



US00D879809S

(12) **United States Design Patent**  
**Harris et al.**

(10) **Patent No.:** **US D879,809 S**  
(45) **Date of Patent:** **\*\* Mar. 31, 2020**

(54) **DISPLAY PANEL WITH CHANGEABLE GRAPHICAL USER INTERFACE**

(71) Applicant: **Ethicon LLC**, Guaynabo, PR (US)

(72) Inventors: **Jason L. Harris**, Lebanon, OH (US);  
**Frederick E. Shelton, IV**, Hillsboro, OH (US); **Douglas E. Withers**, Cincinnati, OH (US); **Christopher J. Hess**, Blue Ash, OH (US)

(73) Assignee: **Ethicon LLC**, Guaynabo, PR (US)

(\*\*) Term: **15 Years**

(21) Appl. No.: **29/608,238**

(22) Filed: **Jun. 20, 2017**

(51) **LOC (12) Cl.** ..... **14-04**

(52) **U.S. Cl.**  
USPC ..... **D14/486; D14/494**

(58) **Field of Classification Search**  
USPC ..... D14/485-495; D20/10, 11, 22-33, 39, D20/40; D5/20, 26, 30, 40, 63-65  
(Continued)

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

66,052 A 6/1867 Smith  
662,587 A 11/1900 Blake  
(Continued)

**FOREIGN PATENT DOCUMENTS**

AU 2011218702 B2 6/2013  
AU 2012200178 B2 7/2013  
(Continued)

**OTHER PUBLICATIONS**

Schellhammer et al., "Poly-Lactic-Acid for Coating of Endovascular Stents: Preliminary Results in Canine Experimental Av-Fistulae," Mat.-wiss. u. Werkstofftech., 32, pp. 193-199 (2001).  
(Continued)

*Primary Examiner* — Cathron C Brooks  
*Assistant Examiner* — Ian F Whitmore

(57) **CLAIM**

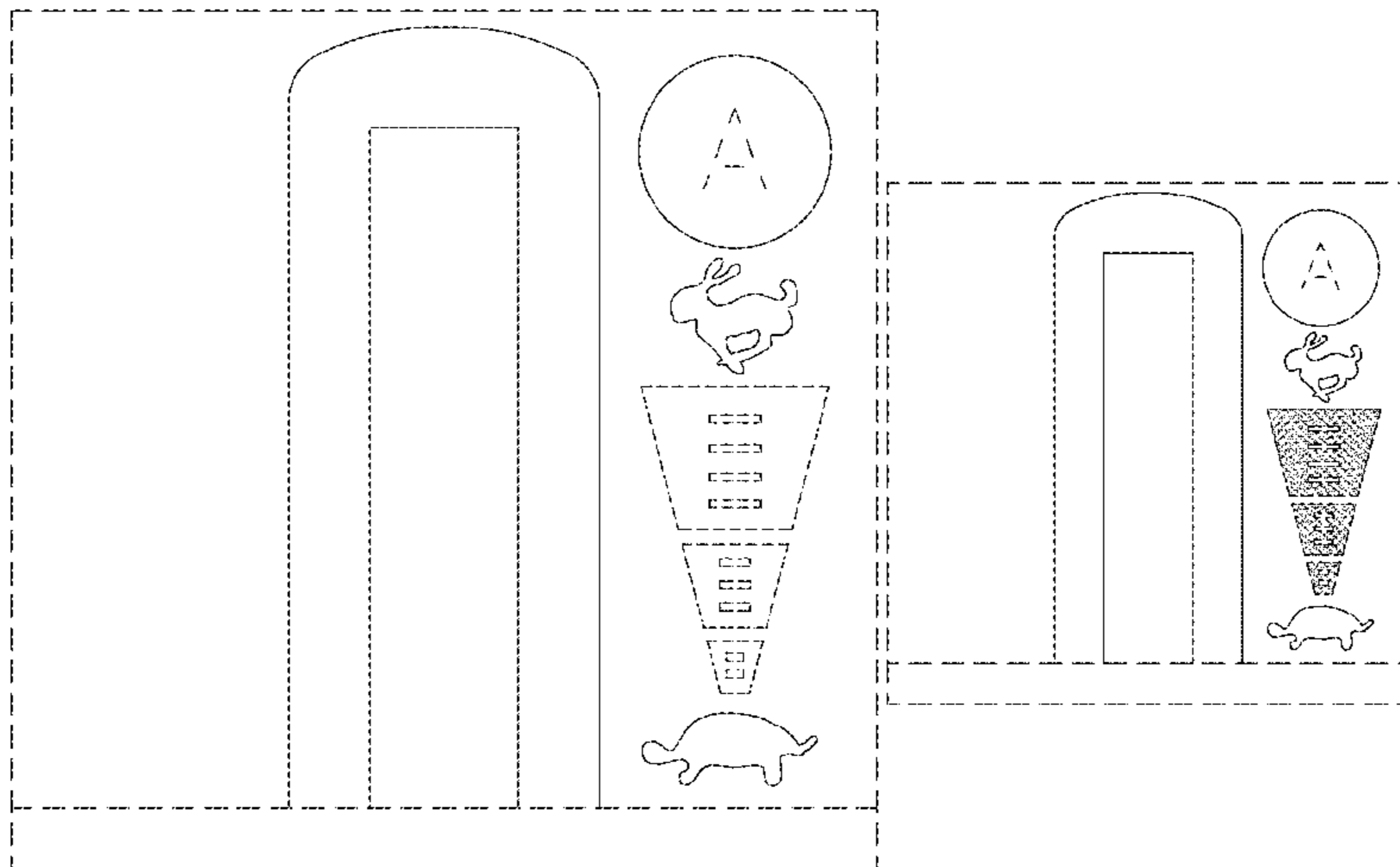
The ornamental design for a display panel with changeable graphical user interface, as shown and described.

**DESCRIPTION**

FIG. 1 is a front view of a display panel with changeable graphical user interface showing a first image in a sequence according to a first embodiment of our new design; FIG. 2 is a front view of a second image in the sequence of the first embodiment; FIG. 3 is a front view of a third image in the sequence of the first embodiment; FIG. 4 is a front view of a fourth image in the sequence of the first embodiment; FIG. 5 is a front view of a display panel with changeable graphical user interface showing a first image in a sequence according to a second embodiment of our new design; FIG. 6 is a front view of a second image in the sequence of the second embodiment; FIG. 7 is a front view of a third image in the sequence of the second embodiment; and, FIG. 8 is a front view of a fourth image in the sequence of the second embodiment.

In all figures, the outermost broken-line square illustrates the perimeter of a portion of a display panel, and defines the bounds of the claimed design. The remaining broken lines illustrate portions of a graphical user interface. The broken lines form no part of the claimed design. Further, the appearance of the display panel with changeable graphical user interface sequentially transitions between the images shown in FIGS. 1-4 and FIGS. 5-8. The process or period in which one image transitions to another forms no part of the claimed design.

**1 Claim, 5 Drawing Sheets**



# US D879,809 S

|      |   |             |         |                   |
|------|---|-------------|---------|-------------------|
| (58) | <b>Field of Classification Search</b>             | 3,551,987 A | 1/1971  | Wilkinson         |
|      | CPC ..... G06F 3/048-04897; G06F 3/147; G06F      | 3,568,675 A | 3/1971  | Harvey            |
|      | 19/3456; A61B 2017/00017; A61B 17/04;             | 3,572,159 A | 3/1971  | Tschanz           |
|      | A61B 17/32; A61B 17/1626; A61B                    | 3,583,393 A | 6/1971  | Takahashi         |
|      | 34/00; A61B 34/25; A61B 34/70; A61M               | 3,589,589 A | 6/1971  | Akopov            |
|      | 5/003   | 3,598,943 A | 8/1971  | Barrett           |
|      | See application file for complete search history. | 3,608,549 A | 9/1971  | Merrill           |
|      |   | 3,618,842 A | 11/1971 | Bryan             |
|      |   | 3,638,652 A | 2/1972  | Kelley            |
|      |   | 3,640,317 A | 2/1972  | Panfli            |
|      |   | 3,643,851 A | 2/1972  | Green et al.      |
|      |   | 3,650,453 A | 3/1972  | Smith, Jr.        |
|      |   | 3,661,666 A | 5/1972  | Foster et al.     |
|      |   | 3,662,939 A | 5/1972  | Bryan             |
|      |   | 3,688,966 A | 9/1972  | Perkins et al.    |
|      |   | 3,695,646 A | 10/1972 | Mommsen           |
|      |   | 3,709,221 A | 1/1973  | Riely             |
|      |   | 3,717,294 A | 2/1973  | Green             |
|      |   | 3,726,755 A | 4/1973  | Shannon           |
|      |   | 3,727,904 A | 4/1973  | Gabbey            |
|      |   | 3,734,207 A | 5/1973  | Fishbein          |
|      |   | 3,740,994 A | 6/1973  | De Carlo, Jr.     |
|      |   | 3,744,495 A | 7/1973  | Johnson           |
|      |   | 3,746,002 A | 7/1973  | Haller            |
|      |   | 3,747,603 A | 7/1973  | Adler             |
|      |   | 3,747,692 A | 7/1973  | Davidson          |
|      |   | 3,751,902 A | 8/1973  | Kingsbury et al.  |
|      |   | 3,752,161 A | 8/1973  | Bent              |
|      |   | 3,799,151 A | 3/1974  | Fukaumi et al.    |
|      |   | 3,808,452 A | 4/1974  | Hutchinson        |
|      |   | 3,815,476 A | 6/1974  | Green et al.      |
|      |   | 3,819,100 A | 6/1974  | Noiles et al.     |
|      |   | 3,821,919 A | 7/1974  | Knohl             |
|      |   | 3,836,171 A | 9/1974  | Hayashi et al.    |
|      |   | 3,837,555 A | 9/1974  | Green             |
|      |   | 3,841,474 A | 10/1974 | Maier             |
|      |   | 3,851,196 A | 11/1974 | Hinds             |
|      |   | 3,863,639 A | 2/1975  | Kleaveland        |
|      |   | 3,883,624 A | 5/1975  | McKenzie et al.   |
|      |   | 3,885,491 A | 5/1975  | Curtis            |
|      |   | 3,892,228 A | 7/1975  | Mitsui            |
|      |   | 3,894,174 A | 7/1975  | Cartun            |
|      |   | 3,902,247 A | 9/1975  | Fleer et al.      |
|      |   | 3,940,844 A | 3/1976  | Colby et al.      |
|      |   | 3,944,163 A | 3/1976  | Hayashi et al.    |
|      |   | 3,950,686 A | 4/1976  | Randall           |
|      |   | 3,952,747 A | 4/1976  | Kimmell, Jr.      |
|      |   | 3,955,581 A | 5/1976  | Spasiano et al.   |
|      |   | 3,959,879 A | 6/1976  | Sellers           |
|      |   | RE28,932 E  | 8/1976  | Noiles et al.     |
|      |   | 3,972,734 A | 8/1976  | King              |
|      |   | 3,981,051 A | 9/1976  | Brumlik           |
|      |   | 4,025,216 A | 5/1977  | Hives             |
|      |   | 4,027,746 A | 6/1977  | Kine              |
|      |   | 4,034,143 A | 7/1977  | Sweet             |
|      |   | 4,038,987 A | 8/1977  | Komiya            |
|      |   | 4,054,108 A | 10/1977 | Gill              |
|      |   | 4,060,089 A | 11/1977 | Noiles            |
|      |   | 4,066,133 A | 1/1978  | Voss              |
|      |   | 4,085,337 A | 4/1978  | Moeller           |
|      |   | 4,100,820 A | 7/1978  | Evett             |
|      |   | 4,106,446 A | 8/1978  | Yamada et al.     |
|      |   | 4,106,620 A | 8/1978  | Brimmer et al.    |
|      |   | 4,108,211 A | 8/1978  | Tanaka            |
|      |   | 4,111,206 A | 9/1978  | Vishnevsky et al. |
|      |   | 4,127,227 A | 11/1978 | Green             |
|      |   | 4,129,059 A | 12/1978 | Van Eck           |
|      |   | 4,132,146 A | 1/1979  | Uhlig             |
|      |   | 4,135,517 A | 1/1979  | Reale             |
|      |   | 4,154,122 A | 5/1979  | Severin           |
|      |   | 4,169,990 A | 10/1979 | Lerdman           |
|      |   | 4,180,285 A | 12/1979 | Reneau            |
|      |   | 4,185,701 A | 1/1980  | Boys              |
|      |   | 4,190,042 A | 2/1980  | Sinnreich         |
|      |   | 4,198,734 A | 4/1980  | Brumlik           |
|      |   | 4,198,982 A | 4/1980  | Fortner et al.    |
|      |   | 4,207,898 A | 6/1980  | Becht             |
|      |   | 4,213,562 A | 7/1980  | Garrett et al.    |
|      |   | 4,226,242 A | 10/1980 | Jarvik            |

(56)

## References Cited

### U.S. PATENT DOCUMENTS

|             |         |                     |
|-------------|---------|---------------------|
| 670,748 A   | 3/1901  | Weddeler            |
| 719,487 A   | 2/1903  | Minor               |
| 804,229 A   | 11/1905 | Hutchinson          |
| 951,393 A   | 3/1910  | Hahn                |
| 1,188,721 A | 6/1916  | Bittner             |
| 1,306,107 A | 6/1919  | Elliott             |
| 1,314,601 A | 9/1919  | McCaskey            |
| 1,677,337 A | 7/1928  | Grove               |
| 1,794,907 A | 3/1931  | Kelly               |
| 1,849,427 A | 3/1932  | Hook                |
| 1,944,116 A | 1/1934  | Stratman            |
| 1,954,048 A | 4/1934  | Jeffrey et al.      |
| 2,037,727 A | 4/1936  | La Chapelle         |
| 2,132,295 A | 10/1938 | Hawkins             |
| 2,161,632 A | 6/1939  | Nattenheimer        |
| D120,434 S  | 5/1940  | Gold                |
| 2,211,117 A | 8/1940  | Hess                |
| 2,214,870 A | 9/1940  | West                |
| 2,224,882 A | 12/1940 | Peck                |
| 2,318,379 A | 5/1943  | Davis et al.        |
| 2,329,440 A | 9/1943  | La Place            |
| 2,377,581 A | 6/1945  | Shaffrey            |
| 2,406,389 A | 8/1946  | Lee                 |
| 2,441,096 A | 5/1948  | Happe               |
| 2,448,741 A | 9/1948  | Scott et al.        |
| 2,450,527 A | 10/1948 | Smith               |
| 2,507,872 A | 5/1950  | Unsinger            |
| 2,526,902 A | 10/1950 | Ruble               |
| 2,527,256 A | 10/1950 | Jackson             |
| 2,578,686 A | 12/1951 | Fish                |
| 2,638,901 A | 5/1953  | Sugarbaker          |
| 2,674,149 A | 4/1954  | Benson              |
| 2,701,489 A | 2/1955  | Osborn              |
| 2,711,461 A | 6/1955  | Happe               |
| 2,742,955 A | 4/1956  | Dominguez           |
| 2,804,848 A | 9/1957  | O'Farrell et al.    |
| 2,808,482 A | 10/1957 | Zanichkowsky et al. |
| 2,853,074 A | 9/1958  | Olson               |
| 2,887,004 A | 5/1959  | Stewart             |
| 2,957,353 A | 10/1960 | Lewis               |
| 2,959,974 A | 11/1960 | Emrick              |
| 3,032,769 A | 5/1962  | Palmer              |
| 3,060,972 A | 10/1962 | Sheldon             |
| 3,075,062 A | 1/1963  | Iaccarino           |
| 3,078,465 A | 2/1963  | Bobrov              |
| 3,079,606 A | 3/1963  | Bobrov et al.       |
| 3,080,564 A | 3/1963  | Strekopitov et al.  |
| 3,166,072 A | 1/1965  | Sullivan, Jr.       |
| 3,180,236 A | 4/1965  | Beckett             |
| 3,196,869 A | 7/1965  | Scholl              |
| 3,204,731 A | 9/1965  | Bent et al.         |
| 3,266,494 A | 8/1966  | Brownrigg et al.    |
| 3,269,630 A | 8/1966  | Fleischer           |
| 3,269,631 A | 8/1966  | Takaro              |
| 3,275,211 A | 9/1966  | Hirsch et al.       |
| 3,317,103 A | 5/1967  | Cullen et al.       |
| 3,317,105 A | 5/1967  | Astafjev et al.     |
| 3,357,296 A | 12/1967 | Lefever             |
| 3,359,978 A | 12/1967 | Smith, Jr.          |
| 3,377,893 A | 4/1968  | Short               |
| 3,480,193 A | 11/1969 | Ralston             |
| 3,490,675 A | 1/1970  | Green et al.        |
| 3,494,533 A | 2/1970  | Green et al.        |
| 3,499,591 A | 3/1970  | Green               |
| 3,503,396 A | 3/1970  | Pierie et al.       |
| 3,509,629 A | 5/1970  | Kidokoro            |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |         |                    |             |         |                    |
|-------------|---------|--------------------|-------------|---------|--------------------|
| 4,239,431 A | 12/1980 | Davini             | 4,478,220 A | 10/1984 | Di Giovanni et al. |
| 4,241,861 A | 12/1980 | Fleischer          | 4,480,641 A | 11/1984 | Failla et al.      |
| 4,244,372 A | 1/1981  | Kapitanov et al.   | 4,485,816 A | 12/1984 | Krumme             |
| 4,250,436 A | 2/1981  | Weissman           | 4,485,817 A | 12/1984 | Swiggett           |
| 4,261,244 A | 4/1981  | Becht et al.       | 4,486,928 A | 12/1984 | Tucker et al.      |
| 4,272,002 A | 6/1981  | Moshofsky          | 4,488,523 A | 12/1984 | Shichman           |
| 4,272,662 A | 6/1981  | Simpson            | 4,489,875 A | 12/1984 | Crawford et al.    |
| 4,274,304 A | 6/1981  | Curtiss            | 4,493,983 A | 1/1985  | Taggert            |
| 4,274,398 A | 6/1981  | Scott, Jr.         | 4,494,057 A | 1/1985  | Hotta              |
| 4,275,813 A | 6/1981  | Noiles             | 4,499,895 A | 2/1985  | Takayama           |
| 4,278,091 A | 7/1981  | Borzone            | 4,500,024 A | 2/1985  | DiGiovanni et al.  |
| 4,289,131 A | 9/1981  | Mueller            | D278,081 S  | 3/1985  | Green              |
| 4,289,133 A | 9/1981  | Rothfuss           | 4,503,842 A | 3/1985  | Takayama           |
| 4,290,542 A | 9/1981  | Fedotov et al.     | 4,505,272 A | 3/1985  | Utyamyshev et al.  |
| D261,356 S  | 10/1981 | Robinson           | 4,505,273 A | 3/1985  | Braun et al.       |
| 4,293,604 A | 10/1981 | Campbell           | 4,505,414 A | 3/1985  | Filipi             |
| 4,296,654 A | 10/1981 | Mercer             | 4,506,671 A | 3/1985  | Green              |
| 4,296,881 A | 10/1981 | Lee                | 4,512,038 A | 4/1985  | Alexander et al.   |
| 4,304,236 A | 12/1981 | Conta et al.       | 4,520,817 A | 6/1985  | Green              |
| 4,305,539 A | 12/1981 | Korolkov et al.    | 4,522,327 A | 6/1985  | Korthoff et al.    |
| 4,312,363 A | 1/1982  | Rothfuss et al.    | 4,526,174 A | 7/1985  | Froehlich          |
| 4,312,685 A | 1/1982  | Riedl              | 4,527,724 A | 7/1985  | Chow et al.        |
| 4,317,451 A | 3/1982  | Cerwin et al.      | 4,530,357 A | 7/1985  | Pawloski et al.    |
| 4,319,576 A | 3/1982  | Rothfuss           | 4,530,453 A | 7/1985  | Green              |
| 4,321,002 A | 3/1982  | Froehlich          | 4,531,522 A | 7/1985  | Bedi et al.        |
| 4,321,746 A | 3/1982  | Grinage            | 4,532,927 A | 8/1985  | Miksza, Jr.        |
| 4,328,839 A | 5/1982  | Lyons et al.       | 4,540,202 A | 9/1985  | Amphoux et al.     |
| 4,331,277 A | 5/1982  | Green              | 4,548,202 A | 10/1985 | Duncan             |
| 4,340,331 A | 7/1982  | Savino             | 4,556,058 A | 12/1985 | Green              |
| 4,347,450 A | 8/1982  | Colligan           | 4,560,915 A | 12/1985 | Soultanian         |
| 4,348,603 A | 9/1982  | Huber              | 4,565,109 A | 1/1986  | Tsay               |
| 4,349,028 A | 9/1982  | Green              | 4,565,189 A | 1/1986  | Mabuchi            |
| 4,350,151 A | 9/1982  | Scott              | 4,566,620 A | 1/1986  | Green et al.       |
| 4,353,371 A | 10/1982 | Cosman             | 4,569,346 A | 2/1986  | Poirier            |
| 4,357,940 A | 11/1982 | Muller             | 4,569,469 A | 2/1986  | Mongeon et al.     |
| 4,361,057 A | 11/1982 | Kochera            | 4,571,213 A | 2/1986  | Ishimoto           |
| 4,366,544 A | 12/1982 | Shima et al.       | 4,573,468 A | 3/1986  | Conta et al.       |
| 4,369,013 A | 1/1983  | Abildgaard et al.  | 4,573,469 A | 3/1986  | Golden et al.      |
| 4,373,147 A | 2/1983  | Carlson, Jr.       | 4,573,622 A | 3/1986  | Green et al.       |
| 4,376,380 A | 3/1983  | Burgess            | 4,576,165 A | 3/1986  | Green et al.       |
| 4,379,457 A | 4/1983  | Gravener et al.    | 4,576,167 A | 3/1986  | Noiles             |
| 4,380,312 A | 4/1983  | Landrus            | 4,580,712 A | 4/1986  | Green              |
| 4,382,326 A | 5/1983  | Rabuse             | 4,585,153 A | 4/1986  | Failla et al.      |
| 4,383,634 A | 5/1983  | Green              | 4,586,501 A | 5/1986  | Claracq            |
| 4,393,728 A | 7/1983  | Larson et al.      | 4,586,502 A | 5/1986  | Bedi et al.        |
| 4,394,613 A | 7/1983  | Cole               | 4,589,416 A | 5/1986  | Green              |
| 4,396,139 A | 8/1983  | Hall et al.        | 4,589,582 A | 5/1986  | Bilotti            |
| 4,397,311 A | 8/1983  | Kanshin et al.     | 4,589,870 A | 5/1986  | Citrin et al.      |
| 4,402,445 A | 9/1983  | Green              | 4,591,085 A | 5/1986  | Di Giovanni        |
| 4,406,621 A | 9/1983  | Bailey             | RE32,214 E  | 7/1986  | Schramm            |
| 4,408,692 A | 10/1983 | Sigel et al.       | 4,597,753 A | 7/1986  | Turley             |
| 4,409,057 A | 10/1983 | Molenda et al.     | 4,600,037 A | 7/1986  | Hatten             |
| 4,415,112 A | 11/1983 | Green              | 4,604,786 A | 8/1986  | Howie, Jr.         |
| 4,416,276 A | 11/1983 | Newton et al.      | 4,605,001 A | 8/1986  | Rothfuss et al.    |
| 4,417,890 A | 11/1983 | Dennehey et al.    | 4,605,004 A | 8/1986  | Di Giovanni et al. |
| 4,423,456 A | 12/1983 | Zaidenweber        | 4,606,343 A | 8/1986  | Conta et al.       |
| 4,428,376 A | 1/1984  | Mericle            | 4,607,636 A | 8/1986  | Kula et al.        |
| 4,429,695 A | 2/1984  | Green              | 4,607,638 A | 8/1986  | Crainich           |
| 4,430,997 A | 2/1984  | DiGiovanni et al.  | 4,608,981 A | 9/1986  | Rothfuss et al.    |
| 4,434,796 A | 3/1984  | Karapetian et al.  | 4,610,250 A | 9/1986  | Green              |
| 4,438,659 A | 3/1984  | Desplats           | 4,610,383 A | 9/1986  | Rothfuss et al.    |
| 4,442,964 A | 4/1984  | Becht              | 4,612,933 A | 9/1986  | Brinkerhoff et al. |
| 4,448,194 A | 5/1984  | DiGiovanni et al.  | D286,180 S  | 10/1986 | Korthoff           |
| 4,451,743 A | 5/1984  | Suzuki et al.      | D286,442 S  | 10/1986 | Korthoff et al.    |
| 4,452,376 A | 6/1984  | Klieman et al.     | 4,617,893 A | 10/1986 | Donner et al.      |
| 4,454,887 A | 6/1984  | Kruger             | 4,617,914 A | 10/1986 | Ueda               |
| 4,461,305 A | 7/1984  | Cibley             | 4,619,262 A | 10/1986 | Taylor             |
| 4,467,805 A | 8/1984  | Fukuda             | 4,619,391 A | 10/1986 | Sharkany et al.    |
| 4,468,597 A | 8/1984  | Baumard et al.     | D287,278 S  | 12/1986 | Spreckelmeier      |
| 4,469,481 A | 9/1984  | Kobayashi          | 4,628,459 A | 12/1986 | Shinohara et al.   |
| 4,470,414 A | 9/1984  | Imagawa et al.     | 4,628,636 A | 12/1986 | Folger             |
| 4,471,780 A | 9/1984  | Menges et al.      | 4,629,107 A | 12/1986 | Fedotov et al.     |
| 4,471,781 A | 9/1984  | Di Giovanni et al. | 4,632,290 A | 12/1986 | Green et al.       |
| 4,473,077 A | 9/1984  | Noiles et al.      | 4,633,861 A | 1/1987  | Chow et al.        |
| 4,475,679 A | 10/1984 | Fleury, Jr.        | 4,633,874 A | 1/1987  | Chow et al.        |
|             |         |                    | 4,634,419 A | 1/1987  | Kreizman et al.    |
|             |         |                    | 4,635,638 A | 1/1987  | Weintraub et al.   |
|             |         |                    | 4,641,076 A | 2/1987  | Linden             |
|             |         |                    | 4,642,618 A | 2/1987  | Johnson et al.     |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |         |                     |             |         |                   |
|-------------|---------|---------------------|-------------|---------|-------------------|
| 4,643,173 A | 2/1987  | Bell et al.         | 4,838,859 A | 6/1989  | Strassmann        |
| 4,643,731 A | 2/1987  | Eckenhoff           | 4,844,068 A | 7/1989  | Arata et al.      |
| 4,646,722 A | 3/1987  | Silverstein et al.  | 4,848,637 A | 7/1989  | Pruitt            |
| 4,646,745 A | 3/1987  | Noiles              | 4,856,078 A | 8/1989  | Konopka           |
| 4,652,820 A | 3/1987  | Maresca             | 4,860,644 A | 8/1989  | Kohl et al.       |
| 4,654,028 A | 3/1987  | Suma                | 4,862,891 A | 9/1989  | Smith             |
| 4,655,222 A | 4/1987  | Florez et al.       | 4,863,423 A | 9/1989  | Wallace           |
| 4,662,555 A | 5/1987  | Thornton            | 4,865,030 A | 9/1989  | Polyak            |
| 4,663,874 A | 5/1987  | Sano et al.         | 4,868,530 A | 9/1989  | Ahs               |
| 4,664,305 A | 5/1987  | Blake, III et al.   | 4,869,414 A | 9/1989  | Green et al.      |
| 4,665,916 A | 5/1987  | Green               | 4,869,415 A | 9/1989  | Fox               |
| 4,667,674 A | 5/1987  | Korthoff et al.     | 4,873,977 A | 10/1989 | Avant et al.      |
| 4,669,647 A | 6/1987  | Storace             | 4,875,486 A | 10/1989 | Rapoport et al.   |
| 4,671,278 A | 6/1987  | Chin                | 4,880,015 A | 11/1989 | Nierman           |
| 4,671,280 A | 6/1987  | Dorband et al.      | 4,890,613 A | 1/1990  | Golden et al.     |
| 4,671,445 A | 6/1987  | Barker et al.       | 4,892,244 A | 1/1990  | Fox et al.        |
| 4,672,964 A | 6/1987  | Dee et al.          | 4,893,622 A | 1/1990  | Green et al.      |
| 4,675,944 A | 6/1987  | Wells               | 4,894,051 A | 1/1990  | Shiber            |
| 4,676,245 A | 6/1987  | Fukuda              | 4,896,584 A | 1/1990  | Stoll et al.      |
| 4,679,460 A | 7/1987  | Yoshigai            | 4,896,678 A | 1/1990  | Ogawa             |
| 4,679,719 A | 7/1987  | Kramer              | 4,900,303 A | 2/1990  | Lemelson          |
| 4,684,051 A | 8/1987  | Akopov et al.       | 4,903,697 A | 2/1990  | Resnick et al.    |
| 4,688,555 A | 8/1987  | Wardle              | 4,909,789 A | 3/1990  | Taguchi et al.    |
| 4,691,703 A | 9/1987  | Auth et al.         | 4,915,100 A | 4/1990  | Green             |
| 4,693,248 A | 9/1987  | Failla              | 4,919,679 A | 4/1990  | Averill et al.    |
| 4,698,579 A | 10/1987 | Richter et al.      | 4,921,479 A | 5/1990  | Grayzel           |
| 4,700,703 A | 10/1987 | Resnick et al.      | 4,925,082 A | 5/1990  | Kim               |
| 4,705,038 A | 11/1987 | Sjostrom et al.     | 4,928,699 A | 5/1990  | Sasai             |
| 4,708,141 A | 11/1987 | Inoue et al.        | 4,930,503 A | 6/1990  | Pruitt            |
| 4,709,120 A | 11/1987 | Pearson             | 4,930,674 A | 6/1990  | Barak             |
| 4,715,520 A | 12/1987 | Roehr, Jr. et al.   | 4,931,047 A | 6/1990  | Broadwin et al.   |
| 4,719,917 A | 1/1988  | Barrows et al.      | 4,931,737 A | 6/1990  | Hishiki           |
| 4,721,099 A | 1/1988  | Chikama             | 4,932,960 A | 6/1990  | Green et al.      |
| 4,724,840 A | 2/1988  | McVay et al.        | 4,933,800 A | 6/1990  | Yang              |
| 4,727,308 A | 2/1988  | Huljak et al.       | 4,933,843 A | 6/1990  | Scheller et al.   |
| 4,728,020 A | 3/1988  | Green et al.        | D309,350 S  | 7/1990  | Sutherland et al. |
| 4,728,876 A | 3/1988  | Mongeon et al.      | 4,938,408 A | 7/1990  | Bedi et al.       |
| 4,729,260 A | 3/1988  | Dudden              | 4,941,623 A | 7/1990  | Pruitt            |
| 4,730,726 A | 3/1988  | Holzwarth           | 4,943,182 A | 7/1990  | Hoblingre         |
| 4,741,336 A | 5/1988  | Failla et al.       | 4,944,443 A | 7/1990  | Oddsens et al.    |
| 4,743,214 A | 5/1988  | Tai-Cheng           | 4,946,067 A | 8/1990  | Kelsall           |
| 4,744,363 A | 5/1988  | Hasson              | 4,948,327 A | 8/1990  | Crupi, Jr.        |
| 4,747,820 A | 5/1988  | Hornlein et al.     | 4,949,707 A | 8/1990  | Levahn et al.     |
| 4,750,902 A | 6/1988  | Wuchinich et al.    | 4,951,860 A | 8/1990  | Peters et al.     |
| 4,752,024 A | 6/1988  | Green et al.        | 4,951,861 A | 8/1990  | Schulze et al.    |
| 4,754,909 A | 7/1988  | Barker et al.       | 4,955,959 A | 9/1990  | Tompkins et al.   |
| 4,761,326 A | 8/1988  | Barnes et al.       | 4,957,212 A | 9/1990  | Duck et al.       |
| 4,763,669 A | 8/1988  | Jaeger              | 4,962,877 A | 10/1990 | Hervas            |
| 4,767,044 A | 8/1988  | Green               | 4,964,559 A | 10/1990 | Deniega et al.    |
| D297,764 S  | 9/1988  | Hunt et al.         | 4,964,863 A | 10/1990 | Kanshin et al.    |
| 4,773,420 A | 9/1988  | Green               | 4,965,709 A | 10/1990 | Ngo               |
| 4,777,780 A | 10/1988 | Holzwarth           | 4,973,274 A | 11/1990 | Hirukawa          |
| 4,781,186 A | 11/1988 | Simpson et al.      | 4,973,302 A | 11/1990 | Armour et al.     |
| 4,784,137 A | 11/1988 | Kulik et al.        | 4,978,049 A | 12/1990 | Green             |
| 4,787,387 A | 11/1988 | Burbank, III et al. | 4,978,333 A | 12/1990 | Broadwin et al.   |
| 4,788,485 A | 11/1988 | Kawagishi et al.    | 4,979,952 A | 12/1990 | Kubota et al.     |
| D298,967 S  | 12/1988 | Hunt                | 4,984,564 A | 1/1991  | Yuen              |
| 4,790,225 A | 12/1988 | Moody et al.        | 4,986,808 A | 1/1991  | Broadwin et al.   |
| 4,790,314 A | 12/1988 | Weaver              | 4,987,049 A | 1/1991  | Komamura et al.   |
| 4,805,617 A | 2/1989  | Bedi et al.         | 4,988,334 A | 1/1991  | Hornlein et al.   |
| 4,805,823 A | 2/1989  | Rothfuss            | 4,995,877 A | 2/1991  | Ams et al.        |
| 4,807,628 A | 2/1989  | Peters et al.       | 4,995,959 A | 2/1991  | Metzner           |
| 4,809,695 A | 3/1989  | Gwathmey et al.     | 4,996,975 A | 3/1991  | Nakamura          |
| 4,815,460 A | 3/1989  | Porat et al.        | 5,002,543 A | 3/1991  | Bradshaw et al.   |
| 4,817,643 A | 4/1989  | Olson               | 5,002,553 A | 3/1991  | Shiber            |
| 4,817,847 A | 4/1989  | Redtenbacher et al. | 5,005,754 A | 4/1991  | Van Overloop      |
| 4,819,853 A | 4/1989  | Green               | 5,009,661 A | 4/1991  | Michelson         |
| 4,821,939 A | 4/1989  | Green               | 5,012,411 A | 4/1991  | Policastro et al. |
| 4,827,911 A | 5/1989  | Broadwin et al.     | 5,014,898 A | 5/1991  | Heidrich          |
| 4,828,542 A | 5/1989  | Hermann             | 5,014,899 A | 5/1991  | Presty et al.     |
| 4,828,944 A | 5/1989  | Yabe et al.         | 5,015,227 A | 5/1991  | Broadwin et al.   |
| 4,830,855 A | 5/1989  | Stewart             | 5,018,515 A | 5/1991  | Gilman            |
| 4,832,158 A | 5/1989  | Farrar et al.       | 5,018,657 A | 5/1991  | Pedlick et al.    |
| 4,833,937 A | 5/1989  | Nagano              | 5,024,652 A | 6/1991  | Dumenek et al.    |
| 4,834,720 A | 5/1989  | Blinkhorn           | 5,024,671 A | 6/1991  | Tu et al.         |
|             |         |                     | 5,025,559 A | 6/1991  | McCullough        |
|             |         |                     | 5,027,834 A | 7/1991  | Pruitt            |
|             |         |                     | 5,030,226 A | 7/1991  | Green et al.      |
|             |         |                     | 5,031,814 A | 7/1991  | Tompkins et al.   |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |         |                    |             |         |                                |
|-------------|---------|--------------------|-------------|---------|--------------------------------|
| 5,035,040 A | 7/1991  | Kerrigan et al.    | 5,205,459 A | 4/1993  | Brinkerhoff et al.             |
| 5,038,109 A | 8/1991  | Goble et al.       | 5,207,672 A | 5/1993  | Roth et al.                    |
| 5,038,247 A | 8/1991  | Kelley et al.      | 5,207,697 A | 5/1993  | Carusillo et al.               |
| 5,040,715 A | 8/1991  | Green et al.       | 5,209,747 A | 5/1993  | Knoepfler                      |
| 5,042,707 A | 8/1991  | Taheri             | 5,209,756 A | 5/1993  | Seedhom et al.                 |
| 5,061,269 A | 10/1991 | Muller             | 5,211,649 A | 5/1993  | Kohler et al.                  |
| 5,062,491 A | 11/1991 | Takeshima et al.   | 5,211,655 A | 5/1993  | Hasson                         |
| 5,062,563 A | 11/1991 | Green et al.       | 5,217,457 A | 6/1993  | Delahuerge et al.              |
| 5,065,929 A | 11/1991 | Schulze et al.     | 5,217,478 A | 6/1993  | Rexroth                        |
| 5,071,052 A | 12/1991 | Rodak et al.       | 5,219,111 A | 6/1993  | Bilotti et al.                 |
| 5,071,430 A | 12/1991 | de Salis et al.    | 5,220,269 A | 6/1993  | Chen et al.                    |
| 5,074,454 A | 12/1991 | Peters             | 5,221,036 A | 6/1993  | Takase                         |
| 5,077,506 A | 12/1991 | Krause             | 5,221,281 A | 6/1993  | Klicek                         |
| 5,079,006 A | 1/1992  | Urquhart           | 5,222,945 A | 6/1993  | Basnight                       |
| 5,080,556 A | 1/1992  | Carreno            | 5,222,963 A | 6/1993  | Brinkerhoff et al.             |
| 5,083,695 A | 1/1992  | Foslien et al.     | 5,222,975 A | 6/1993  | Crainich                       |
| 5,084,057 A | 1/1992  | Green et al.       | 5,222,976 A | 6/1993  | Yoon                           |
| 5,088,979 A | 2/1992  | Filipi et al.      | 5,223,675 A | 6/1993  | Taft                           |
| 5,088,997 A | 2/1992  | Delahuerge et al.  | D338,729 S  | 8/1993  | Sprecklemeier et al.           |
| 5,089,606 A | 2/1992  | Cole et al.        | 5,234,447 A | 8/1993  | Kaster et al.                  |
| 5,094,247 A | 3/1992  | Hernandez et al.   | 5,236,269 A | 8/1993  | Handy                          |
| 5,098,004 A | 3/1992  | Kerrigan           | 5,236,424 A | 8/1993  | Imran                          |
| 5,098,360 A | 3/1992  | Hirota             | 5,236,440 A | 8/1993  | Hlavacek                       |
| 5,100,042 A | 3/1992  | Gravener et al.    | 5,239,981 A | 8/1993  | Anapliotis                     |
| 5,100,420 A | 3/1992  | Green et al.       | 5,240,163 A | 8/1993  | Stein et al.                   |
| 5,104,025 A | 4/1992  | Main et al.        | 5,242,457 A | 9/1993  | Akopov et al.                  |
| 5,104,397 A | 4/1992  | Vasconcelos et al. | 5,244,462 A | 9/1993  | Delahuerge et al.              |
| 5,104,400 A | 4/1992  | Berguer et al.     | 5,246,156 A | 9/1993  | Rothfuss et al.                |
| 5,106,008 A | 4/1992  | Tompkins et al.    | 5,246,443 A | 9/1993  | Mai                            |
| 5,108,368 A | 4/1992  | Hammerslag et al.  | 5,253,793 A | 10/1993 | Green et al.                   |
| 5,109,722 A | 5/1992  | Hufnagle et al.    | 5,258,007 A | 11/1993 | Spetzler et al.                |
| 5,111,987 A | 5/1992  | Moeinzadeh et al.  | 5,258,008 A | 11/1993 | Wilk                           |
| 5,116,349 A | 5/1992  | Aranyi             | 5,258,009 A | 11/1993 | Connors                        |
| D327,323 S  | 6/1992  | Hunt               | 5,258,010 A | 11/1993 | Green et al.                   |
| 5,119,009 A | 6/1992  | McCaleb et al.     | 5,258,012 A | 11/1993 | Luscombe et al.                |
| 5,122,156 A | 6/1992  | Granger et al.     | 5,259,366 A | 11/1993 | Reydel et al.                  |
| 5,124,990 A | 6/1992  | Williamson         | 5,259,835 A | 11/1993 | Clark et al.                   |
| 5,129,570 A | 7/1992  | Schulze et al.     | 5,260,637 A | 11/1993 | Pizzi                          |
| 5,137,198 A | 8/1992  | Nobis et al.       | 5,261,135 A | 11/1993 | Mitchell                       |
| 5,139,513 A | 8/1992  | Segato             | 5,261,877 A | 11/1993 | Fine et al.                    |
| 5,141,144 A | 8/1992  | Foslien et al.     | 5,261,922 A | 11/1993 | Hood                           |
| 5,142,932 A | 9/1992  | Moya et al.        | 5,263,629 A | 11/1993 | Trumbull et al.                |
| 5,155,941 A | 10/1992 | Takahashi et al.   | 5,263,937 A | 11/1993 | Shipp                          |
| 5,156,315 A | 10/1992 | Green et al.       | 5,263,973 A | 11/1993 | Cook                           |
| 5,156,609 A | 10/1992 | Nakao et al.       | 5,264,218 A | 11/1993 | Rogozinski                     |
| 5,156,614 A | 10/1992 | Green et al.       | 5,268,622 A | 12/1993 | Philipp                        |
| 5,158,567 A | 10/1992 | Green              | 5,271,543 A | 12/1993 | Grant et al.                   |
| D330,699 S  | 11/1992 | Gill               | 5,271,544 A | 12/1993 | Fox et al.                     |
| 5,163,598 A | 11/1992 | Peters et al.      | RE34,519 E  | 1/1994  | Fox et al.                     |
| 5,168,605 A | 12/1992 | Bartlett           | 5,275,322 A | 1/1994  | Brinkerhoff et al.             |
| 5,170,925 A | 12/1992 | Madden et al.      | 5,275,323 A | 1/1994  | Schulze et al.                 |
| 5,171,247 A | 12/1992 | Hughett et al.     | 5,275,608 A | 1/1994  | Forman et al.                  |
| 5,171,249 A | 12/1992 | Stefanchik et al.  | 5,279,416 A | 1/1994  | Malec et al.                   |
| 5,171,253 A | 12/1992 | Klieman            | 5,281,216 A | 1/1994  | Klicek                         |
| 5,173,053 A | 12/1992 | Swanson et al.     | 5,282,806 A | 2/1994  | Haber et al.                   |
| 5,173,133 A | 12/1992 | Morin et al.       | 5,282,829 A | 2/1994  | Hermes                         |
| 5,176,677 A | 1/1993  | Wuchinich          | 5,284,128 A | 2/1994  | Hart                           |
| 5,176,688 A | 1/1993  | Narayan et al.     | 5,285,381 A | 2/1994  | Iskarous et al.                |
| 5,187,422 A | 2/1993  | Izenbaard et al.   | 5,285,945 A | 2/1994  | Brinkerhoff et al.             |
| 5,188,102 A | 2/1993  | Idemoto et al.     | 5,286,253 A | 2/1994  | Fucci                          |
| 5,188,111 A | 2/1993  | Yates et al.       | 5,289,963 A | 3/1994  | McGarry et al.                 |
| 5,190,517 A | 3/1993  | Zieve et al.       | 5,290,271 A | 3/1994  | Jernberg                       |
| 5,190,544 A | 3/1993  | Chapman et al.     | 5,290,310 A | 3/1994  | Makower et al.                 |
| 5,190,560 A | 3/1993  | Woods et al.       | 5,292,053 A | 3/1994  | Bilotti et al.                 |
| 5,190,657 A | 3/1993  | Heagle et al.      | 5,293,024 A | 3/1994  | Sugahara et al.                |
| 5,192,288 A | 3/1993  | Thompson et al.    | 5,297,714 A | 3/1994  | Kramer                         |
| 5,193,731 A | 3/1993  | Aranyi             | 5,304,204 A | 4/1994  | Bregen                         |
| 5,195,505 A | 3/1993  | Josefsen           | D347,474 S  | 5/1994  | Olson                          |
| 5,195,968 A | 3/1993  | Lundquist et al.   | 5,307,976 A | 5/1994  | Olson et al.                   |
| 5,197,648 A | 3/1993  | Gingold            | 5,308,576 A | 5/1994  | Green et al.                   |
| 5,197,649 A | 3/1993  | Bessler et al.     | 5,309,387 A | 5/1994  | Mod et al.                     |
| 5,197,966 A | 3/1993  | Sommerkamp         | 5,309,927 A | 5/1994  | Welch                          |
| 5,197,970 A | 3/1993  | Green et al.       | 5,312,023 A | 5/1994  | Green et al.                   |
| 5,200,280 A | 4/1993  | Karasa             | 5,312,024 A | 5/1994  | Grant et al.                   |
| 5,201,750 A | 4/1993  | Hoherl et al.      | 5,312,329 A | 5/1994  | Beaty et al.                   |
|             |         |                    | 5,313,935 A | 5/1994  | Kortenbach et al.              |
|             |         |                    | 5,313,967 A | 5/1994  | Lieber et al.                  |
|             |         |                    | 5,314,424 A | 5/1994  | Nicholas                       |
|             |         |                    | 5,314,445 A | 5/1994  | Heidmueller nee Degwitz et al. |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |         |                 |             |        |                     |
|-------------|---------|-----------------|-------------|--------|---------------------|
| 5,314,466 A | 5/1994  | Stern et al.    | 5,383,881 A | 1/1995 | Green et al.        |
| 5,318,221 A | 6/1994  | Green et al.    | 5,383,882 A | 1/1995 | Buess et al.        |
| 5,320,627 A | 6/1994  | Sorensen et al. | 5,383,888 A | 1/1995 | Zvenyatsky et al.   |
| D348,930 S  | 7/1994  | Olson           | 5,383,895 A | 1/1995 | Holmes et al.       |
| 5,326,013 A | 7/1994  | Green et al.    | 5,388,568 A | 2/1995 | van der Heide       |
| 5,329,923 A | 7/1994  | Lundquist       | 5,389,098 A | 2/1995 | Tsuruta et al.      |
| 5,330,487 A | 7/1994  | Thornton et al. | 5,389,102 A | 2/1995 | Green et al.        |
| 5,330,502 A | 7/1994  | Hassler et al.  | 5,389,104 A | 2/1995 | Hahnen et al.       |
| 5,331,971 A | 7/1994  | Bales et al.    | 5,391,180 A | 2/1995 | Tovey et al.        |
| 5,332,142 A | 7/1994  | Robinson et al. | 5,392,979 A | 2/1995 | Green et al.        |
| 5,333,422 A | 8/1994  | Warren et al.   | 5,395,030 A | 3/1995 | Kuramoto et al.     |
| 5,333,772 A | 8/1994  | Rothfuss et al. | 5,395,033 A | 3/1995 | Byrne et al.        |
| 5,333,773 A | 8/1994  | Main et al.     | 5,395,034 A | 3/1995 | Allen et al.        |
| 5,334,183 A | 8/1994  | Wuchinich       | 5,395,312 A | 3/1995 | Desai               |
| 5,336,130 A | 8/1994  | Ray             | 5,395,384 A | 3/1995 | Duthoit et al.      |
| 5,336,229 A | 8/1994  | Noda            | 5,397,046 A | 3/1995 | Savage et al.       |
| 5,336,232 A | 8/1994  | Green et al.    | 5,397,324 A | 3/1995 | Carroll et al.      |
| 5,339,799 A | 8/1994  | Kami et al.     | 5,400,267 A | 3/1995 | Denen et al.        |
| 5,341,724 A | 8/1994  | Vatel           | 5,403,276 A | 4/1995 | Schechter et al.    |
| 5,341,807 A | 8/1994  | Nardella        | 5,403,312 A | 4/1995 | Yates et al.        |
| 5,341,810 A | 8/1994  | Dardel          | 5,404,106 A | 4/1995 | Matsuda             |
| 5,342,380 A | 8/1994  | Hood            | 5,404,870 A | 4/1995 | Brinkerhoff et al.  |
| 5,342,381 A | 8/1994  | Tidemand        | 5,404,960 A | 4/1995 | Wada et al.         |
| 5,342,385 A | 8/1994  | Norelli et al.  | 5,405,072 A | 4/1995 | Zlock et al.        |
| 5,342,395 A | 8/1994  | Jarrett et al.  | 5,405,073 A | 4/1995 | Porter              |
| 5,342,396 A | 8/1994  | Cook            | 5,405,344 A | 4/1995 | Williamson et al.   |
| 5,343,382 A | 8/1994  | Hale et al.     | 5,405,360 A | 4/1995 | Tovey               |
| 5,343,391 A | 8/1994  | Mushabac        | 5,407,293 A | 4/1995 | Crainich            |
| 5,344,059 A | 9/1994  | Green et al.    | 5,408,409 A | 4/1995 | Glassman et al.     |
| 5,344,060 A | 9/1994  | Gravener et al. | 5,409,498 A | 4/1995 | Braddock et al.     |
| 5,344,454 A | 9/1994  | Clarke et al.   | 5,409,703 A | 4/1995 | McAnalley et al.    |
| 5,346,504 A | 9/1994  | Ortiz et al.    | D357,981 S  | 5/1995 | Green et al.        |
| 5,348,259 A | 9/1994  | Blanco et al.   | 5,411,481 A | 5/1995 | Allen et al.        |
| 5,350,355 A | 9/1994  | Sklar           | 5,411,508 A | 5/1995 | Bessler et al.      |
| 5,350,388 A | 9/1994  | Epstein         | 5,413,107 A | 5/1995 | Oakley et al.       |
| 5,350,391 A | 9/1994  | Iacovelli       | 5,413,267 A | 5/1995 | Solyntjes et al.    |
| 5,350,400 A | 9/1994  | Esposito et al. | 5,413,268 A | 5/1995 | Green et al.        |
| 5,352,229 A | 10/1994 | Goble et al.    | 5,413,272 A | 5/1995 | Green et al.        |
| 5,352,235 A | 10/1994 | Koros et al.    | 5,413,573 A | 5/1995 | Koivukangas         |
| 5,352,238 A | 10/1994 | Green et al.    | 5,415,334 A | 5/1995 | Williamson et al.   |
| 5,354,250 A | 10/1994 | Christensen     | 5,415,335 A | 5/1995 | Knodell, Jr.        |
| 5,354,303 A | 10/1994 | Spaeth et al.   | 5,417,203 A | 5/1995 | Tovey et al.        |
| 5,356,006 A | 10/1994 | Alpern et al.   | 5,417,361 A | 5/1995 | Williamson, IV      |
| 5,356,064 A | 10/1994 | Green et al.    | 5,419,766 A | 5/1995 | Chang et al.        |
| 5,358,506 A | 10/1994 | Green et al.    | 5,421,829 A | 6/1995 | Olichney et al.     |
| 5,358,510 A | 10/1994 | Luscombe et al. | 5,422,567 A | 6/1995 | Matsunaga           |
| 5,359,231 A | 10/1994 | Flowers et al.  | 5,423,471 A | 6/1995 | Mastri et al.       |
| D352,780 S  | 11/1994 | Glaeser et al.  | 5,423,809 A | 6/1995 | Klicek              |
| 5,359,993 A | 11/1994 | Slater et al.   | 5,423,835 A | 6/1995 | Green et al.        |
| 5,360,305 A | 11/1994 | Kerrigan        | 5,425,745 A | 6/1995 | Green et al.        |
| 5,360,428 A | 11/1994 | Hutchinson, Jr. | 5,427,298 A | 6/1995 | Tegtmeier           |
| 5,361,902 A | 11/1994 | Abidin et al.   | 5,431,322 A | 7/1995 | Green et al.        |
| 5,364,001 A | 11/1994 | Bryan           | 5,431,323 A | 7/1995 | Smith et al.        |
| 5,364,002 A | 11/1994 | Green et al.    | 5,431,654 A | 7/1995 | Nic                 |
| 5,364,003 A | 11/1994 | Williamson, IV  | 5,431,668 A | 7/1995 | Burbank, III et al. |
| 5,366,133 A | 11/1994 | Geiste          | 5,433,721 A | 7/1995 | Hooven et al.       |
| 5,366,134 A | 11/1994 | Green et al.    | 5,437,681 A | 8/1995 | Meade et al.        |
| 5,366,479 A | 11/1994 | McGarry et al.  | 5,438,302 A | 8/1995 | Goble               |
| 5,368,015 A | 11/1994 | Wilk            | 5,438,997 A | 8/1995 | Sieben et al.       |
| 5,368,592 A | 11/1994 | Stern et al.    | 5,439,155 A | 8/1995 | Viola               |
| 5,369,565 A | 11/1994 | Chen et al.     | 5,439,156 A | 8/1995 | Grant et al.        |
| 5,370,645 A | 12/1994 | Klicek et al.   | 5,439,479 A | 8/1995 | Shichman et al.     |
| 5,372,124 A | 12/1994 | Takayama et al. | 5,441,191 A | 8/1995 | Linden              |
| 5,372,596 A | 12/1994 | Klicek et al.   | 5,441,193 A | 8/1995 | Gravener            |
| 5,372,602 A | 12/1994 | Burke           | 5,441,483 A | 8/1995 | Avitall             |
| 5,374,277 A | 12/1994 | Hassler         | 5,441,494 A | 8/1995 | Ortiz               |
| 5,375,588 A | 12/1994 | Yoon            | 5,443,197 A | 8/1995 | Malis et al.        |
| 5,376,095 A | 12/1994 | Ortiz           | 5,443,463 A | 8/1995 | Stern et al.        |
| 5,379,933 A | 1/1995  | Green et al.    | 5,444,113 A | 8/1995 | Sinclair et al.     |
| 5,381,649 A | 1/1995  | Webb            | 5,445,155 A | 8/1995 | Sieben              |
| 5,381,782 A | 1/1995  | DeLaRama et al. | 5,445,304 A | 8/1995 | Plyley et al.       |
| 5,381,943 A | 1/1995  | Allen et al.    | 5,445,604 A | 8/1995 | Lang                |
| 5,382,247 A | 1/1995  | Cimino et al.   | 5,445,644 A | 8/1995 | Pietrafitta et al.  |
| 5,383,460 A | 1/1995  | Jang et al.     | 5,446,646 A | 8/1995 | Miyazaki            |
| 5,383,880 A | 1/1995  | Hooven          | 5,447,265 A | 9/1995 | Vidal et al.        |
|             |         |                 | 5,447,417 A | 9/1995 | Kuhl et al.         |
|             |         |                 | 5,447,513 A | 9/1995 | Davison et al.      |
|             |         |                 | 5,449,355 A | 9/1995 | Rhum et al.         |
|             |         |                 | 5,449,365 A | 9/1995 | Green et al.        |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |         |                       |             |         |                    |
|-------------|---------|-----------------------|-------------|---------|--------------------|
| 5,449,370 A | 9/1995  | Vaitekunas            | 5,520,609 A | 5/1996  | Moll et al.        |
| 5,452,836 A | 9/1995  | Huitema et al.        | 5,520,634 A | 5/1996  | Fox et al.         |
| 5,452,837 A | 9/1995  | Williamson, IV et al. | 5,520,678 A | 5/1996  | Heckele et al.     |
| 5,454,378 A | 10/1995 | Palmer et al.         | 5,520,700 A | 5/1996  | Beyar et al.       |
| 5,454,822 A | 10/1995 | Schob et al.          | 5,522,817 A | 6/1996  | Sander et al.      |
| 5,454,827 A | 10/1995 | Aust et al.           | 5,522,831 A | 6/1996  | Sleister et al.    |
| 5,456,401 A | 10/1995 | Green et al.          | 5,527,264 A | 6/1996  | Moll et al.        |
| 5,456,917 A | 10/1995 | Wise et al.           | 5,527,320 A | 6/1996  | Carruthers et al.  |
| 5,458,279 A | 10/1995 | Plyley                | 5,529,235 A | 6/1996  | Boiarski et al.    |
| 5,458,579 A | 10/1995 | Chodorow et al.       | D372,086 S  | 7/1996  | Grasso et al.      |
| 5,462,215 A | 10/1995 | Viola et al.          | 5,531,305 A | 7/1996  | Roberts et al.     |
| 5,464,013 A | 11/1995 | Lemelson              | 5,531,744 A | 7/1996  | Nardella et al.    |
| 5,464,144 A | 11/1995 | Guy et al.            | 5,531,856 A | 7/1996  | Moll et al.        |
| 5,464,300 A | 11/1995 | Crainich              | 5,533,521 A | 7/1996  | Granger            |
| 5,465,819 A | 11/1995 | Weilant et al.        | 5,533,581 A | 7/1996  | Barth et al.       |
| 5,465,894 A | 11/1995 | Clark et al.          | 5,533,661 A | 7/1996  | Main et al.        |
| 5,465,895 A | 11/1995 | Knodel et al.         | 5,535,934 A | 7/1996  | Boiarski et al.    |
| 5,465,896 A | 11/1995 | Allen et al.          | 5,535,935 A | 7/1996  | Vidal et al.       |
| 5,466,020 A | 11/1995 | Page et al.           | 5,535,937 A | 7/1996  | Boiarski et al.    |
| 5,467,911 A | 11/1995 | Tsuruta et al.        | 5,540,375 A | 7/1996  | Bolanos et al.     |
| 5,468,253 A | 11/1995 | Bezwada et al.        | 5,540,705 A | 7/1996  | Meade et al.       |
| 5,470,006 A | 11/1995 | Rodak                 | 5,541,376 A | 7/1996  | Ladtchow et al.    |
| 5,470,007 A | 11/1995 | Plyley et al.         | 5,541,489 A | 7/1996  | Dunstan            |
| 5,470,008 A | 11/1995 | Rodak                 | 5,542,594 A | 8/1996  | McKean et al.      |
| 5,470,009 A | 11/1995 | Rodak                 | 5,542,949 A | 8/1996  | Yoon               |
| 5,470,010 A | 11/1995 | Rothfuss et al.       | 5,543,119 A | 8/1996  | Sutter et al.      |
| 5,471,129 A | 11/1995 | Mann                  | 5,543,695 A | 8/1996  | Culp et al.        |
| 5,472,132 A | 12/1995 | Savage et al.         | 5,544,802 A | 8/1996  | Crainich           |
| 5,472,442 A | 12/1995 | Klicek                | 5,547,117 A | 8/1996  | Hamblin et al.     |
| 5,473,204 A | 12/1995 | Temple                | 5,549,583 A | 8/1996  | Sanford et al.     |
| 5,474,057 A | 12/1995 | Makower et al.        | 5,549,621 A | 8/1996  | Bessler et al.     |
| 5,474,223 A | 12/1995 | Viola et al.          | 5,549,627 A | 8/1996  | Kieturakis         |
| 5,474,566 A | 12/1995 | Alesi et al.          | 5,549,628 A | 8/1996  | Cooper et al.      |
| 5,474,570 A | 12/1995 | Kockerling et al.     | 5,549,637 A | 8/1996  | Crainich           |
| 5,476,206 A | 12/1995 | Green et al.          | 5,551,622 A | 9/1996  | Yoon               |
| 5,476,479 A | 12/1995 | Green et al.          | 5,553,624 A | 9/1996  | Francesca et al.   |
| 5,476,481 A | 12/1995 | Schondorf             | 5,553,675 A | 9/1996  | Pitzen et al.      |
| 5,478,003 A | 12/1995 | Green et al.          | 5,553,765 A | 9/1996  | Knodel et al.      |
| 5,478,354 A | 12/1995 | Tovey et al.          | 5,554,148 A | 9/1996  | Aebischer et al.   |
| 5,480,089 A | 1/1996  | Blewett               | 5,554,169 A | 9/1996  | Green et al.       |
| 5,480,409 A | 1/1996  | Riza                  | 5,556,020 A | 9/1996  | Hou                |
| 5,482,197 A | 1/1996  | Green et al.          | 5,556,416 A | 9/1996  | Clark et al.       |
| 5,483,952 A | 1/1996  | Aranyi                | 5,558,533 A | 9/1996  | Hashizawa et al.   |
| 5,484,095 A | 1/1996  | Green et al.          | 5,558,665 A | 9/1996  | Kieturakis         |
| 5,484,398 A | 1/1996  | Stoddard              | 5,558,671 A | 9/1996  | Yates              |
| 5,484,451 A | 1/1996  | Akopov et al.         | 5,560,530 A | 10/1996 | Bolanos et al.     |
| 5,485,947 A | 1/1996  | Olson et al.          | 5,560,532 A | 10/1996 | DeFonzo et al.     |
| 5,485,952 A | 1/1996  | Fontayne              | 5,561,881 A | 10/1996 | Klinger et al.     |
| 5,487,499 A | 1/1996  | Sorrentino et al.     | 5,562,239 A | 10/1996 | Boiarski et al.    |
| 5,487,500 A | 1/1996  | Knodel et al.         | 5,562,241 A | 10/1996 | Knodel et al.      |
| 5,489,058 A | 2/1996  | Plyley et al.         | 5,562,682 A | 10/1996 | Oberlin et al.     |
| 5,489,256 A | 2/1996  | Adair                 | 5,562,690 A | 10/1996 | Green et al.       |
| 5,489,290 A | 2/1996  | Furnish               | 5,562,701 A | 10/1996 | Huitema et al.     |
| 5,490,819 A | 2/1996  | Nicholas et al.       | 5,562,702 A | 10/1996 | Huitema et al.     |
| 5,492,671 A | 2/1996  | Krafft                | 5,563,481 A | 10/1996 | Krause             |
| 5,496,312 A | 3/1996  | Klicek                | 5,564,615 A | 10/1996 | Bishop et al.      |
| 5,496,317 A | 3/1996  | Goble et al.          | 5,569,161 A | 10/1996 | Ebling et al.      |
| 5,497,933 A | 3/1996  | DeFonzo et al.        | 5,569,270 A | 10/1996 | Weng               |
| 5,498,164 A | 3/1996  | Ward et al.           | 5,569,284 A | 10/1996 | Young et al.       |
| 5,498,838 A | 3/1996  | Furman                | 5,571,090 A | 11/1996 | Sherts             |
| 5,501,654 A | 3/1996  | Faila et al.          | 5,571,100 A | 11/1996 | Goble et al.       |
| 5,503,320 A | 4/1996  | Webster et al.        | 5,571,116 A | 11/1996 | Bolanos et al.     |
| 5,503,635 A | 4/1996  | Sauer et al.          | 5,571,285 A | 11/1996 | Chow et al.        |
| 5,503,638 A | 4/1996  | Cooper et al.         | 5,571,488 A | 11/1996 | Beerstecher et al. |
| 5,505,363 A | 4/1996  | Green et al.          | 5,573,169 A | 11/1996 | Green et al.       |
| 5,507,425 A | 4/1996  | Ziglioli              | 5,573,543 A | 11/1996 | Akopov et al.      |
| 5,507,426 A | 4/1996  | Young et al.          | 5,574,431 A | 11/1996 | McKeown et al.     |
| 5,509,596 A | 4/1996  | Green et al.          | 5,575,054 A | 11/1996 | Klinzing et al.    |
| 5,509,916 A | 4/1996  | Taylor                | 5,575,789 A | 11/1996 | Bell et al.        |
| 5,511,564 A | 4/1996  | Wilk                  | 5,575,799 A | 11/1996 | Bolanos et al.     |
| 5,514,129 A | 5/1996  | Smith                 | 5,575,803 A | 11/1996 | Cooper et al.      |
| 5,514,149 A | 5/1996  | Green et al.          | 5,575,805 A | 11/1996 | Li                 |
| 5,514,157 A | 5/1996  | Nicholas et al.       | 5,577,654 A | 11/1996 | Bishop             |
| 5,518,163 A | 5/1996  | Hooven                | 5,578,052 A | 11/1996 | Koros et al.       |
| 5,518,164 A | 5/1996  | Hooven                | 5,579,978 A | 12/1996 | Green et al.       |
|             |         |                       | 5,580,067 A | 12/1996 | Hamblin et al.     |
|             |         |                       | 5,582,611 A | 12/1996 | Tsuruta et al.     |
|             |         |                       | 5,582,617 A | 12/1996 | Klieman et al.     |
|             |         |                       | 5,582,907 A | 12/1996 | Pall               |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |         |                       |             |         |                     |
|-------------|---------|-----------------------|-------------|---------|---------------------|
| 5,583,114 A | 12/1996 | Barrows et al.        | 5,653,677 A | 8/1997  | Okada et al.        |
| 5,584,425 A | 12/1996 | Savage et al.         | 5,653,721 A | 8/1997  | Knodel et al.       |
| 5,586,711 A | 12/1996 | Plyley et al.         | 5,653,748 A | 8/1997  | Strecker            |
| 5,588,579 A | 12/1996 | Schnut et al.         | 5,655,698 A | 8/1997  | Yoon                |
| 5,588,580 A | 12/1996 | Paul et al.           | 5,657,417 A | 8/1997  | Di Troia            |
| 5,588,581 A | 12/1996 | Conlon et al.         | 5,657,429 A | 8/1997  | Wang et al.         |
| 5,591,170 A | 1/1997  | Spievack et al.       | 5,657,921 A | 8/1997  | Young et al.        |
| 5,591,187 A | 1/1997  | Dekel                 | 5,658,238 A | 8/1997  | Suzuki et al.       |
| 5,597,107 A | 1/1997  | Knodel et al.         | 5,658,281 A | 8/1997  | Heard               |
| 5,599,151 A | 2/1997  | Daum et al.           | 5,658,298 A | 8/1997  | Vincent et al.      |
| 5,599,279 A | 2/1997  | Slotman et al.        | 5,658,300 A | 8/1997  | Bito et al.         |
| 5,599,344 A | 2/1997  | Paterson              | 5,658,307 A | 8/1997  | Exconde             |
| 5,599,350 A | 2/1997  | Schulze et al.        | 5,662,258 A | 9/1997  | Knodel et al.       |
| 5,599,852 A | 2/1997  | Scopelianos et al.    | 5,662,260 A | 9/1997  | Yoon                |
| 5,601,224 A | 2/1997  | Bishop et al.         | 5,662,662 A | 9/1997  | Bishop et al.       |
| 5,601,573 A | 2/1997  | Fogelberg et al.      | 5,662,667 A | 9/1997  | Knodel              |
| 5,601,604 A | 2/1997  | Vincent               | 5,665,085 A | 9/1997  | Nardella            |
| 5,602,449 A | 2/1997  | Krause et al.         | 5,667,517 A | 9/1997  | Hooven              |
| 5,603,443 A | 2/1997  | Clark et al.          | 5,667,526 A | 9/1997  | Levin               |
| 5,605,272 A | 2/1997  | Witt et al.           | 5,667,527 A | 9/1997  | Cook                |
| 5,605,273 A | 2/1997  | Hamblin et al.        | 5,669,544 A | 9/1997  | Schulze et al.      |
| 5,607,094 A | 3/1997  | Clark et al.          | 5,669,904 A | 9/1997  | Platt, Jr. et al.   |
| 5,607,095 A | 3/1997  | Smith et al.          | 5,669,907 A | 9/1997  | Platt, Jr. et al.   |
| 5,607,433 A | 3/1997  | Polla et al.          | 5,669,918 A | 9/1997  | Balazs et al.       |
| 5,607,450 A | 3/1997  | Zvenyatsky et al.     | 5,673,840 A | 10/1997 | Schulze et al.      |
| 5,607,474 A | 3/1997  | Athanasίου et al.     | 5,673,841 A | 10/1997 | Schulze et al.      |
| 5,609,285 A | 3/1997  | Grant et al.          | 5,673,842 A | 10/1997 | Bittner et al.      |
| 5,609,601 A | 3/1997  | Kolesa et al.         | 5,674,286 A | 10/1997 | D'Alessio et al.    |
| 5,611,709 A | 3/1997  | McAnulty              | 5,678,748 A | 10/1997 | Plyley et al.       |
| 5,613,499 A | 3/1997  | Palmer et al.         | 5,680,981 A | 10/1997 | Mililli et al.      |
| 5,613,937 A | 3/1997  | Garrison et al.       | 5,680,982 A | 10/1997 | Schulze et al.      |
| 5,613,966 A | 3/1997  | Makower et al.        | 5,680,983 A | 10/1997 | Plyley et al.       |
| 5,614,887 A | 3/1997  | Buchbinder            | 5,681,341 A | 10/1997 | Lunsford et al.     |
| 5,615,820 A | 4/1997  | Viola                 | 5,683,349 A | 11/1997 | Makower et al.      |
| 5,618,294 A | 4/1997  | Aust et al.           | 5,685,474 A | 11/1997 | Seeber              |
| 5,618,303 A | 4/1997  | Marlow et al.         | 5,686,090 A | 11/1997 | Schilder et al.     |
| 5,618,307 A | 4/1997  | Donlon et al.         | 5,688,270 A | 11/1997 | Yates et al.        |
| 5,619,992 A | 4/1997  | Guthrie et al.        | 5,690,269 A | 11/1997 | Bolanos et al.      |
| 5,620,289 A | 4/1997  | Curry                 | 5,692,668 A | 12/1997 | Schulze et al.      |
| 5,620,326 A | 4/1997  | Younker               | 5,693,020 A | 12/1997 | Rauh                |
| 5,620,452 A | 4/1997  | Yoon                  | 5,693,042 A | 12/1997 | Boiarski et al.     |
| 5,624,398 A | 4/1997  | Smith et al.          | 5,693,051 A | 12/1997 | Schulze et al.      |
| 5,624,452 A | 4/1997  | Yates                 | 5,695,494 A | 12/1997 | Becker              |
| 5,626,587 A | 5/1997  | Bishop et al.         | 5,695,502 A | 12/1997 | Pier et al.         |
| 5,626,595 A | 5/1997  | Sklar et al.          | 5,695,504 A | 12/1997 | Gifford, III et al. |
| 5,628,446 A | 5/1997  | Geiste et al.         | 5,695,524 A | 12/1997 | Kelley et al.       |
| 5,628,743 A | 5/1997  | Cimino                | 5,697,542 A | 12/1997 | Knodel et al.       |
| 5,628,745 A | 5/1997  | Bek                   | 5,697,543 A | 12/1997 | Burdorff            |
| 5,630,539 A | 5/1997  | Plyley et al.         | 5,697,909 A | 12/1997 | Eggers et al.       |
| 5,630,540 A | 5/1997  | Blewett               | 5,697,943 A | 12/1997 | Sauer et al.        |
| 5,630,541 A | 5/1997  | Williamson, IV et al. | 5,700,270 A | 12/1997 | Peysen et al.       |
| 5,630,782 A | 5/1997  | Adair                 | 5,700,276 A | 12/1997 | Benecke             |
| 5,632,432 A | 5/1997  | Schulze et al.        | 5,702,387 A | 12/1997 | Arts et al.         |
| 5,632,433 A | 5/1997  | Grant et al.          | 5,702,408 A | 12/1997 | Wales et al.        |
| 5,633,374 A | 5/1997  | Humphrey et al.       | 5,702,409 A | 12/1997 | Rayburn et al.      |
| 5,634,584 A | 6/1997  | Okorochoa et al.      | 5,704,087 A | 1/1998  | Strub               |
| 5,636,779 A | 6/1997  | Palmer                | 5,704,534 A | 1/1998  | Huitema et al.      |
| 5,636,780 A | 6/1997  | Green et al.          | 5,706,997 A | 1/1998  | Green et al.        |
| 5,638,582 A | 6/1997  | Klatt et al.          | 5,706,998 A | 1/1998  | Plyley et al.       |
| 5,639,008 A | 6/1997  | Gallagher et al.      | 5,707,392 A | 1/1998  | Kortenbach          |
| D381,077 S  | 7/1997  | Hunt                  | 5,709,334 A | 1/1998  | Sorrentino et al.   |
| 5,643,291 A | 7/1997  | Pier et al.           | 5,709,335 A | 1/1998  | Heck                |
| 5,643,293 A | 7/1997  | Kogasaka et al.       | 5,709,680 A | 1/1998  | Yates et al.        |
| 5,643,294 A | 7/1997  | Tovey et al.          | 5,709,706 A | 1/1998  | Kienzle et al.      |
| 5,643,319 A | 7/1997  | Green et al.          | 5,711,472 A | 1/1998  | Bryan               |
| 5,645,209 A | 7/1997  | Green et al.          | 5,712,460 A | 1/1998  | Carr et al.         |
| 5,647,526 A | 7/1997  | Green et al.          | 5,713,128 A | 2/1998  | Schrenk et al.      |
| 5,647,869 A | 7/1997  | Goble et al.          | 5,713,505 A | 2/1998  | Huitema             |
| 5,649,937 A | 7/1997  | Bito et al.           | 5,713,895 A | 2/1998  | Lontine et al.      |
| 5,649,956 A | 7/1997  | Jensen et al.         | 5,713,896 A | 2/1998  | Nardella            |
| 5,651,491 A | 7/1997  | Heaton et al.         | 5,713,920 A | 2/1998  | Bezwada et al.      |
| 5,651,762 A | 7/1997  | Bridges               | 5,715,604 A | 2/1998  | Lanzoni             |
| 5,651,821 A | 7/1997  | Uchida                | 5,715,987 A | 2/1998  | Kelley et al.       |
| 5,653,373 A | 8/1997  | Green et al.          | 5,715,988 A | 2/1998  | Palmer              |
| 5,653,374 A | 8/1997  | Young et al.          | 5,716,366 A | 2/1998  | Yates               |
|             |         |                       | 5,718,359 A | 2/1998  | Palmer et al.       |
|             |         |                       | 5,718,360 A | 2/1998  | Green et al.        |
|             |         |                       | 5,718,548 A | 2/1998  | Cotellessa          |
|             |         |                       | 5,718,714 A | 2/1998  | Livneh              |



(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |        |                   |             |         |                       |
|-------------|--------|-------------------|-------------|---------|-----------------------|
| 5,720,744 A | 2/1998 | Eggleston et al.  | 5,804,726 A | 9/1998  | Geib et al.           |
| D393,067 S  | 3/1998 | Geary et al.      | 5,804,936 A | 9/1998  | Brodsky et al.        |
| 5,724,025 A | 3/1998 | Tavori            | 5,806,676 A | 9/1998  | Wasgien               |
| 5,725,536 A | 3/1998 | Oberlin et al.    | 5,807,376 A | 9/1998  | Viola et al.          |
| 5,725,554 A | 3/1998 | Simon et al.      | 5,807,378 A | 9/1998  | Jensen et al.         |
| 5,728,110 A | 3/1998 | Vidal et al.      | 5,807,393 A | 9/1998  | Williamson, IV et al. |
| 5,728,113 A | 3/1998 | Sherts            | 5,809,441 A | 9/1998  | McKee                 |
| 5,728,121 A | 3/1998 | Bimbo et al.      | 5,810,721 A | 9/1998  | Mueller et al.        |
| 5,730,758 A | 3/1998 | Allgeyer          | 5,810,811 A | 9/1998  | Yates et al.          |
| 5,732,821 A | 3/1998 | Stone et al.      | 5,810,846 A | 9/1998  | Virnich et al.        |
| 5,732,871 A | 3/1998 | Clark et al.      | 5,810,855 A | 9/1998  | Rayburn et al.        |
| 5,732,872 A | 3/1998 | Bolduc et al.     | 5,813,813 A | 9/1998  | Daum et al.           |
| 5,733,308 A | 3/1998 | Daugherty et al.  | 5,814,055 A | 9/1998  | Knodel et al.         |
| 5,735,445 A | 4/1998 | Vidal et al.      | 5,814,057 A | 9/1998  | Oi et al.             |
| 5,735,848 A | 4/1998 | Yates et al.      | 5,816,471 A | 10/1998 | Plyley et al.         |
| 5,735,874 A | 4/1998 | Measamer et al.   | 5,817,084 A | 10/1998 | Jensen                |
| 5,738,474 A | 4/1998 | Blewett           | 5,817,091 A | 10/1998 | Nardella et al.       |
| 5,738,629 A | 4/1998 | Moll et al.       | 5,817,093 A | 10/1998 | Williamson, IV et al. |
| 5,738,648 A | 4/1998 | Lands et al.      | 5,817,109 A | 10/1998 | McGarry et al.        |
| 5,741,271 A | 4/1998 | Nakao et al.      | 5,817,119 A | 10/1998 | Klieman et al.        |
| 5,743,456 A | 4/1998 | Jones et al.      | 5,820,009 A | 10/1998 | Melling et al.        |
| 5,747,953 A | 5/1998 | Philipp           | 5,823,066 A | 10/1998 | Huitema et al.        |
| 5,749,889 A | 5/1998 | Bacich et al.     | 5,824,333 A | 10/1998 | Scopelianos et al.    |
| 5,749,893 A | 5/1998 | Vidal et al.      | 5,826,776 A | 10/1998 | Schulze et al.        |
| 5,749,896 A | 5/1998 | Cook              | 5,827,271 A | 10/1998 | Buysse et al.         |
| 5,749,968 A | 5/1998 | Melanson et al.   | 5,827,298 A | 10/1998 | Hart et al.           |
| 5,752,644 A | 5/1998 | Bolanos et al.    | 5,829,662 A | 11/1998 | Allen et al.          |
| 5,752,965 A | 5/1998 | Francis et al.    | 5,830,598 A | 11/1998 | Patterson             |
| 5,752,970 A | 5/1998 | Yoon              | 5,833,690 A | 11/1998 | Yates et al.          |
| 5,755,717 A | 5/1998 | Yates et al.      | 5,833,695 A | 11/1998 | Yoon                  |
| 5,758,814 A | 6/1998 | Gallagher et al.  | 5,833,696 A | 11/1998 | Whitfield et al.      |
| 5,762,255 A | 6/1998 | Chrisman et al.   | 5,836,503 A | 11/1998 | Ehrenfels et al.      |
| 5,762,256 A | 6/1998 | Mastri et al.     | 5,836,960 A | 11/1998 | Kolesa et al.         |
| 5,766,188 A | 6/1998 | Igaki             | 5,839,369 A | 11/1998 | Chatterjee et al.     |
| 5,766,205 A | 6/1998 | Zvenyatsky et al. | 5,839,639 A | 11/1998 | Sauer et al.          |
| 5,769,303 A | 6/1998 | Knodel et al.     | 5,841,284 A | 11/1998 | Takahashi             |
| 5,769,748 A | 6/1998 | Eyerly et al.     | 5,843,021 A | 12/1998 | Edwards et al.        |
| 5,769,791 A | 6/1998 | Benaron et al.    | 5,843,096 A | 12/1998 | Igaki et al.          |
| 5,769,892 A | 6/1998 | Kingwell          | 5,843,097 A | 12/1998 | Mayenberger et al.    |
| 5,772,379 A | 6/1998 | Evensen           | 5,843,122 A | 12/1998 | Riza                  |
| 5,772,578 A | 6/1998 | Heimberger et al. | 5,843,132 A | 12/1998 | Ilvento               |
| 5,772,659 A | 6/1998 | Becker et al.     | 5,843,169 A | 12/1998 | Taheri                |
| 5,773,991 A | 6/1998 | Chen              | 5,846,254 A | 12/1998 | Schulze et al.        |
| 5,776,130 A | 7/1998 | Buysse et al.     | 5,847,566 A | 12/1998 | Marritt et al.        |
| 5,778,939 A | 7/1998 | Hok-Yin           | 5,849,011 A | 12/1998 | Jones et al.          |
| 5,779,130 A | 7/1998 | Alesi et al.      | 5,849,020 A | 12/1998 | Long et al.           |
| 5,779,131 A | 7/1998 | Knodel et al.     | 5,849,023 A | 12/1998 | Mericle               |
| 5,779,132 A | 7/1998 | Knodel et al.     | 5,851,179 A | 12/1998 | Ritson et al.         |
| 5,782,396 A | 7/1998 | Mastri et al.     | 5,851,212 A | 12/1998 | Zirps et al.          |
| 5,782,397 A | 7/1998 | Koukline          | 5,853,366 A | 12/1998 | Dowlats Shahi         |
| 5,782,748 A | 7/1998 | Palmer et al.     | 5,855,311 A | 1/1999  | Hamblin et al.        |
| 5,782,749 A | 7/1998 | Riza              | 5,855,583 A | 1/1999  | Wang et al.           |
| 5,782,859 A | 7/1998 | Nicholas et al.   | 5,860,581 A | 1/1999  | Robertson et al.      |
| 5,784,934 A | 7/1998 | Izumisawa         | 5,860,975 A | 1/1999  | Goble et al.          |
| 5,785,232 A | 7/1998 | Vidal et al.      | 5,865,361 A | 2/1999  | Milliman et al.       |
| 5,785,647 A | 7/1998 | Tompkins et al.   | 5,865,638 A | 2/1999  | Trafton               |
| 5,787,897 A | 8/1998 | Kieturakis        | 5,868,361 A | 2/1999  | Rinderer              |
| 5,791,231 A | 8/1998 | Cohn et al.       | 5,868,760 A | 2/1999  | McGuckin, Jr.         |
| 5,792,135 A | 8/1998 | Madhani et al.    | 5,868,790 A | 2/1999  | Vincent et al.        |
| 5,792,162 A | 8/1998 | Jolly et al.      | 5,871,135 A | 2/1999  | Williamson, IV et al. |
| 5,792,165 A | 8/1998 | Klieman et al.    | 5,873,885 A | 2/1999  | Weidenbenner          |
| 5,792,573 A | 8/1998 | Pitzen et al.     | 5,876,401 A | 3/1999  | Schulze et al.        |
| 5,794,834 A | 8/1998 | Hamblin et al.    | 5,878,193 A | 3/1999  | Wang et al.           |
| 5,796,188 A | 8/1998 | Bays              | 5,878,607 A | 3/1999  | Nunes et al.          |
| 5,797,536 A | 8/1998 | Smith et al.      | 5,878,937 A | 3/1999  | Green et al.          |
| 5,797,537 A | 8/1998 | Oberlin et al.    | 5,878,938 A | 3/1999  | Bittner et al.        |
| 5,797,538 A | 8/1998 | Heaton et al.     | 5,881,777 A | 3/1999  | Bassi et al.          |
| 5,797,637 A | 8/1998 | Ervin             | 5,891,094 A | 4/1999  | Masterson et al.      |
| 5,797,906 A | 8/1998 | Rhum et al.       | 5,891,160 A | 4/1999  | Williamson, IV et al. |
| 5,797,927 A | 8/1998 | Yoon              | 5,891,558 A | 4/1999  | Bell et al.           |
| 5,797,941 A | 8/1998 | Schulze et al.    | 5,893,506 A | 4/1999  | Powell                |
| 5,797,959 A | 8/1998 | Castro et al.     | 5,893,835 A | 4/1999  | Witt et al.           |
| 5,799,857 A | 9/1998 | Robertson et al.  | 5,893,878 A | 4/1999  | Pierce                |
| 5,800,379 A | 9/1998 | Edwards           | 5,894,979 A | 4/1999  | Powell                |
| 5,800,423 A | 9/1998 | Jensen            | 5,897,552 A | 4/1999  | Edwards et al.        |
|             |        |                   | 5,897,562 A | 4/1999  | Bolanos et al.        |
|             |        |                   | 5,899,824 A | 5/1999  | Kurtz et al.          |
|             |        |                   | 5,899,914 A | 5/1999  | Zirps et al.          |
|             |        |                   | 5,901,895 A | 5/1999  | Heaton et al.         |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|             |         |                    |             |        |                       |
|-------------|---------|--------------------|-------------|--------|-----------------------|
| 5,902,312 A | 5/1999  | Frater et al.      | 6,024,741 A | 2/2000 | Williamson, IV et al. |
| 5,903,117 A | 5/1999  | Gregory            | 6,024,748 A | 2/2000 | Manzo et al.          |
| 5,904,647 A | 5/1999  | Ouchi              | 6,024,750 A | 2/2000 | Mastri et al.         |
| 5,904,693 A | 5/1999  | Dicesare et al.    | 6,024,764 A | 2/2000 | Schroepfel            |
| 5,904,702 A | 5/1999  | Ek et al.          | 6,027,501 A | 2/2000 | Goble et al.          |
| 5,906,577 A | 5/1999  | Beane et al.       | 6,030,384 A | 2/2000 | Nezhat                |
| 5,906,625 A | 5/1999  | Bito et al.        | 6,032,849 A | 3/2000 | Mastri et al.         |
| 5,907,211 A | 5/1999  | Hall et al.        | 6,033,105 A | 3/2000 | Barker et al.         |
| 5,908,402 A | 6/1999  | Blythe             | 6,033,378 A | 3/2000 | Lundquist et al.      |
| 5,908,427 A | 6/1999  | McKean et al.      | 6,033,399 A | 3/2000 | Gines                 |
| 5,909,062 A | 6/1999  | Krietzman          | 6,033,427 A | 3/2000 | Lee                   |
| 5,911,353 A | 6/1999  | Bolanos et al.     | 6,036,641 A | 3/2000 | Taylor et al.         |
| 5,915,616 A | 6/1999  | Viola et al.       | 6,036,667 A | 3/2000 | Manna et al.          |
| 5,916,225 A | 6/1999  | Kugel              | 6,037,724 A | 3/2000 | Buss et al.           |
| 5,918,791 A | 7/1999  | Sorrentino et al.  | 6,037,927 A | 3/2000 | Rosenberg             |
| 5,919,198 A | 7/1999  | Graves, Jr. et al. | 6,039,733 A | 3/2000 | Buysse et al.         |
| 5,921,956 A | 7/1999  | Grinberg et al.    | 6,039,734 A | 3/2000 | Goble                 |
| 5,924,864 A | 7/1999  | Loge et al.        | 6,042,601 A | 3/2000 | Smith                 |
| 5,928,137 A | 7/1999  | Green              | 6,042,607 A | 3/2000 | Williamson, IV et al. |
| 5,928,256 A | 7/1999  | Riza               | 6,043,626 A | 3/2000 | Snyder et al.         |
| 5,931,847 A | 8/1999  | Bittner et al.     | 6,045,560 A | 4/2000 | McKean et al.         |
| 5,931,853 A | 8/1999  | McEwen et al.      | 6,047,861 A | 4/2000 | Vidal et al.          |
| 5,937,951 A | 8/1999  | Izuchukwu et al.   | 6,049,145 A | 4/2000 | Austin et al.         |
| 5,938,667 A | 8/1999  | Peysen et al.      | 6,050,172 A | 4/2000 | Corves et al.         |
| 5,941,442 A | 8/1999  | Geiste et al.      | 6,050,472 A | 4/2000 | Shibata               |
| 5,941,890 A | 8/1999  | Voegele et al.     | 6,050,989 A | 4/2000 | Fox et al.            |
| 5,944,172 A | 8/1999  | Hannula            | 6,050,990 A | 4/2000 | Tankovich et al.      |
| 5,944,715 A | 8/1999  | Goble et al.       | 6,050,996 A | 4/2000 | Schmaltz et al.       |
| 5,946,978 A | 9/1999  | Yamashita          | 6,053,390 A | 4/2000 | Green et al.          |
| 5,947,984 A | 9/1999  | Whipple            | 6,053,899 A | 4/2000 | Slanda et al.         |
| 5,947,996 A | 9/1999  | Logeman            | 6,053,922 A | 4/2000 | Krause et al.         |
| 5,948,030 A | 9/1999  | Miller et al.      | 6,054,142 A | 4/2000 | Li et al.             |
| 5,948,429 A | 9/1999  | Bell et al.        | RE36,720 E  | 5/2000 | Green et al.          |
| 5,951,301 A | 9/1999  | Younker            | 6,056,735 A | 5/2000 | Okada et al.          |
| 5,951,516 A | 9/1999  | Bunyan             | 6,056,746 A | 5/2000 | Goble et al.          |
| 5,951,552 A | 9/1999  | Long et al.        | 6,059,806 A | 5/2000 | Hoegerle              |
| 5,951,574 A | 9/1999  | Stefanchik et al.  | 6,062,360 A | 5/2000 | Shields               |
| 5,951,575 A | 9/1999  | Bolduc et al.      | 6,063,020 A | 5/2000 | Jones et al.          |
| 5,951,581 A | 9/1999  | Saadat et al.      | 6,063,025 A | 5/2000 | Bridges et al.        |
| 5,954,259 A | 9/1999  | Viola et al.       | 6,063,050 A | 5/2000 | Manna et al.          |
| 5,964,394 A | 10/1999 | Robertson          | 6,063,095 A | 5/2000 | Wang et al.           |
| 5,964,774 A | 10/1999 | McKean et al.      | 6,063,097 A | 5/2000 | Oi et al.             |
| 5,966,126 A | 10/1999 | Szabo              | 6,063,098 A | 5/2000 | Houser et al.         |
| 5,971,916 A | 10/1999 | Koren              | 6,065,679 A | 5/2000 | Levie et al.          |
| 5,973,221 A | 10/1999 | Collyer et al.     | 6,065,919 A | 5/2000 | Peck                  |
| D416,089 S  | 11/1999 | Barton et al.      | 6,066,132 A | 5/2000 | Chen et al.           |
| 5,976,122 A | 11/1999 | Madhani et al.     | 6,066,151 A | 5/2000 | Miyawaki et al.       |
| 5,977,746 A | 11/1999 | Hershberger et al. | 6,068,627 A | 5/2000 | Orszulak et al.       |
| 5,980,248 A | 11/1999 | Kusakabe et al.    | 6,071,233 A | 6/2000 | Ishikawa et al.       |
| 5,984,949 A | 11/1999 | Levin              | 6,074,386 A | 6/2000 | Goble et al.          |
| 5,988,479 A | 11/1999 | Palmer             | 6,074,401 A | 6/2000 | Gardiner et al.       |
| 5,990,379 A | 11/1999 | Gregory            | 6,077,280 A | 6/2000 | Fossum                |
| 5,993,466 A | 11/1999 | Yoon               | 6,077,286 A | 6/2000 | Cuschieri et al.      |
| 5,997,528 A | 12/1999 | Bisch et al.       | 6,077,290 A | 6/2000 | Marini                |
| 5,997,552 A | 12/1999 | Person et al.      | 6,079,606 A | 6/2000 | Milliman et al.       |
| 6,001,108 A | 12/1999 | Wang et al.        | 6,080,181 A | 6/2000 | Jensen et al.         |
| 6,003,517 A | 12/1999 | Sheffield et al.   | 6,082,577 A | 7/2000 | Coates et al.         |
| 6,004,319 A | 12/1999 | Goble et al.       | 6,083,191 A | 7/2000 | Rose                  |
| 6,004,335 A | 12/1999 | Vaitekunas et al.  | 6,083,223 A | 7/2000 | Baker                 |
| 6,007,521 A | 12/1999 | Bidwell et al.     | 6,083,234 A | 7/2000 | Nicholas et al.       |
| 6,010,054 A | 1/2000  | Johnson et al.     | 6,083,242 A | 7/2000 | Cook                  |
| 6,010,513 A | 1/2000  | Tormala et al.     | 6,086,544 A | 7/2000 | Hibner et al.         |
| 6,010,520 A | 1/2000  | Pattison           | 6,086,600 A | 7/2000 | Kortenbach            |
| 6,012,494 A | 1/2000  | Balazs             | 6,090,106 A | 7/2000 | Goble et al.          |
| 6,013,076 A | 1/2000  | Goble et al.       | 6,093,186 A | 7/2000 | Goble                 |
| 6,015,406 A | 1/2000  | Goble et al.       | 6,099,537 A | 8/2000 | Sugai et al.          |
| 6,015,417 A | 1/2000  | Reynolds, Jr.      | 6,099,551 A | 8/2000 | Gabbay                |
| 6,017,322 A | 1/2000  | Snoke et al.       | 6,102,271 A | 8/2000 | Longo et al.          |
| 6,017,354 A | 1/2000  | Culp et al.        | 6,104,162 A | 8/2000 | Sainsbury et al.      |
| 6,017,356 A | 1/2000  | Frederick et al.   | 6,104,304 A | 8/2000 | Clark et al.          |
| 6,018,227 A | 1/2000  | Kumar et al.       | 6,106,511 A | 8/2000 | Jensen                |
| 6,019,745 A | 2/2000  | Gray               | 6,109,500 A | 8/2000 | Alli et al.           |
| 6,022,352 A | 2/2000  | Vandewalle         | 6,110,187 A | 8/2000 | Donlon                |
| 6,023,641 A | 2/2000  | Thompson           | 6,113,618 A | 9/2000 | Nic                   |
| 6,024,708 A | 2/2000  | Bales et al.       | 6,117,148 A | 9/2000 | Ravo et al.           |
|             |         |                    | 6,117,158 A | 9/2000 | Measamer et al.       |
|             |         |                    | 6,119,913 A | 9/2000 | Adams et al.          |
|             |         |                    | 6,120,433 A | 9/2000 | Mizuno et al.         |
|             |         |                    | 6,120,462 A | 9/2000 | Hibner et al.         |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |         |                     |              |         |                      |
|--------------|---------|---------------------|--------------|---------|----------------------|
| 6,123,241 A  | 9/2000  | Walter et al.       | 6,241,139 B1 | 6/2001  | Milliman et al.      |
| 6,123,701 A  | 9/2000  | Nezhat              | 6,241,140 B1 | 6/2001  | Adams et al.         |
| H1904 H      | 10/2000 | Yates et al.        | 6,241,723 B1 | 6/2001  | Heim et al.          |
| 6,126,058 A  | 10/2000 | Adams et al.        | 6,245,084 B1 | 6/2001  | Mark et al.          |
| 6,126,359 A  | 10/2000 | Dittrich et al.     | 6,248,116 B1 | 6/2001  | Chevillon et al.     |
| 6,126,670 A  | 10/2000 | Walker et al.       | 6,248,117 B1 | 6/2001  | Blatter              |
| 6,131,789 A  | 10/2000 | Schulze et al.      | 6,249,076 B1 | 6/2001  | Madden et al.        |
| 6,131,790 A  | 10/2000 | Piraka              | 6,249,105 B1 | 6/2001  | Andrews et al.       |
| 6,132,368 A  | 10/2000 | Cooper              | 6,250,532 B1 | 6/2001  | Green et al.         |
| 6,134,962 A  | 10/2000 | Sugitani            | 6,251,485 B1 | 6/2001  | Harris et al.        |
| 6,139,546 A  | 10/2000 | Koenig et al.       | D445,745 S * | 7/2001  | Norman ..... D12/192 |
| 6,142,149 A  | 11/2000 | Steen               | 6,254,534 B1 | 7/2001  | Butler et al.        |
| 6,142,933 A  | 11/2000 | Longo et al.        | 6,254,619 B1 | 7/2001  | Garabet et al.       |
| 6,147,135 A  | 11/2000 | Yuan et al.         | 6,254,642 B1 | 7/2001  | Taylor               |
| 6,149,660 A  | 11/2000 | Laufer et al.       | 6,258,107 B1 | 7/2001  | Balazs et al.        |
| 6,151,323 A  | 11/2000 | O'Connell et al.    | 6,261,286 B1 | 7/2001  | Goble et al.         |
| 6,152,935 A  | 11/2000 | Kammerer et al.     | 6,261,679 B1 | 7/2001  | Chen et al.          |
| 6,155,473 A  | 12/2000 | Tompkins et al.     | 6,264,086 B1 | 7/2001  | McGuckin, Jr.        |
| 6,156,056 A  | 12/2000 | Kearns et al.       | 6,264,087 B1 | 7/2001  | Whitman              |
| 6,157,169 A  | 12/2000 | Lee                 | 6,264,617 B1 | 7/2001  | Bales et al.         |
| 6,159,146 A  | 12/2000 | El Gazayerli        | 6,270,508 B1 | 8/2001  | Klieman et al.       |
| 6,159,200 A  | 12/2000 | Verdura et al.      | 6,270,916 B1 | 8/2001  | Sink et al.          |
| 6,159,224 A  | 12/2000 | Yoon                | 6,273,876 B1 | 8/2001  | Klima et al.         |
| 6,162,208 A  | 12/2000 | Hipps               | 6,273,897 B1 | 8/2001  | Dalessandro et al.   |
| 6,162,220 A  | 12/2000 | Nezhat              | 6,277,114 B1 | 8/2001  | Bullivant et al.     |
| 6,162,537 A  | 12/2000 | Martin et al.       | 6,280,407 B1 | 8/2001  | Manna et al.         |
| 6,165,175 A  | 12/2000 | Wampler et al.      | 6,283,981 B1 | 9/2001  | Beaupre              |
| 6,165,184 A  | 12/2000 | Verdura et al.      | 6,293,927 B1 | 9/2001  | McGuckin, Jr.        |
| 6,165,188 A  | 12/2000 | Saadat et al.       | 6,293,942 B1 | 9/2001  | Goble et al.         |
| 6,167,185 A  | 12/2000 | Smiley et al.       | 6,296,640 B1 | 10/2001 | Wampler et al.       |
| 6,168,605 B1 | 1/2001  | Measamer et al.     | 6,302,311 B1 | 10/2001 | Adams et al.         |
| 6,171,305 B1 | 1/2001  | Sherman             | 6,302,743 B1 | 10/2001 | Chiu et al.          |
| 6,171,316 B1 | 1/2001  | Kovac et al.        | 6,305,891 B1 | 10/2001 | Burlingame           |
| 6,171,330 B1 | 1/2001  | Benchetrit          | 6,306,134 B1 | 10/2001 | Goble et al.         |
| 6,173,074 B1 | 1/2001  | Russo               | 6,306,149 B1 | 10/2001 | Meade                |
| 6,174,308 B1 | 1/2001  | Goble et al.        | 6,306,424 B1 | 10/2001 | Vyakamam et al.      |
| 6,174,309 B1 | 1/2001  | Wrublewski et al.   | 6,309,397 B1 | 10/2001 | Julian et al.        |
| 6,174,318 B1 | 1/2001  | Bates et al.        | 6,309,400 B2 | 10/2001 | Beaupre              |
| 6,175,290 B1 | 1/2001  | Forsythe et al.     | 6,309,403 B1 | 10/2001 | Minor et al.         |
| 6,179,195 B1 | 1/2001  | Adams et al.        | 6,312,435 B1 | 11/2001 | Wallace et al.       |
| 6,179,776 B1 | 1/2001  | Adams et al.        | 6,315,184 B1 | 11/2001 | Whitman              |
| 6,181,105 B1 | 1/2001  | Cutolo et al.       | 6,319,510 B1 | 11/2001 | Yates                |
| 6,182,673 B1 | 2/2001  | Kindermann et al.   | 6,320,123 B1 | 11/2001 | Reimers              |
| 6,185,356 B1 | 2/2001  | Parker et al.       | 6,322,494 B1 | 11/2001 | Bullivant et al.     |
| 6,186,142 B1 | 2/2001  | Schmidt et al.      | 6,324,339 B1 | 11/2001 | Hudson et al.        |
| 6,187,003 B1 | 2/2001  | Buysse et al.       | 6,325,799 B1 | 12/2001 | Goble                |
| 6,190,386 B1 | 2/2001  | Rydell              | 6,325,805 B1 | 12/2001 | Ogilvie et al.       |
| 6,193,129 B1 | 2/2001  | Bittner et al.      | 6,325,810 B1 | 12/2001 | Hamilton et al.      |
| 6,197,042 B1 | 3/2001  | Ginn et al.         | 6,328,498 B1 | 12/2001 | Mersch               |
| 6,200,330 B1 | 3/2001  | Benderev et al.     | 6,330,965 B1 | 12/2001 | Milliman et al.      |
| 6,202,914 B1 | 3/2001  | Geiste et al.       | 6,331,181 B1 | 12/2001 | Tierney et al.       |
| 6,206,894 B1 | 3/2001  | Thompson et al.     | 6,331,761 B1 | 12/2001 | Kumar et al.         |
| 6,206,897 B1 | 3/2001  | Jamiolkowski et al. | 6,333,029 B1 | 12/2001 | Vyakarnam et al.     |
| 6,206,903 B1 | 3/2001  | Ramans              | 6,334,860 B1 | 1/2002  | Dorn                 |
| 6,206,904 B1 | 3/2001  | Ouchi               | 6,334,861 B1 | 1/2002  | Chandler et al.      |
| 6,209,414 B1 | 4/2001  | Uneme               | 6,336,926 B1 | 1/2002  | Goble                |
| 6,210,403 B1 | 4/2001  | Kliccek             | 6,338,737 B1 | 1/2002  | Toledano             |
| 6,213,999 B1 | 4/2001  | Platt, Jr. et al.   | 6,343,731 B1 | 2/2002  | Adams et al.         |
| 6,214,028 B1 | 4/2001  | Yoon et al.         | 6,346,077 B1 | 2/2002  | Taylor et al.        |
| 6,220,368 B1 | 4/2001  | Ark et al.          | 6,348,061 B1 | 2/2002  | Whitman              |
| 6,221,007 B1 | 4/2001  | Green               | D454,951 S   | 3/2002  | Bon                  |
| 6,221,023 B1 | 4/2001  | Matsuba et al.      | 6,352,503 B1 | 3/2002  | Matsui et al.        |
| 6,223,100 B1 | 4/2001  | Green               | 6,352,532 B1 | 3/2002  | Kramer et al.        |
| 6,223,835 B1 | 5/2001  | Habedank et al.     | 6,355,699 B1 | 3/2002  | Vyakamam et al.      |
| 6,224,617 B1 | 5/2001  | Saadat et al.       | 6,356,072 B1 | 3/2002  | Chass                |
| 6,228,080 B1 | 5/2001  | Gines               | 6,358,224 B1 | 3/2002  | Tims et al.          |
| 6,228,081 B1 | 5/2001  | Goble               | 6,358,263 B2 | 3/2002  | Mark et al.          |
| 6,228,083 B1 | 5/2001  | Lands et al.        | 6,358,459 B1 | 3/2002  | Ziegler et al.       |
| 6,228,084 B1 | 5/2001  | Kirwan, Jr.         | 6,364,877 B1 | 4/2002  | Goble et al.         |
| 6,228,089 B1 | 5/2001  | Wahrburg            | 6,364,888 B1 | 4/2002  | Niemeyer et al.      |
| 6,228,098 B1 | 5/2001  | Kayan et al.        | 6,366,441 B1 | 4/2002  | Ozawa et al.         |
| 6,231,565 B1 | 5/2001  | Tovey et al.        | 6,370,981 B2 | 4/2002  | Watarai              |
| 6,234,178 B1 | 5/2001  | Goble et al.        | 6,371,114 B1 | 4/2002  | Schmidt et al.       |
| 6,237,604 B1 | 5/2001  | Burnside et al.     | 6,373,152 B1 | 4/2002  | Wang et al.          |
| 6,238,384 B1 | 5/2001  | Peer                | 6,377,011 B1 | 4/2002  | Ben-Ur               |
|              |         |                     | 6,383,201 B1 | 5/2002  | Dong                 |
|              |         |                     | 6,387,092 B1 | 5/2002  | Burnside et al.      |
|              |         |                     | 6,387,113 B1 | 5/2002  | Hawkins et al.       |
|              |         |                     | 6,387,114 B2 | 5/2002  | Adams                |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |         |                    |              |        |                         |
|--------------|---------|--------------------|--------------|--------|-------------------------|
| 6,391,038 B2 | 5/2002  | Vargas et al.      | 6,503,259 B2 | 1/2003 | Huxel et al.            |
| 6,392,854 B1 | 5/2002  | O’Gorman           | 6,505,768 B2 | 1/2003 | Whitman                 |
| 6,394,998 B1 | 5/2002  | Wallace et al.     | 6,506,197 B1 | 1/2003 | Rollero et al.          |
| 6,398,779 B1 | 6/2002  | Buysse et al.      | 6,510,854 B2 | 1/2003 | Goble                   |
| 6,398,781 B1 | 6/2002  | Goble et al.       | 6,511,468 B1 | 1/2003 | Cragg et al.            |
| 6,398,797 B2 | 6/2002  | Bombard et al.     | 6,512,360 B1 | 1/2003 | Goto et al.             |
| 6,402,766 B2 | 6/2002  | Bowman et al.      | 6,514,252 B2 | 2/2003 | Nezhat et al.           |
| 6,406,440 B1 | 6/2002  | Stefanchik         | 6,516,073 B1 | 2/2003 | Schulz et al.           |
| 6,406,472 B1 | 6/2002  | Jensen             | 6,517,528 B1 | 2/2003 | Pantages et al.         |
| 6,409,724 B1 | 6/2002  | Penny et al.       | 6,517,535 B2 | 2/2003 | Edwards                 |
| H2037 H      | 7/2002  | Yates et al.       | 6,517,565 B1 | 2/2003 | Whitman et al.          |
| 6,412,639 B1 | 7/2002  | Hickey             | 6,517,566 B1 | 2/2003 | Hovland et al.          |
| 6,413,274 B1 | 7/2002  | Pedros             | 6,520,971 B1 | 2/2003 | Perry et al.            |
| 6,415,542 B1 | 7/2002  | Bates et al.       | 6,520,972 B2 | 2/2003 | Peters                  |
| 6,416,486 B1 | 7/2002  | Wampler            | 6,522,101 B2 | 2/2003 | Malackowski             |
| 6,416,509 B1 | 7/2002  | Goble et al.       | 6,524,180 B1 | 2/2003 | Simms et al.            |
| 6,419,695 B1 | 7/2002  | Gabbay             | 6,525,499 B2 | 2/2003 | Naganuma                |
| 6,423,079 B1 | 7/2002  | Blake, III         | 6,527,782 B2 | 3/2003 | Hogg et al.             |
| 6,424,885 B1 | 7/2002  | Niemeyer et al.    | 6,527,785 B2 | 3/2003 | Sancoff et al.          |
| RE37,814 E   | 8/2002  | Allgeyer           | 6,530,942 B2 | 3/2003 | Fogarty et al.          |
| 6,428,070 B1 | 8/2002  | Takanashi et al.   | 6,532,958 B1 | 3/2003 | Buan et al.             |
| 6,428,487 B1 | 8/2002  | Burdorff et al.    | 6,533,157 B1 | 3/2003 | Whitman                 |
| 6,429,611 B1 | 8/2002  | Li                 | 6,533,723 B1 | 3/2003 | Lockery et al.          |
| 6,430,298 B1 | 8/2002  | Kettl et al.       | 6,533,784 B2 | 3/2003 | Truckai et al.          |
| 6,432,065 B1 | 8/2002  | Burdorff et al.    | 6,535,764 B2 | 3/2003 | Imran et al.            |
| 6,436,097 B1 | 8/2002  | Nardella           | 6,539,297 B2 | 3/2003 | Weiberle et al.         |
| 6,436,107 B1 | 8/2002  | Wang et al.        | D473,239 S * | 4/2003 | Cockerill ..... D14/489 |
| 6,436,110 B2 | 8/2002  | Bowman et al.      | 6,539,816 B2 | 4/2003 | Kogiso et al.           |
| 6,436,115 B1 | 8/2002  | Beaupre            | 6,543,456 B1 | 4/2003 | Freeman                 |
| 6,436,122 B1 | 8/2002  | Frank et al.       | 6,545,384 B1 | 4/2003 | Pelrine et al.          |
| 6,439,439 B1 | 8/2002  | Rickard et al.     | 6,547,786 B1 | 4/2003 | Goble                   |
| 6,439,446 B1 | 8/2002  | Perry et al.       | 6,550,546 B2 | 4/2003 | Thurler et al.          |
| 6,440,146 B2 | 8/2002  | Nicholas et al.    | 6,551,333 B2 | 4/2003 | Kuhns et al.            |
| 6,441,577 B2 | 8/2002  | Blumenkranz et al. | 6,554,861 B2 | 4/2003 | Knox et al.             |
| D462,758 S   | 9/2002  | Epstein et al.     | 6,555,770 B2 | 4/2003 | Kawase                  |
| 6,443,973 B1 | 9/2002  | Whitman            | 6,558,378 B2 | 5/2003 | Sherman et al.          |
| 6,445,530 B1 | 9/2002  | Baker              | 6,558,379 B1 | 5/2003 | Batchelor et al.        |
| 6,447,518 B1 | 9/2002  | Krause et al.      | 6,558,429 B2 | 5/2003 | Taylor                  |
| 6,447,523 B1 | 9/2002  | Middleman et al.   | 6,561,187 B2 | 5/2003 | Schmidt et al.          |
| 6,447,799 B1 | 9/2002  | Ullman             | 6,565,560 B1 | 5/2003 | Goble et al.            |
| 6,447,864 B2 | 9/2002  | Johnson et al.     | 6,566,619 B2 | 5/2003 | Gillman et al.          |
| 6,450,391 B1 | 9/2002  | Kayan et al.       | 6,569,085 B2 | 5/2003 | Kortenbach et al.       |
| 6,450,989 B2 | 9/2002  | Dubrul et al.      | 6,569,171 B2 | 5/2003 | DeGuillebon et al.      |
| 6,454,781 B1 | 9/2002  | Witt et al.        | 6,578,751 B2 | 6/2003 | Hartwick                |
| 6,457,625 B1 | 10/2002 | Tormala et al.     | 6,582,364 B2 | 6/2003 | Butler et al.           |
| 6,458,077 B1 | 10/2002 | Boebel et al.      | 6,582,427 B1 | 6/2003 | Goble et al.            |
| 6,458,147 B1 | 10/2002 | Cruise et al.      | 6,582,441 B1 | 6/2003 | He et al.               |
| 6,460,627 B1 | 10/2002 | Below et al.       | 6,583,533 B2 | 6/2003 | Pelrine et al.          |
| 6,468,275 B1 | 10/2002 | Wampler et al.     | 6,585,144 B2 | 7/2003 | Adams et al.            |
| 6,468,286 B2 | 10/2002 | Mastri et al.      | 6,585,664 B2 | 7/2003 | Burdorff et al.         |
| 6,471,106 B1 | 10/2002 | Reining            | 6,586,898 B2 | 7/2003 | King et al.             |
| 6,471,659 B2 | 10/2002 | Eggers et al.      | 6,587,750 B2 | 7/2003 | Gerbi et al.            |
| 6,478,210 B2 | 11/2002 | Adams et al.       | 6,588,277 B2 | 7/2003 | Giordano et al.         |
| 6,482,200 B2 | 11/2002 | Shippert           | 6,588,643 B2 | 7/2003 | Bolduc et al.           |
| 6,482,217 B1 | 11/2002 | Pintor et al.      | 6,588,931 B2 | 7/2003 | Betzner et al.          |
| 6,485,490 B2 | 11/2002 | Wampler et al.     | 6,589,118 B1 | 7/2003 | Soma et al.             |
| 6,485,503 B2 | 11/2002 | Jacobs et al.      | 6,589,164 B1 | 7/2003 | Flaherty                |
| 6,485,667 B1 | 11/2002 | Tan                | 6,592,538 B1 | 7/2003 | Hotchkiss et al.        |
| 6,486,286 B1 | 11/2002 | McGall et al.      | 6,592,597 B2 | 7/2003 | Grant et al.            |
| 6,488,196 B1 | 12/2002 | Fenton, Jr.        | 6,594,552 B1 | 7/2003 | Nowlin et al.           |
| 6,488,197 B1 | 12/2002 | Whitman            | 6,596,296 B1 | 7/2003 | Nelson et al.           |
| 6,488,659 B1 | 12/2002 | Rosenman           | 6,596,304 B1 | 7/2003 | Bayon et al.            |
| 6,491,201 B1 | 12/2002 | Whitman            | 6,596,432 B2 | 7/2003 | Kawakami et al.         |
| 6,491,690 B1 | 12/2002 | Goble et al.       | 6,599,295 B1 | 7/2003 | Tornier et al.          |
| 6,491,701 B2 | 12/2002 | Tierney et al.     | 6,599,323 B2 | 7/2003 | Melican et al.          |
| 6,492,785 B1 | 12/2002 | Kasten et al.      | D478,665 S   | 8/2003 | Isaacs et al.           |
| 6,494,882 B1 | 12/2002 | Lebouitz et al.    | D478,986 S   | 8/2003 | Johnston et al.         |
| 6,494,885 B1 | 12/2002 | Dhindsa            | 6,601,749 B2 | 8/2003 | Sullivan et al.         |
| 6,494,888 B1 | 12/2002 | Laufer et al.      | 6,602,252 B2 | 8/2003 | Mollenauer              |
| 6,494,896 B1 | 12/2002 | D’Alessio et al.   | 6,602,262 B2 | 8/2003 | Griego et al.           |
| 6,498,480 B1 | 12/2002 | Manara             | 6,603,050 B2 | 8/2003 | Heaton                  |
| 6,500,176 B1 | 12/2002 | Truckai et al.     | 6,605,078 B2 | 8/2003 | Adams                   |
| 6,500,194 B2 | 12/2002 | Benderev et al.    | 6,605,669 B2 | 8/2003 | Awokola et al.          |
| 6,503,139 B2 | 1/2003  | Coral              | 6,605,911 B1 | 8/2003 | Klesing                 |
| 6,503,257 B2 | 1/2003  | Grant et al.       | 6,607,475 B2 | 8/2003 | Doyle et al.            |
|              |         |                    | 6,611,793 B1 | 8/2003 | Burnside et al.         |
|              |         |                    | 6,613,069 B2 | 9/2003 | Boyd et al.             |
|              |         |                    | 6,616,686 B2 | 9/2003 | Coleman et al.          |
|              |         |                    | 6,619,529 B2 | 9/2003 | Green et al.            |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

- |              |         |                      |              |         |                      |
|--------------|---------|----------------------|--------------|---------|----------------------|
| 6,620,111 B2 | 9/2003  | Stephens et al.      | 6,726,697 B2 | 4/2004  | Nicholas et al.      |
| 6,620,161 B2 | 9/2003  | Schulze et al.       | 6,726,706 B2 | 4/2004  | Dominguez            |
| 6,620,166 B1 | 9/2003  | Wenstrom, Jr. et al. | 6,729,119 B2 | 5/2004  | Schnipke et al.      |
| 6,625,517 B1 | 9/2003  | Bogdanov et al.      | 6,736,825 B2 | 5/2004  | Blatter et al.       |
| 6,626,834 B2 | 9/2003  | Dunne et al.         | 6,736,854 B2 | 5/2004  | Vadurro et al.       |
| H2086 H      | 10/2003 | Amsler               | 6,740,030 B2 | 5/2004  | Martone et al.       |
| 6,629,630 B2 | 10/2003 | Adams                | 6,743,230 B2 | 6/2004  | Lutze et al.         |
| 6,629,974 B2 | 10/2003 | Penny et al.         | 6,744,385 B2 | 6/2004  | Kazuya et al.        |
| 6,629,988 B2 | 10/2003 | Weadock              | 6,747,121 B2 | 6/2004  | Gogolewski           |
| 6,635,838 B1 | 10/2003 | Kornelson            | 6,747,300 B2 | 6/2004  | Nadd et al.          |
| 6,636,412 B2 | 10/2003 | Smith                | 6,749,560 B1 | 6/2004  | Konstorum et al.     |
| 6,638,108 B2 | 10/2003 | Tachi                | 6,749,600 B1 | 6/2004  | Levy                 |
| 6,638,285 B2 | 10/2003 | Gabbay               | 6,752,768 B2 | 6/2004  | Burdorff et al.      |
| 6,638,297 B1 | 10/2003 | Huitema              | 6,752,816 B2 | 6/2004  | Culp et al.          |
| RE38,335 E   | 11/2003 | Aust et al.          | 6,754,959 B1 | 6/2004  | Guiette, III et al.  |
| 6,641,528 B2 | 11/2003 | Torii                | 6,755,195 B1 | 6/2004  | Lemke et al.         |
| 6,644,532 B2 | 11/2003 | Green et al.         | 6,755,338 B2 | 6/2004  | Hahnen et al.        |
| 6,645,201 B1 | 11/2003 | Utley et al.         | 6,755,843 B2 | 6/2004  | Chung et al.         |
| 6,646,307 B1 | 11/2003 | Yu et al.            | 6,756,705 B2 | 6/2004  | Pulford, Jr.         |
| 6,648,816 B2 | 11/2003 | Irion et al.         | 6,758,846 B2 | 7/2004  | Goble et al.         |
| 6,648,901 B2 | 11/2003 | Fleischman et al.    | 6,761,685 B2 | 7/2004  | Adams et al.         |
| 6,652,595 B1 | 11/2003 | Nicolo               | 6,762,339 B1 | 7/2004  | Klun et al.          |
| D484,243 S   | 12/2003 | Ryan et al.          | 6,764,445 B2 | 7/2004  | Ramans et al.        |
| D484,595 S   | 12/2003 | Ryan et al.          | 6,766,957 B2 | 7/2004  | Matsuura et al.      |
| D484,596 S   | 12/2003 | Ryan et al.          | 6,767,352 B2 | 7/2004  | Field et al.         |
| 6,656,177 B2 | 12/2003 | Truckai et al.       | 6,767,356 B2 | 7/2004  | Kanner et al.        |
| 6,656,193 B2 | 12/2003 | Grant et al.         | 6,769,590 B2 | 8/2004  | Vresh et al.         |
| 6,659,940 B2 | 12/2003 | Adler                | 6,769,594 B2 | 8/2004  | Orban, III           |
| 6,660,008 B1 | 12/2003 | Foerster et al.      | 6,770,027 B2 | 8/2004  | Banik et al.         |
| 6,663,623 B1 | 12/2003 | Oyama et al.         | 6,770,070 B1 | 8/2004  | Balbierz             |
| 6,663,641 B1 | 12/2003 | Kovac et al.         | 6,770,072 B1 | 8/2004  | Truckai et al.       |
| 6,666,854 B1 | 12/2003 | Lange                | 6,773,409 B2 | 8/2004  | Truckai et al.       |
| 6,666,875 B1 | 12/2003 | Sakurai et al.       | 6,773,438 B1 | 8/2004  | Knodel et al.        |
| 6,667,825 B2 | 12/2003 | Lu et al.            | 6,775,575 B2 | 8/2004  | Bommannan et al.     |
| 6,669,073 B2 | 12/2003 | Milliman et al.      | 6,777,838 B2 | 8/2004  | Miekka et al.        |
| 6,670,806 B2 | 12/2003 | Wendt et al.         | 6,780,151 B2 | 8/2004  | Grabover et al.      |
| 6,671,185 B2 | 12/2003 | Duval                | 6,780,180 B1 | 8/2004  | Goble et al.         |
| D484,977 S   | 1/2004  | Ryan et al.          | 6,783,524 B2 | 8/2004  | Anderson et al.      |
| 6,676,660 B2 | 1/2004  | Wampler et al.       | 6,786,382 B1 | 9/2004  | Hoffman              |
| 6,677,687 B2 | 1/2004  | Ho et al.            | 6,786,864 B2 | 9/2004  | Matsuura et al.      |
| 6,679,269 B2 | 1/2004  | Swanson              | 6,786,896 B1 | 9/2004  | Madhani et al.       |
| 6,679,410 B2 | 1/2004  | Wursch et al.        | 6,788,018 B1 | 9/2004  | Blumenkranz          |
| 6,681,978 B2 | 1/2004  | Geiste et al.        | 6,790,173 B2 | 9/2004  | Saadat et al.        |
| 6,681,979 B2 | 1/2004  | Whitman              | 6,793,652 B1 | 9/2004  | Whitman et al.       |
| 6,682,527 B2 | 1/2004  | Strut                | 6,793,661 B2 | 9/2004  | Hamilton et al.      |
| 6,682,528 B2 | 1/2004  | Frazier et al.       | 6,793,663 B2 | 9/2004  | Kneifel et al.       |
| 6,682,544 B2 | 1/2004  | Mastri et al.        | 6,793,669 B2 | 9/2004  | Nakamura et al.      |
| 6,685,698 B2 | 2/2004  | Morley et al.        | 6,796,921 B1 | 9/2004  | Buck et al.          |
| 6,685,727 B2 | 2/2004  | Fisher et al.        | 6,799,669 B2 | 10/2004 | Fukumura et al.      |
| 6,689,153 B1 | 2/2004  | Skiba                | 6,802,822 B1 | 10/2004 | Dodge                |
| 6,692,507 B2 | 2/2004  | Pugsley et al.       | 6,802,843 B2 | 10/2004 | Truckai et al.       |
| 6,692,692 B2 | 2/2004  | Stetzel              | 6,802,844 B2 | 10/2004 | Ferree               |
| 6,695,198 B2 | 2/2004  | Adams et al.         | 6,805,273 B2 | 10/2004 | Bilotti et al.       |
| 6,695,199 B2 | 2/2004  | Whitman              | 6,806,808 B1 | 10/2004 | Watters et al.       |
| 6,695,774 B2 | 2/2004  | Hale et al.          | 6,808,525 B2 | 10/2004 | Latterell et al.     |
| 6,695,849 B2 | 2/2004  | Michelson            | 6,810,359 B2 | 10/2004 | Sakaguchi            |
| 6,696,814 B2 | 2/2004  | Henderson et al.     | 6,814,154 B2 | 11/2004 | Chou                 |
| 6,697,048 B2 | 2/2004  | Rosenberg et al.     | 6,814,741 B2 | 11/2004 | Bowman et al.        |
| 6,698,643 B2 | 3/2004  | Whitman              | 6,817,508 B1 | 11/2004 | Racenet et al.       |
| 6,699,177 B1 | 3/2004  | Wang et al.          | 6,817,509 B2 | 11/2004 | Geiste et al.        |
| 6,699,214 B2 | 3/2004  | Gellman              | 6,817,974 B2 | 11/2004 | Cooper et al.        |
| 6,699,235 B2 | 3/2004  | Wallace et al.       | 6,818,018 B1 | 11/2004 | Sawhney              |
| 6,704,210 B1 | 3/2004  | Myers                | 6,820,791 B2 | 11/2004 | Adams                |
| 6,705,503 B1 | 3/2004  | Pedicini et al.      | 6,821,273 B2 | 11/2004 | Mollenauer           |
| 6,709,445 B2 | 3/2004  | Boebel et al.        | 6,821,282 B2 | 11/2004 | Perry et al.         |
| 6,712,773 B1 | 3/2004  | Viola                | 6,821,284 B2 | 11/2004 | Sturtz et al.        |
| 6,716,223 B2 | 4/2004  | Leopold et al.       | 6,827,246 B2 | 12/2004 | Sullivan et al.      |
| 6,716,232 B1 | 4/2004  | Vidal et al.         | 6,827,712 B2 | 12/2004 | Tovey et al.         |
| 6,716,233 B1 | 4/2004  | Whitman              | 6,827,725 B2 | 12/2004 | Batchelor et al.     |
| 6,720,734 B2 | 4/2004  | Norris               | 6,828,902 B2 | 12/2004 | Casden               |
| 6,722,550 B1 | 4/2004  | Ricordi et al.       | 6,830,174 B2 | 12/2004 | Hillstead et al.     |
| 6,722,552 B2 | 4/2004  | Fenton, Jr.          | 6,831,629 B2 | 12/2004 | Nishino et al.       |
| 6,723,087 B2 | 4/2004  | O'Neill et al.       | 6,832,998 B2 | 12/2004 | Goble                |
| 6,723,091 B2 | 4/2004  | Goble et al.         | 6,834,001 B2 | 12/2004 | Myono                |
| 6,723,109 B2 | 4/2004  | Solingen             | 6,835,173 B2 | 12/2004 | Couvillon, Jr.       |
|              |         |                      | 6,835,199 B2 | 12/2004 | McGuckin, Jr. et al. |
|              |         |                      | 6,835,336 B2 | 12/2004 | Watt                 |
|              |         |                      | 6,836,611 B2 | 12/2004 | Popovic et al.       |
|              |         |                      | 6,837,846 B2 | 1/2005  | Jaffe et al.         |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |        |                     |              |         |                     |
|--------------|--------|---------------------|--------------|---------|---------------------|
| 6,837,883 B2 | 1/2005 | Moll et al.         | 6,945,444 B2 | 9/2005  | Gresham et al.      |
| 6,838,493 B2 | 1/2005 | Williams et al.     | 6,945,981 B2 | 9/2005  | Donofrio et al.     |
| 6,840,423 B2 | 1/2005 | Adams et al.        | 6,951,562 B2 | 10/2005 | Zwirnmann           |
| 6,841,967 B2 | 1/2005 | Kim et al.          | 6,953,138 B1 | 10/2005 | Dworak et al.       |
| 6,843,403 B2 | 1/2005 | Whitman             | 6,953,139 B2 | 10/2005 | Milliman et al.     |
| 6,843,789 B2 | 1/2005 | Goble               | 6,953,461 B2 | 10/2005 | McClurken et al.    |
| 6,843,793 B2 | 1/2005 | Brock et al.        | 6,957,758 B2 | 10/2005 | Aranyi              |
| 6,846,307 B2 | 1/2005 | Whitman et al.      | 6,958,035 B2 | 10/2005 | Friedman et al.     |
| 6,846,308 B2 | 1/2005 | Whitman et al.      | 6,959,851 B2 | 11/2005 | Heinrich            |
| 6,846,309 B2 | 1/2005 | Whitman et al.      | 6,959,852 B2 | 11/2005 | Shelton, IV et al.  |
| 6,847,190 B2 | 1/2005 | Schaefer et al.     | 6,960,107 B1 | 11/2005 | Schaub et al.       |
| 6,849,071 B2 | 2/2005 | Whitman et al.      | 6,960,163 B2 | 11/2005 | Ewers et al.        |
| 6,850,817 B1 | 2/2005 | Green               | 6,960,220 B2 | 11/2005 | Marino et al.       |
| 6,852,122 B2 | 2/2005 | Rush                | 6,962,587 B2 | 11/2005 | Johnson et al.      |
| 6,852,330 B2 | 2/2005 | Bowman et al.       | 6,963,792 B1 | 11/2005 | Green               |
| 6,853,879 B2 | 2/2005 | Sunaoshi            | 6,964,363 B2 | 11/2005 | Wales et al.        |
| 6,858,005 B2 | 2/2005 | Ohline et al.       | 6,966,907 B2 | 11/2005 | Goble               |
| 6,859,882 B2 | 2/2005 | Fung                | 6,966,909 B2 | 11/2005 | Marshall et al.     |
| RE38,708 E   | 3/2005 | Bolanos et al.      | 6,968,908 B2 | 11/2005 | Tokunaga et al.     |
| D502,994 S   | 3/2005 | Blake, III          | 6,969,385 B2 | 11/2005 | Moreyra             |
| 6,861,142 B1 | 3/2005 | Wilkie et al.       | 6,969,395 B2 | 11/2005 | Eskuri              |
| 6,861,954 B2 | 3/2005 | Levin               | 6,971,988 B2 | 12/2005 | Orban, III          |
| 6,863,668 B2 | 3/2005 | Gillespie et al.    | 6,972,199 B2 | 12/2005 | Lebouitz et al.     |
| 6,863,694 B1 | 3/2005 | Boyce et al.        | 6,974,435 B2 | 12/2005 | Daw et al.          |
| 6,863,924 B2 | 3/2005 | Ranganathan et al.  | 6,974,462 B2 | 12/2005 | Sater               |
| 6,866,178 B2 | 3/2005 | Adams et al.        | 6,978,921 B2 | 12/2005 | Shelton, IV et al.  |
| 6,866,668 B2 | 3/2005 | Giannetti et al.    | 6,978,922 B2 | 12/2005 | Bilotti et al.      |
| 6,866,671 B2 | 3/2005 | Tierney et al.      | 6,981,628 B2 | 1/2006  | Wales               |
| 6,867,248 B1 | 3/2005 | Martin et al.       | 6,981,941 B2 | 1/2006  | Whitman et al.      |
| 6,869,430 B2 | 3/2005 | Balbierz et al.     | 6,981,978 B2 | 1/2006  | Gannoe              |
| 6,869,435 B2 | 3/2005 | Blake, III          | 6,984,203 B2 | 1/2006  | Tartaglia et al.    |
| 6,872,214 B2 | 3/2005 | Sonnenschein et al. | 6,984,231 B2 | 1/2006  | Goble et al.        |
| 6,874,669 B2 | 4/2005 | Adams et al.        | 6,986,451 B1 | 1/2006  | Mastri et al.       |
| 6,877,647 B2 | 4/2005 | Green et al.        | 6,988,649 B2 | 1/2006  | Shelton, IV et al.  |
| 6,878,106 B1 | 4/2005 | Herrmann            | 6,988,650 B2 | 1/2006  | Schwemberger et al. |
| 6,884,392 B2 | 4/2005 | Malkin et al.       | 6,989,034 B2 | 1/2006  | Hammer et al.       |
| 6,884,428 B2 | 4/2005 | Binette et al.      | 6,990,731 B2 | 1/2006  | Haytayan            |
| 6,886,730 B2 | 5/2005 | Fujisawa et al.     | 6,990,796 B2 | 1/2006  | Schnipke et al.     |
| 6,887,710 B2 | 5/2005 | Call et al.         | 6,993,200 B2 | 1/2006  | Tastl et al.        |
| 6,889,116 B2 | 5/2005 | Jinno               | 6,993,413 B2 | 1/2006  | Sunaoshi            |
| 6,893,435 B2 | 5/2005 | Goble               | 6,994,708 B2 | 2/2006  | Manzo               |
| 6,894,140 B2 | 5/2005 | Roby                | 6,995,729 B2 | 2/2006  | Govari et al.       |
| 6,895,176 B2 | 5/2005 | Archer et al.       | 6,996,433 B2 | 2/2006  | Burbank et al.      |
| 6,899,538 B2 | 5/2005 | Matoba              | 6,997,931 B2 | 2/2006  | Sauer et al.        |
| 6,899,593 B1 | 5/2005 | Moeller et al.      | 6,997,935 B2 | 2/2006  | Anderson et al.     |
| 6,905,057 B2 | 6/2005 | Swayze et al.       | 6,998,736 B2 | 2/2006  | Lee et al.          |
| 6,905,497 B2 | 6/2005 | Truckai et al.      | 6,998,816 B2 | 2/2006  | Wieck et al.        |
| 6,905,498 B2 | 6/2005 | Hooven              | 7,000,818 B2 | 2/2006  | Shelton, IV et al.  |
| 6,908,472 B2 | 6/2005 | Wiener et al.       | 7,000,819 B2 | 2/2006  | Swayze et al.       |
| 6,911,033 B2 | 6/2005 | de Guillebon et al. | 7,000,911 B2 | 2/2006  | McCormick et al.    |
| 6,911,916 B1 | 6/2005 | Wang et al.         | 7,001,380 B2 | 2/2006  | Goble               |
| 6,913,579 B2 | 7/2005 | Truckai et al.      | 7,001,408 B2 | 2/2006  | Knodel et al.       |
| 6,913,608 B2 | 7/2005 | Liddicoat et al.    | 7,004,174 B2 | 2/2006  | Eggers et al.       |
| 6,913,613 B2 | 7/2005 | Schwarz et al.      | 7,007,176 B2 | 2/2006  | Goodfellow et al.   |
| 6,921,397 B2 | 7/2005 | Corcoran et al.     | 7,008,433 B2 | 3/2006  | Voellmicke et al.   |
| 6,921,412 B1 | 7/2005 | Black et al.        | 7,008,435 B2 | 3/2006  | Cummins             |
| 6,923,093 B2 | 8/2005 | Ullah               | 7,009,039 B2 | 3/2006  | Yayon et al.        |
| 6,923,803 B2 | 8/2005 | Goble               | 7,011,657 B2 | 3/2006  | Truckai et al.      |
| 6,923,819 B2 | 8/2005 | Meade et al.        | 7,014,640 B2 | 3/2006  | Kemppainen et al.   |
| 6,925,849 B2 | 8/2005 | Jairam              | 7,018,357 B2 | 3/2006  | Emmons              |
| 6,926,716 B2 | 8/2005 | Baker et al.        | 7,018,390 B2 | 3/2006  | Turovskiy et al.    |
| 6,928,902 B1 | 8/2005 | Eyssalenne          | 7,021,669 B1 | 4/2006  | Lindermeir et al.   |
| 6,929,641 B2 | 8/2005 | Goble et al.        | 7,022,131 B1 | 4/2006  | Derowe et al.       |
| 6,929,644 B2 | 8/2005 | Truckai et al.      | 7,023,159 B2 | 4/2006  | Gorti et al.        |
| 6,931,830 B2 | 8/2005 | Liao                | 7,025,064 B2 | 4/2006  | Wang et al.         |
| 6,932,218 B2 | 8/2005 | Kosann et al.       | 7,025,732 B2 | 4/2006  | Thompson et al.     |
| 6,932,810 B2 | 8/2005 | Ryan                | 7,025,743 B2 | 4/2006  | Mann et al.         |
| 6,936,042 B2 | 8/2005 | Wallace et al.      | 7,025,774 B2 | 4/2006  | Freeman et al.      |
| 6,936,948 B2 | 8/2005 | Bell et al.         | 7,025,775 B2 | 4/2006  | Gadberry et al.     |
| D509,297 S   | 9/2005 | Wells               | 7,028,570 B2 | 4/2006  | Ohta et al.         |
| D509,589 S   | 9/2005 | Wells               | 7,029,435 B2 | 4/2006  | Nakao               |
| 6,938,706 B2 | 9/2005 | Ng                  | 7,029,439 B2 | 4/2006  | Roberts et al.      |
| 6,939,358 B2 | 9/2005 | Palacios et al.     | 7,030,904 B2 | 4/2006  | Adair et al.        |
| 6,942,662 B2 | 9/2005 | Goble et al.        | 7,032,798 B2 | 4/2006  | Whitman et al.      |
| 6,942,674 B2 | 9/2005 | Belef et al.        | 7,032,799 B2 | 4/2006  | Viola et al.        |
|              |        |                     | 7,033,356 B2 | 4/2006  | Latterell et al.    |
|              |        |                     | 7,035,716 B2 | 4/2006  | Harris et al.       |
|              |        |                     | 7,035,762 B2 | 4/2006  | Menard et al.       |
|              |        |                     | 7,036,680 B1 | 5/2006  | Flannery            |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |         |                      |              |         |                     |
|--------------|---------|----------------------|--------------|---------|---------------------|
| 7,037,314 B2 | 5/2006  | Armstrong            | 7,118,020 B2 | 10/2006 | Lee et al.          |
| 7,037,344 B2 | 5/2006  | Kagan et al.         | 7,118,528 B1 | 10/2006 | Piskun              |
| 7,041,088 B2 | 5/2006  | Nawrocki et al.      | 7,118,563 B2 | 10/2006 | Weckwerth et al.    |
| 7,041,102 B2 | 5/2006  | Truckai et al.       | 7,118,582 B1 | 10/2006 | Wang et al.         |
| 7,041,868 B2 | 5/2006  | Greene et al.        | 7,119,534 B2 | 10/2006 | Butzmann            |
| 7,043,852 B2 | 5/2006  | Hayashida et al.     | 7,121,446 B2 | 10/2006 | Arad et al.         |
| 7,044,350 B2 | 5/2006  | Kameyama et al.      | 7,121,773 B2 | 10/2006 | Mikiya et al.       |
| 7,044,352 B2 | 5/2006  | Shelton, IV et al.   | 7,122,028 B2 | 10/2006 | Looper et al.       |
| 7,044,353 B2 | 5/2006  | Mastri et al.        | 7,125,403 B2 | 10/2006 | Julian et al.       |
| 7,046,082 B2 | 5/2006  | Komiya et al.        | 7,125,409 B2 | 10/2006 | Truckai et al.      |
| 7,048,165 B2 | 5/2006  | Haramiishi           | 7,126,303 B2 | 10/2006 | Farritor et al.     |
| 7,048,687 B1 | 5/2006  | Reuss et al.         | 7,126,879 B2 | 10/2006 | Snyder              |
| 7,048,745 B2 | 5/2006  | Tierney et al.       | 7,128,253 B2 | 10/2006 | Mastri et al.       |
| 7,052,454 B2 | 5/2006  | Taylor               | 7,128,254 B2 | 10/2006 | Shelton, IV et al.  |
| 7,052,494 B2 | 5/2006  | Goble et al.         | 7,128,748 B2 | 10/2006 | Mooradian et al.    |
| 7,052,499 B2 | 5/2006  | Steger et al.        | 7,131,445 B2 | 11/2006 | Amoah               |
| 7,055,730 B2 | 6/2006  | Ehrenfels et al.     | 7,133,601 B2 | 11/2006 | Phillips et al.     |
| 7,055,731 B2 | 6/2006  | Shelton, IV et al.   | 7,134,364 B2 | 11/2006 | Kageler et al.      |
| 7,056,284 B2 | 6/2006  | Martone et al.       | 7,134,587 B2 | 11/2006 | Schwemberger et al. |
| 7,056,330 B2 | 6/2006  | Gayton               | 7,135,027 B2 | 11/2006 | Delmotte            |
| 7,059,331 B2 | 6/2006  | Adams et al.         | 7,137,980 B2 | 11/2006 | Buysse et al.       |
| 7,059,508 B2 | 6/2006  | Shelton, IV et al.   | 7,137,981 B2 | 11/2006 | Long                |
| 7,063,671 B2 | 6/2006  | Couvillon, Jr.       | 7,139,016 B2 | 11/2006 | Squilla et al.      |
| 7,063,712 B2 | 6/2006  | Vargas et al.        | 7,140,527 B2 | 11/2006 | Ehrenfels et al.    |
| 7,064,509 B1 | 6/2006  | Fu et al.            | 7,140,528 B2 | 11/2006 | Shelton, IV         |
| 7,066,879 B2 | 6/2006  | Fowler et al.        | 7,141,055 B2 | 11/2006 | Abrams et al.       |
| 7,066,944 B2 | 6/2006  | Laufer               | 7,143,923 B2 | 12/2006 | Shelton, IV et al.  |
| 7,067,038 B2 | 6/2006  | Trokhan et al.       | 7,143,924 B2 | 12/2006 | Scirica et al.      |
| 7,070,083 B2 | 7/2006  | Jankowski            | 7,143,925 B2 | 12/2006 | Shelton, IV et al.  |
| 7,070,559 B2 | 7/2006  | Adams et al.         | 7,143,926 B2 | 12/2006 | Shelton, IV et al.  |
| 7,070,597 B2 | 7/2006  | Truckai et al.       | 7,146,191 B2 | 12/2006 | Kerner et al.       |
| 7,071,287 B2 | 7/2006  | Rhine et al.         | 7,147,138 B2 | 12/2006 | Shelton, IV         |
| 7,075,770 B1 | 7/2006  | Smith                | 7,147,139 B2 | 12/2006 | Schwemberger et al. |
| 7,077,856 B2 | 7/2006  | Whitman              | 7,147,140 B2 | 12/2006 | Wukusick et al.     |
| 7,080,769 B2 | 7/2006  | Vresh et al.         | 7,147,637 B2 | 12/2006 | Goble               |
| 7,081,114 B2 | 7/2006  | Rashidi              | 7,147,648 B2 | 12/2006 | Un                  |
| 7,083,073 B2 | 8/2006  | Yoshie et al.        | 7,147,650 B2 | 12/2006 | Lee                 |
| 7,083,075 B2 | 8/2006  | Swayze et al.        | 7,150,748 B2 | 12/2006 | Ebbutt et al.       |
| 7,083,571 B2 | 8/2006  | Wang et al.          | 7,153,300 B2 | 12/2006 | Goble               |
| 7,083,615 B2 | 8/2006  | Peterson et al.      | 7,153,314 B2 | 12/2006 | Laufer et al.       |
| 7,083,619 B2 | 8/2006  | Truckai et al.       | 7,155,316 B2 | 12/2006 | Sutherland et al.   |
| 7,083,620 B2 | 8/2006  | Jahns et al.         | 7,156,863 B2 | 1/2007  | Sonnenschein et al. |
| 7,083,626 B2 | 8/2006  | Hart et al.          | 7,159,750 B2 | 1/2007  | Racenet et al.      |
| 7,086,267 B2 | 8/2006  | Dworak et al.        | 7,160,296 B2 | 1/2007  | Pearson et al.      |
| 7,087,049 B2 | 8/2006  | Nowlin et al.        | 7,160,299 B2 | 1/2007  | Baily               |
| 7,087,054 B2 | 8/2006  | Truckai et al.       | 7,161,036 B2 | 1/2007  | Oikawa et al.       |
| 7,087,071 B2 | 8/2006  | Nicholas et al.      | 7,161,580 B2 | 1/2007  | Bailey et al.       |
| 7,090,637 B2 | 8/2006  | Danitz et al.        | 7,162,758 B2 | 1/2007  | Skinner             |
| 7,090,673 B2 | 8/2006  | Dycus et al.         | 7,163,563 B2 | 1/2007  | Schwartz et al.     |
| 7,090,683 B2 | 8/2006  | Brock et al.         | 7,166,133 B2 | 1/2007  | Evans et al.        |
| 7,090,684 B2 | 8/2006  | McGuckin, Jr. et al. | 7,168,604 B2 | 1/2007  | Milliman et al.     |
| 7,091,412 B2 | 8/2006  | Wang et al.          | 7,170,910 B2 | 1/2007  | Chen et al.         |
| 7,093,492 B2 | 8/2006  | Treiber et al.       | 7,171,279 B2 | 1/2007  | Buckingham et al.   |
| 7,094,202 B2 | 8/2006  | Nobis et al.         | 7,172,104 B2 | 2/2007  | Scirica et al.      |
| 7,094,247 B2 | 8/2006  | Monassevitch et al.  | 7,172,593 B2 | 2/2007  | Trieu et al.        |
| 7,094,916 B2 | 8/2006  | DeLuca et al.        | 7,172,615 B2 | 2/2007  | Morriss et al.      |
| 7,096,972 B2 | 8/2006  | Orozco, Jr.          | 7,174,636 B2 | 2/2007  | Lowe                |
| 7,097,089 B2 | 8/2006  | Marczyk              | 7,177,533 B2 | 2/2007  | McFarlin et al.     |
| 7,097,644 B2 | 8/2006  | Long                 | 7,179,223 B2 | 2/2007  | Motoki et al.       |
| 7,097,650 B2 | 8/2006  | Weller et al.        | 7,179,267 B2 | 2/2007  | Nolan et al.        |
| 7,098,794 B2 | 8/2006  | Lindsay et al.       | 7,182,239 B1 | 2/2007  | Myers               |
| 7,100,949 B2 | 9/2006  | Williams et al.      | 7,182,763 B2 | 2/2007  | Nardella            |
| 7,101,187 B1 | 9/2006  | Deconinck et al.     | 7,183,737 B2 | 2/2007  | Kitagawa            |
| 7,101,371 B2 | 9/2006  | Dycus et al.         | 7,187,960 B2 | 3/2007  | Abreu               |
| 7,101,394 B2 | 9/2006  | Hamm et al.          | 7,188,758 B2 | 3/2007  | Viola et al.        |
| 7,104,741 B2 | 9/2006  | Krohn                | 7,189,207 B2 | 3/2007  | Viola               |
| 7,108,695 B2 | 9/2006  | Witt et al.          | 7,190,147 B2 | 3/2007  | Gileff et al.       |
| 7,108,701 B2 | 9/2006  | Evens et al.         | 7,193,199 B2 | 3/2007  | Jang                |
| 7,108,709 B2 | 9/2006  | Cummins              | 7,195,627 B2 | 3/2007  | Amoah et al.        |
| 7,111,768 B2 | 9/2006  | Cummins et al.       | 7,196,911 B2 | 3/2007  | Takano et al.       |
| 7,111,769 B2 | 9/2006  | Wales et al.         | D541,418 S   | 4/2007  | Schechter et al.    |
| 7,112,214 B2 | 9/2006  | Peterson et al.      | 7,199,537 B2 | 4/2007  | Okamura et al.      |
| RE39,358 E   | 10/2006 | Goble                | 7,202,576 B1 | 4/2007  | Dechene et al.      |
| 7,114,642 B2 | 10/2006 | Whitman              | 7,202,653 B2 | 4/2007  | Pai                 |
| 7,116,100 B1 | 10/2006 | Mock et al.          | 7,204,404 B2 | 4/2007  | Nguyen et al.       |
|              |         |                      | 7,204,835 B2 | 4/2007  | Latterell et al.    |
|              |         |                      | 7,207,233 B2 | 4/2007  | Wadge               |
|              |         |                      | 7,207,471 B2 | 4/2007  | Heinrich et al.     |
|              |         |                      | 7,207,472 B2 | 4/2007  | Wukusick et al.     |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |         |                      |              |         |                      |
|--------------|---------|----------------------|--------------|---------|----------------------|
| 7,207,556 B2 | 4/2007  | Saitoh et al.        | 7,313,430 B2 | 12/2007 | Urquhart et al.      |
| 7,208,005 B2 | 4/2007  | Freckler et al.      | 7,314,473 B2 | 1/2008  | Jinno et al.         |
| 7,210,609 B2 | 5/2007  | Leiboff et al.       | 7,322,859 B2 | 1/2008  | Evans                |
| 7,211,081 B2 | 5/2007  | Goble                | 7,322,975 B2 | 1/2008  | Goble et al.         |
| 7,211,084 B2 | 5/2007  | Goble et al.         | 7,322,994 B2 | 1/2008  | Nicholas et al.      |
| 7,211,092 B2 | 5/2007  | Hughett              | 7,324,572 B2 | 1/2008  | Chang                |
| 7,211,979 B2 | 5/2007  | Khatib et al.        | 7,326,203 B2 | 2/2008  | Papineau et al.      |
| 7,213,736 B2 | 5/2007  | Wales et al.         | 7,326,213 B2 | 2/2008  | Benderev et al.      |
| 7,214,224 B2 | 5/2007  | Goble                | 7,328,828 B2 | 2/2008  | Ortiz                |
| 7,215,517 B2 | 5/2007  | Takamatsu            | 7,328,829 B2 | 2/2008  | Arad et al.          |
| 7,217,285 B2 | 5/2007  | Vargas et al.        | 7,330,004 B2 | 2/2008  | DeJonge et al.       |
| 7,220,260 B2 | 5/2007  | Fleming et al.       | 7,331,340 B2 | 2/2008  | Barney               |
| 7,220,272 B2 | 5/2007  | Weadock              | 7,331,343 B2 | 2/2008  | Schmidt et al.       |
| 7,225,959 B2 | 6/2007  | Patton et al.        | 7,331,403 B2 | 2/2008  | Berry et al.         |
| 7,225,963 B2 | 6/2007  | Scirica              | 7,331,406 B2 | 2/2008  | Wottreng, Jr. et al. |
| 7,225,964 B2 | 6/2007  | Mastri et al.        | 7,331,969 B1 | 2/2008  | Inganas et al.       |
| 7,226,450 B2 | 6/2007  | Athanasidou et al.   | 7,334,717 B2 | 2/2008  | Rethy et al.         |
| 7,228,505 B2 | 6/2007  | Shimazu et al.       | 7,334,718 B2 | 2/2008  | McAlister et al.     |
| 7,229,408 B2 | 6/2007  | Douglas et al.       | 7,335,199 B2 | 2/2008  | Goble et al.         |
| 7,234,624 B2 | 6/2007  | Gresham et al.       | 7,335,401 B2 | 2/2008  | Finke et al.         |
| 7,235,072 B2 | 6/2007  | Sartor et al.        | 7,336,045 B2 | 2/2008  | Clermonts            |
| 7,235,089 B1 | 6/2007  | McGuckin, Jr.        | 7,336,048 B2 | 2/2008  | Lohr                 |
| 7,235,302 B2 | 6/2007  | Jing et al.          | 7,336,184 B2 | 2/2008  | Smith et al.         |
| 7,237,708 B1 | 7/2007  | Guy et al.           | 7,337,774 B2 | 3/2008  | Webb                 |
| 7,238,195 B2 | 7/2007  | Viola                | 7,338,505 B2 | 3/2008  | Belson               |
| 7,238,901 B2 | 7/2007  | Kim et al.           | 7,338,513 B2 | 3/2008  | Lee et al.           |
| 7,239,657 B1 | 7/2007  | Gunnarsson           | 7,341,554 B2 | 3/2008  | Sekine et al.        |
| 7,241,288 B2 | 7/2007  | Braun                | 7,341,555 B2 | 3/2008  | Ootawara et al.      |
| 7,241,289 B2 | 7/2007  | Braun                | 7,341,591 B2 | 3/2008  | Grinberg             |
| 7,246,734 B2 | 7/2007  | Shelton, IV          | 7,343,920 B2 | 3/2008  | Toby et al.          |
| 7,247,161 B2 | 7/2007  | Johnston et al.      | 7,344,532 B2 | 3/2008  | Goble et al.         |
| 7,249,267 B2 | 7/2007  | Chapuis              | 7,344,533 B2 | 3/2008  | Pearson et al.       |
| 7,252,641 B2 | 8/2007  | Thompson et al.      | 7,346,344 B2 | 3/2008  | Fontaine             |
| 7,252,660 B2 | 8/2007  | Kunz                 | 7,346,406 B2 | 3/2008  | Brotto et al.        |
| 7,255,012 B2 | 8/2007  | Hedtke               | 7,348,763 B1 | 3/2008  | Reinhart et al.      |
| 7,255,696 B2 | 8/2007  | Goble et al.         | 7,348,875 B2 | 3/2008  | Hughes et al.        |
| 7,256,695 B2 | 8/2007  | Hamel et al.         | RE40,237 E   | 4/2008  | Bilotti et al.       |
| 7,258,262 B2 | 8/2007  | Mastri et al.        | 7,351,258 B2 | 4/2008  | Ricotta et al.       |
| 7,258,546 B2 | 8/2007  | Beier et al.         | 7,354,447 B2 | 4/2008  | Shelton, IV et al.   |
| 7,260,431 B2 | 8/2007  | Libbus et al.        | 7,354,502 B2 | 4/2008  | Polat et al.         |
| 7,265,374 B2 | 9/2007  | Lee et al.           | 7,357,287 B2 | 4/2008  | Shelton, IV et al.   |
| 7,267,677 B2 | 9/2007  | Johnson et al.       | 7,357,806 B2 | 4/2008  | Rivera et al.        |
| 7,267,679 B2 | 9/2007  | McGuckin, Jr. et al. | 7,361,168 B2 | 4/2008  | Makower et al.       |
| 7,272,002 B2 | 9/2007  | Drapeau              | 7,361,195 B2 | 4/2008  | Schwartz et al.      |
| 7,273,483 B2 | 9/2007  | Wiener et al.        | 7,362,062 B2 | 4/2008  | Schneider et al.     |
| D552,623 S   | 10/2007 | Vong et al.          | 7,364,060 B2 | 4/2008  | Milliman             |
| 7,275,674 B2 | 10/2007 | Racenet et al.       | 7,364,061 B2 | 4/2008  | Swayze et al.        |
| 7,276,044 B2 | 10/2007 | Ferry et al.         | 7,367,485 B2 | 5/2008  | Shelton, IV et al.   |
| 7,276,068 B2 | 10/2007 | Johnson et al.       | 7,368,124 B2 | 5/2008  | Chun et al.          |
| 7,278,562 B2 | 10/2007 | Mastri et al.        | 7,371,210 B2 | 5/2008  | Brock et al.         |
| 7,278,563 B1 | 10/2007 | Green                | 7,371,403 B2 | 5/2008  | McCarthy et al.      |
| 7,278,949 B2 | 10/2007 | Bader                | 7,377,918 B2 | 5/2008  | Amoah                |
| 7,278,994 B2 | 10/2007 | Goble                | 7,377,928 B2 | 5/2008  | Zubik et al.         |
| 7,282,048 B2 | 10/2007 | Goble et al.         | RE40,388 E   | 6/2008  | Gines                |
| 7,283,096 B2 | 10/2007 | Geisheimer et al.    | 7,380,695 B2 | 6/2008  | Doll et al.          |
| 7,286,850 B2 | 10/2007 | Frieling et al.      | 7,380,696 B2 | 6/2008  | Shelton, IV et al.   |
| 7,287,682 B1 | 10/2007 | Ezzat et al.         | 7,384,403 B2 | 6/2008  | Sherman              |
| 7,289,139 B2 | 10/2007 | Amling et al.        | 7,384,417 B2 | 6/2008  | Cucin                |
| 7,293,685 B2 | 11/2007 | Ehrenfels et al.     | 7,386,365 B2 | 6/2008  | Nixon                |
| 7,295,893 B2 | 11/2007 | Sunaoshi             | 7,386,730 B2 | 6/2008  | Uchikubo             |
| 7,295,907 B2 | 11/2007 | Lu et al.            | 7,388,217 B2 | 6/2008  | Buschbeck et al.     |
| 7,296,722 B2 | 11/2007 | Ivanko               | 7,388,484 B2 | 6/2008  | Hsu                  |
| 7,296,724 B2 | 11/2007 | Green et al.         | 7,391,173 B2 | 6/2008  | Schena               |
| 7,297,149 B2 | 11/2007 | Vitali et al.        | 7,394,190 B2 | 7/2008  | Huang                |
| 7,300,373 B2 | 11/2007 | Jinno et al.         | 7,396,356 B2 | 7/2008  | Mollenauer           |
| 7,300,431 B2 | 11/2007 | Dubrovsky            | 7,397,364 B2 | 7/2008  | Govari               |
| 7,300,450 B2 | 11/2007 | Vleugels et al.      | 7,398,707 B2 | 7/2008  | Morley et al.        |
| 7,303,106 B2 | 12/2007 | Milliman et al.      | 7,398,907 B2 | 7/2008  | Racenet et al.       |
| 7,303,107 B2 | 12/2007 | Milliman et al.      | 7,398,908 B2 | 7/2008  | Holsten et al.       |
| 7,303,108 B2 | 12/2007 | Shelton, IV          | 7,400,107 B2 | 7/2008  | Schneider et al.     |
| 7,303,502 B2 | 12/2007 | Thompson             | 7,400,752 B2 | 7/2008  | Zacharias            |
| 7,303,556 B2 | 12/2007 | Metzger              | 7,401,000 B2 | 7/2008  | Nakamura             |
| 7,306,597 B2 | 12/2007 | Manzo                | 7,401,721 B2 | 7/2008  | Holsten et al.       |
| 7,308,998 B2 | 12/2007 | Mastri et al.        | 7,404,449 B2 | 7/2008  | Birmingham et al.    |
| 7,311,238 B2 | 12/2007 | Liu                  | 7,404,508 B2 | 7/2008  | Smith et al.         |
|              |         |                      | 7,404,509 B2 | 7/2008  | Ortiz et al.         |
|              |         |                      | 7,404,822 B2 | 7/2008  | Viard et al.         |
|              |         |                      | 7,407,074 B2 | 8/2008  | Ortiz et al.         |
|              |         |                      | 7,407,075 B2 | 8/2008  | Holsten et al.       |



(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |         |                    |              |         |                     |
|--------------|---------|--------------------|--------------|---------|---------------------|
| 7,407,076 B2 | 8/2008  | Racenet et al.     | 7,500,979 B2 | 3/2009  | Hueil et al.        |
| 7,407,077 B2 | 8/2008  | Ortiz et al.       | 7,501,198 B2 | 3/2009  | Barley et al.       |
| 7,407,078 B2 | 8/2008  | Shelton, IV et al. | 7,503,474 B2 | 3/2009  | Hillstead et al.    |
| 7,408,310 B2 | 8/2008  | Hong et al.        | 7,506,790 B2 | 3/2009  | Shelton, IV         |
| 7,410,085 B2 | 8/2008  | Wolf et al.        | 7,506,791 B2 | 3/2009  | Omaits et al.       |
| 7,410,086 B2 | 8/2008  | Ortiz et al.       | 7,507,202 B2 | 3/2009  | Schoellhom          |
| 7,410,483 B2 | 8/2008  | Danitz et al.      | 7,510,107 B2 | 3/2009  | Timm et al.         |
| 7,413,563 B2 | 8/2008  | Corcoran et al.    | 7,510,534 B2 | 3/2009  | Burdorff et al.     |
| 7,416,101 B2 | 8/2008  | Shelton, IV et al. | 7,510,566 B2 | 3/2009  | Jacobs et al.       |
| 7,418,078 B2 | 8/2008  | Blanz et al.       | 7,513,407 B1 | 4/2009  | Chang               |
| RE40,514 E   | 9/2008  | Mastri et al.      | 7,513,408 B2 | 4/2009  | Shelton, IV et al.  |
| 7,419,080 B2 | 9/2008  | Smith et al.       | 7,517,356 B2 | 4/2009  | Heinrich            |
| 7,419,081 B2 | 9/2008  | Ehrenfels et al.   | 7,524,320 B2 | 4/2009  | Tierney et al.      |
| 7,419,321 B2 | 9/2008  | Tereschouk         | 7,527,632 B2 | 5/2009  | Houghton et al.     |
| 7,419,495 B2 | 9/2008  | Menn et al.        | 7,530,984 B2 | 5/2009  | Sonnenschein et al. |
| 7,422,136 B1 | 9/2008  | Marczyk            | 7,530,985 B2 | 5/2009  | Takemoto et al.     |
| 7,422,138 B2 | 9/2008  | Bilotti et al.     | 7,533,906 B2 | 5/2009  | Luetzgen et al.     |
| 7,422,139 B2 | 9/2008  | Shelton, IV et al. | 7,534,259 B2 | 5/2009  | Lashinski et al.    |
| 7,424,965 B2 | 9/2008  | Racenet et al.     | 7,540,867 B2 | 6/2009  | Jinno et al.        |
| 7,427,607 B2 | 9/2008  | Suzuki             | 7,540,872 B2 | 6/2009  | Schechter et al.    |
| D578,644 S   | 10/2008 | Shumer et al.      | 7,542,807 B2 | 6/2009  | Bertolero et al.    |
| 7,430,772 B2 | 10/2008 | Van Es             | 7,543,730 B1 | 6/2009  | Marczyk             |
| 7,431,188 B1 | 10/2008 | Marczyk            | 7,546,939 B2 | 6/2009  | Adams et al.        |
| 7,431,189 B2 | 10/2008 | Shelton, IV et al. | 7,546,940 B2 | 6/2009  | Milliman et al.     |
| 7,431,230 B2 | 10/2008 | McPherson et al.   | 7,547,287 B2 | 6/2009  | Boecker et al.      |
| 7,431,694 B2 | 10/2008 | Stefanchik et al.  | 7,547,312 B2 | 6/2009  | Bauman et al.       |
| 7,431,730 B2 | 10/2008 | Viola              | 7,549,563 B2 | 6/2009  | Mather et al.       |
| 7,434,715 B2 | 10/2008 | Shelton, IV et al. | 7,549,564 B2 | 6/2009  | Boudreaux           |
| 7,434,717 B2 | 10/2008 | Shelton, IV et al. | 7,549,998 B2 | 6/2009  | Braun               |
| 7,435,249 B2 | 10/2008 | Buysse et al.      | 7,552,854 B2 | 6/2009  | Wixey et al.        |
| 7,438,209 B1 | 10/2008 | Hess et al.        | 7,553,173 B2 | 6/2009  | Kowalick            |
| 7,438,718 B2 | 10/2008 | Milliman et al.    | 7,553,275 B2 | 6/2009  | Padget et al.       |
| 7,439,354 B2 | 10/2008 | Lenges et al.      | 7,554,343 B2 | 6/2009  | Bromfield           |
| 7,441,684 B2 | 10/2008 | Shelton, IV et al. | 7,556,185 B2 | 7/2009  | Viola               |
| 7,441,685 B1 | 10/2008 | Boudreaux          | 7,556,186 B2 | 7/2009  | Milliman            |
| 7,442,201 B2 | 10/2008 | Pugsley et al.     | 7,556,647 B2 | 7/2009  | Drews et al.        |
| 7,443,547 B2 | 10/2008 | Moreno et al.      | 7,559,449 B2 | 7/2009  | Viola               |
| 7,448,525 B2 | 11/2008 | Shelton, IV et al. | 7,559,450 B2 | 7/2009  | Wales et al.        |
| 7,450,010 B1 | 11/2008 | Gravelle et al.    | 7,559,452 B2 | 7/2009  | Wales et al.        |
| 7,451,904 B2 | 11/2008 | Shelton, IV        | 7,559,937 B2 | 7/2009  | de la Torre et al.  |
| 7,455,208 B2 | 11/2008 | Wales et al.       | 7,561,637 B2 | 7/2009  | Jonsson et al.      |
| 7,455,676 B2 | 11/2008 | Holsten et al.     | 7,562,910 B2 | 7/2009  | Kertesz et al.      |
| 7,455,682 B2 | 11/2008 | Viola              | 7,563,269 B2 | 7/2009  | Hashiguchi          |
| D582,934 S   | 12/2008 | Byeon              | 7,563,862 B2 | 7/2009  | Sieg et al.         |
| 7,461,767 B2 | 12/2008 | Viola et al.       | 7,565,993 B2 | 7/2009  | Milliman et al.     |
| 7,462,187 B2 | 12/2008 | Johnston et al.    | 7,566,300 B2 | 7/2009  | Devierre et al.     |
| 7,464,845 B2 | 12/2008 | Chou               | 7,567,045 B2 | 7/2009  | Fristedt            |
| 7,464,846 B2 | 12/2008 | Shelton, IV et al. | 7,568,603 B2 | 8/2009  | Shelton, IV et al.  |
| 7,464,847 B2 | 12/2008 | Viola et al.       | 7,568,604 B2 | 8/2009  | Ehrenfels et al.    |
| 7,464,848 B2 | 12/2008 | Green et al.       | 7,568,619 B2 | 8/2009  | Todd et al.         |
| 7,464,849 B2 | 12/2008 | Shelton, IV et al. | 7,575,144 B2 | 8/2009  | Ortiz et al.        |
| 7,467,740 B2 | 12/2008 | Shelton, IV et al. | 7,578,825 B2 | 8/2009  | Huebner             |
| 7,467,849 B2 | 12/2008 | Silverbrook et al. | D600,712 S   | 9/2009  | LaManna et al.      |
| 7,472,814 B2 | 1/2009  | Mastri et al.      | 7,583,063 B2 | 9/2009  | Dooley              |
| 7,472,815 B2 | 1/2009  | Shelton, IV et al. | 7,584,880 B2 | 9/2009  | Racenet et al.      |
| 7,472,816 B2 | 1/2009  | Holsten et al.     | 7,586,289 B2 | 9/2009  | Andruk et al.       |
| 7,473,221 B2 | 1/2009  | Ewers et al.       | 7,588,174 B2 | 9/2009  | Holsten et al.      |
| 7,473,253 B2 | 1/2009  | Dycus et al.       | 7,588,175 B2 | 9/2009  | Timm et al.         |
| 7,473,263 B2 | 1/2009  | Johnston et al.    | 7,588,176 B2 | 9/2009  | Timm et al.         |
| 7,476,237 B2 | 1/2009  | Taniguchi et al.   | 7,588,177 B2 | 9/2009  | Racenet             |
| 7,479,608 B2 | 1/2009  | Smith              | 7,591,783 B2 | 9/2009  | Boulais et al.      |
| 7,481,347 B2 | 1/2009  | Roy                | 7,591,818 B2 | 9/2009  | Bertolero et al.    |
| 7,481,348 B2 | 1/2009  | Marczyk            | 7,593,766 B2 | 9/2009  | Faber et al.        |
| 7,481,349 B2 | 1/2009  | Holsten et al.     | 7,597,229 B2 | 10/2009 | Boudreaux et al.    |
| 7,481,824 B2 | 1/2009  | Boudreaux et al.   | 7,597,230 B2 | 10/2009 | Racenet et al.      |
| 7,485,124 B2 | 2/2009  | Kuhns et al.       | 7,597,693 B2 | 10/2009 | Garrison            |
| 7,485,133 B2 | 2/2009  | Cannon et al.      | 7,597,699 B2 | 10/2009 | Rogers              |
| 7,485,142 B2 | 2/2009  | Milo               | 7,598,972 B2 | 10/2009 | Tomita              |
| 7,487,899 B2 | 2/2009  | Shelton, IV et al. | 7,600,663 B2 | 10/2009 | Green               |
| 7,489,055 B2 | 2/2009  | Jeong et al.       | 7,604,118 B2 | 10/2009 | Iio et al.          |
| 7,490,749 B2 | 2/2009  | Schall et al.      | 7,604,150 B2 | 10/2009 | Boudreaux           |
| 7,491,232 B2 | 2/2009  | Bolduc et al.      | 7,604,151 B2 | 10/2009 | Hess et al.         |
| 7,494,039 B2 | 2/2009  | Racenet et al.     | 7,604,668 B2 | 10/2009 | Farnsworth et al.   |
| 7,494,499 B2 | 2/2009  | Nagase et al.      | 7,607,557 B2 | 10/2009 | Shelton, IV et al.  |
| 7,494,501 B2 | 2/2009  | Ahlberg et al.     | 7,608,091 B2 | 10/2009 | Goldfarb et al.     |
|              |         |                    | D604,325 S   | 11/2009 | Ebeling et al.      |
|              |         |                    | 7,611,038 B2 | 11/2009 | Racenet et al.      |
|              |         |                    | 7,611,474 B2 | 11/2009 | Hibner et al.       |
|              |         |                    | 7,615,003 B2 | 11/2009 | Stefanchik et al.   |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |         |                        |              |        |                    |
|--------------|---------|------------------------|--------------|--------|--------------------|
| 7,615,067 B2 | 11/2009 | Lee et al.             | 7,705,559 B2 | 4/2010 | Powell et al.      |
| 7,617,961 B2 | 11/2009 | Viola                  | 7,708,180 B2 | 5/2010 | Murray et al.      |
| D605,201 S * | 12/2009 | Lorenz ..... D14/488   | 7,708,181 B2 | 5/2010 | Cole et al.        |
| D607,010 S   | 12/2009 | Kocmick                | 7,708,182 B2 | 5/2010 | Viola              |
| 7,624,902 B2 | 12/2009 | Marczyk et al.         | 7,708,758 B2 | 5/2010 | Lee et al.         |
| 7,624,903 B2 | 12/2009 | Green et al.           | 7,712,182 B2 | 5/2010 | Zeiler et al.      |
| 7,625,370 B2 | 12/2009 | Hart et al.            | 7,713,190 B2 | 5/2010 | Brock et al.       |
| 7,630,841 B2 | 12/2009 | Comisky et al.         | 7,714,239 B2 | 5/2010 | Smith              |
| 7,631,793 B2 | 12/2009 | Rethy et al.           | 7,714,334 B2 | 5/2010 | Lin                |
| 7,631,794 B2 | 12/2009 | Rethy et al.           | 7,717,312 B2 | 5/2010 | Beetel             |
| 7,635,074 B2 | 12/2009 | Olson et al.           | 7,717,313 B2 | 5/2010 | Criscuolo et al.   |
| 7,635,922 B2 | 12/2009 | Becker                 | 7,717,846 B2 | 5/2010 | Zirps et al.       |
| 7,637,409 B2 | 12/2009 | Marczyk                | 7,717,873 B2 | 5/2010 | Swick              |
| 7,637,410 B2 | 12/2009 | Marczyk                | 7,717,915 B2 | 5/2010 | Miyazawa           |
| 7,638,958 B2 | 12/2009 | Philipp et al.         | 7,717,926 B2 | 5/2010 | Whitfield et al.   |
| 7,641,091 B2 | 1/2010  | Olson et al.           | 7,718,180 B2 | 5/2010 | Karp               |
| 7,641,092 B2 | 1/2010  | Kruszynski et al.      | 7,718,556 B2 | 5/2010 | Matsuda et al.     |
| 7,641,093 B2 | 1/2010  | Doll et al.            | 7,721,930 B2 | 5/2010 | McKenna et al.     |
| 7,641,095 B2 | 1/2010  | Viola                  | 7,721,931 B2 | 5/2010 | Shelton, IV et al. |
| 7,641,671 B2 | 1/2010  | Crainich               | 7,721,933 B2 | 5/2010 | Ehrenfels et al.   |
| 7,644,783 B2 | 1/2010  | Roberts et al.         | 7,721,934 B2 | 5/2010 | Shelton, IV et al. |
| 7,644,848 B2 | 1/2010  | Swayze et al.          | 7,721,936 B2 | 5/2010 | Shalton, IV et al. |
| 7,645,230 B2 | 1/2010  | Mikkaichi et al.       | 7,722,527 B2 | 5/2010 | Bouchier et al.    |
| 7,648,055 B2 | 1/2010  | Marczyk                | 7,722,607 B2 | 5/2010 | Dumbauld et al.    |
| 7,648,457 B2 | 1/2010  | Stefanchik et al.      | 7,722,610 B2 | 5/2010 | Viola et al.       |
| 7,648,519 B2 | 1/2010  | Lee et al.             | 7,725,214 B2 | 5/2010 | Diolaiti           |
| 7,650,185 B2 | 1/2010  | Maile et al.           | 7,726,171 B2 | 6/2010 | Langlotz et al.    |
| 7,651,017 B2 | 1/2010  | Ortiz et al.           | 7,726,537 B2 | 6/2010 | Olson et al.       |
| 7,651,498 B2 | 1/2010  | Shifrin et al.         | 7,726,538 B2 | 6/2010 | Holsten et al.     |
| 7,654,431 B2 | 2/2010  | Hueil et al.           | 7,726,539 B2 | 6/2010 | Holsten et al.     |
| 7,655,004 B2 | 2/2010  | Long                   | 7,727,954 B2 | 6/2010 | McKay              |
| 7,655,288 B2 | 2/2010  | Bauman et al.          | 7,728,553 B2 | 6/2010 | Carrier et al.     |
| 7,655,584 B2 | 2/2010  | Biran et al.           | 7,729,742 B2 | 6/2010 | Govari             |
| 7,656,131 B2 | 2/2010  | Embrey et al.          | 7,731,072 B2 | 6/2010 | Timm et al.        |
| 7,658,311 B2 | 2/2010  | Boudreaux              | 7,731,073 B2 | 6/2010 | Wixey et al.       |
| 7,658,312 B2 | 2/2010  | Vidal et al.           | 7,731,724 B2 | 6/2010 | Huitema et al.     |
| 7,658,705 B2 | 2/2010  | Melvin et al.          | 7,735,703 B2 | 6/2010 | Morgan et al.      |
| 7,659,219 B2 | 2/2010  | Biran et al.           | 7,736,254 B2 | 6/2010 | Schena             |
| 7,662,161 B2 | 2/2010  | Briganti et al.        | 7,736,306 B2 | 6/2010 | Brustad et al.     |
| 7,665,646 B2 | 2/2010  | Prommersberger         | 7,736,374 B2 | 6/2010 | Vaughan et al.     |
| 7,665,647 B2 | 2/2010  | Shelton, IV et al.     | 7,738,971 B2 | 6/2010 | Swayze et al.      |
| 7,669,746 B2 | 3/2010  | Shelton, IV            | 7,740,159 B2 | 6/2010 | Shelton, IV et al. |
| 7,669,747 B2 | 3/2010  | Weisenburgh, II et al. | 7,742,036 B2 | 6/2010 | Grant et al.       |
| 7,670,334 B2 | 3/2010  | Hueil et al.           | 7,743,960 B2 | 6/2010 | Whitman et al.     |
| 7,673,780 B2 | 3/2010  | Shelton, IV et al.     | 7,744,624 B2 | 6/2010 | Bettuchi           |
| 7,673,781 B2 | 3/2010  | Swayze et al.          | 7,744,627 B2 | 6/2010 | Orban, III et al.  |
| 7,673,782 B2 | 3/2010  | Hess et al.            | 7,744,628 B2 | 6/2010 | Viola              |
| 7,673,783 B2 | 3/2010  | Morgan et al.          | 7,747,146 B2 | 6/2010 | Milano et al.      |
| 7,674,253 B2 | 3/2010  | Fisher et al.          | 7,748,587 B2 | 7/2010 | Haramiishi et al.  |
| 7,674,255 B2 | 3/2010  | Braun                  | 7,748,632 B2 | 7/2010 | Coleman et al.     |
| 7,674,263 B2 | 3/2010  | Ryan                   | 7,749,204 B2 | 7/2010 | Dhanaraj et al.    |
| 7,674,270 B2 | 3/2010  | Layer                  | 7,751,870 B2 | 7/2010 | Whitman            |
| 7,682,307 B2 | 3/2010  | Danitz et al.          | 7,753,245 B2 | 7/2010 | Boudreaux et al.   |
| 7,682,367 B2 | 3/2010  | Shah et al.            | 7,753,246 B2 | 7/2010 | Scirica            |
| 7,682,686 B2 | 3/2010  | Curro et al.           | 7,753,904 B2 | 7/2010 | Shelton, IV et al. |
| 7,686,201 B2 | 3/2010  | Csiky                  | 7,757,924 B2 | 7/2010 | Gerbi et al.       |
| 7,686,804 B2 | 3/2010  | Johnson et al.         | 7,758,594 B2 | 7/2010 | Lamson et al.      |
| 7,686,826 B2 | 3/2010  | Lee et al.             | 7,758,612 B2 | 7/2010 | Shipp              |
| 7,688,028 B2 | 3/2010  | Phillips et al.        | 7,762,462 B2 | 7/2010 | Gelbman            |
| 7,691,098 B2 | 4/2010  | Wallace et al.         | 7,762,998 B2 | 7/2010 | Birk et al.        |
| 7,691,103 B2 | 4/2010  | Fernandez et al.       | 7,766,207 B2 | 8/2010 | Mather et al.      |
| 7,691,106 B2 | 4/2010  | Schenberger et al.     | 7,766,209 B2 | 8/2010 | Baxter, III et al. |
| 7,694,864 B2 | 4/2010  | Okada et al.           | 7,766,210 B2 | 8/2010 | Shelton, IV et al. |
| 7,694,865 B2 | 4/2010  | Scirica                | 7,766,821 B2 | 8/2010 | Brunnen et al.     |
| 7,695,485 B2 | 4/2010  | Whitman et al.         | 7,766,894 B2 | 8/2010 | Weitzner et al.    |
| 7,695,493 B2 | 4/2010  | Saadat et al.          | 7,770,658 B2 | 8/2010 | Ito et al.         |
| 7,699,204 B2 | 4/2010  | Viola                  | 7,770,773 B2 | 8/2010 | Whitman et al.     |
| 7,699,835 B2 | 4/2010  | Lee et al.             | 7,770,774 B2 | 8/2010 | Mastri et al.      |
| 7,699,844 B2 | 4/2010  | Utley et al.           | 7,770,775 B2 | 8/2010 | Shelton, IV et al. |
| 7,699,846 B2 | 4/2010  | Ryan                   | 7,770,776 B2 | 8/2010 | Chen et al.        |
| 7,699,856 B2 | 4/2010  | Van Wyk et al.         | 7,771,396 B2 | 8/2010 | Stefanchik et al.  |
| 7,699,859 B2 | 4/2010  | Bombard et al.         | 7,772,720 B2 | 8/2010 | McGee et al.       |
| 7,699,860 B2 | 4/2010  | Huitema et al.         | 7,772,725 B2 | 8/2010 | Siman-Tov          |
| 7,699,868 B2 | 4/2010  | Frank et al.           | 7,775,972 B2 | 8/2010 | Brock et al.       |
| 7,703,653 B2 | 4/2010  | Shah et al.            | 7,776,037 B2 | 8/2010 | Odom               |
|              |         |                        | 7,776,060 B2 | 8/2010 | Mooradian et al.   |
|              |         |                        | 7,776,065 B2 | 8/2010 | Griffiths et al.   |
|              |         |                        | 7,778,004 B2 | 8/2010 | Nerheim et al.     |
|              |         |                        | 7,779,737 B2 | 8/2010 | Newman, Jr. et al. |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |         |                     |              |         |                      |
|--------------|---------|---------------------|--------------|---------|----------------------|
| 7,780,054 B2 | 8/2010  | Wales               | 7,850,982 B2 | 12/2010 | Stopek et al.        |
| 7,780,055 B2 | 8/2010  | Scirica et al.      | 7,854,735 B2 | 12/2010 | Houser et al.        |
| 7,780,309 B2 | 8/2010  | McMillan et al.     | 7,854,736 B2 | 12/2010 | Ryan                 |
| 7,780,663 B2 | 8/2010  | Yates et al.        | 7,857,183 B2 | 12/2010 | Shelton, IV          |
| 7,780,685 B2 | 8/2010  | Hunt et al.         | 7,857,184 B2 | 12/2010 | Viola                |
| 7,784,662 B2 | 8/2010  | Wales et al.        | 7,857,185 B2 | 12/2010 | Swayze et al.        |
| 7,784,663 B2 | 8/2010  | Shelton, IV         | 7,857,186 B2 | 12/2010 | Baxter, III et al.   |
| 7,787,256 B2 | 8/2010  | Chan et al.         | 7,857,813 B2 | 12/2010 | Schmitz et al.       |
| 7,789,283 B2 | 9/2010  | Shah                | 7,861,906 B2 | 1/2011  | Doll et al.          |
| 7,789,875 B2 | 9/2010  | Brock et al.        | 7,862,502 B2 | 1/2011  | Pool et al.          |
| 7,789,883 B2 | 9/2010  | Takashino et al.    | 7,862,546 B2 | 1/2011  | Conlon et al.        |
| 7,789,889 B2 | 9/2010  | Zubik et al.        | 7,862,579 B2 | 1/2011  | Ortiz et al.         |
| 7,793,812 B2 | 9/2010  | Moore et al.        | 7,866,525 B2 | 1/2011  | Scirica              |
| 7,794,475 B2 | 9/2010  | Hess et al.         | 7,866,527 B2 | 1/2011  | Hall et al.          |
| 7,798,386 B2 | 9/2010  | Schall et al.       | 7,866,528 B2 | 1/2011  | Olson et al.         |
| 7,799,039 B2 | 9/2010  | Shelton, IV et al.  | 7,870,989 B2 | 1/2011  | Viola et al.         |
| 7,799,044 B2 | 9/2010  | Johnston et al.     | 7,871,418 B2 | 1/2011  | Thompson et al.      |
| 7,799,965 B2 | 9/2010  | Patel et al.        | 7,871,440 B2 | 1/2011  | Schwartz et al.      |
| 7,803,151 B2 | 9/2010  | Whitman             | 7,875,055 B2 | 1/2011  | Cichocki, Jr.        |
| 7,806,871 B2 | 10/2010 | Li et al.           | 7,879,063 B2 | 2/2011  | Khosravi             |
| 7,806,891 B2 | 10/2010 | Nowlin et al.       | 7,879,070 B2 | 2/2011  | Ortiz et al.         |
| 7,810,690 B2 | 10/2010 | Bilotti et al.      | 7,883,461 B2 | 2/2011  | Albrecht et al.      |
| 7,810,691 B2 | 10/2010 | Boyden et al.       | 7,883,465 B2 | 2/2011  | Donofrio et al.      |
| 7,810,692 B2 | 10/2010 | Hall et al.         | 7,886,951 B2 | 2/2011  | Hessler              |
| 7,810,693 B2 | 10/2010 | Broehl et al.       | 7,886,952 B2 | 2/2011  | Scirica et al.       |
| 7,811,275 B2 | 10/2010 | Birk et al.         | 7,887,530 B2 | 2/2011  | Zemlok et al.        |
| 7,814,816 B2 | 10/2010 | Alberti et al.      | 7,887,535 B2 | 2/2011  | Lands et al.         |
| 7,815,092 B2 | 10/2010 | Whitman et al.      | 7,887,536 B2 | 2/2011  | Johnson et al.       |
| 7,815,565 B2 | 10/2010 | Stefanchik et al.   | 7,887,563 B2 | 2/2011  | Cummins              |
| 7,815,662 B2 | 10/2010 | Spivey et al.       | 7,891,531 B1 | 2/2011  | Ward                 |
| 7,819,296 B2 | 10/2010 | Hueil et al.        | 7,891,532 B2 | 2/2011  | Mastri et al.        |
| 7,819,297 B2 | 10/2010 | Doll et al.         | 7,892,200 B2 | 2/2011  | Birk et al.          |
| 7,819,298 B2 | 10/2010 | Hall et al.         | 7,892,245 B2 | 2/2011  | Liddicoat et al.     |
| 7,819,299 B2 | 10/2010 | Shelton, IV et al.  | 7,893,586 B2 | 2/2011  | West et al.          |
| 7,819,799 B2 | 10/2010 | Merril et al.       | 7,896,214 B2 | 3/2011  | Farascioni           |
| 7,819,884 B2 | 10/2010 | Lee et al.          | 7,896,215 B2 | 3/2011  | Adams et al.         |
| 7,819,886 B2 | 10/2010 | Whitfield et al.    | 7,896,869 B2 | 3/2011  | DiSilvestro et al.   |
| 7,823,592 B2 | 11/2010 | Bettuchi et al.     | 7,896,877 B2 | 3/2011  | Hall et al.          |
| 7,823,760 B2 | 11/2010 | Zemlok et al.       | 7,896,895 B2 | 3/2011  | Boudreaux et al.     |
| 7,824,401 B2 | 11/2010 | Manzo et al.        | 7,896,897 B2 | 3/2011  | Gresham et al.       |
| 7,824,422 B2 | 11/2010 | Benchetrit          | 7,898,198 B2 | 3/2011  | Murphree             |
| 7,824,426 B2 | 11/2010 | Racenet et al.      | 7,900,805 B2 | 3/2011  | Shelton, IV et al.   |
| 7,828,189 B2 | 11/2010 | Holsten et al.      | 7,900,806 B2 | 3/2011  | Chen et al.          |
| 7,828,794 B2 | 11/2010 | Sartor              | 7,901,381 B2 | 3/2011  | Birk et al.          |
| 7,828,808 B2 | 11/2010 | Hinman et al.       | 7,905,380 B2 | 3/2011  | Shelton, IV et al.   |
| 7,831,292 B2 | 11/2010 | Quaid et al.        | 7,905,381 B2 | 3/2011  | Baxter, III et al.   |
| 7,832,408 B2 | 11/2010 | Shelton, IV et al.  | 7,905,881 B2 | 3/2011  | Masuda et al.        |
| 7,832,611 B2 | 11/2010 | Boyden et al.       | 7,905,889 B2 | 3/2011  | Catanese, III et al. |
| 7,832,612 B2 | 11/2010 | Baxter, III et al.  | 7,905,890 B2 | 3/2011  | Whitfield et al.     |
| 7,833,234 B2 | 11/2010 | Bailly et al.       | 7,905,902 B2 | 3/2011  | Huitema et al.       |
| 7,835,823 B2 | 11/2010 | Sillman et al.      | 7,909,039 B2 | 3/2011  | Hur                  |
| 7,836,400 B2 | 11/2010 | May et al.          | 7,909,191 B2 | 3/2011  | Baker et al.         |
| 7,837,079 B2 | 11/2010 | Holsten et al.      | 7,909,220 B2 | 3/2011  | Viola                |
| 7,837,080 B2 | 11/2010 | Schwemberger        | 7,909,221 B2 | 3/2011  | Viola et al.         |
| 7,837,081 B2 | 11/2010 | Holsten et al.      | 7,909,224 B2 | 3/2011  | Prommersberger       |
| 7,837,425 B2 | 11/2010 | Saeki et al.        | 7,913,891 B2 | 3/2011  | Doll et al.          |
| 7,837,685 B2 | 11/2010 | Weinberg et al.     | 7,913,893 B2 | 3/2011  | Mastri et al.        |
| 7,837,687 B2 | 11/2010 | Harp                | 7,914,521 B2 | 3/2011  | Wang et al.          |
| 7,837,694 B2 | 11/2010 | Tethrake et al.     | 7,914,543 B2 | 3/2011  | Roth et al.          |
| 7,838,789 B2 | 11/2010 | Stoffers et al.     | 7,914,551 B2 | 3/2011  | Ortiz et al.         |
| 7,839,109 B2 | 11/2010 | Carmen, Jr. et al.  | 7,918,230 B2 | 4/2011  | Whitman et al.       |
| 7,841,503 B2 | 11/2010 | Sonnenschein et al. | 7,918,376 B1 | 4/2011  | Knodel et al.        |
| 7,842,025 B2 | 11/2010 | Coleman et al.      | 7,918,377 B2 | 4/2011  | Measamer et al.      |
| 7,842,028 B2 | 11/2010 | Lee                 | 7,918,845 B2 | 4/2011  | Saadat et al.        |
| 7,843,158 B2 | 11/2010 | Prisco              | 7,918,848 B2 | 4/2011  | Lau et al.           |
| 7,845,533 B2 | 12/2010 | Marczyk et al.      | 7,918,861 B2 | 4/2011  | Brock et al.         |
| 7,845,534 B2 | 12/2010 | Viola et al.        | 7,918,867 B2 | 4/2011  | Dana et al.          |
| 7,845,535 B2 | 12/2010 | Scircia             | 7,922,061 B2 | 4/2011  | Shelton, IV et al.   |
| 7,845,536 B2 | 12/2010 | Viola et al.        | 7,922,063 B2 | 4/2011  | Zemlok et al.        |
| 7,845,537 B2 | 12/2010 | Shelton, IV et al.  | 7,922,743 B2 | 4/2011  | Heinrich et al.      |
| 7,846,085 B2 | 12/2010 | Silverman et al.    | 7,923,144 B2 | 4/2011  | Kohn et al.          |
| 7,846,149 B2 | 12/2010 | Jankowski           | 7,926,691 B2 | 4/2011  | Viola et al.         |
| 7,848,066 B2 | 12/2010 | Yanagishima         | 7,927,328 B2 | 4/2011  | Orszulak et al.      |
| 7,850,623 B2 | 12/2010 | Griffin et al.      | 7,928,281 B2 | 4/2011  | Augustine            |
| 7,850,642 B2 | 12/2010 | Moll et al.         | 7,930,040 B1 | 4/2011  | Kelsch et al.        |
|              |         |                     | 7,930,065 B2 | 4/2011  | Larkin et al.        |
|              |         |                     | 7,931,660 B2 | 4/2011  | Aranyi et al.        |
|              |         |                     | 7,931,695 B2 | 4/2011  | Ringeisen            |
|              |         |                     | 7,931,877 B2 | 4/2011  | Steffens et al.      |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |        |                      |              |         |                       |
|--------------|--------|----------------------|--------------|---------|-----------------------|
| 7,934,630 B2 | 5/2011 | Shelton, IV et al.   | 8,007,479 B2 | 8/2011  | Birk et al.           |
| 7,934,631 B2 | 5/2011 | Balbierz et al.      | 8,007,511 B2 | 8/2011  | Brock et al.          |
| 7,934,896 B2 | 5/2011 | Schnier              | 8,007,513 B2 | 8/2011  | Nalagatla et al.      |
| 7,935,130 B2 | 5/2011 | Williams             | 8,008,598 B2 | 8/2011  | Whitman et al.        |
| 7,935,773 B2 | 5/2011 | Hadba et al.         | 8,011,550 B2 | 9/2011  | Aranyi et al.         |
| 7,936,142 B2 | 5/2011 | Otsuka et al.        | 8,011,551 B2 | 9/2011  | Marczyk et al.        |
| 7,938,307 B2 | 5/2011 | Bettuchi             | 8,011,553 B2 | 9/2011  | Mastri et al.         |
| 7,941,865 B2 | 5/2011 | Seman, Jr. et al.    | 8,011,555 B2 | 9/2011  | Tarinelli et al.      |
| 7,942,303 B2 | 5/2011 | Shah                 | 8,012,170 B2 | 9/2011  | Whitman et al.        |
| 7,942,890 B2 | 5/2011 | D'Agostino et al.    | 8,016,176 B2 | 9/2011  | Kasvikis et al.       |
| 7,944,175 B2 | 5/2011 | Mori et al.          | 8,016,177 B2 | 9/2011  | Bettuchi et al.       |
| 7,945,792 B2 | 5/2011 | Cherpantier          | 8,016,178 B2 | 9/2011  | Olson et al.          |
| 7,945,798 B2 | 5/2011 | Carlson et al.       | 8,016,849 B2 | 9/2011  | Wenchell              |
| 7,946,453 B2 | 5/2011 | Voegele et al.       | 8,016,855 B2 | 9/2011  | Whitman et al.        |
| 7,947,011 B2 | 5/2011 | Birk et al.          | 8,016,858 B2 | 9/2011  | Whitman               |
| 7,950,560 B2 | 5/2011 | Zemlok et al.        | 8,016,881 B2 | 9/2011  | Furst                 |
| 7,950,561 B2 | 5/2011 | Aranyi               | 8,020,742 B2 | 9/2011  | Marczyk               |
| 7,951,071 B2 | 5/2011 | Whitman et al.       | 8,020,743 B2 | 9/2011  | Shelton, IV           |
| 7,951,166 B2 | 5/2011 | Orban, III et al.    | 8,021,375 B2 | 9/2011  | Aldrich et al.        |
| 7,954,682 B2 | 6/2011 | Giordano et al.      | 8,025,199 B2 | 9/2011  | Whitman et al.        |
| 7,954,684 B2 | 6/2011 | Boudreaux            | 8,025,896 B2 | 9/2011  | Malaviya et al.       |
| 7,954,685 B2 | 6/2011 | Viola                | 8,028,882 B2 | 10/2011 | Viola                 |
| 7,954,686 B2 | 6/2011 | Baxter, III et al.   | 8,028,883 B2 | 10/2011 | Stopek                |
| 7,954,687 B2 | 6/2011 | Zemlok et al.        | 8,028,884 B2 | 10/2011 | Sniffin et al.        |
| 7,955,253 B2 | 6/2011 | Ewers et al.         | 8,028,885 B2 | 10/2011 | Smith et al.          |
| 7,955,257 B2 | 6/2011 | Frasier et al.       | 8,029,510 B2 | 10/2011 | Hoegerle              |
| 7,955,322 B2 | 6/2011 | Devengenzo et al.    | 8,031,069 B2 | 10/2011 | Cohn et al.           |
| 7,955,327 B2 | 6/2011 | Sartor               | 8,033,438 B2 | 10/2011 | Scirica               |
| 7,955,380 B2 | 6/2011 | Chu et al.           | 8,033,439 B2 | 10/2011 | Racenet et al.        |
| 7,959,050 B2 | 6/2011 | Smith et al.         | 8,033,440 B2 | 10/2011 | Wenchell et al.       |
| 7,959,051 B2 | 6/2011 | Smith et al.         | 8,034,077 B2 | 10/2011 | Smith et al.          |
| 7,959,052 B2 | 6/2011 | Sonnenschein et al.  | 8,034,337 B2 | 10/2011 | Simard                |
| 7,963,432 B2 | 6/2011 | Knodel et al.        | 8,034,363 B2 | 10/2011 | Li et al.             |
| 7,963,433 B2 | 6/2011 | Whitman et al.       | 8,035,487 B2 | 10/2011 | Malackowski           |
| 7,963,913 B2 | 6/2011 | Devengenzo et al.    | 8,037,591 B2 | 10/2011 | Spivey et al.         |
| 7,963,963 B2 | 6/2011 | Francischelli et al. | 8,038,045 B2 | 10/2011 | Bettuchi et al.       |
| 7,963,964 B2 | 6/2011 | Santilli et al.      | 8,038,046 B2 | 10/2011 | Smith et al.          |
| 7,964,206 B2 | 6/2011 | Suokas et al.        | 8,038,686 B2 | 10/2011 | Huitema et al.        |
| 7,966,236 B2 | 6/2011 | Noriega et al.       | 8,043,207 B2 | 10/2011 | Adams                 |
| 7,966,269 B2 | 6/2011 | Bauer et al.         | 8,043,328 B2 | 10/2011 | Hahnen et al.         |
| 7,966,799 B2 | 6/2011 | Morgan et al.        | 8,044,536 B2 | 10/2011 | Nguyen et al.         |
| 7,967,178 B2 | 6/2011 | Scirica et al.       | 8,044,604 B2 | 10/2011 | Hagino et al.         |
| 7,967,179 B2 | 6/2011 | Olson et al.         | 8,047,236 B2 | 11/2011 | Perry                 |
| 7,967,180 B2 | 6/2011 | Scirica              | 8,048,503 B2 | 11/2011 | Farnsworth et al.     |
| 7,967,181 B2 | 6/2011 | Viola et al.         | 8,052,636 B2 | 11/2011 | Moll et al.           |
| 7,967,791 B2 | 6/2011 | Franer et al.        | 8,056,787 B2 | 11/2011 | Boudreaux et al.      |
| 7,967,839 B2 | 6/2011 | Flock et al.         | 8,056,788 B2 | 11/2011 | Mastri et al.         |
| 7,972,298 B2 | 7/2011 | Wallace et al.       | 8,056,789 B1 | 11/2011 | White et al.          |
| 7,972,315 B2 | 7/2011 | Birk et al.          | 8,057,508 B2 | 11/2011 | Shelton, IV           |
| 7,976,213 B2 | 7/2011 | Bertolotti et al.    | 8,058,771 B2 | 11/2011 | Giordano et al.       |
| 7,976,563 B2 | 7/2011 | Summerer             | 8,060,250 B2 | 11/2011 | Reiland et al.        |
| 7,979,137 B2 | 7/2011 | Tracey et al.        | 8,061,014 B2 | 11/2011 | Smith et al.          |
| 7,980,443 B2 | 7/2011 | Scheib et al.        | 8,061,576 B2 | 11/2011 | Cappola               |
| 7,981,132 B2 | 7/2011 | Dubrul et al.        | 8,062,236 B2 | 11/2011 | Soltz                 |
| 7,987,405 B2 | 7/2011 | Turner et al.        | 8,062,330 B2 | 11/2011 | Prommersberger et al. |
| 7,988,015 B2 | 8/2011 | Mason, II et al.     | 8,063,619 B2 | 11/2011 | Zhu et al.            |
| 7,988,026 B2 | 8/2011 | Knodel et al.        | 8,066,158 B2 | 11/2011 | Vogel et al.          |
| 7,988,027 B2 | 8/2011 | Olson et al.         | 8,066,166 B2 | 11/2011 | Demmy et al.          |
| 7,988,028 B2 | 8/2011 | Farascioni et al.    | 8,066,167 B2 | 11/2011 | Measamer et al.       |
| 7,988,779 B2 | 8/2011 | Disalvo et al.       | 8,066,168 B2 | 11/2011 | Vidal et al.          |
| 7,992,757 B2 | 8/2011 | Wheeler et al.       | 8,066,720 B2 | 11/2011 | Knodel et al.         |
| 7,993,360 B2 | 8/2011 | Hacker et al.        | D650,074 S   | 12/2011 | Hunt et al.           |
| 7,994,670 B2 | 8/2011 | Ji                   | D650,789 S   | 12/2011 | Arnold                |
| 7,997,054 B2 | 8/2011 | Bertsch et al.       | 8,070,033 B2 | 12/2011 | Milliman et al.       |
| 7,997,468 B2 | 8/2011 | Farascioni           | 8,070,034 B1 | 12/2011 | Knodel                |
| 7,997,469 B2 | 8/2011 | Olson et al.         | 8,070,035 B2 | 12/2011 | Holsten et al.        |
| 8,002,696 B2 | 8/2011 | Suzuki               | 8,070,743 B2 | 12/2011 | Kagan et al.          |
| 8,002,784 B2 | 8/2011 | Jinno et al.         | 8,074,858 B2 | 12/2011 | Marczyk               |
| 8,002,785 B2 | 8/2011 | Weiss et al.         | 8,074,861 B2 | 12/2011 | Ehrenfels et al.      |
| 8,002,795 B2 | 8/2011 | Beetel               | 8,075,476 B2 | 12/2011 | Vargas                |
| 8,006,365 B2 | 8/2011 | Levin et al.         | 8,075,571 B2 | 12/2011 | Vitali et al.         |
| 8,006,885 B2 | 8/2011 | Marczyk              | 8,079,950 B2 | 12/2011 | Stern et al.          |
| 8,006,889 B2 | 8/2011 | Adams et al.         | 8,079,989 B2 | 12/2011 | Birk et al.           |
| 8,007,370 B2 | 8/2011 | Hirsch et al.        | 8,080,004 B2 | 12/2011 | Downey et al.         |
| 8,007,465 B2 | 8/2011 | Birk et al.          | 8,083,118 B2 | 12/2011 | Milliman et al.       |
|              |        |                      | 8,083,119 B2 | 12/2011 | Prommersberger        |
|              |        |                      | 8,083,120 B2 | 12/2011 | Shelton, IV et al.    |
|              |        |                      | 8,084,001 B2 | 12/2011 | Burns et al.          |
|              |        |                      | 8,084,969 B2 | 12/2011 | David et al.          |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |         |                     |              |        |                      |
|--------------|---------|---------------------|--------------|--------|----------------------|
| 8,085,013 B2 | 12/2011 | Wei et al.          | 8,162,197 B2 | 4/2012 | Mastri et al.        |
| 8,087,562 B1 | 1/2012  | Manoux et al.       | 8,162,668 B2 | 4/2012 | Toly                 |
| 8,087,563 B2 | 1/2012  | Milliman et al.     | 8,162,933 B2 | 4/2012 | Francischelli et al. |
| 8,089,509 B2 | 1/2012  | Chatenever et al.   | 8,162,965 B2 | 4/2012 | Reschke et al.       |
| 8,091,753 B2 | 1/2012  | Viola               | 8,167,185 B2 | 5/2012 | Shelton, IV et al.   |
| 8,091,756 B2 | 1/2012  | Viola               | 8,167,622 B2 | 5/2012 | Zhou                 |
| 8,092,443 B2 | 1/2012  | Bischoff            | 8,167,895 B2 | 5/2012 | D'Agostino et al.    |
| 8,092,932 B2 | 1/2012  | Phillips et al.     | 8,167,898 B1 | 5/2012 | Schaller et al.      |
| 8,093,572 B2 | 1/2012  | Kuduvalli           | 8,170,241 B2 | 5/2012 | Roe et al.           |
| 8,096,458 B2 | 1/2012  | Hessler             | 8,172,004 B2 | 5/2012 | Ho                   |
| 8,096,459 B2 | 1/2012  | Ortiz et al.        | 8,172,120 B2 | 5/2012 | Boyden et al.        |
| 8,097,017 B2 | 1/2012  | Viola               | 8,172,122 B2 | 5/2012 | Kasvikis et al.      |
| 8,100,310 B2 | 1/2012  | Zemlok              | 8,172,124 B2 | 5/2012 | Shelton, IV et al.   |
| 8,100,824 B2 | 1/2012  | Hegeman et al.      | 8,177,776 B2 | 5/2012 | Humayun et al.       |
| 8,100,872 B2 | 1/2012  | Patel               | 8,177,797 B2 | 5/2012 | Shimoji et al.       |
| 8,102,138 B2 | 1/2012  | Sekine et al.       | 8,179,705 B2 | 5/2012 | Chapuis              |
| 8,102,278 B2 | 1/2012  | Deck et al.         | 8,180,458 B2 | 5/2012 | Kane et al.          |
| 8,105,350 B2 | 1/2012  | Lee et al.          | 8,181,839 B2 | 5/2012 | Beetel               |
| 8,107,925 B2 | 1/2012  | Natsuno et al.      | 8,181,840 B2 | 5/2012 | Milliman             |
| 8,108,033 B2 | 1/2012  | Drew et al.         | 8,182,422 B2 | 5/2012 | Bayer et al.         |
| 8,108,072 B2 | 1/2012  | Zhao et al.         | 8,182,444 B2 | 5/2012 | Uber, III et al.     |
| 8,109,426 B2 | 2/2012  | Milliman et al.     | 8,183,807 B2 | 5/2012 | Tsai et al.          |
| 8,110,208 B1 | 2/2012  | Hen                 | 8,186,555 B2 | 5/2012 | Shelton, IV et al.   |
| 8,113,405 B2 | 2/2012  | Milliman            | 8,186,556 B2 | 5/2012 | Viola                |
| 8,113,408 B2 | 2/2012  | Wenchell et al.     | 8,186,558 B2 | 5/2012 | Sapienza             |
| 8,113,410 B2 | 2/2012  | Hall et al.         | 8,186,560 B2 | 5/2012 | Hess et al.          |
| 8,114,017 B2 | 2/2012  | Bacher              | 8,191,752 B2 | 6/2012 | Scirica              |
| 8,114,100 B2 | 2/2012  | Smith et al.        | 8,192,350 B2 | 6/2012 | Ortiz et al.         |
| 8,118,206 B2 | 2/2012  | Zand et al.         | 8,192,460 B2 | 6/2012 | Orban, III et al.    |
| 8,118,207 B2 | 2/2012  | Racenet et al.      | 8,192,651 B2 | 6/2012 | Young et al.         |
| 8,120,301 B2 | 2/2012  | Goldberg et al.     | 8,196,795 B2 | 6/2012 | Moore et al.         |
| 8,122,128 B2 | 2/2012  | Burke, II et al.    | 8,196,796 B2 | 6/2012 | Shelton, IV et al.   |
| 8,123,103 B2 | 2/2012  | Milliman            | 8,197,501 B2 | 6/2012 | Shadeck et al.       |
| 8,123,523 B2 | 2/2012  | Carron et al.       | 8,197,502 B2 | 6/2012 | Smith et al.         |
| 8,123,766 B2 | 2/2012  | Bauman et al.       | 8,197,837 B2 | 6/2012 | Jamiolkowski et al.  |
| 8,123,767 B2 | 2/2012  | Bauman et al.       | 8,201,720 B2 | 6/2012 | Hessler              |
| 8,125,168 B2 | 2/2012  | Johnson et al.      | 8,201,721 B2 | 6/2012 | Zemlok et al.        |
| 8,127,975 B2 | 3/2012  | Olson et al.        | 8,202,549 B2 | 6/2012 | Stucky et al.        |
| 8,127,976 B2 | 3/2012  | Scirica et al.      | 8,205,779 B2 | 6/2012 | Ma et al.            |
| 8,128,624 B2 | 3/2012  | Couture et al.      | 8,205,780 B2 | 6/2012 | Sorrentino et al.    |
| 8,128,643 B2 | 3/2012  | Aranyi et al.       | 8,205,781 B2 | 6/2012 | Baxter, III et al.   |
| 8,128,645 B2 | 3/2012  | Sonnenschein et al. | 8,210,411 B2 | 7/2012 | Yates et al.         |
| 8,128,662 B2 | 3/2012  | Altarac et al.      | 8,210,414 B2 | 7/2012 | Bettuchi et al.      |
| 8,132,703 B2 | 3/2012  | Milliman et al.     | 8,210,415 B2 | 7/2012 | Ward                 |
| 8,132,705 B2 | 3/2012  | Viola et al.        | 8,210,416 B2 | 7/2012 | Milliman et al.      |
| 8,132,706 B2 | 3/2012  | Marczyk et al.      | 8,210,721 B2 | 7/2012 | Chen et al.          |
| 8,133,500 B2 | 3/2012  | Ringeisen et al.    | 8,211,125 B2 | 7/2012 | Spivey               |
| 8,134,306 B2 | 3/2012  | Drader et al.       | 8,214,019 B2 | 7/2012 | Govari et al.        |
| 8,136,711 B2 | 3/2012  | Beardsley et al.    | 8,215,531 B2 | 7/2012 | Shelton, IV et al.   |
| 8,136,712 B2 | 3/2012  | Zingman             | 8,215,532 B2 | 7/2012 | Marczyk              |
| 8,136,713 B2 | 3/2012  | Hathaway et al.     | 8,215,533 B2 | 7/2012 | Viola et al.         |
| 8,137,339 B2 | 3/2012  | Jinno et al.        | 8,220,468 B2 | 7/2012 | Cooper et al.        |
| 8,140,417 B2 | 3/2012  | Shibata             | 8,220,688 B2 | 7/2012 | Laurent et al.       |
| 8,141,762 B2 | 3/2012  | Bedi et al.         | 8,220,690 B2 | 7/2012 | Hess et al.          |
| 8,141,763 B2 | 3/2012  | Milliman            | 8,221,424 B2 | 7/2012 | Cha                  |
| 8,142,200 B2 | 3/2012  | Crunkilton et al.   | 8,221,433 B2 | 7/2012 | Lozier et al.        |
| 8,142,425 B2 | 3/2012  | Eggers              | 8,225,799 B2 | 7/2012 | Bettuchi             |
| 8,142,461 B2 | 3/2012  | Houser et al.       | 8,225,979 B2 | 7/2012 | Farascioni et al.    |
| 8,142,515 B2 | 3/2012  | Therin et al.       | 8,226,553 B2 | 7/2012 | Shelton, IV et al.   |
| 8,143,520 B2 | 3/2012  | Cutler              | 8,226,635 B2 | 7/2012 | Petrie et al.        |
| 8,146,790 B2 | 4/2012  | Milliman            | 8,226,675 B2 | 7/2012 | Houser et al.        |
| 8,147,421 B2 | 4/2012  | Farquhar et al.     | 8,226,715 B2 | 7/2012 | Hwang et al.         |
| 8,147,456 B2 | 4/2012  | Fisher et al.       | 8,227,946 B2 | 7/2012 | Kim                  |
| 8,147,485 B2 | 4/2012  | Wham et al.         | 8,228,020 B2 | 7/2012 | Shin et al.          |
| 8,152,041 B2 | 4/2012  | Kostrzewski         | 8,228,048 B2 | 7/2012 | Spencer              |
| 8,152,756 B2 | 4/2012  | Webster et al.      | 8,229,549 B2 | 7/2012 | Whitman et al.       |
| 8,154,239 B2 | 4/2012  | Katsuki et al.      | 8,231,040 B2 | 7/2012 | Zemlok et al.        |
| 8,157,145 B2 | 4/2012  | Shelton, IV et al.  | 8,231,042 B2 | 7/2012 | Hessler et al.       |
| 8,157,148 B2 | 4/2012  | Scirica             | 8,231,043 B2 | 7/2012 | Tarinelli et al.     |
| 8,157,151 B2 | 4/2012  | Ingmanson et al.    | 8,235,272 B2 | 8/2012 | Nicholas et al.      |
| 8,157,152 B2 | 4/2012  | Holsten et al.      | 8,236,010 B2 | 8/2012 | Ortiz et al.         |
| 8,157,153 B2 | 4/2012  | Shelton, IV et al.  | 8,236,011 B2 | 8/2012 | Harris et al.        |
| 8,157,793 B2 | 4/2012  | Omori et al.        | 8,236,020 B2 | 8/2012 | Smith et al.         |
| 8,161,977 B2 | 4/2012  | Shelton, IV et al.  | 8,237,388 B2 | 8/2012 | Jinno et al.         |
| 8,162,138 B2 | 4/2012  | Bettenhausen et al. | 8,240,537 B2 | 8/2012 | Marczyk              |
|              |         |                     | 8,241,271 B2 | 8/2012 | Millman et al.       |
|              |         |                     | 8,241,284 B2 | 8/2012 | Dycus et al.         |
|              |         |                     | 8,241,308 B2 | 8/2012 | Kortenbach et al.    |
|              |         |                     | 8,241,322 B2 | 8/2012 | Whitman et al.       |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |         |                    |              |         |                       |
|--------------|---------|--------------------|--------------|---------|-----------------------|
| 8,245,594 B2 | 8/2012  | Rogers et al.      | 8,317,744 B2 | 11/2012 | Kirschenman           |
| 8,245,898 B2 | 8/2012  | Smith et al.       | 8,317,790 B2 | 11/2012 | Bell et al.           |
| 8,245,899 B2 | 8/2012  | Swensgard et al.   | 8,319,002 B2 | 11/2012 | Daniels et al.        |
| 8,245,900 B2 | 8/2012  | Scirica            | 8,322,455 B2 | 12/2012 | Shelton, IV et al.    |
| 8,245,901 B2 | 8/2012  | Stopek             | 8,322,589 B2 | 12/2012 | Boudreaux             |
| 8,246,608 B2 | 8/2012  | Omori et al.       | 8,322,590 B2 | 12/2012 | Patel et al.          |
| 8,246,637 B2 | 8/2012  | Viola et al.       | 8,322,901 B2 | 12/2012 | Michelotti            |
| 8,256,654 B2 | 9/2012  | Bettuchi et al.    | 8,323,789 B2 | 12/2012 | Rozhin et al.         |
| 8,256,655 B2 | 9/2012  | Sniffin et al.     | 8,328,061 B2 | 12/2012 | Kasvikis              |
| 8,256,656 B2 | 9/2012  | Milliman et al.    | 8,328,062 B2 | 12/2012 | Viola                 |
| 8,257,251 B2 | 9/2012  | Shelton, IV et al. | 8,328,063 B2 | 12/2012 | Milliman et al.       |
| 8,257,356 B2 | 9/2012  | Bleich et al.      | 8,328,064 B2 | 12/2012 | Racenet et al.        |
| 8,257,386 B2 | 9/2012  | Lee et al.         | 8,328,802 B2 | 12/2012 | Deville et al.        |
| 8,257,391 B2 | 9/2012  | Orban, III et al.  | 8,328,823 B2 | 12/2012 | Aranyi et al.         |
| 8,257,634 B2 | 9/2012  | Scirica            | 8,333,313 B2 | 12/2012 | Boudreaux et al.      |
| 8,258,745 B2 | 9/2012  | Smith et al.       | 8,333,691 B2 | 12/2012 | Schaaf                |
| 8,262,560 B2 | 9/2012  | Whitman            | 8,333,764 B2 | 12/2012 | Francischelli et al.  |
| 8,262,655 B2 | 9/2012  | Ghabrial et al.    | 8,333,779 B2 | 12/2012 | Smith et al.          |
| 8,267,300 B2 | 9/2012  | Boudreaux          | 8,334,468 B2 | 12/2012 | Palmer et al.         |
| 8,267,924 B2 | 9/2012  | Zemlok et al.      | 8,336,753 B2 | 12/2012 | Olson et al.          |
| 8,267,946 B2 | 9/2012  | Whitfield et al.   | 8,336,754 B2 | 12/2012 | Cappola et al.        |
| 8,267,951 B2 | 9/2012  | Whayne et al.      | 8,342,377 B2 | 1/2013  | Milliman et al.       |
| 8,269,121 B2 | 9/2012  | Smith              | 8,342,378 B2 | 1/2013  | Marczyk et al.        |
| 8,272,553 B2 | 9/2012  | Mastri et al.      | 8,342,379 B2 | 1/2013  | Whitman et al.        |
| 8,272,554 B2 | 9/2012  | Whitman et al.     | 8,343,150 B2 | 1/2013  | Artale                |
| 8,272,918 B2 | 9/2012  | Lam                | 8,347,978 B2 | 1/2013  | Forster et al.        |
| 8,273,404 B2 | 9/2012  | Dave et al.        | 8,348,118 B2 | 1/2013  | Segura                |
| 8,276,801 B2 | 10/2012 | Zemlok et al.      | 8,348,123 B2 | 1/2013  | Scirica et al.        |
| 8,276,802 B2 | 10/2012 | Kostrzewski        | 8,348,124 B2 | 1/2013  | Scirica               |
| 8,277,473 B2 | 10/2012 | Sunaoshi et al.    | 8,348,125 B2 | 1/2013  | Viola et al.          |
| 8,281,446 B2 | 10/2012 | Moskovich          | 8,348,126 B2 | 1/2013  | Olson et al.          |
| 8,281,973 B2 | 10/2012 | Wenchell et al.    | 8,348,127 B2 | 1/2013  | Marczyk               |
| 8,281,974 B2 | 10/2012 | Hessler et al.     | 8,348,129 B2 | 1/2013  | Bedi et al.           |
| 8,282,654 B2 | 10/2012 | Ferrari et al.     | 8,348,130 B2 | 1/2013  | Shah et al.           |
| 8,285,367 B2 | 10/2012 | Hyde et al.        | 8,348,131 B2 | 1/2013  | Omaits et al.         |
| 8,286,723 B2 | 10/2012 | Puzio et al.       | 8,348,837 B2 | 1/2013  | Wenchell              |
| 8,286,845 B2 | 10/2012 | Perry et al.       | 8,348,959 B2 | 1/2013  | Wolford et al.        |
| 8,286,846 B2 | 10/2012 | Smith et al.       | 8,348,972 B2 | 1/2013  | Soltz et al.          |
| 8,286,847 B2 | 10/2012 | Taylor             | 8,349,987 B2 | 1/2013  | Kapiamba et al.       |
| 8,287,487 B2 | 10/2012 | Estes              | 8,352,004 B2 | 1/2013  | Mannheimer et al.     |
| 8,287,522 B2 | 10/2012 | Moses et al.       | 8,353,437 B2 | 1/2013  | Boudreaux             |
| 8,287,561 B2 | 10/2012 | Nunez et al.       | 8,353,438 B2 | 1/2013  | Baxter, III et al.    |
| 8,288,984 B2 | 10/2012 | Yang               | 8,353,439 B2 | 1/2013  | Baxter, III et al.    |
| 8,289,403 B2 | 10/2012 | Dobashi et al.     | 8,356,740 B1 | 1/2013  | Knodel                |
| 8,292,147 B2 | 10/2012 | Viola              | 8,357,144 B2 | 1/2013  | Whitman et al.        |
| 8,292,148 B2 | 10/2012 | Viola              | 8,357,158 B2 | 1/2013  | McKenna et al.        |
| 8,292,150 B2 | 10/2012 | Bryant             | 8,357,161 B2 | 1/2013  | Mueller               |
| 8,292,151 B2 | 10/2012 | Viola              | 8,359,174 B2 | 1/2013  | Nakashima et al.      |
| 8,292,152 B2 | 10/2012 | Milliman et al.    | 8,360,296 B2 | 1/2013  | Zingman               |
| 8,292,155 B2 | 10/2012 | Shelton, IV et al. | 8,360,297 B2 | 1/2013  | Shelton, IV et al.    |
| 8,292,157 B2 | 10/2012 | Smith et al.       | 8,360,298 B2 | 1/2013  | Farascioni et al.     |
| 8,292,158 B2 | 10/2012 | Sapienza           | 8,360,299 B2 | 1/2013  | Zemlok et al.         |
| 8,292,801 B2 | 10/2012 | Dejima et al.      | 8,361,501 B2 | 1/2013  | DiTizio et al.        |
| 8,292,888 B2 | 10/2012 | Whitman            | D676,866 S   | 2/2013  | Chaudhri              |
| 8,294,399 B2 | 10/2012 | Suzuki et al.      | 8,365,973 B1 | 2/2013  | White et al.          |
| 8,298,161 B2 | 10/2012 | Vargas             | 8,365,975 B1 | 2/2013  | Manoux et al.         |
| 8,298,189 B2 | 10/2012 | Fisher et al.      | 8,365,976 B2 | 2/2013  | Hess et al.           |
| 8,298,233 B2 | 10/2012 | Mueller            | 8,366,559 B2 | 2/2013  | Papenfuss et al.      |
| 8,298,677 B2 | 10/2012 | Wiesner et al.     | 8,366,719 B2 | 2/2013  | Markey et al.         |
| 8,302,323 B2 | 11/2012 | Fortier et al.     | 8,366,787 B2 | 2/2013  | Brown et al.          |
| 8,308,040 B2 | 11/2012 | Huang et al.       | 8,369,056 B2 | 2/2013  | Senriuchi et al.      |
| 8,308,041 B2 | 11/2012 | Kostrzewski        | 8,371,393 B2 | 2/2013  | Higuchi et al.        |
| 8,308,042 B2 | 11/2012 | Aranyi             | 8,371,491 B2 | 2/2013  | Huitema et al.        |
| 8,308,043 B2 | 11/2012 | Bindra et al.      | 8,371,492 B2 | 2/2013  | Aranyi et al.         |
| 8,308,046 B2 | 11/2012 | Prommersberger     | 8,371,493 B2 | 2/2013  | Aranyi et al.         |
| 8,308,659 B2 | 11/2012 | Scheibe et al.     | 8,371,494 B2 | 2/2013  | Racenet et al.        |
| 8,308,725 B2 | 11/2012 | Bell et al.        | 8,372,094 B2 | 2/2013  | Bettuchi et al.       |
| 8,310,188 B2 | 11/2012 | Nakai              | 8,376,865 B2 | 2/2013  | Forster et al.        |
| 8,313,496 B2 | 11/2012 | Sauer et al.       | 8,377,029 B2 | 2/2013  | Nagao et al.          |
| 8,313,499 B2 | 11/2012 | Magnusson et al.   | 8,377,044 B2 | 2/2013  | Coe et al.            |
| 8,313,509 B2 | 11/2012 | Kostrzewski        | 8,382,773 B2 | 2/2013  | Whitfield et al.      |
| 8,317,070 B2 | 11/2012 | Hueil et al.       | 8,382,790 B2 | 2/2013  | Uenohara et al.       |
| 8,317,071 B1 | 11/2012 | Knodel             | D677,273 S * | 3/2013  | Randall ..... D14/492 |
| 8,317,074 B2 | 11/2012 | Ortiz et al.       | 8,387,848 B2 | 3/2013  | Johnson et al.        |
| 8,317,437 B2 | 11/2012 | Merkley et al.     | 8,388,633 B2 | 3/2013  | Rousseau et al.       |
|              |         |                    | 8,389,588 B2 | 3/2013  | Ringeisen et al.      |
|              |         |                    | 8,393,513 B2 | 3/2013  | Jankowski             |
|              |         |                    | 8,393,514 B2 | 3/2013  | Shelton, IV et al.    |
|              |         |                    | 8,393,516 B2 | 3/2013  | Kostrzewski           |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |        |                      |              |         |                        |
|--------------|--------|----------------------|--------------|---------|------------------------|
| 8,397,832 B2 | 3/2013 | Blickle et al.       | 8,465,502 B2 | 6/2013  | Zergiebel              |
| 8,397,971 B2 | 3/2013 | Yates et al.         | 8,465,515 B2 | 6/2013  | Drew et al.            |
| 8,397,973 B1 | 3/2013 | Hansen               | 8,469,254 B2 | 6/2013  | Czernik et al.         |
| 8,398,633 B2 | 3/2013 | Mueller              | 8,469,946 B2 | 6/2013  | Sugita                 |
| 8,398,669 B2 | 3/2013 | Kim                  | 8,469,973 B2 | 6/2013  | Meade et al.           |
| 8,398,673 B2 | 3/2013 | Hinchliffe et al.    | 8,470,355 B2 | 6/2013  | Skalla et al.          |
| 8,398,674 B2 | 3/2013 | Prestel              | D686,240 S * | 7/2013  | Lin ..... D14/488      |
| 8,400,851 B2 | 3/2013 | Byun                 | 8,474,677 B2 | 7/2013  | Woodard, Jr. et al.    |
| 8,403,138 B2 | 3/2013 | Weisshaupt et al.    | 8,475,453 B2 | 7/2013  | Marczyk et al.         |
| 8,403,196 B2 | 3/2013 | Beardsley et al.     | 8,475,454 B1 | 7/2013  | Alshemari              |
| 8,403,198 B2 | 3/2013 | Sorrentino et al.    | 8,475,474 B2 | 7/2013  | Bombard et al.         |
| 8,403,832 B2 | 3/2013 | Cunningham et al.    | 8,479,968 B2 | 7/2013  | Hodgkinson et al.      |
| 8,403,945 B2 | 3/2013 | Whitfield et al.     | 8,479,969 B2 | 7/2013  | Shelton, IV            |
| 8,403,946 B2 | 3/2013 | Whitfield et al.     | 8,480,703 B2 | 7/2013  | Nicholas et al.        |
| 8,403,950 B2 | 3/2013 | Palmer et al.        | 8,483,509 B2 | 7/2013  | Matsuzaka              |
| 8,408,439 B2 | 4/2013 | Huang et al.         | 8,485,412 B2 | 7/2013  | Shelton, IV et al.     |
| 8,408,442 B2 | 4/2013 | Racenet et al.       | 8,485,413 B2 | 7/2013  | Scheib et al.          |
| 8,409,079 B2 | 4/2013 | Okamoto et al.       | 8,485,970 B2 | 7/2013  | Widenhouse et al.      |
| 8,409,174 B2 | 4/2013 | Omori                | 8,487,199 B2 | 7/2013  | Palmer et al.          |
| 8,409,175 B2 | 4/2013 | Lee et al.           | 8,487,487 B2 | 7/2013  | Dietz et al.           |
| 8,409,222 B2 | 4/2013 | Whitfield et al.     | 8,490,851 B2 | 7/2013  | Blier et al.           |
| 8,409,223 B2 | 4/2013 | Sorrentino et al.    | 8,490,853 B2 | 7/2013  | Criscuolo et al.       |
| 8,411,500 B2 | 4/2013 | Gapihan et al.       | 8,491,581 B2 | 7/2013  | Deville et al.         |
| 8,413,661 B2 | 4/2013 | Rousseau et al.      | 8,491,603 B2 | 7/2013  | Yeung et al.           |
| 8,413,870 B2 | 4/2013 | Pastorelli et al.    | 8,496,153 B2 | 7/2013  | Demmy et al.           |
| 8,413,871 B2 | 4/2013 | Racenet et al.       | 8,496,154 B2 | 7/2013  | Marczyk et al.         |
| 8,413,872 B2 | 4/2013 | Patel                | 8,496,156 B2 | 7/2013  | Sniffin et al.         |
| 8,414,577 B2 | 4/2013 | Boudreaux et al.     | 8,496,683 B2 | 7/2013  | Prommersberger et al.  |
| 8,414,598 B2 | 4/2013 | Brock et al.         | 8,499,992 B2 | 8/2013  | Whitman et al.         |
| 8,418,073 B2 | 4/2013 | Mohr et al.          | 8,499,993 B2 | 8/2013  | Shelton, IV et al.     |
| 8,418,906 B2 | 4/2013 | Farascioni et al.    | 8,500,721 B2 | 8/2013  | Jinno                  |
| 8,418,907 B2 | 4/2013 | Johnson et al.       | 8,500,762 B2 | 8/2013  | Sholev et al.          |
| 8,418,908 B1 | 4/2013 | Beardsley            | 8,502,091 B2 | 8/2013  | Palmer et al.          |
| 8,418,909 B2 | 4/2013 | Kostrzewski          | 8,505,799 B2 | 8/2013  | Viola et al.           |
| 8,419,635 B2 | 4/2013 | Shelton, IV et al.   | 8,505,801 B2 | 8/2013  | Ehrenfels et al.       |
| 8,419,717 B2 | 4/2013 | Diolaiti et al.      | 8,506,555 B2 | 8/2013  | Ruiz Morales           |
| 8,419,747 B2 | 4/2013 | Hinman et al.        | 8,506,557 B2 | 8/2013  | Zemlok et al.          |
| 8,419,754 B2 | 4/2013 | Laby et al.          | 8,506,580 B2 | 8/2013  | Zergiebel et al.       |
| 8,423,182 B2 | 4/2013 | Robinson et al.      | 8,506,581 B2 | 8/2013  | Wingardner, III et al. |
| 8,424,737 B2 | 4/2013 | Scirica              | 8,511,308 B2 | 8/2013  | Hecox et al.           |
| 8,424,739 B2 | 4/2013 | Racenet et al.       | 8,512,359 B2 | 8/2013  | Whitman et al.         |
| 8,424,740 B2 | 4/2013 | Shelton, IV et al.   | 8,512,402 B2 | 8/2013  | Marczyk et al.         |
| 8,424,741 B2 | 4/2013 | McGuckin, Jr. et al. | 8,517,239 B2 | 8/2013  | Scheib et al.          |
| 8,425,600 B2 | 4/2013 | Maxwell              | 8,517,241 B2 | 8/2013  | Nicholas et al.        |
| 8,427,430 B2 | 4/2013 | Lee et al.           | 8,517,243 B2 | 8/2013  | Giordano et al.        |
| 8,430,292 B2 | 4/2013 | Patel et al.         | 8,517,244 B2 | 8/2013  | Shelton, IV et al.     |
| 8,430,892 B2 | 4/2013 | Bindra et al.        | 8,518,024 B2 | 8/2013  | Williams et al.        |
| 8,430,898 B2 | 4/2013 | Wiener et al.        | 8,521,273 B2 | 8/2013  | Kliman                 |
| 8,435,257 B2 | 5/2013 | Smith et al.         | 8,523,042 B2 | 9/2013  | Masiakos et al.        |
| 8,439,246 B1 | 5/2013 | Knodel               | 8,523,043 B2 | 9/2013  | Ullrich et al.         |
| 8,444,036 B2 | 5/2013 | Shelton, IV          | 8,523,881 B2 | 9/2013  | Cabin et al.           |
| 8,444,037 B2 | 5/2013 | Nicholas et al.      | 8,523,900 B2 | 9/2013  | Jinno et al.           |
| 8,444,549 B2 | 5/2013 | Viola et al.         | 8,529,588 B2 | 9/2013  | Ahlberg et al.         |
| 8,449,536 B2 | 5/2013 | Selig                | 8,529,600 B2 | 9/2013  | Woodard, Jr. et al.    |
| 8,449,560 B2 | 5/2013 | Roth et al.          | 8,529,819 B2 | 9/2013  | Ostapoff et al.        |
| 8,453,904 B2 | 6/2013 | Eskaros et al.       | 8,532,747 B2 | 9/2013  | Nock et al.            |
| 8,453,906 B2 | 6/2013 | Huang et al.         | 8,534,527 B2 | 9/2013  | Brendel et al.         |
| 8,453,907 B2 | 6/2013 | Laurent et al.       | 8,534,528 B2 | 9/2013  | Shelton, IV            |
| 8,453,908 B2 | 6/2013 | Bedi et al.          | 8,535,304 B2 | 9/2013  | Sklar et al.           |
| 8,453,912 B2 | 6/2013 | Mastri et al.        | 8,535,340 B2 | 9/2013  | Allen                  |
| 8,453,914 B2 | 6/2013 | Laurent et al.       | 8,539,866 B2 | 9/2013  | Nayak et al.           |
| 8,454,495 B2 | 6/2013 | Kawano et al.        | 8,540,128 B2 | 9/2013  | Shelton, IV et al.     |
| 8,454,551 B2 | 6/2013 | Allen et al.         | 8,540,129 B2 | 9/2013  | Baxter, III et al.     |
| 8,454,628 B2 | 6/2013 | Smith et al.         | 8,540,130 B2 | 9/2013  | Moore et al.           |
| 8,454,640 B2 | 6/2013 | Johnston et al.      | 8,540,131 B2 | 9/2013  | Swayze                 |
| 8,457,757 B2 | 6/2013 | Cauller et al.       | 8,540,133 B2 | 9/2013  | Bedi et al.            |
| 8,459,520 B2 | 6/2013 | Giordano et al.      | 8,540,733 B2 | 9/2013  | Whitman et al.         |
| 8,459,521 B2 | 6/2013 | Zemlok et al.        | 8,540,735 B2 | 9/2013  | Mitelberg et al.       |
| 8,459,524 B2 | 6/2013 | Pribanic et al.      | 8,550,984 B2 | 10/2013 | Takemoto               |
| 8,459,525 B2 | 6/2013 | Yates et al.         | 8,551,076 B2 | 10/2013 | Duval et al.           |
| 8,464,922 B2 | 6/2013 | Marczyk              | 8,555,660 B2 | 10/2013 | Takenaka et al.        |
| 8,464,923 B2 | 6/2013 | Shelton, IV          | 8,556,151 B2 | 10/2013 | Viola                  |
| 8,464,924 B2 | 6/2013 | Gresham et al.       | 8,556,918 B2 | 10/2013 | Bauman et al.          |
| 8,464,925 B2 | 6/2013 | Hull et al.          | 8,556,935 B1 | 10/2013 | Knodel et al.          |
| 8,465,475 B2 | 6/2013 | Isbell, Jr.          | 8,560,147 B2 | 10/2013 | Taylor et al.          |
|              |        |                      | 8,561,617 B2 | 10/2013 | Lindh et al.           |
|              |        |                      | 8,561,870 B2 | 10/2013 | Baxter, III et al.     |
|              |        |                      | 8,561,871 B2 | 10/2013 | Rajappa et al.         |
|              |        |                      | 8,561,873 B2 | 10/2013 | Ingmanson et al.       |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |         |                     |              |        |                      |
|--------------|---------|---------------------|--------------|--------|----------------------|
| 8,562,598 B2 | 10/2013 | Falkenstein et al.  | 8,657,482 B2 | 2/2014 | Malackowski et al.   |
| 8,567,656 B2 | 10/2013 | Shelton, IV et al.  | 8,657,808 B2 | 2/2014 | McPherson            |
| 8,568,416 B2 | 10/2013 | Schmitz et al.      | 8,657,814 B2 | 2/2014 | Werneth et al.       |
| 8,568,425 B2 | 10/2013 | Ross et al.         | 8,657,821 B2 | 2/2014 | Palermo              |
| D692,916 S   | 11/2013 | Granchi et al.      | D701,238 S   | 3/2014 | Lai et al.           |
| 8,573,459 B2 | 11/2013 | Smith et al.        | 8,662,370 B2 | 3/2014 | Takei                |
| 8,573,461 B2 | 11/2013 | Shelton, IV et al.  | 8,663,106 B2 | 3/2014 | Stivoric et al.      |
| 8,573,462 B2 | 11/2013 | Smith et al.        | 8,663,192 B2 | 3/2014 | Hester et al.        |
| 8,573,465 B2 | 11/2013 | Shelton, IV         | 8,663,245 B2 | 3/2014 | Francischelli et al. |
| 8,574,199 B2 | 11/2013 | von Bulow et al.    | 8,663,262 B2 | 3/2014 | Smith et al.         |
| 8,574,263 B2 | 11/2013 | Mueller             | 8,663,270 B2 | 3/2014 | Donnigan et al.      |
| 8,575,880 B2 | 11/2013 | Grantz              | 8,664,792 B2 | 3/2014 | Rebsdorf             |
| 8,575,895 B2 | 11/2013 | Garrastacho et al.  | 8,668,129 B2 | 3/2014 | Olson                |
| 8,579,176 B2 | 11/2013 | Smith et al.        | 8,668,130 B2 | 3/2014 | Hess et al.          |
| 8,579,178 B2 | 11/2013 | Holsten et al.      | 8,672,206 B2 | 3/2014 | Aranyi et al.        |
| 8,579,897 B2 | 11/2013 | Vakharia et al.     | 8,672,207 B2 | 3/2014 | Shelton, IV et al.   |
| 8,579,937 B2 | 11/2013 | Gresham             | 8,672,208 B2 | 3/2014 | Hess et al.          |
| 8,584,919 B2 | 11/2013 | Hueil et al.        | 8,672,922 B2 | 3/2014 | Loh et al.           |
| 8,584,920 B2 | 11/2013 | Hodgkinson          | 8,672,935 B2 | 3/2014 | Okada et al.         |
| 8,584,921 B2 | 11/2013 | Scirica             | 8,672,951 B2 | 3/2014 | Smith et al.         |
| 8,585,583 B2 | 11/2013 | Sakaguchi et al.    | 8,673,210 B2 | 3/2014 | Deshays              |
| 8,585,721 B2 | 11/2013 | Kirsch              | 8,675,820 B2 | 3/2014 | Baic et al.          |
| 8,590,760 B2 | 11/2013 | Cummins et al.      | 8,678,263 B2 | 3/2014 | Viola                |
| 8,590,762 B2 | 11/2013 | Hess et al.         | 8,678,994 B2 | 3/2014 | Sonnenschein et al.  |
| 8,590,764 B2 | 11/2013 | Hartwick et al.     | 8,679,093 B2 | 3/2014 | Farra                |
| 8,596,515 B2 | 12/2013 | Okoniewski          | 8,679,098 B2 | 3/2014 | Hart                 |
| 8,597,745 B2 | 12/2013 | Farnsworth et al.   | 8,679,137 B2 | 3/2014 | Bauman et al.        |
| 8,599,450 B2 | 12/2013 | Kubo et al.         | 8,679,154 B2 | 3/2014 | Smith et al.         |
| 8,602,287 B2 | 12/2013 | Yates et al.        | 8,679,156 B2 | 3/2014 | Smith et al.         |
| 8,602,288 B2 | 12/2013 | Shelton, IV et al.  | 8,679,454 B2 | 3/2014 | Guire et al.         |
| 8,603,077 B2 | 12/2013 | Cooper et al.       | 8,684,248 B2 | 4/2014 | Milliman             |
| 8,603,089 B2 | 12/2013 | Viola               | 8,684,249 B2 | 4/2014 | Racenet et al.       |
| 8,603,110 B2 | 12/2013 | Maruyama et al.     | 8,684,250 B2 | 4/2014 | Bettuchi et al.      |
| 8,603,135 B2 | 12/2013 | Mueller             | 8,684,253 B2 | 4/2014 | Giordano et al.      |
| 8,608,043 B2 | 12/2013 | Scirica             | 8,684,962 B2 | 4/2014 | Kirschenman et al.   |
| 8,608,044 B2 | 12/2013 | Hueil et al.        | 8,685,004 B2 | 4/2014 | Zemlock et al.       |
| 8,608,045 B2 | 12/2013 | Smith et al.        | 8,685,020 B2 | 4/2014 | Weizman et al.       |
| 8,608,046 B2 | 12/2013 | Laurent et al.      | 8,690,893 B2 | 4/2014 | Deitch et al.        |
| 8,608,745 B2 | 12/2013 | Guzman et al.       | 8,695,866 B2 | 4/2014 | Leimbach et al.      |
| 8,613,383 B2 | 12/2013 | Beckman et al.      | 8,696,665 B2 | 4/2014 | Hunt et al.          |
| 8,616,427 B2 | 12/2013 | Viola               | 8,701,958 B2 | 4/2014 | Shelton, IV et al.   |
| 8,616,431 B2 | 12/2013 | Timm et al.         | 8,701,959 B2 | 4/2014 | Shah                 |
| 8,622,274 B2 | 1/2014  | Yates et al.        | 8,708,210 B2 | 4/2014 | Zemlok et al.        |
| 8,622,275 B2 | 1/2014  | Baxter, III et al.  | 8,708,211 B2 | 4/2014 | Zemlok et al.        |
| 8,627,993 B2 | 1/2014  | Smith et al.        | 8,708,213 B2 | 4/2014 | Shelton, IV et al.   |
| 8,627,994 B2 | 1/2014  | Zemlok et al.       | 8,714,352 B2 | 5/2014 | Farascioni et al.    |
| 8,627,995 B2 | 1/2014  | Smith et al.        | 8,714,429 B2 | 5/2014 | Demmy                |
| 8,628,518 B2 | 1/2014  | Blumenkranz et al.  | 8,714,430 B2 | 5/2014 | Natarajan et al.     |
| 8,628,544 B2 | 1/2014  | Farascioni          | 8,715,256 B2 | 5/2014 | Greener              |
| 8,628,545 B2 | 1/2014  | Cabrera et al.      | 8,715,302 B2 | 5/2014 | Ibrahim et al.       |
| 8,631,987 B2 | 1/2014  | Shelton, IV et al.  | 8,720,766 B2 | 5/2014 | Hess et al.          |
| 8,631,992 B1 | 1/2014  | Hausen et al.       | 8,721,630 B2 | 5/2014 | Ortiz et al.         |
| 8,631,993 B2 | 1/2014  | Kostrzewski         | 8,721,666 B2 | 5/2014 | Schroeder et al.     |
| 8,632,462 B2 | 1/2014  | Yoo et al.          | 8,727,197 B2 | 5/2014 | Hess et al.          |
| 8,632,525 B2 | 1/2014  | Kerr et al.         | 8,727,199 B2 | 5/2014 | Wenchell             |
| 8,632,535 B2 | 1/2014  | Shelton, IV et al.  | 8,727,200 B2 | 5/2014 | Roy                  |
| 8,632,539 B2 | 1/2014  | Twomey et al.       | 8,727,961 B2 | 5/2014 | Ziv                  |
| 8,632,563 B2 | 1/2014  | Nagase et al.       | 8,728,099 B2 | 5/2014 | Cohn et al.          |
| 8,636,187 B2 | 1/2014  | Hueil et al.        | 8,728,119 B2 | 5/2014 | Cummins              |
| 8,636,190 B2 | 1/2014  | Zemlok et al.       | 8,733,470 B2 | 5/2014 | Matthias et al.      |
| 8,636,191 B2 | 1/2014  | Meagher             | 8,733,612 B2 | 5/2014 | Ma                   |
| 8,636,193 B2 | 1/2014  | Whitman et al.      | 8,733,613 B2 | 5/2014 | Huitema et al.       |
| 8,636,736 B2 | 1/2014  | Yates et al.        | 8,733,614 B2 | 5/2014 | Ross et al.          |
| 8,636,766 B2 | 1/2014  | Milliman et al.     | 8,734,336 B2 | 5/2014 | Bonadio et al.       |
| 8,639,936 B2 | 1/2014  | Hu et al.           | 8,734,359 B2 | 5/2014 | Ibanez et al.        |
| 8,640,788 B2 | 2/2014  | Dachs, II et al.    | 8,734,478 B2 | 5/2014 | Widenhouse et al.    |
| 8,646,674 B2 | 2/2014  | Schulte et al.      | 8,739,033 B2 | 5/2014 | Rosenberg            |
| 8,647,258 B2 | 2/2014  | Aranyi et al.       | 8,739,417 B2 | 6/2014 | Tokunaga et al.      |
| 8,652,120 B2 | 2/2014  | Giordano et al.     | 8,740,034 B2 | 6/2014 | Morgan et al.        |
| 8,652,151 B2 | 2/2014  | Lehman et al.       | 8,740,037 B2 | 6/2014 | Shelton, IV et al.   |
| 8,657,174 B2 | 2/2014  | Yates et al.        | 8,740,038 B2 | 6/2014 | Shelton, IV et al.   |
| 8,657,175 B2 | 2/2014  | Sonnenschein et al. | 8,740,987 B2 | 6/2014 | Geremakis et al.     |
| 8,657,176 B2 | 2/2014  | Shelton, IV et al.  | 8,746,529 B2 | 6/2014 | Shelton, IV et al.   |
| 8,657,177 B2 | 2/2014  | Scirica et al.      | 8,746,530 B2 | 6/2014 | Giordano et al.      |
| 8,657,178 B2 | 2/2014  | Hueil et al.        | 8,746,533 B2 | 6/2014 | Whitman et al.       |
|              |         |                     | 8,746,535 B2 | 6/2014 | Shelton, IV et al.   |
|              |         |                     | 8,747,238 B2 | 6/2014 | Shelton, IV et al.   |
|              |         |                     | 8,747,441 B2 | 6/2014 | Konieczynski et al.  |
|              |         |                     | 8,752,264 B2 | 6/2014 | Ackley et al.        |



(56)

References Cited

U.S. PATENT DOCUMENTS

|              |        |                        |              |         |                        |
|--------------|--------|------------------------|--------------|---------|------------------------|
| 8,752,699 B2 | 6/2014 | Morgan et al.          | 8,821,514 B2 | 9/2014  | Aranyi                 |
| 8,752,747 B2 | 6/2014 | Shelton, IV            | 8,822,934 B2 | 9/2014  | Sayeh et al.           |
| 8,752,748 B2 | 6/2014 | Whitman et al.         | 8,825,164 B2 | 9/2014  | Tweden et al.          |
| 8,752,749 B2 | 6/2014 | Moore et al.           | 8,827,133 B2 | 9/2014  | Shelton, IV et al.     |
| 8,753,664 B2 | 6/2014 | Dao et al.             | 8,827,134 B2 | 9/2014  | Viola et al.           |
| 8,757,287 B2 | 6/2014 | Mak et al.             | 8,827,903 B2 | 9/2014  | Shelton, IV et al.     |
| 8,757,465 B2 | 6/2014 | Woodard, Jr. et al.    | 8,833,219 B2 | 9/2014  | Pierce                 |
| 8,758,235 B2 | 6/2014 | Jaworek                | 8,833,630 B2 | 9/2014  | Milliman               |
| 8,758,366 B2 | 6/2014 | McLean et al.          | 8,833,632 B2 | 9/2014  | Swensgard              |
| 8,758,391 B2 | 6/2014 | Swayze et al.          | 8,834,353 B2 | 9/2014  | Dejima et al.          |
| 8,758,438 B2 | 6/2014 | Boyce et al.           | 8,834,498 B2 | 9/2014  | Byrum et al.           |
| 8,763,875 B2 | 7/2014 | Morgan et al.          | 8,834,518 B2 | 9/2014  | Faller et al.          |
| 8,763,877 B2 | 7/2014 | Schall et al.          | 8,840,003 B2 | 9/2014  | Morgan et al.          |
| 8,763,879 B2 | 7/2014 | Shelton, IV et al.     | 8,840,603 B2 | 9/2014  | Shelton, IV et al.     |
| 8,764,732 B2 | 7/2014 | Hartwell               | 8,840,609 B2 | 9/2014  | Stuebe                 |
| 8,770,458 B2 | 7/2014 | Scirica                | 8,840,876 B2 | 9/2014  | Eemeta et al.          |
| 8,770,459 B2 | 7/2014 | Racenet et al.         | 8,844,789 B2 | 9/2014  | Shelton, IV et al.     |
| 8,770,460 B2 | 7/2014 | Belzer                 | 8,844,790 B2 | 9/2014  | Demmy et al.           |
| 8,771,169 B2 | 7/2014 | Whitman et al.         | 8,851,215 B2 | 10/2014 | Goto                   |
| 8,771,260 B2 | 7/2014 | Conlon et al.          | 8,851,354 B2 | 10/2014 | Swensgard et al.       |
| 8,777,004 B2 | 7/2014 | Shelton, IV et al.     | 8,852,174 B2 | 10/2014 | Burbank                |
| 8,777,082 B2 | 7/2014 | Scirica                | 8,852,185 B2 | 10/2014 | Twomey                 |
| 8,777,083 B2 | 7/2014 | Racenet et al.         | 8,852,199 B2 | 10/2014 | Deslauriers et al.     |
| 8,777,898 B2 | 7/2014 | Suon et al.            | 8,852,218 B2 | 10/2014 | Hughett, Sr. et al.    |
| 8,783,541 B2 | 7/2014 | Shelton, IV et al.     | 8,857,693 B2 | 10/2014 | Schuckmann et al.      |
| 8,783,542 B2 | 7/2014 | Riestenberg et al.     | 8,857,694 B2 | 10/2014 | Shelton, IV et al.     |
| 8,783,543 B2 | 7/2014 | Shelton, IV et al.     | 8,858,538 B2 | 10/2014 | Belson et al.          |
| 8,784,304 B2 | 7/2014 | Mikkaichi et al.       | 8,858,571 B2 | 10/2014 | Shelton, IV et al.     |
| 8,784,404 B2 | 7/2014 | Doyle et al.           | 8,858,590 B2 | 10/2014 | Shelton, IV et al.     |
| 8,784,415 B2 | 7/2014 | Malackowski et al.     | 8,864,007 B2 | 10/2014 | Widenhouse et al.      |
| 8,789,737 B2 | 7/2014 | Hodgkinson et al.      | 8,864,009 B2 | 10/2014 | Shelton, IV et al.     |
| 8,789,739 B2 | 7/2014 | Swensgard              | 8,864,010 B2 | 10/2014 | Williams               |
| 8,789,740 B2 | 7/2014 | Baxter, III et al.     | 8,870,050 B2 | 10/2014 | Hodgkinson             |
| 8,789,741 B2 | 7/2014 | Baxter, III et al.     | 8,870,912 B2 | 10/2014 | Brisson et al.         |
| 8,790,658 B2 | 7/2014 | Cigarini et al.        | 8,875,971 B2 | 11/2014 | Hall et al.            |
| 8,790,684 B2 | 7/2014 | Dave et al.            | 8,875,972 B2 | 11/2014 | Weisenburgh, II et al. |
| D711,905 S * | 8/2014 | Morrison ..... D14/486 | 8,876,857 B2 | 11/2014 | Burbank                |
| 8,794,496 B2 | 8/2014 | Scirica                | 8,876,858 B2 | 11/2014 | Braun                  |
| 8,794,497 B2 | 8/2014 | Zingman                | 8,887,979 B2 | 11/2014 | Mastri et al.          |
| 8,795,276 B2 | 8/2014 | Dietz et al.           | 8,888,688 B2 | 11/2014 | Julian et al.          |
| 8,795,308 B2 | 8/2014 | Valin                  | 8,888,695 B2 | 11/2014 | Piskun et al.          |
| 8,795,324 B2 | 8/2014 | Kawai et al.           | 8,888,792 B2 | 11/2014 | Harris et al.          |
| 8,796,995 B2 | 8/2014 | Cunanan et al.         | 8,888,809 B2 | 11/2014 | Davison et al.         |
| 8,800,681 B2 | 8/2014 | Rousson et al.         | 8,893,946 B2 | 11/2014 | Boudreaux et al.       |
| 8,800,837 B2 | 8/2014 | Zemlok                 | 8,893,949 B2 | 11/2014 | Shelton, IV et al.     |
| 8,800,838 B2 | 8/2014 | Shelton, IV            | 8,894,647 B2 | 11/2014 | Beardsley et al.       |
| 8,800,839 B2 | 8/2014 | Beetel                 | 8,894,654 B2 | 11/2014 | Anderson               |
| 8,800,840 B2 | 8/2014 | Jankowski              | 8,899,460 B2 | 12/2014 | Wojcicki               |
| 8,800,841 B2 | 8/2014 | Ellerhorst et al.      | 8,899,461 B2 | 12/2014 | Farascioni             |
| 8,801,710 B2 | 8/2014 | Ullrich et al.         | 8,899,462 B2 | 12/2014 | Kostrzewski et al.     |
| 8,801,734 B2 | 8/2014 | Shelton, IV et al.     | 8,899,463 B2 | 12/2014 | Schall et al.          |
| 8,801,735 B2 | 8/2014 | Shelton, IV et al.     | 8,899,464 B2 | 12/2014 | Hueil et al.           |
| 8,801,752 B2 | 8/2014 | Fortier et al.         | 8,899,465 B2 | 12/2014 | Shelton, IV et al.     |
| 8,801,801 B2 | 8/2014 | Datta et al.           | 8,899,466 B2 | 12/2014 | Baxter, III et al.     |
| 8,806,973 B2 | 8/2014 | Ross et al.            | 8,900,267 B2 | 12/2014 | Woolfson et al.        |
| 8,807,414 B2 | 8/2014 | Ross et al.            | 8,905,287 B2 | 12/2014 | Racenet et al.         |
| 8,808,161 B2 | 8/2014 | Gregg et al.           | 8,905,977 B2 | 12/2014 | Shelton et al.         |
| 8,808,164 B2 | 8/2014 | Hoffman et al.         | 8,910,846 B2 | 12/2014 | Viola                  |
| 8,808,274 B2 | 8/2014 | Hartwell               | 8,911,426 B2 | 12/2014 | Coppeta et al.         |
| 8,808,294 B2 | 8/2014 | Fox et al.             | 8,911,448 B2 | 12/2014 | Stein                  |
| 8,808,308 B2 | 8/2014 | Boukhny et al.         | 8,911,460 B2 | 12/2014 | Neurohr et al.         |
| 8,808,311 B2 | 8/2014 | Heinrich et al.        | 8,911,471 B2 | 12/2014 | Spivey et al.          |
| 8,808,325 B2 | 8/2014 | Hess et al.            | 8,920,433 B2 | 12/2014 | Barrier et al.         |
| 8,810,197 B2 | 8/2014 | Juergens               | 8,920,435 B2 | 12/2014 | Smith et al.           |
| 8,811,017 B2 | 8/2014 | Fujii et al.           | 8,920,438 B2 | 12/2014 | Aranyi et al.          |
| 8,813,866 B2 | 8/2014 | Suzuki                 | 8,920,443 B2 | 12/2014 | Hiles et al.           |
| 8,814,024 B2 | 8/2014 | Woodard, Jr. et al.    | 8,920,444 B2 | 12/2014 | Hiles et al.           |
| 8,814,025 B2 | 8/2014 | Miller et al.          | 8,922,163 B2 | 12/2014 | Macdonald              |
| 8,814,836 B2 | 8/2014 | Ignon et al.           | 8,925,782 B2 | 1/2015  | Shelton, IV            |
| 8,818,523 B2 | 8/2014 | Olson et al.           | 8,925,783 B2 | 1/2015  | Zemlok et al.          |
| 8,820,603 B2 | 9/2014 | Shelton, IV et al.     | 8,925,788 B2 | 1/2015  | Hess et al.            |
| 8,820,605 B2 | 9/2014 | Shelton, IV            | 8,926,506 B2 | 1/2015  | Widenhouse et al.      |
| 8,820,606 B2 | 9/2014 | Hodgkinson             | 8,926,598 B2 | 1/2015  | Mollere et al.         |
| 8,820,607 B2 | 9/2014 | Marczyk                | 8,931,576 B2 | 1/2015  | Iwata                  |
| 8,820,608 B2 | 9/2014 | Miyamoto               | 8,931,679 B2 | 1/2015  | Kostrzewski            |
|              |        |                        | 8,931,680 B2 | 1/2015  | Milliman               |
|              |        |                        | 8,931,682 B2 | 1/2015  | Timm et al.            |
|              |        |                        | 8,936,614 B2 | 1/2015  | Allen, IV              |
|              |        |                        | 8,939,343 B2 | 1/2015  | Milliman et al.        |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |        |                       |              |        |                     |
|--------------|--------|-----------------------|--------------|--------|---------------------|
| 8,939,344 B2 | 1/2015 | Olson et al.          | 9,027,817 B2 | 5/2015 | Milliman et al.     |
| 8,945,163 B2 | 2/2015 | Voegele et al.        | 9,028,494 B2 | 5/2015 | Shelton, IV et al.  |
| 8,955,732 B2 | 2/2015 | Zemlok et al.         | 9,028,495 B2 | 5/2015 | Mueller et al.      |
| 8,956,342 B1 | 2/2015 | Russo et al.          | 9,028,519 B2 | 5/2015 | Yates et al.        |
| 8,956,390 B2 | 2/2015 | Shah et al.           | 9,030,169 B2 | 5/2015 | Christensen et al.  |
| 8,958,860 B2 | 2/2015 | Banerjee et al.       | 9,033,203 B2 | 5/2015 | Woodard, Jr. et al. |
| 8,960,519 B2 | 2/2015 | Whitman et al.        | 9,033,204 B2 | 5/2015 | Shelton, IV et al.  |
| 8,960,520 B2 | 2/2015 | McCuen                | 9,034,505 B2 | 5/2015 | Detry et al.        |
| 8,960,521 B2 | 2/2015 | Kostrzewski           | 9,038,881 B1 | 5/2015 | Schaller et al.     |
| 8,961,191 B2 | 2/2015 | Hanshew               | 9,039,690 B2 | 5/2015 | Kersten et al.      |
| 8,961,504 B2 | 2/2015 | Hoarau et al.         | 9,039,694 B2 | 5/2015 | Ross et al.         |
| 8,963,714 B2 | 2/2015 | Medhal et al.         | 9,039,720 B2 | 5/2015 | Madan               |
| D725,674 S   | 3/2015 | Jung et al.           | 9,043,027 B2 | 5/2015 | Durant et al.       |
| 8,967,443 B2 | 3/2015 | McCuen                | 9,044,227 B2 | 6/2015 | Shelton, IV et al.  |
| 8,967,444 B2 | 3/2015 | Beetel                | 9,044,228 B2 | 6/2015 | Woodard, Jr. et al. |
| 8,967,446 B2 | 3/2015 | Beardsley et al.      | 9,044,229 B2 | 6/2015 | Scheib et al.       |
| 8,967,448 B2 | 3/2015 | Carter et al.         | 9,044,230 B2 | 6/2015 | Morgan et al.       |
| 8,968,276 B2 | 3/2015 | Zemlok et al.         | 9,044,241 B2 | 6/2015 | Barner et al.       |
| 8,968,308 B2 | 3/2015 | Homer et al.          | 9,044,261 B2 | 6/2015 | Houser              |
| 8,968,312 B2 | 3/2015 | Marczyk et al.        | 9,044,281 B2 | 6/2015 | Pool et al.         |
| 8,968,337 B2 | 3/2015 | Whitfield et al.      | 9,050,083 B2 | 6/2015 | Yates et al.        |
| 8,968,340 B2 | 3/2015 | Chowaniec et al.      | 9,050,084 B2 | 6/2015 | Schmid et al.       |
| 8,968,355 B2 | 3/2015 | Malkowski et al.      | 9,050,100 B2 | 6/2015 | Yates et al.        |
| 8,968,358 B2 | 3/2015 | Reschke               | 9,050,120 B2 | 6/2015 | Swarup et al.       |
| 8,970,507 B2 | 3/2015 | Holbein et al.        | 9,050,123 B2 | 6/2015 | Krause et al.       |
| 8,973,803 B2 | 3/2015 | Hall et al.           | 9,050,176 B2 | 6/2015 | Datta et al.        |
| 8,973,804 B2 | 3/2015 | Hess et al.           | 9,055,941 B2 | 6/2015 | Schmid et al.       |
| 8,973,805 B2 | 3/2015 | Scirica et al.        | 9,055,942 B2 | 6/2015 | Balbierz et al.     |
| 8,974,440 B2 | 3/2015 | Farritor et al.       | 9,055,943 B2 | 6/2015 | Zemlok et al.       |
| 8,974,932 B2 | 3/2015 | McGahan et al.        | 9,055,944 B2 | 6/2015 | Hodgkinson et al.   |
| 8,978,954 B2 | 3/2015 | Shelton, IV et al.    | 9,055,961 B2 | 6/2015 | Manzo et al.        |
| 8,978,955 B2 | 3/2015 | Aronhalt et al.       | 9,060,770 B2 | 6/2015 | Shelton, IV et al.  |
| 8,978,956 B2 | 3/2015 | Schell et al.         | 9,060,776 B2 | 6/2015 | Yates et al.        |
| 8,979,843 B2 | 3/2015 | Timm et al.           | 9,060,794 B2 | 6/2015 | Kang et al.         |
| 8,979,890 B2 | 3/2015 | Boudreaux             | 9,060,894 B2 | 6/2015 | Wubbeling           |
| 8,982,195 B2 | 3/2015 | Claus et al.          | 9,061,392 B2 | 6/2015 | Forgues et al.      |
| 8,985,429 B2 | 3/2015 | Balek et al.          | 9,072,515 B2 | 7/2015 | Hall et al.         |
| 8,986,302 B2 | 3/2015 | Aldridge et al.       | 9,072,523 B2 | 7/2015 | Houser et al.       |
| 8,991,676 B2 | 3/2015 | Hess et al.           | 9,072,535 B2 | 7/2015 | Shelton, IV et al.  |
| 8,991,677 B2 | 3/2015 | Moore et al.          | 9,072,536 B2 | 7/2015 | Shelton, IV et al.  |
| 8,991,678 B2 | 3/2015 | Wellman et al.        | 9,078,653 B2 | 7/2015 | Leimbach et al.     |
| 8,992,042 B2 | 3/2015 | Eichenholz            | 9,084,601 B2 | 7/2015 | Moore et al.        |
| 8,992,422 B2 | 3/2015 | Spivey et al.         | 9,084,602 B2 | 7/2015 | Gleiman             |
| 8,992,565 B2 | 3/2015 | Brisson et al.        | 9,086,875 B2 | 7/2015 | Harrat et al.       |
| 8,996,165 B2 | 3/2015 | Wang et al.           | 9,089,326 B2 | 7/2015 | Krumanaker et al.   |
| 8,998,058 B2 | 4/2015 | Moore et al.          | 9,089,330 B2 | 7/2015 | Widenhouse et al.   |
| 8,998,059 B2 | 4/2015 | Smith et al.          | 9,089,352 B2 | 7/2015 | Jeong               |
| 8,998,060 B2 | 4/2015 | Bruewer et al.        | 9,089,360 B2 | 7/2015 | Messerly et al.     |
| 8,998,061 B2 | 4/2015 | Williams et al.       | 9,091,588 B2 | 7/2015 | Lefler              |
| 8,998,939 B2 | 4/2015 | Price et al.          | D736,792 S   | 8/2015 | Brinda et al.       |
| 9,000,720 B2 | 4/2015 | Stulen et al.         | 9,095,339 B2 | 8/2015 | Moore et al.        |
| 9,002,518 B2 | 4/2015 | Manzo et al.          | 9,095,346 B2 | 8/2015 | Houser et al.       |
| 9,004,339 B1 | 4/2015 | Park                  | 9,095,362 B2 | 8/2015 | Dachs, II et al.    |
| 9,005,230 B2 | 4/2015 | Yates et al.          | 9,095,367 B2 | 8/2015 | Olson et al.        |
| 9,005,238 B2 | 4/2015 | DeSantis et al.       | 9,096,033 B2 | 8/2015 | Holop et al.        |
| 9,005,243 B2 | 4/2015 | Stopek et al.         | 9,099,863 B2 | 8/2015 | Smith et al.        |
| 9,010,606 B2 | 4/2015 | Aranyi et al.         | 9,099,877 B2 | 8/2015 | Banos et al.        |
| 9,010,608 B2 | 4/2015 | Casasanta, Jr. et al. | 9,101,358 B2 | 8/2015 | Kerr et al.         |
| 9,010,611 B2 | 4/2015 | Ross et al.           | 9,101,385 B2 | 8/2015 | Shelton, IV et al.  |
| 9,011,439 B2 | 4/2015 | Shalaby et al.        | 9,101,475 B2 | 8/2015 | Wei et al.          |
| 9,011,471 B2 | 4/2015 | Timm et al.           | 9,107,663 B2 | 8/2015 | Swensgard           |
| 9,016,539 B2 | 4/2015 | Kostrzewski et al.    | 9,107,690 B2 | 8/2015 | Bales, Jr. et al.   |
| 9,016,540 B2 | 4/2015 | Whitman et al.        | 9,110,587 B2 | 8/2015 | Kim et al.          |
| 9,016,541 B2 | 4/2015 | Viola et al.          | 9,113,862 B2 | 8/2015 | Morgan et al.       |
| 9,016,542 B2 | 4/2015 | Shelton, IV et al.    | 9,113,864 B2 | 8/2015 | Morgan et al.       |
| 9,016,545 B2 | 4/2015 | Aranyi et al.         | 9,113,865 B2 | 8/2015 | Shelton, IV et al.  |
| 9,017,331 B2 | 4/2015 | Fox                   | 9,113,868 B2 | 8/2015 | Felder et al.       |
| 9,017,355 B2 | 4/2015 | Smith et al.          | 9,113,873 B2 | 8/2015 | Marczyk et al.      |
| 9,017,369 B2 | 4/2015 | Renger et al.         | 9,113,874 B2 | 8/2015 | Shelton, IV et al.  |
| 9,017,371 B2 | 4/2015 | Whitman et al.        | 9,113,876 B2 | 8/2015 | Zemlok et al.       |
| 9,021,684 B2 | 5/2015 | Lenker et al.         | 9,113,879 B2 | 8/2015 | Felder et al.       |
| 9,023,014 B2 | 5/2015 | Chowaniec et al.      | 9,113,880 B2 | 8/2015 | Zemlok et al.       |
| 9,023,069 B2 | 5/2015 | Kasvikis et al.       | 9,113,881 B2 | 8/2015 | Scirica             |
| 9,023,071 B2 | 5/2015 | Miller et al.         | 9,113,883 B2 | 8/2015 | Aronhalt et al.     |
| 9,026,347 B2 | 5/2015 | Gadh et al.           | 9,113,884 B2 | 8/2015 | Shelton, IV et al.  |
|              |        |                       | 9,113,887 B2 | 8/2015 | Behnke, II et al.   |
|              |        |                       | 9,119,615 B2 | 9/2015 | Felder et al.       |
|              |        |                       | 9,119,657 B2 | 9/2015 | Shelton, IV et al.  |
|              |        |                       | 9,119,898 B2 | 9/2015 | Bayon et al.        |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

- |              |         |                            |              |        |                                |
|--------------|---------|----------------------------|--------------|--------|--------------------------------|
| 9,119,957 B2 | 9/2015  | Gantz et al.               | 9,226,767 B2 | 1/2016 | Stulen et al.                  |
| 9,123,286 B2 | 9/2015  | Park                       | 9,232,941 B2 | 1/2016 | Mandakolathur Vasudevan et al. |
| 9,124,097 B2 | 9/2015  | Cruz                       | 9,232,945 B2 | 1/2016 | Zingman                        |
| 9,125,654 B2 | 9/2015  | Aronhalt et al.            | 9,232,979 B2 | 1/2016 | Parihar et al.                 |
| 9,125,662 B2 | 9/2015  | Shelton, IV                | 9,233,610 B2 | 1/2016 | Kim et al.                     |
| 9,126,317 B2 | 9/2015  | Lawton et al.              | 9,237,891 B2 | 1/2016 | Shelton, IV                    |
| 9,131,835 B2 | 9/2015  | Widenhouse et al.          | 9,237,892 B2 | 1/2016 | Hodgkinson                     |
| 9,131,940 B2 | 9/2015  | Huitema et al.             | 9,237,895 B2 | 1/2016 | McCarthy et al.                |
| 9,131,950 B2 | 9/2015  | Matthew                    | 9,237,900 B2 | 1/2016 | Boudreaux et al.               |
| 9,131,957 B2 | 9/2015  | Skarbnik et al.            | 9,237,921 B2 | 1/2016 | Messerly et al.                |
| 9,138,225 B2 | 9/2015  | Huang et al.               | 9,239,064 B2 | 1/2016 | Helbig et al.                  |
| 9,138,226 B2 | 9/2015  | Racenet et al.             | 9,240,740 B2 | 1/2016 | Zeng et al.                    |
| 9,144,455 B2 | 9/2015  | Kennedy et al.             | 9,241,711 B2 | 1/2016 | Ivanko                         |
| D741,882 S   | 10/2015 | Shmilov et al.             | 9,241,712 B2 | 1/2016 | Zemlok et al.                  |
| 9,149,274 B2 | 10/2015 | Spivey et al.              | 9,241,714 B2 | 1/2016 | Timm et al.                    |
| 9,149,324 B2 | 10/2015 | Huang et al.               | 9,241,716 B2 | 1/2016 | Whitman                        |
| 9,149,325 B2 | 10/2015 | Worrell et al.             | 9,241,731 B2 | 1/2016 | Boudreaux et al.               |
| 9,153,994 B2 | 10/2015 | Wood et al.                | 9,244,524 B2 | 1/2016 | Inoue et al.                   |
| 9,161,753 B2 | 10/2015 | Prior                      | D748,668 S   | 2/2016 | Kim et al.                     |
| 9,161,769 B2 | 10/2015 | Stoddard et al.            | D749,623 S   | 2/2016 | Gray et al.                    |
| 9,161,803 B2 | 10/2015 | Yates et al.               | D750,122 S   | 2/2016 | Shardlow et al.                |
| 9,161,807 B2 | 10/2015 | Garrison                   | D750,129 S   | 2/2016 | Kwon                           |
| 9,168,038 B2 | 10/2015 | Shelton, IV et al.         | 9,254,131 B2 | 2/2016 | Soltz et al.                   |
| 9,168,039 B1 | 10/2015 | Knodel                     | 9,259,274 B2 | 2/2016 | Prisco                         |
| 9,168,042 B2 | 10/2015 | Milliman                   | 9,259,275 B2 | 2/2016 | Burbank                        |
| 9,168,054 B2 | 10/2015 | Turner et al.              | 9,261,172 B2 | 2/2016 | Solomon et al.                 |
| 9,168,144 B2 | 10/2015 | Rivin et al.               | 9,265,500 B2 | 2/2016 | Sorrentino et al.              |
| 9,179,911 B2 | 11/2015 | Morgan et al.              | 9,265,516 B2 | 2/2016 | Casey et al.                   |
| 9,179,912 B2 | 11/2015 | Yates et al.               | 9,265,585 B2 | 2/2016 | Wingardner et al.              |
| 9,182,244 B2 | 11/2015 | Luke et al.                | 9,271,718 B2 | 3/2016 | Milad et al.                   |
| 9,186,046 B2 | 11/2015 | Ramamurthy et al.          | 9,271,727 B2 | 3/2016 | McGuckin, Jr. et al.           |
| 9,186,137 B2 | 11/2015 | Farascioni et al.          | 9,271,753 B2 | 3/2016 | Butler et al.                  |
| 9,186,140 B2 | 11/2015 | Hiles et al.               | 9,271,799 B2 | 3/2016 | Shelton, IV et al.             |
| 9,186,142 B2 | 11/2015 | Fanelli et al.             | 9,272,406 B2 | 3/2016 | Aronhalt et al.                |
| 9,186,143 B2 | 11/2015 | Timm et al.                | 9,274,095 B2 | 3/2016 | Humayun et al.                 |
| 9,186,148 B2 | 11/2015 | Felder et al.              | 9,277,919 B2 | 3/2016 | Timmer et al.                  |
| 9,186,221 B2 | 11/2015 | Burbank                    | 9,277,922 B2 | 3/2016 | Carter et al.                  |
| 9,192,380 B2 | 11/2015 | (Tarinelli) Racenet et al. | 9,282,962 B2 | 3/2016 | Schmid et al.                  |
| 9,192,384 B2 | 11/2015 | Bettuchi                   | 9,282,963 B2 | 3/2016 | Bryant                         |
| 9,192,430 B2 | 11/2015 | Rachlin et al.             | 9,282,966 B2 | 3/2016 | Shelton, IV et al.             |
| 9,192,434 B2 | 11/2015 | Twomey et al.              | 9,282,974 B2 | 3/2016 | Shelton, IV                    |
| 9,193,045 B2 | 11/2015 | Saur et al.                | 9,283,028 B2 | 3/2016 | Johnson                        |
| 9,197,079 B2 | 11/2015 | Yip et al.                 | 9,283,045 B2 | 3/2016 | Rhee et al.                    |
| D744,528 S   | 12/2015 | Agrawal                    | 9,283,054 B2 | 3/2016 | Morgan et al.                  |
| 9,198,642 B2 | 12/2015 | Storz                      | 9,289,206 B2 | 3/2016 | Hess et al.                    |
| 9,198,644 B2 | 12/2015 | Balek et al.               | 9,289,207 B2 | 3/2016 | Shelton, IV                    |
| 9,198,661 B2 | 12/2015 | Swensgard                  | 9,289,210 B2 | 3/2016 | Baxter, III et al.             |
| 9,198,662 B2 | 12/2015 | Barton et al.              | 9,289,211 B2 | 3/2016 | Williams et al.                |
| 9,198,683 B2 | 12/2015 | Friedman et al.            | 9,289,212 B2 | 3/2016 | Shelton, IV et al.             |
| 9,204,830 B2 | 12/2015 | Zand et al.                | 9,289,225 B2 | 3/2016 | Shelton, IV et al.             |
| 9,204,877 B2 | 12/2015 | Whitman et al.             | 9,289,256 B2 | 3/2016 | Shelton, IV et al.             |
| 9,204,878 B2 | 12/2015 | Hall et al.                | 9,293,757 B2 | 3/2016 | Toussaint et al.               |
| 9,204,879 B2 | 12/2015 | Shelton, IV                | 9,295,464 B2 | 3/2016 | Shelton, IV et al.             |
| 9,204,880 B2 | 12/2015 | Baxter, III et al.         | 9,295,465 B2 | 3/2016 | Farascioni                     |
| 9,204,923 B2 | 12/2015 | Manzo et al.               | 9,295,466 B2 | 3/2016 | Hodgkinson et al.              |
| 9,204,924 B2 | 12/2015 | Marczyk et al.             | 9,295,467 B2 | 3/2016 | Scirica                        |
| 9,211,120 B2 | 12/2015 | Scheib et al.              | 9,295,468 B2 | 3/2016 | Heinrich et al.                |
| 9,211,121 B2 | 12/2015 | Hall et al.                | 9,295,514 B2 | 3/2016 | Shelton, IV et al.             |
| 9,211,122 B2 | 12/2015 | Hagerty et al.             | 9,295,522 B2 | 3/2016 | Kostrzewski                    |
| 9,216,013 B2 | 12/2015 | Scirica et al.             | 9,295,784 B2 | 3/2016 | Eggert et al.                  |
| 9,216,019 B2 | 12/2015 | Schmid et al.              | 9,301,691 B2 | 4/2016 | Hufnagel et al.                |
| 9,216,020 B2 | 12/2015 | Zhang et al.               | 9,301,752 B2 | 4/2016 | Mandakolathur Vasudevan et al. |
| 9,216,030 B2 | 12/2015 | Fan et al.                 | 9,301,753 B2 | 4/2016 | Aldridge et al.                |
| 9,216,062 B2 | 12/2015 | Duque et al.               | 9,301,755 B2 | 4/2016 | Shelton, IV et al.             |
| 9,220,500 B2 | 12/2015 | Swayze et al.              | 9,301,759 B2 | 4/2016 | Spivey et al.                  |
| 9,220,501 B2 | 12/2015 | Baxter, III et al.         | 9,307,965 B2 | 4/2016 | Ming et al.                    |
| 9,220,502 B2 | 12/2015 | Zemlok et al.              | 9,307,986 B2 | 4/2016 | Hall et al.                    |
| 9,220,508 B2 | 12/2015 | Dannaher                   | 9,307,987 B2 | 4/2016 | Swensgard et al.               |
| 9,220,559 B2 | 12/2015 | Worrell et al.             | 9,307,988 B2 | 4/2016 | Shelton, IV                    |
| 9,220,570 B2 | 12/2015 | Kim et al.                 | 9,307,989 B2 | 4/2016 | Shelton, IV et al.             |
| D746,854 S   | 1/2016  | Shardlow et al.            | 9,307,994 B2 | 4/2016 | Gresham et al.                 |
| 9,226,750 B2 | 1/2016  | Weir et al.                | 9,308,009 B2 | 4/2016 | Madan et al.                   |
| 9,226,751 B2 | 1/2016  | Shelton, IV et al.         | 9,308,011 B2 | 4/2016 | Chao et al.                    |
| 9,226,754 B2 | 1/2016  | D'Agostino et al.          | 9,308,646 B2 | 4/2016 | Lim et al.                     |
| 9,226,761 B2 | 1/2016  | Burbank                    | 9,313,915 B2 | 4/2016 | Niu et al.                     |
|              |         |                            | 9,314,246 B2 | 4/2016 | Shelton, IV et al.             |
|              |         |                            | 9,314,247 B2 | 4/2016 | Shelton, IV et al.             |
|              |         |                            | 9,314,261 B2 | 4/2016 | Bales, Jr. et al.              |
|              |         |                            | 9,314,908 B2 | 4/2016 | Tanimoto et al.                |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |        |                            |              |         |                         |
|--------------|--------|----------------------------|--------------|---------|-------------------------|
| 9,320,518 B2 | 4/2016 | Henderson et al.           | 9,408,604 B2 | 8/2016  | Shelton, IV et al.      |
| 9,320,520 B2 | 4/2016 | Shelton, IV et al.         | 9,408,606 B2 | 8/2016  | Shelton, IV             |
| 9,320,521 B2 | 4/2016 | Shelton, IV et al.         | 9,408,622 B2 | 8/2016  | Stulen et al.           |
| 9,320,523 B2 | 4/2016 | Shelton, IV et al.         | 9,411,370 B2 | 8/2016  | Benni et al.            |
| 9,325,516 B2 | 4/2016 | Pera et al.                | 9,413,128 B2 | 8/2016  | Tien et al.             |
| D755,196 S   | 5/2016 | Meyers et al.              | 9,414,838 B2 | 8/2016  | Shelton, IV et al.      |
| D756,373 S   | 5/2016 | Raskin et al.              | 9,414,849 B2 | 8/2016  | Nagashimada             |
| D756,377 S   | 5/2016 | Connolly et al.            | 9,414,880 B2 | 8/2016  | Monson et al.           |
| D757,028 S   | 5/2016 | Goldenberg et al.          | 9,420,967 B2 | 8/2016  | Zand et al.             |
| 9,326,767 B2 | 5/2016 | Koch, Jr. et al.           | 9,421,003 B2 | 8/2016  | Williams et al.         |
| 9,326,768 B2 | 5/2016 | Shelton, IV                | 9,421,014 B2 | 8/2016  | Ingmanson et al.        |
| 9,326,769 B2 | 5/2016 | Shelton, IV et al.         | 9,421,030 B2 | 8/2016  | Cole et al.             |
| 9,326,770 B2 | 5/2016 | Shelton, IV et al.         | 9,421,060 B2 | 8/2016  | Monson et al.           |
| 9,326,771 B2 | 5/2016 | Baxter, III et al.         | 9,421,062 B2 | 8/2016  | Houser et al.           |
| 9,326,788 B2 | 5/2016 | Batross et al.             | 9,427,223 B2 | 8/2016  | Park et al.             |
| 9,326,812 B2 | 5/2016 | Waalder et al.             | 9,427,231 B2 | 8/2016  | Racenet et al.          |
| 9,331,721 B2 | 5/2016 | Martinez Nuevo et al.      | D767,624 S   | 9/2016  | Lee et al.              |
| 9,332,890 B2 | 5/2016 | Ozawa                      | 9,433,411 B2 | 9/2016  | Racenet et al.          |
| 9,332,974 B2 | 5/2016 | Henderson et al.           | 9,433,419 B2 | 9/2016  | Gonzalez et al.         |
| 9,332,984 B2 | 5/2016 | Weaner et al.              | 9,433,420 B2 | 9/2016  | Hodgkinson              |
| 9,332,987 B2 | 5/2016 | Leimbach et al.            | 9,439,649 B2 | 9/2016  | Shelton, IV et al.      |
| 9,333,040 B2 | 5/2016 | Shellenberger et al.       | 9,439,650 B2 | 9/2016  | McGuckin, Jr. et al.    |
| 9,333,082 B2 | 5/2016 | Wei et al.                 | 9,439,651 B2 | 9/2016  | Smith et al.            |
| 9,337,668 B2 | 5/2016 | Yip                        | 9,439,668 B2 | 9/2016  | Timm et al.             |
| 9,339,226 B2 | 5/2016 | van der Walt et al.        | 9,445,808 B2 | 9/2016  | Woodard, Jr. et al.     |
| 9,345,477 B2 | 5/2016 | Anim et al.                | 9,445,813 B2 | 9/2016  | Shelton, IV et al.      |
| 9,345,479 B2 | 5/2016 | (Tarinelli) Racenet et al. | 9,445,817 B2 | 9/2016  | Bettuchi                |
| 9,345,480 B2 | 5/2016 | Hessler et al.             | 9,446,226 B2 | 9/2016  | Zilberman               |
| 9,345,481 B2 | 5/2016 | Hall et al.                | 9,451,938 B2 | 9/2016  | Overes et al.           |
| 9,351,726 B2 | 5/2016 | Leimbach et al.            | 9,451,958 B2 | 9/2016  | Shelton, IV et al.      |
| 9,351,727 B2 | 5/2016 | Leimbach et al.            | D768,152 S   | 10/2016 | Gutierrez et al.        |
| 9,351,728 B2 | 5/2016 | Sniffin et al.             | D768,156 S   | 10/2016 | Frincke                 |
| 9,351,730 B2 | 5/2016 | Schmid et al.              | D769,315 S   | 10/2016 | Scotti                  |
| 9,351,731 B2 | 5/2016 | Carter et al.              | D769,930 S   | 10/2016 | Agrawal                 |
| 9,351,732 B2 | 5/2016 | Hodgkinson                 | 9,461,340 B2 | 10/2016 | Li et al.               |
| D758,433 S   | 6/2016 | Lee et al.                 | 9,463,040 B2 | 10/2016 | Jeong et al.            |
| D759,063 S   | 6/2016 | Chen                       | 9,463,260 B2 | 10/2016 | Stopek                  |
| 9,358,003 B2 | 6/2016 | Hall et al.                | 9,468,438 B2 | 10/2016 | Baber et al.            |
| 9,358,005 B2 | 6/2016 | Shelton, IV et al.         | 9,468,447 B2 | 10/2016 | Aman et al.             |
| 9,358,015 B2 | 6/2016 | Sorrentino et al.          | 9,470,297 B2 | 10/2016 | Aranyi et al.           |
| 9,358,031 B2 | 6/2016 | Manzo                      | 9,471,969 B2 | 10/2016 | Zeng et al.             |
| 9,364,217 B2 | 6/2016 | Kostrzewski et al.         | 9,474,506 B2 | 10/2016 | Magnin et al.           |
| 9,364,219 B2 | 6/2016 | Olson et al.               | 9,474,523 B2 | 10/2016 | Meade et al.            |
| 9,364,220 B2 | 6/2016 | Williams                   | 9,474,540 B2 | 10/2016 | Stokes et al.           |
| 9,364,226 B2 | 6/2016 | Zemlok et al.              | 9,475,180 B2 | 10/2016 | Eshleman et al.         |
| 9,364,229 B2 | 6/2016 | D'Agostino et al.          | D770,476 S   | 11/2016 | Jitkoff et al.          |
| 9,364,230 B2 | 6/2016 | Shelton, IV et al.         | D770,515 S   | 11/2016 | Cho et al.              |
| 9,364,231 B2 | 6/2016 | Wenchell                   | D771,116 S   | 11/2016 | Dellinger et al.        |
| 9,364,233 B2 | 6/2016 | Alexander, III et al.      | D772,905 S * | 11/2016 | Ingenlath ..... D14/486 |
| 9,364,279 B2 | 6/2016 | Houser et al.              | 9,480,476 B2 | 11/2016 | Aldridge et al.         |
| 9,368,991 B2 | 6/2016 | Qahouq                     | 9,480,492 B2 | 11/2016 | Aranyi et al.           |
| 9,370,341 B2 | 6/2016 | Ceniccola et al.           | 9,483,095 B2 | 11/2016 | Tran et al.             |
| 9,370,358 B2 | 6/2016 | Shelton, IV et al.         | 9,486,186 B2 | 11/2016 | Fiebig et al.           |
| 9,370,364 B2 | 6/2016 | Smith et al.               | 9,486,213 B2 | 11/2016 | Altman et al.           |
| 9,375,206 B2 | 6/2016 | Vidal et al.               | 9,486,214 B2 | 11/2016 | Shelton, IV             |
| 9,375,230 B2 | 6/2016 | Ross et al.                | 9,486,302 B2 | 11/2016 | Boey et al.             |
| 9,375,232 B2 | 6/2016 | Hunt et al.                | 9,488,197 B2 | 11/2016 | Wi                      |
| 9,375,255 B2 | 6/2016 | Houser et al.              | 9,492,146 B2 | 11/2016 | Kostrzewski et al.      |
| D761,309 S   | 7/2016 | Lee et al.                 | 9,492,167 B2 | 11/2016 | Shelton, IV et al.      |
| 9,381,058 B2 | 7/2016 | Houser et al.              | 9,492,170 B2 | 11/2016 | Bear et al.             |
| 9,386,983 B2 | 7/2016 | Swensgard et al.           | 9,492,189 B2 | 11/2016 | Williams et al.         |
| 9,386,984 B2 | 7/2016 | Aronhalt et al.            | 9,492,192 B2 | 11/2016 | To et al.               |
| 9,386,985 B2 | 7/2016 | Koch, Jr. et al.           | 9,498,213 B2 | 11/2016 | Marczyk et al.          |
| 9,386,988 B2 | 7/2016 | Baxter, III et al.         | 9,498,219 B2 | 11/2016 | Moore et al.            |
| 9,387,003 B2 | 7/2016 | Kaercher et al.            | 9,504,483 B2 | 11/2016 | Houser et al.           |
| 9,393,015 B2 | 7/2016 | Laurent et al.             | 9,504,521 B2 | 11/2016 | Deutmeyer et al.        |
| 9,393,017 B2 | 7/2016 | Flanagan et al.            | D774,547 S   | 12/2016 | Capela et al.           |
| 9,393,018 B2 | 7/2016 | Wang et al.                | D775,336 S   | 12/2016 | Shelton, IV et al.      |
| 9,398,911 B2 | 7/2016 | Auld                       | 9,510,827 B2 | 12/2016 | Kostrzewski             |
| D763,277 S   | 8/2016 | Ahmed et al.               | 9,510,828 B2 | 12/2016 | Yates et al.            |
| D764,498 S   | 8/2016 | Capela et al.              | 9,510,830 B2 | 12/2016 | Shelton, IV et al.      |
| 9,402,604 B2 | 8/2016 | Williams et al.            | 9,510,846 B2 | 12/2016 | Sholev et al.           |
| 9,402,626 B2 | 8/2016 | Ortiz et al.               | 9,510,895 B2 | 12/2016 | Houser et al.           |
| 9,402,627 B2 | 8/2016 | Stevenson et al.           | 9,510,925 B2 | 12/2016 | Hotter et al.           |
| 9,402,629 B2 | 8/2016 | Ehrenfels et al.           | 9,517,063 B2 | 12/2016 | Swayze et al.           |
|              |        |                            | 9,517,068 B2 | 12/2016 | Shelton, IV et al.      |
|              |        |                            | 9,521,996 B2 | 12/2016 | Armstrong               |
|              |        |                            | 9,522,029 B2 | 12/2016 | Yates et al.            |
|              |        |                            | 9,526,481 B2 | 12/2016 | Storz et al.            |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |         |                                       |              |        |                     |
|--------------|---------|---------------------------------------|--------------|--------|---------------------|
| 9,526,499 B2 | 12/2016 | Kostrzewski et al.                    | 9,641,122 B2 | 5/2017 | Romanowich et al.   |
| 9,526,563 B2 | 12/2016 | Twomey                                | 9,642,620 B2 | 5/2017 | Baxter, III et al.  |
| 9,526,564 B2 | 12/2016 | Rusin                                 | 9,649,096 B2 | 5/2017 | Sholev              |
| D776,683 S   | 1/2017  | Gobinski et al.                       | 9,649,110 B2 | 5/2017 | Parihar et al.      |
| D777,773 S   | 1/2017  | Shi                                   | 9,649,111 B2 | 5/2017 | Shelton, IV et al.  |
| 9,532,783 B2 | 1/2017  | Swayze et al.                         | 9,655,613 B2 | 5/2017 | Schaller            |
| 9,539,726 B2 | 1/2017  | Simaan et al.                         | 9,655,614 B2 | 5/2017 | Swensgard et al.    |
| 9,545,253 B2 | 1/2017  | Worrell et al.                        | 9,655,615 B2 | 5/2017 | Knodel et al.       |
| 9,545,258 B2 | 1/2017  | Smith et al.                          | 9,655,616 B2 | 5/2017 | Aranyi              |
| 9,549,732 B2 | 1/2017  | Yates et al.                          | 9,655,624 B2 | 5/2017 | Shelton, IV et al.  |
| 9,549,735 B2 | 1/2017  | Shelton, IV et al.                    | 9,662,108 B2 | 5/2017 | Williams            |
| 9,554,794 B2 | 1/2017  | Baber et al.                          | 9,662,110 B2 | 5/2017 | Huang et al.        |
| 9,554,796 B2 | 1/2017  | Kostrzewski                           | 9,662,116 B2 | 5/2017 | Smith et al.        |
| 9,554,812 B2 | 1/2017  | Inkpen et al.                         | 9,662,131 B2 | 5/2017 | Omori et al.        |
| 9,559,624 B2 | 1/2017  | Philipp                               | D788,792 S   | 6/2017 | Alessandri et al.   |
| 9,561,013 B2 | 2/2017  | Tsuchiya                              | D789,384 S   | 6/2017 | Lin et al.          |
| 9,561,030 B2 | 2/2017  | Zhang et al.                          | D790,570 S   | 6/2017 | Butcher et al.      |
| 9,561,031 B2 | 2/2017  | Heinrich et al.                       | 9,668,728 B2 | 6/2017 | Williams et al.     |
| 9,561,032 B2 | 2/2017  | Shelton, IV et al.                    | 9,668,729 B2 | 6/2017 | Williams et al.     |
| 9,561,038 B2 | 2/2017  | Shelton, IV et al.                    | 9,668,732 B2 | 6/2017 | Patel et al.        |
| 9,561,045 B2 | 2/2017  | Hinman et al.                         | 9,668,733 B2 | 6/2017 | Williams            |
| 9,566,061 B2 | 2/2017  | Aronhalt et al.                       | 9,668,734 B2 | 6/2017 | Kostrzewski et al.  |
| 9,566,062 B2 | 2/2017  | Boudreaux                             | 9,675,344 B2 | 6/2017 | Combrowski et al.   |
| 9,566,065 B2 | 2/2017  | Knodel                                | 9,675,351 B2 | 6/2017 | Hodgkinson et al.   |
| 9,566,067 B2 | 2/2017  | Milliman et al.                       | 9,675,355 B2 | 6/2017 | Shelton, IV et al.  |
| 9,572,574 B2 | 2/2017  | Shelton, IV et al.                    | 9,675,372 B2 | 6/2017 | Laurent et al.      |
| 9,572,577 B2 | 2/2017  | Lloyd et al.                          | 9,675,375 B2 | 6/2017 | Houser et al.       |
| 9,572,592 B2 | 2/2017  | Price et al.                          | 9,675,405 B2 | 6/2017 | Trees et al.        |
| 9,574,644 B2 | 2/2017  | Parihar                               | 9,675,819 B2 | 6/2017 | Dunbar et al.       |
| 9,579,088 B2 | 2/2017  | Farritor et al.                       | 9,681,870 B2 | 6/2017 | Baxter, III et al.  |
| D780,803 S * | 3/2017  | Gill ..... D14/489                    | 9,681,873 B2 | 6/2017 | Smith et al.        |
| D781,879 S   | 3/2017  | Butcher et al.                        | 9,681,884 B2 | 6/2017 | Clem et al.         |
| D782,530 S   | 3/2017  | Paek et al.                           | 9,687,230 B2 | 6/2017 | Leimbach et al.     |
| 9,585,550 B2 | 3/2017  | Abel et al.                           | 9,687,231 B2 | 6/2017 | Baxter, III et al.  |
| 9,585,657 B2 | 3/2017  | Shelton, IV et al.                    | 9,687,232 B2 | 6/2017 | Shelton, IV et al.  |
| 9,585,658 B2 | 3/2017  | Shelton, IV                           | 9,687,233 B2 | 6/2017 | Fernandez et al.    |
| 9,585,659 B2 | 3/2017  | Viola et al.                          | 9,687,236 B2 | 6/2017 | Leimbach et al.     |
| 9,585,660 B2 | 3/2017  | Laurent et al.                        | 9,687,237 B2 | 6/2017 | Schmid et al.       |
| 9,585,662 B2 | 3/2017  | Shelton, IV et al.                    | 9,687,253 B2 | 6/2017 | Detry et al.        |
| 9,585,663 B2 | 3/2017  | Shelton, IV et al.                    | 9,689,466 B2 | 6/2017 | Kanai et al.        |
| 9,585,672 B2 | 3/2017  | Bastia                                | 9,690,362 B2 | 6/2017 | Leimbach et al.     |
| 9,590,433 B2 | 3/2017  | Li                                    | 9,693,772 B2 | 7/2017 | Ingmanson et al.    |
| 9,592,050 B2 | 3/2017  | Schmid et al.                         | 9,693,774 B2 | 7/2017 | Gettinger et al.    |
| 9,592,052 B2 | 3/2017  | Shelton, IV                           | 9,693,777 B2 | 7/2017 | Schellin et al.     |
| 9,592,053 B2 | 3/2017  | Shelton, IV et al.                    | 9,700,309 B2 | 7/2017 | Jaworek et al.      |
| 9,592,054 B2 | 3/2017  | Schmid et al.                         | 9,700,310 B2 | 7/2017 | Morgan et al.       |
| 9,597,073 B2 | 3/2017  | Sorrentino et al.                     | 9,700,312 B2 | 7/2017 | Kostrzewski et al.  |
| 9,597,075 B2 | 3/2017  | Shelton, IV et al.                    | 9,700,317 B2 | 7/2017 | Aronhalt et al.     |
| 9,597,080 B2 | 3/2017  | Milliman et al.                       | 9,700,318 B2 | 7/2017 | Scirica et al.      |
| 9,597,104 B2 | 3/2017  | Nicholas et al.                       | 9,700,319 B2 | 7/2017 | Motooka et al.      |
| 9,597,143 B2 | 3/2017  | Madan et al.                          | 9,700,320 B2 | 7/2017 | Dinardo et al.      |
| 9,603,595 B2 | 3/2017  | Shelton, IV et al.                    | 9,700,321 B2 | 7/2017 | Shelton, IV et al.  |
| 9,603,598 B2 | 3/2017  | Shelton, IV et al.                    | 9,706,981 B2 | 7/2017 | Nicholas et al.     |
| 9,603,599 B2 | 3/2017  | Miller et al.                         | 9,706,991 B2 | 7/2017 | Hess et al.         |
| 9,603,991 B2 | 3/2017  | Shelton, IV et al.                    | 9,706,993 B2 | 7/2017 | Hessler et al.      |
| D783,658 S   | 4/2017  | Hurst et al.                          | 9,707,005 B2 | 7/2017 | Strobl et al.       |
| 9,610,080 B2 | 4/2017  | Whitfield et al.                      | 9,707,026 B2 | 7/2017 | Malackowski et al.  |
| 9,614,258 B2 | 4/2017  | Takahashi et al.                      | 9,707,043 B2 | 7/2017 | Bozung              |
| 9,615,826 B2 | 4/2017  | Shelton, IV et al.                    | 9,707,684 B2 | 7/2017 | Ruiz Morales et al. |
| 9,622,745 B2 | 4/2017  | Ingmanson et al.                      | 9,713,468 B2 | 7/2017 | Harris et al.       |
| 9,629,623 B2 | 4/2017  | Lytle, IV et al.                      | 9,713,470 B2 | 7/2017 | Scirica et al.      |
| 9,629,626 B2 | 4/2017  | Soltz et al.                          | 9,713,474 B2 | 7/2017 | Lorenz              |
| 9,629,627 B2 | 4/2017  | Kostrzewski et al.                    | 9,717,497 B2 | 8/2017 | Zerle et al.        |
| 9,629,628 B2 | 4/2017  | Aranyi                                | 9,717,498 B2 | 8/2017 | Aranyi et al.       |
| 9,629,629 B2 | 4/2017  | Leimbach et al.                       | 9,722,236 B2 | 8/2017 | Sathrum             |
| 9,629,652 B2 | 4/2017  | Mumaw et al.                          | 9,724,091 B2 | 8/2017 | Shelton, IV et al.  |
| 9,629,814 B2 | 4/2017  | Widenhouse et al.                     | 9,724,092 B2 | 8/2017 | Baxter, III et al.  |
| D786,280 S   | 5/2017  | Ma                                    | 9,724,094 B2 | 8/2017 | Baber               |
| D786,896 S   | 5/2017  | Kim et al.                            | 9,724,096 B2 | 8/2017 | Thompson et al.     |
| D787,547 S * | 5/2017  | Basargin ..... D14/488                | 9,724,098 B2 | 8/2017 | Baxter, III et al.  |
| D788,123 S   | 5/2017  | Shan et al.                           | 9,724,118 B2 | 8/2017 | Schulte et al.      |
| D788,140 S   | 5/2017  | Hemsley et al.                        | 9,724,163 B2 | 8/2017 | Orban               |
| 9,636,111 B2 | 5/2017  | Wenchell                              | 9,730,692 B2 | 8/2017 | Shelton, IV et al.  |
| 9,636,850 B2 | 5/2017  | Stopek (Nee Prommersberger)<br>et al. | 9,730,695 B2 | 8/2017 | Leimbach et al.     |
|              |         |                                       | 9,730,697 B2 | 8/2017 | Morgan et al.       |
|              |         |                                       | 9,730,717 B2 | 8/2017 | Katsuki et al.      |
|              |         |                                       | 9,731,410 B2 | 8/2017 | Hirabayashi et al.  |
|              |         |                                       | 9,733,663 B2 | 8/2017 | Leimbach et al.     |
|              |         |                                       | 9,737,297 B2 | 8/2017 | Racenet et al.      |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |         |                          |              |         |                        |
|--------------|---------|--------------------------|--------------|---------|------------------------|
| 9,737,301 B2 | 8/2017  | Baber et al.             | 9,820,741 B2 | 11/2017 | Kostrzewski            |
| 9,737,302 B2 | 8/2017  | Shelton, IV et al.       | 9,820,768 B2 | 11/2017 | Gee et al.             |
| 9,737,303 B2 | 8/2017  | Shelton, IV et al.       | 9,825,455 B2 | 11/2017 | Sandhu et al.          |
| 9,737,365 B2 | 8/2017  | Hegeman et al.           | 9,826,976 B2 | 11/2017 | Parihar et al.         |
| 9,743,927 B2 | 8/2017  | Whitman                  | 9,826,977 B2 | 11/2017 | Leimbach et al.        |
| 9,743,928 B2 | 8/2017  | Shelton, IV et al.       | 9,826,978 B2 | 11/2017 | Shelton, IV et al.     |
| 9,743,929 B2 | 8/2017  | Leimbach et al.          | 9,829,698 B2 | 11/2017 | Haraguchi et al.       |
| D798,319 S * | 9/2017  | Bergstrand ..... D14/486 | D806,108 S   | 12/2017 | Day                    |
| 9,750,498 B2 | 9/2017  | Timm et al.              | 9,833,236 B2 | 12/2017 | Shelton, IV et al.     |
| 9,750,499 B2 | 9/2017  | Leimbach et al.          | 9,833,238 B2 | 12/2017 | Baxter, III et al.     |
| 9,750,501 B2 | 9/2017  | Shelton, IV et al.       | 9,833,239 B2 | 12/2017 | Yates et al.           |
| 9,750,502 B2 | 9/2017  | Scirica et al.           | 9,833,241 B2 | 12/2017 | Huitema et al.         |
| 9,750,639 B2 | 9/2017  | Barnes et al.            | 9,833,242 B2 | 12/2017 | Baxter, III et al.     |
| 9,757,123 B2 | 9/2017  | Giordano et al.          | 9,839,420 B2 | 12/2017 | Shelton, IV et al.     |
| 9,757,124 B2 | 9/2017  | Schellin et al.          | 9,839,421 B2 | 12/2017 | Zerkle et al.          |
| 9,757,126 B2 | 9/2017  | Cappola                  | 9,839,422 B2 | 12/2017 | Schellin et al.        |
| 9,757,128 B2 | 9/2017  | Baber et al.             | 9,839,423 B2 | 12/2017 | Vendely et al.         |
| 9,757,129 B2 | 9/2017  | Williams                 | 9,839,427 B2 | 12/2017 | Swayze et al.          |
| 9,757,130 B2 | 9/2017  | Shelton, IV              | 9,839,428 B2 | 12/2017 | Baxter, III et al.     |
| 9,763,662 B2 | 9/2017  | Shelton, IV et al.       | 9,839,429 B2 | 12/2017 | Weisenburgh, II et al. |
| 9,763,668 B2 | 9/2017  | Whitfield et al.         | 9,839,480 B2 | 12/2017 | Pribanic et al.        |
| 9,770,245 B2 | 9/2017  | Swayze et al.            | 9,844,368 B2 | 12/2017 | Boudreaux et al.       |
| 9,770,274 B2 | 9/2017  | Pool et al.              | 9,844,369 B2 | 12/2017 | Huitema et al.         |
| D798,886 S   | 10/2017 | Prophete et al.          | 9,844,372 B2 | 12/2017 | Shelton, IV et al.     |
| D800,742 S   | 10/2017 | Rhodes                   | 9,844,373 B2 | 12/2017 | Swayze et al.          |
| D800,744 S   | 10/2017 | Jitkoff et al.           | 9,844,374 B2 | 12/2017 | Lytte, IV et al.       |
| D800,766 S   | 10/2017 | Park et al.              | 9,844,375 B2 | 12/2017 | Overmyer et al.        |
| D800,904 S   | 10/2017 | Leimbach et al.          | 9,844,376 B2 | 12/2017 | Baxter, III et al.     |
| 9,775,608 B2 | 10/2017 | Aronhalt et al.          | 9,844,379 B2 | 12/2017 | Shelton, IV et al.     |
| 9,775,609 B2 | 10/2017 | Shelton, IV et al.       | 9,848,871 B2 | 12/2017 | Harris et al.          |
| 9,775,610 B2 | 10/2017 | Nicholas et al.          | 9,848,873 B2 | 12/2017 | Shelton, IV            |
| 9,775,611 B2 | 10/2017 | Kostrzewski              | 9,848,875 B2 | 12/2017 | Aronhalt et al.        |
| 9,775,613 B2 | 10/2017 | Shelton, IV et al.       | 9,848,877 B2 | 12/2017 | Shelton, IV et al.     |
| 9,775,614 B2 | 10/2017 | Shelton, IV et al.       | 9,855,039 B2 | 1/2018  | Racenet et al.         |
| 9,775,618 B2 | 10/2017 | Bettuchi et al.          | 9,855,040 B2 | 1/2018  | Kostrzewski            |
| 9,775,635 B2 | 10/2017 | Takei                    | 9,855,662 B2 | 1/2018  | Ruiz Morales et al.    |
| 9,782,169 B2 | 10/2017 | Kimsey et al.            | 9,861,261 B2 | 1/2018  | Shahinian              |
| 9,782,170 B2 | 10/2017 | Zemlok et al.            | 9,861,359 B2 | 1/2018  | Shelton, IV et al.     |
| 9,782,180 B2 | 10/2017 | Smith et al.             | 9,861,361 B2 | 1/2018  | Aronhalt et al.        |
| 9,782,193 B2 | 10/2017 | Thistle                  | 9,861,382 B2 | 1/2018  | Smith et al.           |
| 9,782,214 B2 | 10/2017 | Houser et al.            | 9,867,612 B2 | 1/2018  | Parihar et al.         |
| 9,788,834 B2 | 10/2017 | Schmid et al.            | 9,867,618 B2 | 1/2018  | Hall et al.            |
| 9,788,835 B2 | 10/2017 | Morgan et al.            | 9,867,620 B2 | 1/2018  | Fischvogt et al.       |
| 9,788,836 B2 | 10/2017 | Overmyer et al.          | 9,868,198 B2 | 1/2018  | Nicholas et al.        |
| 9,788,847 B2 | 10/2017 | Jinno                    | 9,872,682 B2 | 1/2018  | Hess et al.            |
| 9,788,851 B2 | 10/2017 | Dannaher et al.          | 9,872,683 B2 | 1/2018  | Hopkins et al.         |
| 9,788,902 B2 | 10/2017 | Inoue et al.             | 9,872,684 B2 | 1/2018  | Hall et al.            |
| 9,795,379 B2 | 10/2017 | Leimbach et al.          | 9,877,721 B2 | 1/2018  | Schellin et al.        |
| 9,795,380 B2 | 10/2017 | Shelton, IV et al.       | 9,877,723 B2 | 1/2018  | Hall et al.            |
| 9,795,381 B2 | 10/2017 | Shelton, IV              | D810,099 S   | 2/2018  | Riedel                 |
| 9,795,382 B2 | 10/2017 | Shelton, IV              | 9,883,843 B2 | 2/2018  | Garlow                 |
| 9,795,383 B2 | 10/2017 | Aldridge et al.          | 9,883,860 B2 | 2/2018  | Leimbach et al.        |
| 9,795,384 B2 | 10/2017 | Weaner et al.            | 9,883,861 B2 | 2/2018  | Shelton, IV et al.     |
| 9,797,486 B2 | 10/2017 | Zergiebel et al.         | 9,884,456 B2 | 2/2018  | Schellin et al.        |
| 9,801,626 B2 | 10/2017 | Parihar et al.           | 9,888,919 B2 | 2/2018  | Leimbach et al.        |
| 9,801,627 B2 | 10/2017 | Harris et al.            | 9,888,921 B2 | 2/2018  | Williams et al.        |
| 9,801,628 B2 | 10/2017 | Harris et al.            | 9,888,924 B2 | 2/2018  | Ebersole et al.        |
| 9,801,634 B2 | 10/2017 | Shelton, IV et al.       | 9,889,230 B2 | 2/2018  | Bennett et al.         |
| 9,802,033 B2 | 10/2017 | Hibner et al.            | 9,895,147 B2 | 2/2018  | Shelton, IV            |
| 9,804,618 B2 | 10/2017 | Leimbach et al.          | 9,895,148 B2 | 2/2018  | Shelton, IV et al.     |
| D803,234 S   | 11/2017 | Day et al.               | 9,895,813 B2 | 2/2018  | Blumenkranz et al.     |
| D803,235 S   | 11/2017 | Markson et al.           | 9,901,339 B2 | 2/2018  | Farascioni             |
| D803,850 S   | 11/2017 | Chang et al.             | 9,901,341 B2 | 2/2018  | Kostrzewski            |
| 9,808,244 B2 | 11/2017 | Leimbach et al.          | 9,901,342 B2 | 2/2018  | Shelton, IV et al.     |
| 9,808,246 B2 | 11/2017 | Shelton, IV et al.       | 9,901,344 B2 | 2/2018  | Moore et al.           |
| 9,808,247 B2 | 11/2017 | Shelton, IV et al.       | 9,901,345 B2 | 2/2018  | Moore et al.           |
| 9,808,249 B2 | 11/2017 | Shelton, IV              | 9,901,346 B2 | 2/2018  | Moore et al.           |
| 9,814,460 B2 | 11/2017 | Kimsey et al.            | 9,901,412 B2 | 2/2018  | Lathrop et al.         |
| 9,814,462 B2 | 11/2017 | Woodard, Jr. et al.      | D813,899 S   | 3/2018  | Erant et al.           |
| 9,814,463 B2 | 11/2017 | Williams et al.          | 9,907,456 B2 | 3/2018  | Miyoshi                |
| 9,814,530 B2 | 11/2017 | Weir et al.              | 9,907,553 B2 | 3/2018  | Cole et al.            |
| 9,814,561 B2 | 11/2017 | Forsell                  | 9,907,600 B2 | 3/2018  | Stulen et al.          |
| 9,820,445 B2 | 11/2017 | Simpson et al.           | 9,907,620 B2 | 3/2018  | Shelton, IV et al.     |
| 9,820,737 B2 | 11/2017 | Beardsley et al.         | 9,913,642 B2 | 3/2018  | Leimbach et al.        |
| 9,820,738 B2 | 11/2017 | Lytte, IV et al.         | 9,913,644 B2 | 3/2018  | McCuen                 |
|              |         |                          | 9,913,646 B2 | 3/2018  | Shelton, IV            |
|              |         |                          | 9,913,647 B2 | 3/2018  | Weisenburgh, II et al. |
|              |         |                          | 9,913,648 B2 | 3/2018  | Shelton, IV et al.     |
|              |         |                          | 9,913,694 B2 | 3/2018  | Brisson                |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

- 9,913,733 B2 3/2018 Piron et al.  
 9,918,704 B2 3/2018 Shelton, IV et al.  
 9,918,714 B2 3/2018 Gibbons, Jr.  
 9,918,715 B2 3/2018 Menn  
 9,918,716 B2 3/2018 Baxter, III et al.  
 9,918,717 B2 3/2018 Czemik  
 9,924,941 B2 3/2018 Burbank  
 9,924,942 B2 3/2018 Swayze et al.  
 9,924,944 B2 3/2018 Shelton, IV et al.  
 9,924,945 B2 3/2018 Zheng et al.  
 9,924,946 B2 3/2018 Vendely et al.  
 9,924,947 B2 3/2018 Shelton, IV et al.  
 9,924,961 B2 3/2018 Shelton, IV et al.  
 9,931,106 B2 4/2018 Au et al.  
 9,931,116 B2 4/2018 Racenet et al.  
 9,931,118 B2 4/2018 Shelton, IV et al.  
 9,936,949 B2 4/2018 Measamer et al.  
 9,936,950 B2 4/2018 Shelton, IV et al.  
 9,936,951 B2 4/2018 Hufnagel et al.  
 9,936,954 B2 4/2018 Shelton, IV et al.  
 9,937,626 B2 4/2018 Rockrohr  
 9,943,309 B2 4/2018 Shelton, IV et al.  
 9,943,310 B2 4/2018 Harris et al.  
 9,943,312 B2 4/2018 Posada et al.  
 D819,072 S 5/2018 Clediere  
 9,955,965 B2 5/2018 Chen et al.  
 9,955,966 B2 5/2018 Zergiebel  
 9,962,158 B2 5/2018 Hall et al.  
 9,962,159 B2 5/2018 Heinrich et al.  
 9,962,161 B2 5/2018 Scheib et al.  
 9,968,354 B2 5/2018 Shelton, IV et al.  
 9,968,355 B2 5/2018 Shelton, IV et al.  
 9,968,356 B2 5/2018 Shelton, IV et al.  
 9,968,397 B2 5/2018 Taylor et al.  
 9,974,529 B2 5/2018 Shelton, IV et al.  
 9,974,538 B2 5/2018 Baxter, III et al.  
 9,974,539 B2 5/2018 Yates et al.  
 9,974,541 B2 5/2018 Calderoni  
 9,974,542 B2 5/2018 Hodgkinson  
 9,980,713 B2 5/2018 Aronhalt et al.  
 9,980,724 B2 5/2018 Farascioni et al.  
 9,980,729 B2 5/2018 Moore et al.  
 9,980,769 B2 5/2018 Trees et al.  
 D819,680 S 6/2018 Nguyen  
 D819,682 S 6/2018 Howard et al.  
 D819,684 S 6/2018 Dart  
 D820,307 S 6/2018 Jian et al.  
 D820,867 S 6/2018 Dickens et al.  
 9,987,000 B2 6/2018 Shelton, IV et al.  
 9,987,003 B2 6/2018 Timm et al.  
 9,987,006 B2 6/2018 Morgan et al.  
 9,987,095 B2 6/2018 Chowaniec et al.  
 9,987,099 B2 6/2018 Chen et al.  
 9,993,248 B2 6/2018 Shelton, IV et al.  
 9,993,258 B2 6/2018 Shelton, IV et al.  
 9,999,408 B2 6/2018 Boudreaux et al.  
 9,999,423 B2 6/2018 Schuckmann et al.  
 9,999,426 B2 6/2018 Moore et al.  
 9,999,431 B2 6/2018 Shelton, IV et al.  
 9,999,472 B2 6/2018 Weir et al.  
 10,004,497 B2 6/2018 Overmyer et al.  
 10,004,498 B2 6/2018 Morgan et al.  
 10,004,500 B2 6/2018 Shelton, IV et al.  
 10,004,501 B2 6/2018 Shelton, IV et al.  
 10,004,505 B2 6/2018 Moore et al.  
 10,004,506 B2 6/2018 Shelton, IV et al.  
 D822,206 S 7/2018 Shelton, IV et al.  
 10,010,322 B2 7/2018 Shelton, IV et al.  
 10,010,324 B2 7/2018 Huitema et al.  
 10,013,049 B2 7/2018 Leimbach et al.  
 10,016,199 B2 7/2018 Baber et al.  
 10,022,125 B2 7/2018 (Prommersberger) Stopek  
 10,024,407 B2 7/2018 Aranyi et al.  
 10,028,742 B2 7/2018 Shelton, IV et al.  
 10,028,743 B2 7/2018 Shelton, IV et al.  
 10,028,744 B2 7/2018 Shelton, IV et al.  
 10,028,761 B2 7/2018 Leimbach et al.  
 10,029,125 B2 7/2018 Shapiro et al.  
 10,034,668 B2 7/2018 Ebner  
 D826,405 S 8/2018 Shelton, IV et al.  
 10,039,440 B2 8/2018 Fenech et al.  
 10,039,529 B2 8/2018 Kerr et al.  
 10,039,532 B2 8/2018 Srinivas et al.  
 10,039,545 B2 8/2018 Sadowski et al.  
 10,041,822 B2 8/2018 Zemlok  
 10,045,769 B2 8/2018 Aronhalt et al.  
 10,045,776 B2 8/2018 Shelton, IV et al.  
 10,045,778 B2 8/2018 Yates et al.  
 10,045,779 B2 8/2018 Savage et al.  
 10,045,781 B2 8/2018 Cropper et al.  
 10,052,044 B2 8/2018 Shelton, IV et al.  
 10,052,099 B2 8/2018 Morgan et al.  
 10,052,100 B2 8/2018 Morgan et al.  
 10,052,102 B2 8/2018 Baxter, III et al.  
 10,052,104 B2 8/2018 Shelton, IV et al.  
 10,052,164 B2 8/2018 Overmyer  
 10,058,317 B2 8/2018 Fan et al.  
 10,058,327 B2 8/2018 Weisenburgh, II et al.  
 10,058,395 B2 8/2018 Devengenzo et al.  
 10,058,963 B2 8/2018 Shelton, IV et al.  
 10,064,620 B2 9/2018 Gettinger et al.  
 10,064,621 B2 9/2018 Kerr et al.  
 10,064,624 B2 9/2018 Shelton, IV et al.  
 10,064,639 B2 9/2018 Ishida et al.  
 10,064,649 B2 9/2018 Golebieski et al.  
 10,064,688 B2 9/2018 Shelton, IV et al.  
 10,070,861 B2 9/2018 Spivey et al.  
 10,070,863 B2 9/2018 Swayze et al.  
 10,071,452 B2 9/2018 Shelton, IV et al.  
 10,076,325 B2 9/2018 Huang et al.  
 10,076,326 B2 9/2018 Yates et al.  
 10,076,340 B2 9/2018 Belagali et al.  
 D831,209 S 10/2018 Huitema et al.  
 D831,676 S 10/2018 Park et al.  
 D832,301 S 10/2018 Smith  
 10,085,624 B2 10/2018 Isoda et al.  
 10,085,728 B2 10/2018 Jogasaki et al.  
 10,085,748 B2 10/2018 Morgan et al.  
 10,085,749 B2 10/2018 Cappola et al.  
 10,085,751 B2 10/2018 Overmyer et al.  
 10,085,754 B2 10/2018 Sniffin et al.  
 10,085,806 B2 10/2018 Hagn et al.  
 10,092,292 B2 10/2018 Boudreaux et al.  
 10,098,635 B2 10/2018 Burbank  
 10,098,636 B2 10/2018 Shelton, IV et al.  
 10,098,638 B2 10/2018 Viola et al.  
 10,098,640 B2 10/2018 Bertolero et al.  
 10,098,642 B2 10/2018 Baxter, III et al.  
 10,099,303 B2 10/2018 Yoshida et al.  
 10,105,128 B2 10/2018 Cooper et al.  
 10,105,136 B2 10/2018 Yates et al.  
 10,105,139 B2 10/2018 Yates et al.  
 10,105,140 B2 10/2018 Malinouskas et al.  
 10,106,932 B2 10/2018 Anderson et al.  
 10,111,657 B2 10/2018 McCuen  
 10,111,679 B2 10/2018 Baber et al.  
 10,111,698 B2 10/2018 Scheib et al.  
 10,111,702 B2 10/2018 Kostrzewski  
 10,117,649 B2 11/2018 Baxter, III et al.  
 10,117,652 B2 11/2018 Schmid et al.  
 10,117,653 B2 11/2018 Leimbach et al.  
 10,117,654 B2 11/2018 Ingmanson et al.  
 10,123,798 B2 11/2018 Baxter, III et al.  
 10,124,493 B2 11/2018 Rothfuss et al.  
 10,130,352 B2 11/2018 Widenhouse et al.  
 10,130,359 B2 11/2018 Hess et al.  
 10,130,361 B2 11/2018 Yates et al.  
 10,130,363 B2 11/2018 Huitema et al.  
 10,130,366 B2 11/2018 Shelton, IV et al.  
 10,130,367 B2 11/2018 Cappola et al.  
 10,130,738 B2 11/2018 Shelton, IV et al.  
 10,130,830 B2 11/2018 Miret Carceller et al.  
 10,133,248 B2 11/2018 Fitzsimmons et al.  
 10,135,242 B2 11/2018 Baber et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

|               |         |                    |                 |        |                            |
|---------------|---------|--------------------|-----------------|--------|----------------------------|
| 10,136,887 B2 | 11/2018 | Shelton, IV et al. | 10,238,390 B2   | 3/2019 | Harris et al.              |
| 10,136,889 B2 | 11/2018 | Shelton, IV et al. | 10,238,391 B2   | 3/2019 | Leimbach et al.            |
| 10,136,890 B2 | 11/2018 | Shelton, IV et al. | D844,666 S      | 4/2019 | Espeleta et al.            |
| 10,136,891 B2 | 11/2018 | Shelton, IV et al. | D844,667 S      | 4/2019 | Espeleta et al.            |
| D835,659 S    | 12/2018 | Anzures et al.     | D845,342 S      | 4/2019 | Espeleta et al.            |
| D836,124 S    | 12/2018 | Fan                | 10,245,027 B2   | 4/2019 | Shelton, IV et al.         |
| 10,143,474 B2 | 12/2018 | Bucciaglia et al.  | 10,245,028 B2   | 4/2019 | Shelton, IV et al.         |
| 10,149,679 B2 | 12/2018 | Shelton, IV et al. | 10,245,029 B2   | 4/2019 | Hunter et al.              |
| 10,149,680 B2 | 12/2018 | Parihar et al.     | 10,245,030 B2   | 4/2019 | Hunter et al.              |
| 10,149,682 B2 | 12/2018 | Shelton, IV et al. | 10,245,032 B2   | 4/2019 | Shelton, IV                |
| 10,149,683 B2 | 12/2018 | Smith et al.       | 10,245,033 B2   | 4/2019 | Overmyer et al.            |
| 10,149,712 B2 | 12/2018 | Manwaring et al.   | 10,245,034 B2   | 4/2019 | Shelton, IV et al.         |
| 10,154,841 B2 | 12/2018 | Weaner et al.      | 10,245,035 B2   | 4/2019 | Swayze et al.              |
| 10,159,482 B2 | 12/2018 | Swayze et al.      | 10,245,058 B2   | 4/2019 | Omori et al.               |
| 10,159,483 B2 | 12/2018 | Beckman et al.     | 10,251,648 B2   | 4/2019 | Harris et al.              |
| 10,163,589 B2 | 12/2018 | Zergiebel et al.   | 10,251,649 B2   | 4/2019 | Schellin et al.            |
| D837,244 S    | 1/2019  | Kuo et al.         | 10,251,725 B2   | 4/2019 | Valentine et al.           |
| D837,245 S    | 1/2019  | Kuo et al.         | 10,258,322 B2   | 4/2019 | Fanton et al.              |
| 10,166,025 B2 | 1/2019  | Leimbach et al.    | 10,258,330 B2   | 4/2019 | Shelton, IV et al.         |
| 10,166,026 B2 | 1/2019  | Shelton, IV et al. | 10,258,331 B2   | 4/2019 | Shelton, IV et al.         |
| 10,172,611 B2 | 1/2019  | Shelton, IV et al. | 10,258,332 B2   | 4/2019 | Schmid et al.              |
| 10,172,615 B2 | 1/2019  | Marczyk et al.     | 10,258,333 B2   | 4/2019 | Shelton, IV et al.         |
| 10,172,616 B2 | 1/2019  | Murray et al.      | 10,258,336 B2   | 4/2019 | Baxter, III et al.         |
| 10,172,617 B2 | 1/2019  | Shelton, IV et al. | 10,258,418 B2   | 4/2019 | Shelton, IV et al.         |
| 10,172,619 B2 | 1/2019  | Harris et al.      | 10,264,797 B2   | 4/2019 | Zhang et al.               |
| 10,172,620 B2 | 1/2019  | Harris et al.      | 10,265,065 B2   | 4/2019 | Shelton, IV et al.         |
| 10,172,636 B2 | 1/2019  | Stulen et al.      | 10,265,067 B2   | 4/2019 | Yates et al.               |
| 10,175,127 B2 | 1/2019  | Collins et al.     | 10,265,068 B2   | 4/2019 | Harris et al.              |
| 10,178,992 B2 | 1/2019  | Wise et al.        | 10,265,072 B2   | 4/2019 | Shelton, IV et al.         |
| 10,180,463 B2 | 1/2019  | Beckman et al.     | 10,265,073 B2   | 4/2019 | Scheib et al.              |
| 10,182,813 B2 | 1/2019  | Leimbach et al.    | 10,265,074 B2   | 4/2019 | Shelton, IV et al.         |
| 10,182,816 B2 | 1/2019  | Shelton, IV et al. | 10,265,090 B2   | 4/2019 | Ingmanson et al.           |
| 10,182,818 B2 | 1/2019  | Hensel et al.      | 10,271,844 B2   | 4/2019 | Valentine et al.           |
| 10,182,819 B2 | 1/2019  | Shelton, IV        | 10,271,845 B2   | 4/2019 | Shelton, IV                |
| 10,188,385 B2 | 1/2019  | Kerr et al.        | 10,271,846 B2   | 4/2019 | Shelton, IV et al.         |
| 10,188,393 B2 | 1/2019  | Smith et al.       | 10,271,849 B2   | 4/2019 | Vendely et al.             |
| 10,188,394 B2 | 1/2019  | Shelton, IV et al. | 10,271,851 B2   | 4/2019 | Shelton, IV et al.         |
| D839,900 S *  | 2/2019  | Gan ..... D14/486  | D847,989 S      | 5/2019 | Shelton, IV et al.         |
| D841,667 S    | 2/2019  | Coren              | D848,473 S      | 5/2019 | Zhu et al.                 |
| 10,194,904 B2 | 2/2019  | Viola et al.       | D849,046 S      | 5/2019 | Kuo et al.                 |
| 10,194,910 B2 | 2/2019  | Shelton, IV et al. | 10,278,696 B2   | 5/2019 | Gurumurthy et al.          |
| 10,194,913 B2 | 2/2019  | Nalagatla et al.   | 10,278,697 B2   | 5/2019 | Shelton, IV et al.         |
| 10,194,976 B2 | 2/2019  | Boudreaux          | 10,278,702 B2   | 5/2019 | Shelton, IV et al.         |
| 10,201,348 B2 | 2/2019  | Scheib et al.      | 10,278,703 B2   | 5/2019 | Nativ et al.               |
| 10,201,349 B2 | 2/2019  | Leimbach et al.    | 10,278,707 B2   | 5/2019 | Thompson et al.            |
| 10,201,363 B2 | 2/2019  | Shelton, IV        | 10,278,722 B2   | 5/2019 | Shelton, IV et al.         |
| 10,201,364 B2 | 2/2019  | Leimbach et al.    | 10,278,780 B2   | 5/2019 | Shelton, IV                |
| 10,201,365 B2 | 2/2019  | Boudreaux et al.   | 10,285,694 B2   | 5/2019 | Viola et al.               |
| 10,201,381 B2 | 2/2019  | Zergiebel et al.   | 10,285,695 B2   | 5/2019 | Jaworek et al.             |
| 10,206,605 B2 | 2/2019  | Shelton, IV et al. | 10,285,699 B2   | 5/2019 | Vendely et al.             |
| 10,206,676 B2 | 2/2019  | Shelton, IV        | 10,285,705 B2   | 5/2019 | Shelton, IV et al.         |
| 10,206,677 B2 | 2/2019  | Harris et al.      | 10,292,701 B2   | 5/2019 | Scheib et al.              |
| 10,206,678 B2 | 2/2019  | Shelton, IV et al. | 10,292,704 B2   | 5/2019 | Harris et al.              |
| 10,211,586 B2 | 2/2019  | Adams et al.       | 10,292,707 B2   | 5/2019 | Shelton, IV et al.         |
| 10,213,198 B2 | 2/2019  | Aronhalt et al.    | 10,293,100 B2   | 5/2019 | Shelton, IV et al.         |
| 10,213,201 B2 | 2/2019  | Shelton, IV et al. | 10,293,553 B2   | 5/2019 | Racenet et al.             |
| 10,213,202 B2 | 2/2019  | Flanagan et al.    | 10,299,787 B2   | 5/2019 | Shelton, IV                |
| 10,213,203 B2 | 2/2019  | Swayze et al.      | 10,299,788 B2   | 5/2019 | Heinrich et al.            |
| 10,213,262 B2 | 2/2019  | Shelton, IV et al. | 10,299,792 B2   | 5/2019 | Huitema et al.             |
| D842,328 S    | 3/2019  | Jian et al.        | 10,299,817 B2   | 5/2019 | Shelton, IV et al.         |
| 10,219,832 B2 | 3/2019  | Bagwell et al.     | 10,299,818 B2   | 5/2019 | Riva                       |
| 10,220,522 B2 | 3/2019  | Rockrohr           | 10,299,878 B2   | 5/2019 | Shelton, IV et al.         |
| 10,226,239 B2 | 3/2019  | Nicholas et al.    | D850,617 S      | 6/2019 | Shelton, IV et al.         |
| 10,226,249 B2 | 3/2019  | Jaworek et al.     | D851,676 S      | 6/2019 | Foss et al.                |
| 10,226,250 B2 | 3/2019  | Beckman et al.     | D851,762 S      | 6/2019 | Shelton, IV et al.         |
| 10,226,251 B2 | 3/2019  | Scheib et al.      | 10,307,159 B2   | 6/2019 | Harris et al.              |
| 10,226,274 B2 | 3/2019  | Worrell et al.     | 10,307,160 B2   | 6/2019 | Vendely et al.             |
| 10,231,634 B2 | 3/2019  | Zand et al.        | 10,307,163 B2   | 6/2019 | Moore et al.               |
| 10,231,653 B2 | 3/2019  | Bohm et al.        | 10,307,170 B2 * | 6/2019 | Parfett ..... A61B 17/1626 |
| 10,231,734 B2 | 3/2019  | Thompson et al.    | 10,307,202 B2   | 6/2019 | Smith et al.               |
| 10,231,794 B2 | 3/2019  | Shelton, IV et al. | 10,314,577 B2   | 6/2019 | Laurent et al.             |
| 10,238,385 B2 | 3/2019  | Yates et al.       | 10,314,582 B2   | 6/2019 | Shelton, IV et al.         |
| 10,238,386 B2 | 3/2019  | Overmyer et al.    | 10,314,587 B2   | 6/2019 | Harris et al.              |
| 10,238,387 B2 | 3/2019  | Yates et al.       | 10,314,588 B2   | 6/2019 | Turner et al.              |
| 10,238,389 B2 | 3/2019  | Yates et al.       | 10,314,589 B2   | 6/2019 | Shelton, IV et al.         |
|               |         |                    | 10,314,590 B2   | 6/2019 | Shelton, IV et al.         |
|               |         |                    | 10,321,907 B2   | 6/2019 | Shelton, IV et al.         |
|               |         |                    | 10,321,909 B2   | 6/2019 | Shelton, IV et al.         |
|               |         |                    | 10,321,927 B2   | 6/2019 | Hinman                     |



(56)

References Cited

U.S. PATENT DOCUMENTS

|                 |        |                          |                 |         |                    |
|-----------------|--------|--------------------------|-----------------|---------|--------------------|
| 10,327,743 B2   | 6/2019 | St. Goar et al.          | 10,420,553 B2   | 9/2019  | Shelton, IV et al. |
| 10,327,764 B2   | 6/2019 | Harris et al.            | 10,420,555 B2   | 9/2019  | Shelton, IV et al. |
| 10,327,765 B2   | 6/2019 | Timm et al.              | 10,420,558 B2   | 9/2019  | Nalagatla et al.   |
| 10,327,767 B2   | 6/2019 | Shelton, IV et al.       | 10,420,559 B2   | 9/2019  | Marczyk et al.     |
| 10,327,769 B2   | 6/2019 | Overmyer et al.          | 10,420,560 B2   | 9/2019  | Shelton, IV et al. |
| 10,327,776 B2   | 6/2019 | Harris et al.            | 10,420,561 B2   | 9/2019  | Shelton, IV et al. |
| 10,327,777 B2   | 6/2019 | Harris et al.            | 10,420,577 B2   | 9/2019  | Chowaniec et al.   |
| D854,032 S *    | 7/2019 | Jones ..... D14/486      | 10,426,463 B2   | 10/2019 | Shelton, IV et al. |
| D854,151 S      | 7/2019 | Shelton, IV et al.       | 10,426,467 B2   | 10/2019 | Miller et al.      |
| 10,335,144 B2   | 7/2019 | Shelton, IV et al.       | 10,426,468 B2   | 10/2019 | Contini et al.     |
| 10,335,145 B2   | 7/2019 | Harris et al.            | 10,426,469 B2   | 10/2019 | Shelton, IV et al. |
| 10,335,147 B2   | 7/2019 | Rector et al.            | 10,426,471 B2   | 10/2019 | Shelton, IV et al. |
| 10,335,148 B2   | 7/2019 | Shelton, IV et al.       | 10,426,476 B2   | 10/2019 | Harris et al.      |
| 10,335,149 B2   | 7/2019 | Baxter, III et al.       | 10,426,477 B2   | 10/2019 | Harris et al.      |
| 10,335,150 B2   | 7/2019 | Shelton, IV              | 10,426,478 B2   | 10/2019 | Shelton, IV et al. |
| 10,335,151 B2   | 7/2019 | Shelton, IV et al.       | 10,426,481 B2   | 10/2019 | Aronhalt et al.    |
| 10,337,148 B2   | 7/2019 | Rouse et al.             | 10,433,837 B2   | 10/2019 | Worthington et al. |
| 10,342,533 B2   | 7/2019 | Shelton, IV et al.       | 10,433,839 B2   | 10/2019 | Scheib et al.      |
| 10,342,535 B2   | 7/2019 | Scheib et al.            | 10,433,840 B2   | 10/2019 | Shelton, IV et al. |
| 10,342,541 B2   | 7/2019 | Shelton, IV et al.       | 10,433,844 B2   | 10/2019 | Shelton, IV et al. |
| 10,342,543 B2   | 7/2019 | Shelton, IV et al.       | 10,433,845 B2   | 10/2019 | Baxter, III et al. |
| 10,342,623 B2   | 7/2019 | Huelman et al.           | 10,433,846 B2   | 10/2019 | Vendely et al.     |
| 10,349,939 B2   | 7/2019 | Shelton, IV et al.       | 10,433,849 B2   | 10/2019 | Shelton, IV et al. |
| 10,357,246 B2   | 7/2019 | Shelton, IV et al.       | 10,433,918 B2   | 10/2019 | Shelton, IV et al. |
| 10,357,247 B2   | 7/2019 | Shelton, IV et al.       | 10,441,279 B2   | 10/2019 | Shelton, IV et al. |
| 10,357,248 B2   | 7/2019 | Dalessandro et al.       | 10,441,280 B2   | 10/2019 | Timm et al.        |
| 10,357,252 B2   | 7/2019 | Harris et al.            | 10,441,281 B2   | 10/2019 | Shelton, IV et al. |
| 10,363,031 B2   | 7/2019 | Alexander, III et al.    | 10,441,285 B2   | 10/2019 | Shelton, IV et al. |
| 10,363,033 B2   | 7/2019 | Timm et al.              | 10,441,286 B2   | 10/2019 | Shelton, IV et al. |
| 10,363,036 B2   | 7/2019 | Yates et al.             | 10,441,345 B2   | 10/2019 | Aldridge et al.    |
| 10,363,037 B2   | 7/2019 | Aronhalt et al.          | 10,441,369 B2   | 10/2019 | Shelton, IV et al. |
| 10,363,045 B2   | 7/2019 | Whitfield et al.         | 10,448,948 B2   | 10/2019 | Shelton, IV et al. |
| D855,634 S *    | 8/2019 | Kim ..... D14/485        | 10,448,950 B2   | 10/2019 | Shelton, IV et al. |
| D856,359 S *    | 8/2019 | Huang ..... D14/486      | 10,448,952 B2   | 10/2019 | Shelton, IV et al. |
| 10,368,838 B2   | 8/2019 | Williams et al.          | 2001/0000531 A1 | 4/2001  | Casscells et al.   |
| 10,368,861 B2   | 8/2019 | Baxter, III et al.       | 2001/0025183 A1 | 9/2001  | Shahidi            |
| 10,368,863 B2   | 8/2019 | Timm et al.              | 2001/0025184 A1 | 9/2001  | Messerly           |
| 10,368,864 B2 * | 8/2019 | Harris ..... A61B 17/068 | 2002/0014510 A1 | 2/2002  | Richter et al.     |
| 10,368,865 B2   | 8/2019 | Harris et al.            | 2002/0022810 A1 | 2/2002  | Urich              |
| 10,368,867 B2   | 8/2019 | Harris et al.            | 2002/0022836 A1 | 2/2002  | Goble et al.       |
| 10,368,892 B2   | 8/2019 | Stulen et al.            | 2002/0022861 A1 | 2/2002  | Jacobs et al.      |
| 10,376,262 B2   | 8/2019 | Zemlok et al.            | 2002/0029032 A1 | 3/2002  | Arkin              |
| 10,376,263 B2   | 8/2019 | Morgan et al.            | 2002/0029036 A1 | 3/2002  | Goble et al.       |
| 10,383,626 B2   | 8/2019 | Soltz                    | 2002/0042620 A1 | 4/2002  | Julian et al.      |
| 10,383,628 B2   | 8/2019 | Kang et al.              | 2002/0087048 A1 | 7/2002  | Brock et al.       |
| 10,383,629 B2   | 8/2019 | Ross et al.              | 2002/0091374 A1 | 7/2002  | Cooper             |
| 10,383,630 B2   | 8/2019 | Shelton, IV et al.       | 2002/0095175 A1 | 7/2002  | Brock et al.       |
| 10,383,633 B2   | 8/2019 | Shelton, IV et al.       | 2002/0103494 A1 | 8/2002  | Pacey              |
| 10,383,634 B2   | 8/2019 | Shelton, IV et al.       | 2002/0116063 A1 | 8/2002  | Giannetti et al.   |
| 10,390,823 B2   | 8/2019 | Shelton, IV et al.       | 2002/0117534 A1 | 8/2002  | Green et al.       |
| 10,390,825 B2   | 8/2019 | Shelton, IV et al.       | 2002/0127265 A1 | 9/2002  | Bowman et al.      |
| 10,390,828 B2   | 8/2019 | Vendely et al.           | 2002/0128633 A1 | 9/2002  | Brock et al.       |
| 10,390,829 B2   | 8/2019 | Eckert et al.            | 2002/0134811 A1 | 9/2002  | Napier et al.      |
| 10,390,830 B2   | 8/2019 | Schulz                   | 2002/0135474 A1 | 9/2002  | Sylliassen         |
| 10,390,841 B2   | 8/2019 | Shelton, IV et al.       | 2002/0143340 A1 | 10/2002 | Kaneko             |
| 10,390,897 B2   | 8/2019 | Kostrzewski              | 2002/0158593 A1 | 10/2002 | Henderson et al.   |
| 10,398,433 B2   | 9/2019 | Boudreaux et al.         | 2002/0185514 A1 | 12/2002 | Adams et al.       |
| 10,398,434 B2   | 9/2019 | Shelton, IV et al.       | 2002/0188170 A1 | 12/2002 | Santamore et al.   |
| 10,398,436 B2   | 9/2019 | Shelton, IV et al.       | 2002/0188287 A1 | 12/2002 | Zvuloni et al.     |
| 10,405,854 B2   | 9/2019 | Schmid et al.            | 2003/0009193 A1 | 1/2003  | Corsaro            |
| 10,405,857 B2   | 9/2019 | Shelton, IV et al.       | 2003/0011245 A1 | 1/2003  | Fiebig             |
| 10,405,859 B2   | 9/2019 | Harris et al.            | 2003/0045835 A1 | 3/2003  | Anderson et al.    |
| 10,405,863 B2   | 9/2019 | Wise et al.              | 2003/0066858 A1 | 4/2003  | Holgersson         |
| 10,405,914 B2   | 9/2019 | Manwaring et al.         | 2003/0078647 A1 | 4/2003  | Vallana et al.     |
| 10,405,932 B2   | 9/2019 | Overmyer                 | 2003/0083648 A1 | 5/2003  | Wang et al.        |
| 10,413,291 B2   | 9/2019 | Worthington et al.       | 2003/0084983 A1 | 5/2003  | Rangachari et al.  |
| 10,413,293 B2   | 9/2019 | Shelton, IV et al.       | 2003/0093103 A1 | 5/2003  | Malackowski et al. |
| 10,413,294 B2   | 9/2019 | Shelton, IV et al.       | 2003/0094356 A1 | 5/2003  | Waldron            |
| 10,413,297 B2   | 9/2019 | Harris et al.            | 2003/0096158 A1 | 5/2003  | Takano et al.      |
| 10,413,370 B2   | 9/2019 | Yates et al.             | 2003/0114851 A1 | 6/2003  | Truckai et al.     |
| 10,413,373 B2   | 9/2019 | Yates et al.             | 2003/0139741 A1 | 7/2003  | Goble et al.       |
| 10,420,548 B2   | 9/2019 | Whitman et al.           | 2003/0149406 A1 | 8/2003  | Martineau et al.   |
| 10,420,549 B2   | 9/2019 | Yates et al.             | 2003/0153908 A1 | 8/2003  | Goble et al.       |
| 10,420,550 B2   | 9/2019 | Shelton, IV              | 2003/0153968 A1 | 8/2003  | Geis et al.        |
| 10,420,552 B2   | 9/2019 | Shelton, IV et al.       | 2003/0163085 A1 | 8/2003  | Tanner et al.      |
|                 |        |                          | 2003/0181900 A1 | 9/2003  | Long               |
|                 |        |                          | 2003/0190584 A1 | 10/2003 | Heasley            |
|                 |        |                          | 2003/0195387 A1 | 10/2003 | Kortenbach et al.  |
|                 |        |                          | 2003/0205029 A1 | 11/2003 | Chapolini et al.   |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |    |         |                     |              |    |         |                     |
|--------------|----|---------|---------------------|--------------|----|---------|---------------------|
| 2003/0212005 | A1 | 11/2003 | Petito et al.       | 2005/0080342 | A1 | 4/2005  | Gilreath et al.     |
| 2003/0216732 | A1 | 11/2003 | Truckai et al.      | 2005/0085693 | A1 | 4/2005  | Belson et al.       |
| 2003/0236505 | A1 | 12/2003 | Bonadio et al.      | 2005/0090817 | A1 | 4/2005  | Phan                |
| 2004/0006335 | A1 | 1/2004  | Garrison            | 2005/0096683 | A1 | 5/2005  | Ellins et al.       |
| 2004/0006340 | A1 | 1/2004  | Latterell et al.    | 2005/0116673 | A1 | 6/2005  | Carl et al.         |
| 2004/0007608 | A1 | 1/2004  | Ehrenfels et al.    | 2005/0124855 | A1 | 6/2005  | Jaffe et al.        |
| 2004/0024457 | A1 | 2/2004  | Boyce et al.        | 2005/0125897 | A1 | 6/2005  | Wyslucha et al.     |
| 2004/0028502 | A1 | 2/2004  | Cummins             | 2005/0130682 | A1 | 6/2005  | Takara et al.       |
| 2004/0030333 | A1 | 2/2004  | Goble               | 2005/0131173 | A1 | 6/2005  | McDaniel et al.     |
| 2004/0034357 | A1 | 2/2004  | Beane et al.        | 2005/0131211 | A1 | 6/2005  | Bayley et al.       |
| 2004/0044295 | A1 | 3/2004  | Reinert et al.      | 2005/0131390 | A1 | 6/2005  | Heinrich et al.     |
| 2004/0044364 | A1 | 3/2004  | DeVries et al.      | 2005/0131436 | A1 | 6/2005  | Johnston et al.     |
| 2004/0049121 | A1 | 3/2004  | Yaron               | 2005/0131457 | A1 | 6/2005  | Douglas et al.      |
| 2004/0049172 | A1 | 3/2004  | Root et al.         | 2005/0137454 | A1 | 6/2005  | Saadat et al.       |
| 2004/0059362 | A1 | 3/2004  | Knodel et al.       | 2005/0137455 | A1 | 6/2005  | Ewers et al.        |
| 2004/0068161 | A1 | 4/2004  | Couvillon           | 2005/0139636 | A1 | 6/2005  | Schwemberger et al. |
| 2004/0068224 | A1 | 4/2004  | Couvillon et al.    | 2005/0143759 | A1 | 6/2005  | Kelly               |
| 2004/0068307 | A1 | 4/2004  | Goble               | 2005/0143769 | A1 | 6/2005  | White et al.        |
| 2004/0070369 | A1 | 4/2004  | Sakakibara          | 2005/0145671 | A1 | 7/2005  | Viola               |
| 2004/0073222 | A1 | 4/2004  | Koseki              | 2005/0150928 | A1 | 7/2005  | Kameyama et al.     |
| 2004/0078037 | A1 | 4/2004  | Batchelor et al.    | 2005/0154258 | A1 | 7/2005  | Tartaglia et al.    |
| 2004/0082952 | A1 | 4/2004  | Dycus et al.        | 2005/0154406 | A1 | 7/2005  | Bombard et al.      |
| 2004/0085180 | A1 | 5/2004  | Juang               | 2005/0159778 | A1 | 7/2005  | Heinrich et al.     |
| 2004/0093024 | A1 | 5/2004  | Lousararian et al.  | 2005/0165419 | A1 | 7/2005  | Sauer et al.        |
| 2004/0098040 | A1 | 5/2004  | Taniguchi           | 2005/0169974 | A1 | 8/2005  | Tenerz et al.       |
| 2004/0101822 | A1 | 5/2004  | Wiesner et al.      | 2005/0171522 | A1 | 8/2005  | Christopherson      |
| 2004/0102783 | A1 | 5/2004  | Sutterlin et al.    | 2005/0177176 | A1 | 8/2005  | Gerbi et al.        |
| 2004/0108357 | A1 | 6/2004  | Milliman et al.     | 2005/0177181 | A1 | 8/2005  | Kagan et al.        |
| 2004/0110439 | A1 | 6/2004  | Chaikof et al.      | 2005/0177249 | A1 | 8/2005  | Kladakis et al.     |
| 2004/0115022 | A1 | 6/2004  | Albertson et al.    | 2005/0182298 | A1 | 8/2005  | Ikeda et al.        |
| 2004/0116952 | A1 | 6/2004  | Sakurai et al.      | 2005/0184121 | A1 | 8/2005  | Heinrich            |
| 2004/0119185 | A1 | 6/2004  | Chen                | 2005/0186240 | A1 | 8/2005  | Ringeisen et al.    |
| 2004/0122419 | A1 | 6/2004  | Neuberger           | 2005/0187545 | A1 | 8/2005  | Hooven et al.       |
| 2004/0122423 | A1 | 6/2004  | Dycus et al.        | 2005/0203550 | A1 | 9/2005  | Laufer et al.       |
| 2004/0133095 | A1 | 7/2004  | Dunki-Jacobs et al. | 2005/0209614 | A1 | 9/2005  | Fenter et al.       |
| 2004/0133189 | A1 | 7/2004  | Sakurai             | 2005/0216055 | A1 | 9/2005  | Scirica et al.      |
| 2004/0143297 | A1 | 7/2004  | Ramsey              | 2005/0222587 | A1 | 10/2005 | Jinno et al.        |
| 2004/0147909 | A1 | 7/2004  | Johnston et al.     | 2005/0222611 | A1 | 10/2005 | Weitkamp            |
| 2004/0153100 | A1 | 8/2004  | Ahlberg et al.      | 2005/0222616 | A1 | 10/2005 | Rethy et al.        |
| 2004/0158261 | A1 | 8/2004  | Vu                  | 2005/0222665 | A1 | 10/2005 | Aranyi              |
| 2004/0164123 | A1 | 8/2004  | Racenet et al.      | 2005/0228224 | A1 | 10/2005 | Okada et al.        |
| 2004/0166169 | A1 | 8/2004  | Malaviya et al.     | 2005/0228446 | A1 | 10/2005 | Mooradian et al.    |
| 2004/0167572 | A1 | 8/2004  | Roth et al.         | 2005/0230453 | A1 | 10/2005 | Viola               |
| 2004/0181219 | A1 | 9/2004  | Goble et al.        | 2005/0240178 | A1 | 10/2005 | Morley et al.       |
| 2004/0193189 | A1 | 9/2004  | Kortenbach et al.   | 2005/0245965 | A1 | 11/2005 | Orban, III et al.   |
| 2004/0197367 | A1 | 10/2004 | Rezania et al.      | 2005/0246881 | A1 | 11/2005 | Kelly et al.        |
| 2004/0199181 | A1 | 10/2004 | Knodel et al.       | 2005/0251063 | A1 | 11/2005 | Basude              |
| 2004/0204735 | A1 | 10/2004 | Shiroff et al.      | 2005/0256452 | A1 | 11/2005 | DeMarchi et al.     |
| 2004/0218451 | A1 | 11/2004 | Said et al.         | 2005/0261676 | A1 | 11/2005 | Hall et al.         |
| 2004/0222268 | A1 | 11/2004 | Bilotti et al.      | 2005/0263563 | A1 | 12/2005 | Racenet et al.      |
| 2004/0225186 | A1 | 11/2004 | Horne et al.        | 2005/0267455 | A1 | 12/2005 | Eggers et al.       |
| 2004/0232201 | A1 | 11/2004 | Wenchell et al.     | 2005/0274034 | A1 | 12/2005 | Hayashida et al.    |
| 2004/0236352 | A1 | 11/2004 | Wang et al.         | 2005/0283188 | A1 | 12/2005 | Loshakove et al.    |
| 2004/0243147 | A1 | 12/2004 | Lipow               | 2006/0008787 | A1 | 1/2006  | Hayman et al.       |
| 2004/0243151 | A1 | 12/2004 | Demmy et al.        | 2006/0015009 | A1 | 1/2006  | Jaffe et al.        |
| 2004/0243163 | A1 | 12/2004 | Casiano et al.      | 2006/0020258 | A1 | 1/2006  | Strauss et al.      |
| 2004/0247415 | A1 | 12/2004 | Mangone             | 2006/0020336 | A1 | 1/2006  | Liddicoat           |
| 2004/0249366 | A1 | 12/2004 | Kunz                | 2006/0025812 | A1 | 2/2006  | Shelton             |
| 2004/0254455 | A1 | 12/2004 | Iddan               | 2006/0041188 | A1 | 2/2006  | Dirusso et al.      |
| 2004/0254566 | A1 | 12/2004 | Plicchi et al.      | 2006/0047275 | A1 | 3/2006  | Goble               |
| 2004/0254590 | A1 | 12/2004 | Hoffman et al.      | 2006/0049229 | A1 | 3/2006  | Milliman et al.     |
| 2004/0260315 | A1 | 12/2004 | Dell et al.         | 2006/0052824 | A1 | 3/2006  | Ransick et al.      |
| 2004/0267310 | A1 | 12/2004 | Racenet et al.      | 2006/0052825 | A1 | 3/2006  | Ransick et al.      |
| 2005/0010158 | A1 | 1/2005  | Brugger et al.      | 2006/0064086 | A1 | 3/2006  | Odom                |
| 2005/0010213 | A1 | 1/2005  | Stad et al.         | 2006/0079735 | A1 | 4/2006  | Martone et al.      |
| 2005/0021078 | A1 | 1/2005  | Vleugels et al.     | 2006/0079879 | A1 | 4/2006  | Faller et al.       |
| 2005/0032511 | A1 | 2/2005  | Malone et al.       | 2006/0086032 | A1 | 4/2006  | Valencic et al.     |
| 2005/0033352 | A1 | 2/2005  | Zepf et al.         | 2006/0087746 | A1 | 4/2006  | Lipow               |
| 2005/0051163 | A1 | 3/2005  | Deem et al.         | 2006/0089535 | A1 | 4/2006  | Raz et al.          |
| 2005/0054946 | A1 | 3/2005  | Krzyzanowski        | 2006/0097699 | A1 | 5/2006  | Kamenoff            |
| 2005/0057225 | A1 | 3/2005  | Marquet             | 2006/0100643 | A1 | 5/2006  | Laufer et al.       |
| 2005/0058890 | A1 | 3/2005  | Brazell et al.      | 2006/0100649 | A1 | 5/2006  | Hart                |
| 2005/0059997 | A1 | 3/2005  | Bauman et al.       | 2006/0111711 | A1 | 5/2006  | Goble               |
| 2005/0070929 | A1 | 3/2005  | Dalessandro et al.  | 2006/0111723 | A1 | 5/2006  | Chapolini et al.    |
| 2005/0075561 | A1 | 4/2005  | Golden              | 2006/0116634 | A1 | 6/2006  | Shachar             |
|              |    |         |                     | 2006/0142772 | A1 | 6/2006  | Ralph et al.        |
|              |    |         |                     | 2006/0154546 | A1 | 7/2006  | Murphy et al.       |
|              |    |         |                     | 2006/0161050 | A1 | 7/2006  | Butler et al.       |
|              |    |         |                     | 2006/0161185 | A1 | 7/2006  | Saadat et al.       |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |    |         |                   |              |     |         |                                 |
|--------------|----|---------|-------------------|--------------|-----|---------|---------------------------------|
| 2006/0167471 | A1 | 7/2006  | Phillips          | 2007/0213750 | A1  | 9/2007  | Weadock                         |
| 2006/0173470 | A1 | 8/2006  | Oray et al.       | 2007/0225562 | A1  | 9/2007  | Spivey et al.                   |
| 2006/0176031 | A1 | 8/2006  | Forman et al.     | 2007/0233163 | A1  | 10/2007 | Bombard et al.                  |
| 2006/0178556 | A1 | 8/2006  | Hasser et al.     | 2007/0243227 | A1  | 10/2007 | Gertner                         |
| 2006/0180633 | A1 | 8/2006  | Emmons            | 2007/0244471 | A1  | 10/2007 | Malackowski                     |
| 2006/0180634 | A1 | 8/2006  | Shelton et al.    | 2007/0246505 | A1  | 10/2007 | Pace-Florida et al.             |
| 2006/0185682 | A1 | 8/2006  | Marczyk           | 2007/0262592 | A1  | 11/2007 | Hwang et al.                    |
| 2006/0199999 | A1 | 9/2006  | Ikeda et al.      | 2007/0275035 | A1  | 11/2007 | Herman et al.                   |
| 2006/0201989 | A1 | 9/2006  | Ojeda             | 2007/0276409 | A1  | 11/2007 | Ortiz et al.                    |
| 2006/0206100 | A1 | 9/2006  | Eskridge et al.   | 2007/0279011 | A1  | 12/2007 | Jones et al.                    |
| 2006/0217729 | A1 | 9/2006  | Eskridge et al.   | 2007/0286892 | A1  | 12/2007 | Herzberg et al.                 |
| 2006/0235368 | A1 | 10/2006 | Oz                | 2007/0296286 | A1  | 12/2007 | Avenell                         |
| 2006/0241666 | A1 | 10/2006 | Briggs et al.     | 2008/0003196 | A1  | 1/2008  | Jonn et al.                     |
| 2006/0244460 | A1 | 11/2006 | Weaver            | 2008/0015598 | A1  | 1/2008  | Prommersberger                  |
| 2006/0252990 | A1 | 11/2006 | Kubach            | 2008/0021486 | A1  | 1/2008  | Oyola et al.                    |
| 2006/0252993 | A1 | 11/2006 | Freed et al.      | 2008/0029570 | A1  | 2/2008  | Shelton et al.                  |
| 2006/0258904 | A1 | 11/2006 | Stefanchik et al. | 2008/0029573 | A1  | 2/2008  | Shelton et al.                  |
| 2006/0259073 | A1 | 11/2006 | Miyamoto et al.   | 2008/0029574 | A1  | 2/2008  | Shelton et al.                  |
| 2006/0261763 | A1 | 11/2006 | Iott et al.       | 2008/0029575 | A1  | 2/2008  | Shelton et al.                  |
| 2006/0263444 | A1 | 11/2006 | Ming et al.       | 2008/0030170 | A1  | 2/2008  | Dacquay et al.                  |
| 2006/0264831 | A1 | 11/2006 | Skwarek et al.    | 2008/0042861 | A1  | 2/2008  | Dacquay et al.                  |
| 2006/0264929 | A1 | 11/2006 | Goble et al.      | 2008/0051833 | A1  | 2/2008  | Gramuglia et al.                |
| 2006/0271042 | A1 | 11/2006 | Latterell et al.  | 2008/0064921 | A1  | 3/2008  | Larkin et al.                   |
| 2006/0271102 | A1 | 11/2006 | Bosshard et al.   | 2008/0065153 | A1  | 3/2008  | Allard et al.                   |
| 2006/0282064 | A1 | 12/2006 | Shimizu et al.    | 2008/0071328 | A1  | 3/2008  | Haubrich et al.                 |
| 2006/0284730 | A1 | 12/2006 | Schmid et al.     | 2008/0078802 | A1  | 4/2008  | Hess et al.                     |
| 2006/0287576 | A1 | 12/2006 | Tsuji et al.      | 2008/0082114 | A1  | 4/2008  | McKenna et al.                  |
| 2006/0289602 | A1 | 12/2006 | Wales et al.      | 2008/0082125 | A1  | 4/2008  | Murray et al.                   |
| 2006/0291981 | A1 | 12/2006 | Viola et al.      | 2008/0082126 | A1  | 4/2008  | Murray et al.                   |
| 2007/0010702 | A1 | 1/2007  | Wang et al.       | 2008/0083807 | A1  | 4/2008  | Beardsley et al.                |
| 2007/0010838 | A1 | 1/2007  | Shelton et al.    | 2008/0085296 | A1  | 4/2008  | Powell et al.                   |
| 2007/0016235 | A1 | 1/2007  | Tanaka et al.     | 2008/0086078 | A1  | 4/2008  | Powell et al.                   |
| 2007/0026039 | A1 | 2/2007  | Drumheller et al. | 2008/0091072 | A1  | 4/2008  | Omori et al.                    |
| 2007/0026040 | A1 | 2/2007  | Crawley et al.    | 2008/0108443 | A1  | 5/2008  | Jinno et al.                    |
| 2007/0027468 | A1 | 2/2007  | Wales et al.      | 2008/0114250 | A1  | 5/2008  | Urbano et al.                   |
| 2007/0027551 | A1 | 2/2007  | Farnsworth et al. | 2008/0125634 | A1  | 5/2008  | Ryan et al.                     |
| 2007/0043387 | A1 | 2/2007  | Vargas et al.     | 2008/0125749 | A1  | 5/2008  | Olson                           |
| 2007/0049951 | A1 | 3/2007  | Menn              | 2008/0128469 | A1  | 6/2008  | Dalessandro et al.              |
| 2007/0049966 | A1 | 3/2007  | Bonadio et al.    | 2008/0129253 | A1  | 6/2008  | Shiue et al.                    |
| 2007/0051375 | A1 | 3/2007  | Milliman          | 2008/0135600 | A1  | 6/2008  | Hiranuma et al.                 |
| 2007/0055228 | A1 | 3/2007  | Berg et al.       | 2008/0140115 | A1  | 6/2008  | Stopek                          |
| 2007/0073341 | A1 | 3/2007  | Smith et al.      | 2008/0140159 | A1  | 6/2008  | Bornhoft et al.                 |
| 2007/0073389 | A1 | 3/2007  | Bolduc et al.     | 2008/0154299 | A1  | 6/2008  | Livneh                          |
| 2007/0078328 | A1 | 4/2007  | Ozaki et al.      | 2008/0154335 | A1  | 6/2008  | Thrope et al.                   |
| 2007/0078484 | A1 | 4/2007  | Talarico et al.   | 2008/0169328 | A1  | 7/2008  | Shelton                         |
| 2007/0084897 | A1 | 4/2007  | Shelton et al.    | 2008/0169332 | A1  | 7/2008  | Shelton et al.                  |
| 2007/0088376 | A1 | 4/2007  | Zacharias         | 2008/0169333 | A1  | 7/2008  | Shelton et al.                  |
| 2007/0090788 | A1 | 4/2007  | Hansford et al.   | 2008/0172087 | A1  | 7/2008  | Fuchs et al.                    |
| 2007/0093869 | A1 | 4/2007  | Bloom et al.      | 2008/0190989 | A1  | 8/2008  | Crews et al.                    |
| 2007/0102472 | A1 | 5/2007  | Shelton           | 2008/0196253 | A1  | 8/2008  | Ezra et al.                     |
| 2007/0106113 | A1 | 5/2007  | Ravo              | 2008/0196419 | A1  | 8/2008  | Dube                            |
| 2007/0106317 | A1 | 5/2007  | Shelton et al.    | 2008/0197167 | A1  | 8/2008  | Viola et al.                    |
| 2007/0134251 | A1 | 6/2007  | Ashkenazi et al.  | 2008/0200755 | A1  | 8/2008  | Bakos                           |
| 2007/0135686 | A1 | 6/2007  | Pruitt et al.     | 2008/0200762 | A1  | 8/2008  | Stokes et al.                   |
| 2007/0135803 | A1 | 6/2007  | Belson            | 2008/0200835 | A1  | 8/2008  | Monson et al.                   |
| 2007/0152612 | A1 | 7/2007  | Chen et al.       | 2008/0200911 | A1  | 8/2008  | Long                            |
| 2007/0155010 | A1 | 7/2007  | Farnsworth et al. | 2008/0200933 | A1  | 8/2008  | Bakos et al.                    |
| 2007/0170225 | A1 | 7/2007  | Shelton et al.    | 2008/0200934 | A1  | 8/2008  | Fox                             |
| 2007/0173687 | A1 | 7/2007  | Shima et al.      | 2008/0216504 | A1* | 9/2008  | Kim ..... B67D 1/0005<br>62/338 |
| 2007/0173813 | A1 | 7/2007  | Odom              | 2008/0234709 | A1  | 9/2008  | Houser                          |
| 2007/0175950 | A1 | 8/2007  | Shelton et al.    | 2008/0242939 | A1  | 10/2008 | Johnston                        |
| 2007/0175951 | A1 | 8/2007  | Shelton et al.    | 2008/0249536 | A1  | 10/2008 | Stahler et al.                  |
| 2007/0175955 | A1 | 8/2007  | Shelton et al.    | 2008/0249608 | A1  | 10/2008 | Dave                            |
| 2007/0179477 | A1 | 8/2007  | Danger            | 2008/0255413 | A1  | 10/2008 | Zemlok et al.                   |
| 2007/0185545 | A1 | 8/2007  | Duke              | 2008/0262654 | A1  | 10/2008 | Omori et al.                    |
| 2007/0190110 | A1 | 8/2007  | Pameijer et al.   | 2008/0269596 | A1  | 10/2008 | Revie et al.                    |
| 2007/0191868 | A1 | 8/2007  | Theroux et al.    | 2008/0281171 | A1  | 11/2008 | Fennell et al.                  |
| 2007/0194079 | A1 | 8/2007  | Hueil et al.      | 2008/0287944 | A1  | 11/2008 | Pearson et al.                  |
| 2007/0194082 | A1 | 8/2007  | Morgan et al.     | 2008/0293910 | A1  | 11/2008 | Kapiamba et al.                 |
| 2007/0197954 | A1 | 8/2007  | Keenan            | 2008/0294179 | A1  | 11/2008 | Balbierz et al.                 |
| 2007/0198039 | A1 | 8/2007  | Jones et al.      | 2008/0296346 | A1  | 12/2008 | Shelton, IV et al.              |
| 2007/0203510 | A1 | 8/2007  | Bettuchi          | 2008/0297287 | A1  | 12/2008 | Shachar et al.                  |
| 2007/0207010 | A1 | 9/2007  | Caspi             | 2008/0308602 | A1  | 12/2008 | Timm et al.                     |
| 2007/0208359 | A1 | 9/2007  | Hoffman           | 2008/0308603 | A1  | 12/2008 | Shelton et al.                  |
| 2007/0208375 | A1 | 9/2007  | Nishizawa et al.  | 2008/0312687 | A1  | 12/2008 | Blier                           |
|              |    |         |                   | 2008/0315829 | A1  | 12/2008 | Jones et al.                    |
|              |    |         |                   | 2009/0001121 | A1  | 1/2009  | Hess et al.                     |
|              |    |         |                   | 2009/0001130 | A1  | 1/2009  | Hess et al.                     |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |    |         |                        |              |    |         |                    |
|--------------|----|---------|------------------------|--------------|----|---------|--------------------|
| 2009/0004455 | A1 | 1/2009  | Gravagna et al.        | 2010/0147921 | A1 | 6/2010  | Olson              |
| 2009/0005809 | A1 | 1/2009  | Hess et al.            | 2010/0147922 | A1 | 6/2010  | Olson              |
| 2009/0012534 | A1 | 1/2009  | Madhani et al.         | 2010/0179022 | A1 | 7/2010  | Shirokoshi         |
| 2009/0015195 | A1 | 1/2009  | Loth-Krausser          | 2010/0180711 | A1 | 7/2010  | Kilibarda et al.   |
| 2009/0020958 | A1 | 1/2009  | Soul                   | 2010/0191262 | A1 | 7/2010  | Harris et al.      |
| 2009/0048583 | A1 | 2/2009  | Williams et al.        | 2010/0191292 | A1 | 7/2010  | DeMeo et al.       |
| 2009/0048589 | A1 | 2/2009  | Takashino et al.       | 2010/0193566 | A1 | 8/2010  | Scheib et al.      |
| 2009/0076506 | A1 | 3/2009  | Baker                  | 2010/0204717 | A1 | 8/2010  | Knodel             |
| 2009/0078736 | A1 | 3/2009  | Van Lue                | 2010/0204721 | A1 | 8/2010  | Young et al.       |
| 2009/0081313 | A1 | 3/2009  | Aghion et al.          | 2010/0217281 | A1 | 8/2010  | Matsuoka et al.    |
| 2009/0088659 | A1 | 4/2009  | Graham et al.          | 2010/0222901 | A1 | 9/2010  | Swayze et al.      |
| 2009/0090763 | A1 | 4/2009  | Zemlok et al.          | 2010/0241137 | A1 | 9/2010  | Doyle et al.       |
| 2009/0092651 | A1 | 4/2009  | Shah et al.            | 2010/0249497 | A1 | 9/2010  | Peine et al.       |
| 2009/0099579 | A1 | 4/2009  | Nentwick et al.        | 2010/0249947 | A1 | 9/2010  | Lesh et al.        |
| 2009/0099876 | A1 | 4/2009  | Whitman                | 2010/0256675 | A1 | 10/2010 | Romans             |
| 2009/0112234 | A1 | 4/2009  | Crainich et al.        | 2010/0258327 | A1 | 10/2010 | Esenwein et al.    |
| 2009/0118762 | A1 | 5/2009  | Crainch et al.         | 2010/0267662 | A1 | 10/2010 | Fielder et al.     |
| 2009/0119011 | A1 | 5/2009  | Kondo et al.           | 2010/0274160 | A1 | 10/2010 | Yachi et al.       |
| 2009/0131819 | A1 | 5/2009  | Ritchie et al.         | 2010/0292540 | A1 | 11/2010 | Hess et al.        |
| 2009/0132400 | A1 | 5/2009  | Conway                 | 2010/0298636 | A1 | 11/2010 | Castro et al.      |
| 2009/0143855 | A1 | 6/2009  | Weber et al.           | 2010/0312261 | A1 | 12/2010 | Suzuki et al.      |
| 2009/0149871 | A9 | 6/2009  | Kagan et al.           | 2010/0318085 | A1 | 12/2010 | Austin et al.      |
| 2009/0171147 | A1 | 7/2009  | Lee et al.             | 2010/0331856 | A1 | 12/2010 | Carlson et al.     |
| 2009/0177226 | A1 | 7/2009  | Reinprecht et al.      | 2011/0006101 | A1 | 1/2011  | Hall et al.        |
| 2009/0181290 | A1 | 7/2009  | Baldwin et al.         | 2011/0011916 | A1 | 1/2011  | Levine             |
| 2009/0188964 | A1 | 7/2009  | Orlov                  | 2011/0016960 | A1 | 1/2011  | Debrailly          |
| 2009/0192534 | A1 | 7/2009  | Ortiz et al.           | 2011/0021871 | A1 | 1/2011  | Berkelaar          |
| 2009/0198272 | A1 | 8/2009  | Kerver et al.          | 2011/0022032 | A1 | 1/2011  | Zemlok et al.      |
| 2009/0204108 | A1 | 8/2009  | Steffen                | 2011/0024477 | A1 | 2/2011  | Hall               |
| 2009/0204109 | A1 | 8/2009  | Grove et al.           | 2011/0024478 | A1 | 2/2011  | Shelton, IV        |
| 2009/0206125 | A1 | 8/2009  | Huitema et al.         | 2011/0025311 | A1 | 2/2011  | Chauvin et al.     |
| 2009/0206126 | A1 | 8/2009  | Huitema et al.         | 2011/0036891 | A1 | 2/2011  | Zemlok et al.      |
| 2009/0206131 | A1 | 8/2009  | Weisenburgh, II et al. | 2011/0046667 | A1 | 2/2011  | Culligan et al.    |
| 2009/0206133 | A1 | 8/2009  | Morgan et al.          | 2011/0060363 | A1 | 3/2011  | Hess et al.        |
| 2009/0206137 | A1 | 8/2009  | Hall et al.            | 2011/0066156 | A1 | 3/2011  | McGahan et al.     |
| 2009/0206139 | A1 | 8/2009  | Hall et al.            | 2011/0082538 | A1 | 4/2011  | Dahlgren et al.    |
| 2009/0206141 | A1 | 8/2009  | Huitema et al.         | 2011/0087276 | A1 | 4/2011  | Bedi et al.        |
| 2009/0206142 | A1 | 8/2009  | Huitema et al.         | 2011/0088921 | A1 | 4/2011  | Forgues et al.     |
| 2009/0221993 | A1 | 9/2009  | Sohi et al.            | 2011/0091515 | A1 | 4/2011  | Zilberman et al.   |
| 2009/0227834 | A1 | 9/2009  | Nakamoto et al.        | 2011/0095064 | A1 | 4/2011  | Taylor et al.      |
| 2009/0234273 | A1 | 9/2009  | Intoccia et al.        | 2011/0101069 | A1 | 5/2011  | Bombard et al.     |
| 2009/0242610 | A1 | 10/2009 | Shelton, IV et al.     | 2011/0101794 | A1 | 5/2011  | Schroeder et al.   |
| 2009/0247368 | A1 | 10/2009 | Chiang                 | 2011/0112517 | A1 | 5/2011  | Peine et al.       |
| 2009/0247901 | A1 | 10/2009 | Zimmer                 | 2011/0112530 | A1 | 5/2011  | Keller             |
| 2009/0253959 | A1 | 10/2009 | Yoshie et al.          | 2011/0114697 | A1 | 5/2011  | Baxter, III et al. |
| 2009/0255974 | A1 | 10/2009 | Viola                  | 2011/0121049 | A1 | 5/2011  | Malinouskas et al. |
| 2009/0262078 | A1 | 10/2009 | Pizzi                  | 2011/0125176 | A1 | 5/2011  | Yates et al.       |
| 2009/0270895 | A1 | 10/2009 | Churchill et al.       | 2011/0127945 | A1 | 6/2011  | Yoneda             |
| 2009/0290016 | A1 | 11/2009 | Suda                   | 2011/0129706 | A1 | 6/2011  | Takahashi et al.   |
| 2009/0292283 | A1 | 11/2009 | Odom                   | 2011/0144764 | A1 | 6/2011  | Bagga et al.       |
| 2009/0306639 | A1 | 12/2009 | Nevo et al.            | 2011/0147433 | A1 | 6/2011  | Shelton, IV et al. |
| 2009/0308907 | A1 | 12/2009 | Nalagatla et al.       | 2011/0160725 | A1 | 6/2011  | Kabaya et al.      |
| 2009/0318557 | A1 | 12/2009 | Stockel                | 2011/0163146 | A1 | 7/2011  | Ortiz et al.       |
| 2010/0005035 | A1 | 1/2010  | Carpenter et al.       | 2011/0172495 | A1 | 7/2011  | Armstrong          |
| 2010/0012703 | A1 | 1/2010  | Calabrese et al.       | 2011/0174861 | A1 | 7/2011  | Shelton, IV et al. |
| 2010/0016888 | A1 | 1/2010  | Calabrese et al.       | 2011/0192882 | A1 | 8/2011  | Hess et al.        |
| 2010/0017715 | A1 | 1/2010  | Balassanian            | 2011/0199225 | A1 | 8/2011  | Touchberry et al.  |
| 2010/0023024 | A1 | 1/2010  | Zeiner et al.          | 2011/0218400 | A1 | 9/2011  | Ma et al.          |
| 2010/0030233 | A1 | 2/2010  | Whitman et al.         | 2011/0218550 | A1 | 9/2011  | Ma                 |
| 2010/0036370 | A1 | 2/2010  | Mirel et al.           | 2011/0230713 | A1 | 9/2011  | Kleemann et al.    |
| 2010/0051668 | A1 | 3/2010  | Milliman et al.        | 2011/0238044 | A1 | 9/2011  | Main et al.        |
| 2010/0057118 | A1 | 3/2010  | Dietz et al.           | 2011/0241597 | A1 | 10/2011 | Zhu et al.         |
| 2010/0065604 | A1 | 3/2010  | Weng                   | 2011/0271186 | A1 | 11/2011 | Owens              |
| 2010/0069942 | A1 | 3/2010  | Shelton, IV            | 2011/0275901 | A1 | 11/2011 | Shelton, IV        |
| 2010/0076483 | A1 | 3/2010  | Imuta                  | 2011/0276083 | A1 | 11/2011 | Shelton, IV et al. |
| 2010/0076489 | A1 | 3/2010  | Stopek et al.          | 2011/0278343 | A1 | 11/2011 | Knodel et al.      |
| 2010/0081883 | A1 | 4/2010  | Murray et al.          | 2011/0279268 | A1 | 11/2011 | Konishi et al.     |
| 2010/0094340 | A1 | 4/2010  | Stopek et al.          | 2011/0290856 | A1 | 12/2011 | Shelton, IV et al. |
| 2010/0100123 | A1 | 4/2010  | Bennett                | 2011/0293690 | A1 | 12/2011 | Griffin et al.     |
| 2010/0100124 | A1 | 4/2010  | Calabrese et al.       | 2011/0295295 | A1 | 12/2011 | Shelton, IV et al. |
| 2010/0116519 | A1 | 5/2010  | Gareis                 | 2011/0313894 | A1 | 12/2011 | Dye et al.         |
| 2010/0122339 | A1 | 5/2010  | Boccacci               | 2011/0315413 | A1 | 12/2011 | Fisher et al.      |
| 2010/0133317 | A1 | 6/2010  | Shelton, IV et al.     | 2012/0004636 | A1 | 1/2012  | Lo                 |
| 2010/0137990 | A1 | 6/2010  | Apatsidis et al.       | 2012/0007442 | A1 | 1/2012  | Rhodes et al.      |
| 2010/0145146 | A1 | 6/2010  | Melder                 | 2012/0016239 | A1 | 1/2012  | Barthe et al.      |
|              |    |         |                        | 2012/0016413 | A1 | 1/2012  | Timm et al.        |
|              |    |         |                        | 2012/0016467 | A1 | 1/2012  | Chen et al.        |
|              |    |         |                        | 2012/0029272 | A1 | 2/2012  | Shelton, IV et al. |
|              |    |         |                        | 2012/0033360 | A1 | 2/2012  | Hsu                |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |    |         |                                |              |    |         |                    |
|--------------|----|---------|--------------------------------|--------------|----|---------|--------------------|
| 2012/0059286 | A1 | 3/2012  | Hastings et al.                | 2013/0267978 | A1 | 10/2013 | Trissel            |
| 2012/0064483 | A1 | 3/2012  | Lint et al.                    | 2013/0270322 | A1 | 10/2013 | Scheib et al.      |
| 2012/0074200 | A1 | 3/2012  | Schmid et al.                  | 2013/0277410 | A1 | 10/2013 | Fernandez et al.   |
| 2012/0078244 | A1 | 3/2012  | Worrell et al.                 | 2013/0306704 | A1 | 11/2013 | Balbierz et al.    |
| 2012/0080336 | A1 | 4/2012  | Shelton, IV et al.             | 2013/0317753 | A1 | 11/2013 | Kamen et al.       |
| 2012/0080344 | A1 | 4/2012  | Shelton, IV                    | 2013/0324982 | A1 | 12/2013 | Smith et al.       |
| 2012/0080478 | A1 | 4/2012  | Morgan et al.                  | 2013/0327552 | A1 | 12/2013 | Loveless et al.    |
| 2012/0080498 | A1 | 4/2012  | Shelton, IV et al.             | 2013/0333910 | A1 | 12/2013 | Tanimoto et al.    |
| 2012/0086276 | A1 | 4/2012  | Sawyers                        | 2013/0334280 | A1 | 12/2013 | Krehel et al.      |
| 2012/0095458 | A1 | 4/2012  | Cybulski et al.                | 2013/0334283 | A1 | 12/2013 | Swayze et al.      |
| 2012/0109186 | A1 | 5/2012  | Parrott et al.                 | 2013/0334285 | A1 | 12/2013 | Swayze et al.      |
| 2012/0116261 | A1 | 5/2012  | Mumaw et al.                   | 2013/0341374 | A1 | 12/2013 | Shelton, IV et al. |
| 2012/0116262 | A1 | 5/2012  | Houser et al.                  | 2014/0001231 | A1 | 1/2014  | Shelton, IV et al. |
| 2012/0116265 | A1 | 5/2012  | Houser et al.                  | 2014/0001234 | A1 | 1/2014  | Shelton, IV et al. |
| 2012/0116266 | A1 | 5/2012  | Houser et al.                  | 2014/0005640 | A1 | 1/2014  | Shelton, IV et al. |
| 2012/0118595 | A1 | 5/2012  | Pellenc                        | 2014/0005678 | A1 | 1/2014  | Shelton, IV et al. |
| 2012/0123463 | A1 | 5/2012  | Jacobs                         | 2014/0005702 | A1 | 1/2014  | Timm et al.        |
| 2012/0125792 | A1 | 5/2012  | Cassivi                        | 2014/0005718 | A1 | 1/2014  | Shelton, IV et al. |
| 2012/0130217 | A1 | 5/2012  | Kauphusman et al.              | 2014/0012289 | A1 | 1/2014  | Snow et al.        |
| 2012/0132286 | A1 | 5/2012  | Lim et al.                     | 2014/0012299 | A1 | 1/2014  | Stoddard et al.    |
| 2012/0171539 | A1 | 7/2012  | Rejman et al.                  | 2014/0014705 | A1 | 1/2014  | Baxter, III        |
| 2012/0175398 | A1 | 7/2012  | Sandborn et al.                | 2014/0018832 | A1 | 1/2014  | Shelton, IV        |
| 2012/0197272 | A1 | 8/2012  | Oray et al.                    | 2014/0039549 | A1 | 2/2014  | Belsky et al.      |
| 2012/0211542 | A1 | 8/2012  | Racenet                        | 2014/0048580 | A1 | 2/2014  | Merchant et al.    |
| 2012/0234895 | A1 | 9/2012  | O'Connor et al.                | 2014/0081176 | A1 | 3/2014  | Hassan             |
| 2012/0234897 | A1 | 9/2012  | Shelton, IV et al.             | 2014/0094681 | A1 | 4/2014  | Valentine et al.   |
| 2012/0239068 | A1 | 9/2012  | Morris et al.                  | 2014/0100558 | A1 | 4/2014  | Schmitz et al.     |
| 2012/0248169 | A1 | 10/2012 | Widenhouse et al.              | 2014/0107640 | A1 | 4/2014  | Yates et al.       |
| 2012/0251861 | A1 | 10/2012 | Liang et al.                   | 2014/0110456 | A1 | 4/2014  | Taylor             |
| 2012/0253328 | A1 | 10/2012 | Cunningham et al.              | 2014/0115229 | A1 | 4/2014  | Kothamasu et al.   |
| 2012/0283707 | A1 | 11/2012 | Giordano et al.                | 2014/0131418 | A1 | 5/2014  | Kostrzewski        |
| 2012/0289979 | A1 | 11/2012 | Eskaros et al.                 | 2014/0135832 | A1 | 5/2014  | Park et al.        |
| 2012/0292367 | A1 | 11/2012 | Morgan et al.                  | 2014/0151433 | A1 | 6/2014  | Shelton, IV et al. |
| 2012/0298722 | A1 | 11/2012 | Hess et al.                    | 2014/0158747 | A1 | 6/2014  | Measamer et al.    |
| 2012/0303002 | A1 | 11/2012 | Chowaniec et al.               | 2014/0166723 | A1 | 6/2014  | Beardsley et al.   |
| 2013/0006227 | A1 | 1/2013  | Takashino                      | 2014/0166724 | A1 | 6/2014  | Schellin et al.    |
| 2013/0008937 | A1 | 1/2013  | Viola                          | 2014/0166725 | A1 | 6/2014  | Schellin et al.    |
| 2013/0012983 | A1 | 1/2013  | Kleyman                        | 2014/0166726 | A1 | 6/2014  | Schellin et al.    |
| 2013/0018400 | A1 | 1/2013  | Milton et al.                  | 2014/0175147 | A1 | 6/2014  | Manoux et al.      |
| 2013/0020375 | A1 | 1/2013  | Shelton, IV et al.             | 2014/0175150 | A1 | 6/2014  | Shelton, IV et al. |
| 2013/0020376 | A1 | 1/2013  | Shelton, IV et al.             | 2014/0175152 | A1 | 6/2014  | Hess et al.        |
| 2013/0023861 | A1 | 1/2013  | Shelton, IV et al.             | 2014/0181710 | A1 | 6/2014  | Baalu et al.       |
| 2013/0023910 | A1 | 1/2013  | Solomon et al.                 | 2014/0188091 | A1 | 7/2014  | Vidal et al.       |
| 2013/0026208 | A1 | 1/2013  | Shelton, IV et al.             | 2014/0188159 | A1 | 7/2014  | Steege             |
| 2013/0026210 | A1 | 1/2013  | Shelton, IV et al.             | 2014/0207124 | A1 | 7/2014  | Aldridge et al.    |
| 2013/0030462 | A1 | 1/2013  | Keating et al.                 | 2014/0207125 | A1 | 7/2014  | Applegate et al.   |
| 2013/0041292 | A1 | 2/2013  | Cunningham                     | 2014/0209658 | A1 | 7/2014  | Skalla et al.      |
| 2013/0057162 | A1 | 3/2013  | Pollischansky                  | 2014/0224857 | A1 | 8/2014  | Schmid             |
| 2013/0068816 | A1 | 3/2013  | Mandakolathur Vasudevan et al. | 2014/0228867 | A1 | 8/2014  | Thomas et al.      |
| 2013/0087597 | A1 | 4/2013  | Shelton, IV et al.             | 2014/0230595 | A1 | 8/2014  | Butt et al.        |
| 2013/0090534 | A1 | 4/2013  | Burns et al.                   | 2014/0239047 | A1 | 8/2014  | Hodgkinson et al.  |
| 2013/0096568 | A1 | 4/2013  | Justis                         | 2014/0243865 | A1 | 8/2014  | Swayze et al.      |
| 2013/0098970 | A1 | 4/2013  | Racenet et al.                 | 2014/0246475 | A1 | 9/2014  | Hall et al.        |
| 2013/0105552 | A1 | 5/2013  | Weir et al.                    | 2014/0248167 | A1 | 9/2014  | Sugimoto et al.    |
| 2013/0106352 | A1 | 5/2013  | Nagamine                       | 2014/0249557 | A1 | 9/2014  | Koch, Jr. et al.   |
| 2013/0116669 | A1 | 5/2013  | Shelton, IV et al.             | 2014/0249573 | A1 | 9/2014  | Arav               |
| 2013/0123816 | A1 | 5/2013  | Hodgkinson et al.              | 2014/0252061 | A1 | 9/2014  | Estrella et al.    |
| 2013/0126202 | A1 | 5/2013  | Oomori et al.                  | 2014/0263541 | A1 | 9/2014  | Leimbach et al.    |
| 2013/0131476 | A1 | 5/2013  | Siu et al.                     | 2014/0263552 | A1 | 9/2014  | Hall et al.        |
| 2013/0131651 | A1 | 5/2013  | Strobl et al.                  | 2014/0263554 | A1 | 9/2014  | Leimbach et al.    |
| 2013/0136969 | A1 | 5/2013  | Yasui et al.                   | 2014/0263558 | A1 | 9/2014  | Hausen et al.      |
| 2013/0153641 | A1 | 6/2013  | Shelton, IV et al.             | 2014/0276730 | A1 | 9/2014  | Boudreaux et al.   |
| 2013/0158390 | A1 | 6/2013  | Tan et al.                     | 2014/0284371 | A1 | 9/2014  | Morgan et al.      |
| 2013/0162198 | A1 | 6/2013  | Yokota et al.                  | 2014/0288460 | A1 | 9/2014  | Ouyang et al.      |
| 2013/0169217 | A1 | 7/2013  | Watanabe et al.                | 2014/0291379 | A1 | 10/2014 | Schellin et al.    |
| 2013/0172878 | A1 | 7/2013  | Smith                          | 2014/0291383 | A1 | 10/2014 | Spivey et al.      |
| 2013/0175317 | A1 | 7/2013  | Yates et al.                   | 2014/0299648 | A1 | 10/2014 | Shelton, IV et al. |
| 2013/0214025 | A1 | 8/2013  | Zemlok et al.                  | 2014/0303645 | A1 | 10/2014 | Morgan et al.      |
| 2013/0233906 | A1 | 9/2013  | Hess et al.                    | 2014/0303660 | A1 | 10/2014 | Boyden et al.      |
| 2013/0238021 | A1 | 9/2013  | Gross et al.                   | 2014/0330161 | A1 | 11/2014 | Swayze et al.      |
| 2013/0245704 | A1 | 9/2013  | Koltz et al.                   | 2014/0330298 | A1 | 11/2014 | Arshonsky et al.   |
| 2013/0248578 | A1 | 9/2013  | Arteaga Gonzalez               | 2014/0330579 | A1 | 11/2014 | Cashman et al.     |
| 2013/0253480 | A1 | 9/2013  | Kimball et al.                 | 2014/0367445 | A1 | 12/2014 | Ingmanson et al.   |
| 2013/0256373 | A1 | 10/2013 | Schmid et al.                  | 2014/0374130 | A1 | 12/2014 | Nakamura et al.    |
| 2013/0256380 | A1 | 10/2013 | Schmid et al.                  | 2014/0378950 | A1 | 12/2014 | Chiu               |
|              |    |         |                                | 2015/0002089 | A1 | 1/2015  | Rejman et al.      |
|              |    |         |                                | 2015/0008248 | A1 | 1/2015  | Giordano et al.    |
|              |    |         |                                | 2015/0038961 | A1 | 2/2015  | Clark et al.       |
|              |    |         |                                | 2015/0053737 | A1 | 2/2015  | Leimbach et al.    |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |     |         |                                      |              |    |         |                                |
|--------------|-----|---------|--------------------------------------|--------------|----|---------|--------------------------------|
| 2015/0053742 | A1  | 2/2015  | Shelton, IV et al.                   | 2016/0000437 | A1 | 1/2016  | Giordano et al.                |
| 2015/0053743 | A1  | 2/2015  | Yates et al.                         | 2016/0000438 | A1 | 1/2016  | Swayze et al.                  |
| 2015/0053746 | A1  | 2/2015  | Shelton, IV et al.                   | 2016/0000442 | A1 | 1/2016  | Shelton, IV                    |
| 2015/0053748 | A1  | 2/2015  | Yates et al.                         | 2016/0000452 | A1 | 1/2016  | Yates et al.                   |
| 2015/0060518 | A1  | 3/2015  | Shelton, IV et al.                   | 2016/0000453 | A1 | 1/2016  | Yates et al.                   |
| 2015/0060519 | A1  | 3/2015  | Shelton, IV et al.                   | 2016/0023342 | A1 | 1/2016  | Koenig et al.                  |
| 2015/0060520 | A1  | 3/2015  | Shelton, IV et al.                   | 2016/0030042 | A1 | 2/2016  | Heinrich et al.                |
| 2015/0060521 | A1  | 3/2015  | Weisenburgh, II et al.               | 2016/0058443 | A1 | 3/2016  | Yates et al.                   |
| 2015/0066000 | A1  | 3/2015  | An et al.                            | 2016/0066913 | A1 | 3/2016  | Swayze et al.                  |
| 2015/0076208 | A1  | 3/2015  | Shelton, IV                          | 2016/0069449 | A1 | 3/2016  | Kanai et al.                   |
| 2015/0076209 | A1  | 3/2015  | Shelton, IV et al.                   | 2016/0074040 | A1 | 3/2016  | Widenhouse et al.              |
| 2015/0076210 | A1  | 3/2015  | Shelton, IV et al.                   | 2016/0074103 | A1 | 3/2016  | Sartor                         |
| 2015/0076212 | A1  | 3/2015  | Shelton, IV                          | 2016/0082161 | A1 | 3/2016  | Zilberman et al.               |
| 2015/0080868 | A1  | 3/2015  | Kerr                                 | 2016/0089137 | A1 | 3/2016  | Hess et al.                    |
| 2015/0083781 | A1  | 3/2015  | Giordano et al.                      | 2016/0089198 | A1 | 3/2016  | Arya et al.                    |
| 2015/0083782 | A1  | 3/2015  | Scheib et al.                        | 2016/0095585 | A1 | 4/2016  | Zergiebel et al.               |
| 2015/0088547 | A1  | 3/2015  | Balram et al.                        | 2016/0106431 | A1 | 4/2016  | Shelton, IV et al.             |
| 2015/0090760 | A1  | 4/2015  | Giordano et al.                      | 2016/0113653 | A1 | 4/2016  | Zingman                        |
| 2015/0090761 | A1  | 4/2015  | Giordano et al.                      | 2016/0120544 | A1 | 5/2016  | Shelton, IV et al.             |
| 2015/0090762 | A1  | 4/2015  | Giordano et al.                      | 2016/0120545 | A1 | 5/2016  | Shelton, IV et al.             |
| 2015/0122870 | A1  | 5/2015  | Zemlok et al.                        | 2016/0135835 | A1 | 5/2016  | Onuma                          |
| 2015/0134077 | A1  | 5/2015  | Shelton, IV et al.                   | 2016/0166248 | A1 | 6/2016  | Deville et al.                 |
| 2015/0150620 | A1  | 6/2015  | Miyamoto et al.                      | 2016/0166256 | A1 | 6/2016  | Baxter, III et al.             |
| 2015/0173749 | A1  | 6/2015  | Shelton, IV et al.                   | 2016/0174974 | A1 | 6/2016  | Schmid et al.                  |
| 2015/0173756 | A1  | 6/2015  | Baxter, III et al.                   | 2016/0183939 | A1 | 6/2016  | Shelton, IV et al.             |
| 2015/0173789 | A1  | 6/2015  | Baxter, III et al.                   | 2016/0183943 | A1 | 6/2016  | Shelton, IV                    |
| 2015/0182220 | A1  | 7/2015  | Yates et al.                         | 2016/0183944 | A1 | 6/2016  | Swensgard et al.               |
| 2015/0196295 | A1  | 7/2015  | Shelton, IV et al.                   | 2016/0192916 | A1 | 7/2016  | Shelton, IV et al.             |
| 2015/0196296 | A1  | 7/2015  | Swayze et al.                        | 2016/0192917 | A1 | 7/2016  | Shelton, IV et al.             |
| 2015/0196299 | A1  | 7/2015  | Swayze et al.                        | 2016/0192918 | A1 | 7/2016  | Shelton, IV et al.             |
| 2015/0196348 | A1  | 7/2015  | Yates et al.                         | 2016/0192960 | A1 | 7/2016  | Bueno et al.                   |
| 2015/0201918 | A1  | 7/2015  | Kumar et al.                         | 2016/0192977 | A1 | 7/2016  | Manwaring et al.               |
| 2015/0201932 | A1  | 7/2015  | Swayze et al.                        | 2016/0199063 | A1 | 7/2016  | Mandakolathur Vasudevan et al. |
| 2015/0201936 | A1  | 7/2015  | Swayze et al.                        | 2016/0199089 | A1 | 7/2016  | Hess et al.                    |
| 2015/0201937 | A1  | 7/2015  | Swayze et al.                        | 2016/0199956 | A1 | 7/2016  | Shelton, IV et al.             |
| 2015/0201938 | A1  | 7/2015  | Swayze et al.                        | 2016/0206310 | A1 | 7/2016  | Shelton, IV                    |
| 2015/0201939 | A1  | 7/2015  | Swayze et al.                        | 2016/0206314 | A1 | 7/2016  | Scheib et al.                  |
| 2015/0201940 | A1  | 7/2015  | Swayze et al.                        | 2016/0220266 | A1 | 8/2016  | Shelton, IV et al.             |
| 2015/0201941 | A1  | 7/2015  | Swayze et al.                        | 2016/0235404 | A1 | 8/2016  | Shelton, IV                    |
| 2015/0222212 | A1  | 8/2015  | Iwata                                | 2016/0235405 | A1 | 8/2016  | Shelton, IV et al.             |
| 2015/0223868 | A1  | 8/2015  | Brandt et al.                        | 2016/0235409 | A1 | 8/2016  | Shelton, IV et al.             |
| 2015/0231409 | A1  | 8/2015  | Racenet et al.                       | 2016/0235467 | A1 | 8/2016  | Godara et al.                  |
| 2015/0238118 | A1  | 8/2015  | Legassey et al.                      | 2016/0235494 | A1 | 8/2016  | Shelton, IV et al.             |
| 2015/0272557 | A1  | 10/2015 | Overmyer et al.                      | 2016/0242782 | A1 | 8/2016  | Shelton, IV et al.             |
| 2015/0272571 | A1  | 10/2015 | Leimbach et al.                      | 2016/0242783 | A1 | 8/2016  | Shelton, IV et al.             |
| 2015/0272580 | A1  | 10/2015 | Leimbach et al.                      | 2016/0249910 | A1 | 9/2016  | Shelton, IV et al.             |
| 2015/0272582 | A1  | 10/2015 | Leimbach et al.                      | 2016/0249922 | A1 | 9/2016  | Morgan et al.                  |
| 2015/0273671 | A1  | 10/2015 | Totsu                                | 2016/0256071 | A1 | 9/2016  | Shelton, IV et al.             |
| 2015/0297200 | A1  | 10/2015 | Fitzsimmons et al.                   | 2016/0256154 | A1 | 9/2016  | Shelton, IV et al.             |
| 2015/0297222 | A1  | 10/2015 | Huitema et al.                       | 2016/0256159 | A1 | 9/2016  | Pinjala et al.                 |
| 2015/0297223 | A1  | 10/2015 | Huitema et al.                       | 2016/0256160 | A1 | 9/2016  | Shelton, IV et al.             |
| 2015/0297225 | A1  | 10/2015 | Huitema et al.                       | 2016/0256229 | A1 | 9/2016  | Morgan et al.                  |
| 2015/0297228 | A1  | 10/2015 | Huitema et al.                       | 2016/0262745 | A1 | 9/2016  | Morgan et al.                  |
| 2015/0297229 | A1  | 10/2015 | Schellin et al.                      | 2016/0262746 | A1 | 9/2016  | Shelton, IV et al.             |
| 2015/0297233 | A1  | 10/2015 | Huitema et al.                       | 2016/0262921 | A1 | 9/2016  | Balbierz et al.                |
| 2015/0297234 | A1  | 10/2015 | Schellin et al.                      | 2016/0270780 | A1 | 9/2016  | Hall et al.                    |
| 2015/0297235 | A1  | 10/2015 | Harris et al.                        | 2016/0278765 | A1 | 9/2016  | Shelton, IV et al.             |
| 2015/0302539 | A1  | 10/2015 | Mazar et al.                         | 2016/0278771 | A1 | 9/2016  | Shelton, IV et al.             |
| 2015/0303417 | A1  | 10/2015 | Koeder et al.                        | 2016/0287279 | A1 | 10/2016 | Bovay et al.                   |
| 2015/0313594 | A1  | 11/2015 | Shelton, IV et al.                   | 2016/0310143 | A1 | 10/2016 | Bettuchi                       |
| 2015/0319821 | A1* | 11/2015 | Yoshida ..... G06F 3/0321<br>315/152 | 2016/0345976 | A1 | 12/2016 | Gonzalez et al.                |
| 2015/0324317 | A1  | 11/2015 | Collins et al.                       | 2016/0346034 | A1 | 12/2016 | Arya et al.                    |
| 2015/0327864 | A1  | 11/2015 | Hodgkinson et al.                    | 2016/0354088 | A1 | 12/2016 | Cabrera et al.                 |
| 2015/0336249 | A1  | 11/2015 | Iwata et al.                         | 2016/0367122 | A1 | 12/2016 | Ichimura et al.                |
| 2015/0352699 | A1  | 12/2015 | Sakai et al.                         | 2016/0374672 | A1 | 12/2016 | Bear et al.                    |
| 2015/0366585 | A1  | 12/2015 | Lemay et al.                         | 2016/0374675 | A1 | 12/2016 | Shelton, IV et al.             |
| 2015/0372265 | A1  | 12/2015 | Morisaku et al.                      | 2016/0374678 | A1 | 12/2016 | Becerra et al.                 |
| 2015/0374361 | A1  | 12/2015 | Gettinger et al.                     | 2017/0007236 | A1 | 1/2017  | Shelton, IV et al.             |
| 2015/0374369 | A1  | 12/2015 | Yates et al.                         | 2017/0007237 | A1 | 1/2017  | Yates et al.                   |
| 2015/0374371 | A1  | 12/2015 | Richard et al.                       | 2017/0007243 | A1 | 1/2017  | Shelton, IV et al.             |
| 2015/0374372 | A1  | 12/2015 | Zergiebel et al.                     | 2017/0007244 | A1 | 1/2017  | Shelton, IV et al.             |
| 2015/0374378 | A1  | 12/2015 | Giordano et al.                      | 2017/0007245 | A1 | 1/2017  | Shelton, IV et al.             |
| 2016/0000430 | A1  | 1/2016  | Ming et al.                          | 2017/0007247 | A1 | 1/2017  | Shelton, IV et al.             |
| 2016/0000431 | A1  | 1/2016  | Giordano et al.                      | 2017/0007248 | A1 | 1/2017  | Shelton, IV et al.             |
|              |     |         |                                      | 2017/0007249 | A1 | 1/2017  | Shelton, IV et al.             |
|              |     |         |                                      | 2017/0007250 | A1 | 1/2017  | Shelton, IV et al.             |
|              |     |         |                                      | 2017/0007251 | A1 | 1/2017  | Yates et al.                   |
|              |     |         |                                      | 2017/0007347 | A1 | 1/2017  | Jaworek et al.                 |
|              |     |         |                                      | 2017/0014125 | A1 | 1/2017  | Shelton, IV et al.             |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |     |         |                       |              |    |         |                       |
|--------------|-----|---------|-----------------------|--------------|----|---------|-----------------------|
| 2017/0027572 | A1  | 2/2017  | Nalagatla et al.      | 2017/0281183 | A1 | 10/2017 | Miller et al.         |
| 2017/0027573 | A1  | 2/2017  | Nalagatla et al.      | 2017/0281184 | A1 | 10/2017 | Shelton, IV et al.    |
| 2017/0049444 | A1  | 2/2017  | Schellin et al.       | 2017/0281185 | A1 | 10/2017 | Miller et al.         |
| 2017/0049447 | A1  | 2/2017  | Barton et al.         | 2017/0281186 | A1 | 10/2017 | Shelton, IV et al.    |
| 2017/0049448 | A1  | 2/2017  | Widenhouse et al.     | 2017/0281187 | A1 | 10/2017 | Shelton, IV et al.    |
| 2017/0055986 | A1  | 3/2017  | Harris et al.         | 2017/0281189 | A1 | 10/2017 | Nalagatla et al.      |
| 2017/0055999 | A1  | 3/2017  | Baxter, III et al.    | 2017/0290584 | A1 | 10/2017 | Jasemian et al.       |
| 2017/0056000 | A1  | 3/2017  | Nalagatla et al.      | 2017/0290585 | A1 | 10/2017 | Shelton, IV et al.    |
| 2017/0056002 | A1  | 3/2017  | Nalagatla et al.      | 2017/0296169 | A1 | 10/2017 | Yates et al.          |
| 2017/0056005 | A1  | 3/2017  | Shelton, IV et al.    | 2017/0296170 | A1 | 10/2017 | Shelton, IV et al.    |
| 2017/0056006 | A1  | 3/2017  | Shelton, IV et al.    | 2017/0296173 | A1 | 10/2017 | Shelton, IV et al.    |
| 2017/0079642 | A1  | 3/2017  | Overmyer et al.       | 2017/0296177 | A1 | 10/2017 | Harris et al.         |
| 2017/0086827 | A1  | 3/2017  | Vendely et al.        | 2017/0296179 | A1 | 10/2017 | Shelton, IV et al.    |
| 2017/0086829 | A1  | 3/2017  | Vendely et al.        | 2017/0296185 | A1 | 10/2017 | Swensgard et al.      |
| 2017/0086830 | A1  | 3/2017  | Yates et al.          | 2017/0296189 | A1 | 10/2017 | Vendely et al.        |
| 2017/0086831 | A1  | 3/2017  | Shelton, IV et al.    | 2017/0296213 | A1 | 10/2017 | Swensgard et al.      |
| 2017/0086832 | A1  | 3/2017  | Harris et al.         | 2017/0311944 | A1 | 11/2017 | Morgan et al.         |
| 2017/0086836 | A1  | 3/2017  | Harris et al.         | 2017/0311949 | A1 | 11/2017 | Shelton, IV           |
| 2017/0086838 | A1  | 3/2017  | Harris et al.         | 2017/0311950 | A1 | 11/2017 | Shelton, IV et al.    |
| 2017/0086842 | A1  | 3/2017  | Shelton, IV et al.    | 2017/0312041 | A1 | 11/2017 | Giordano et al.       |
| 2017/0086843 | A1  | 3/2017  | Vendely et al.        | 2017/0312042 | A1 | 11/2017 | Giordano et al.       |
| 2017/0086844 | A1  | 3/2017  | Vendely et al.        | 2017/0319201 | A1 | 11/2017 | Morgan et al.         |
| 2017/0095250 | A1  | 4/2017  | Kostrzewski et al.    | 2017/0319207 | A1 | 11/2017 | Shelton, IV et al.    |
| 2017/0105733 | A1  | 4/2017  | Scheib et al.         | 2017/0319209 | A1 | 11/2017 | Morgan et al.         |
| 2017/0119388 | A1  | 5/2017  | Kostrzewski           | 2017/0325813 | A1 | 11/2017 | Aranyi et al.         |
| 2017/0119390 | A1  | 5/2017  | Schellin et al.       | 2017/0333034 | A1 | 11/2017 | Morgan et al.         |
| 2017/0119397 | A1  | 5/2017  | Harris et al.         | 2017/0333035 | A1 | 11/2017 | Morgan et al.         |
| 2017/0135697 | A1  | 5/2017  | Mozdzierz et al.      | 2017/0333070 | A1 | 11/2017 | Laurent et al.        |
| 2017/0143335 | A1  | 5/2017  | Gupta et al.          | 2017/0348010 | A1 | 12/2017 | Chiang                |
| 2017/0150965 | A1  | 6/2017  | Williams              | 2017/0348043 | A1 | 12/2017 | Wang et al.           |
| 2017/0150983 | A1  | 6/2017  | Ingmanson et al.      | 2017/0354413 | A1 | 12/2017 | Chen et al.           |
| 2017/0172382 | A1  | 6/2017  | Nir et al.            | 2017/0354415 | A1 | 12/2017 | Casasanta, Jr. et al. |
| 2017/0172550 | A1  | 6/2017  | Mukherjee et al.      | 2017/0358052 | A1 | 12/2017 | Yuan                  |
| 2017/0172662 | A1  | 6/2017  | Panescu et al.        | 2017/0360439 | A1 | 12/2017 | Chen et al.           |
| 2017/0172672 | A1  | 6/2017  | Bailey et al.         | 2017/0360441 | A1 | 12/2017 | Sgroi                 |
| 2017/0182211 | A1  | 6/2017  | Raxworthy et al.      | 2017/0360442 | A1 | 12/2017 | Shelton, IV et al.    |
| 2017/0196558 | A1  | 7/2017  | Morgan et al.         | 2017/0367695 | A1 | 12/2017 | Shelton, IV et al.    |
| 2017/0196561 | A1  | 7/2017  | Shelton, IV et al.    | 2017/0367696 | A1 | 12/2017 | Shelton, IV et al.    |
| 2017/0196562 | A1  | 7/2017  | Shelton, IV et al.    | 2017/0367697 | A1 | 12/2017 | Shelton, IV et al.    |
| 2017/0196637 | A1  | 7/2017  | Shelton, IV et al.    | 2017/0367698 | A1 | 12/2017 | Shelton, IV et al.    |
| 2017/0196648 | A1  | 7/2017  | Ward et al.           | 2017/0367699 | A1 | 12/2017 | Shelton, IV et al.    |
| 2017/0196649 | A1  | 7/2017  | Yates et al.          | 2017/0367700 | A1 | 12/2017 | Leimbach et al.       |
| 2017/0202571 | A1  | 7/2017  | Shelton, IV et al.    | 2017/0367991 | A1 | 12/2017 | Widenhouse et al.     |
| 2017/0202596 | A1  | 7/2017  | Shelton, IV et al.    | 2018/0000483 | A1 | 1/2018  | Leimbach et al.       |
| 2017/0202770 | A1  | 7/2017  | Friedrich et al.      | 2018/0000545 | A1 | 1/2018  | Giordano et al.       |
| 2017/0209145 | A1  | 7/2017  | Swayze et al.         | 2018/0008270 | A1 | 1/2018  | Moore et al.          |
| 2017/0209146 | A1  | 7/2017  | Yates et al.          | 2018/0008271 | A1 | 1/2018  | Moore et al.          |
| 2017/0209226 | A1  | 7/2017  | Overmyer et al.       | 2018/0008356 | A1 | 1/2018  | Giordano et al.       |
| 2017/0215881 | A1  | 8/2017  | Shelton, IV et al.    | 2018/0008357 | A1 | 1/2018  | Giordano et al.       |
| 2017/0215943 | A1  | 8/2017  | Allen, IV             | 2018/0028184 | A1 | 2/2018  | Shelton, IV et al.    |
| 2017/0224331 | A1  | 8/2017  | Worthington et al.    | 2018/0028185 | A1 | 2/2018  | Shelton, IV et al.    |
| 2017/0224332 | A1  | 8/2017  | Hunter et al.         | 2018/0042611 | A1 | 2/2018  | Swayze et al.         |
| 2017/0224334 | A1  | 8/2017  | Worthington et al.    | 2018/0049824 | A1 | 2/2018  | Harris et al.         |
| 2017/0224335 | A1  | 8/2017  | Weaner et al.         | 2018/0049883 | A1 | 2/2018  | Moskowitz et al.      |
| 2017/0224339 | A1  | 8/2017  | Huang et al.          | 2018/0055513 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0224343 | A1  | 8/2017  | Baxter, III et al.    | 2018/0055524 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0231627 | A1  | 8/2017  | Shelton, IV et al.    | 2018/0055525 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0231628 | A1  | 8/2017  | Shelton, IV et al.    | 2018/0055526 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0238928 | A1  | 8/2017  | Morgan et al.         | 2018/0064437 | A1 | 3/2018  | Yates et al.          |
| 2017/0238929 | A1  | 8/2017  | Yates et al.          | 2018/0064440 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0245854 | A1  | 8/2017  | Zemlok et al.         | 2018/0064441 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0245952 | A1  | 8/2017  | Shelton, IV et al.    | 2018/0064442 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0249431 | A1  | 8/2017  | Shelton, IV et al.    | 2018/0064443 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0253181 | A1* | 9/2017  | Choi ..... B60Q 9/008 | 2018/0070939 | A1 | 3/2018  | Giordano et al.       |
| 2017/0258469 | A1  | 9/2017  | Shelton, IV et al.    | 2018/0070942 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0265856 | A1  | 9/2017  | Shelton, IV et al.    | 2018/0078248 | A1 | 3/2018  | Swayze et al.         |
| 2017/0281155 | A1  | 10/2017 | Shelton, IV et al.    | 2018/0078268 | A1 | 3/2018  | Messerly et al.       |
| 2017/0281164 | A1  | 10/2017 | Harris et al.         | 2018/0085116 | A1 | 3/2018  | Yates et al.          |
| 2017/0281166 | A1  | 10/2017 | Morgan et al.         | 2018/0085117 | A1 | 3/2018  | Shelton, IV et al.    |
| 2017/0281167 | A1  | 10/2017 | Shelton, IV et al.    | 2018/0103953 | A1 | 4/2018  | Shelton, IV et al.    |
| 2017/0281169 | A1  | 10/2017 | Harris et al.         | 2018/0103955 | A1 | 4/2018  | Shelton, IV et al.    |
| 2017/0281171 | A1  | 10/2017 | Shelton, IV et al.    | 2018/0110516 | A1 | 4/2018  | Baxter, III et al.    |
| 2017/0281173 | A1  | 10/2017 | Shelton, IV et al.    | 2018/0110518 | A1 | 4/2018  | Overmyer et al.       |
| 2017/0281174 | A1  | 10/2017 | Harris et al.         | 2018/0110519 | A1 | 4/2018  | Lytte, IV et al.      |
| 2017/0281179 | A1  | 10/2017 | Shelton, IV et al.    | 2018/0110520 | A1 | 4/2018  | Shelton, IV et al.    |
|              |     |         |                       | 2018/0110521 | A1 | 4/2018  | Shelton, IV et al.    |
|              |     |         |                       | 2018/0110522 | A1 | 4/2018  | Shelton, IV et al.    |
|              |     |         |                       | 2018/0110523 | A1 | 4/2018  | Shelton, IV           |
|              |     |         |                       | 2018/0110574 | A1 | 4/2018  | Shelton, IV et al.    |

(56)

References Cited

U.S. PATENT DOCUMENTS

|              |    |        |                     |              |     |         |                            |
|--------------|----|--------|---------------------|--------------|-----|---------|----------------------------|
| 2018/0110575 | A1 | 4/2018 | Shelton, IV et al.  | 2018/0168630 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0114591 | A1 | 4/2018 | Pribanic et al.     | 2018/0168631 | A1  | 6/2018  | Harris et al.              |
| 2018/0116658 | A1 | 5/2018 | Aronhaft, IV et al. | 2018/0168632 | A1  | 6/2018  | Harris et al.              |
| 2018/0116662 | A1 | 5/2018 | Shelton, IV et al.  | 2018/0168633 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0116665 | A1 | 5/2018 | Hall et al.         | 2018/0168634 | A1  | 6/2018  | Harris et al.              |
| 2018/0125481 | A1 | 5/2018 | Yates et al.        | 2018/0168635 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0125484 | A1 | 5/2018 | Kostrzewski         | 2018/0168636 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0125487 | A1 | 5/2018 | Beardsley           | 2018/0168637 | A1  | 6/2018  | Harris et al.              |
| 2018/0125488 | A1 | 5/2018 | Morgan et al.       | 2018/0168638 | A1  | 6/2018  | Harris et al.              |
| 2018/0125489 | A1 | 5/2018 | Leimbach et al.     | 2018/0168639 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0125590 | A1 | 5/2018 | Giordano et al.     | 2018/0168640 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0126504 | A1 | 5/2018 | Shelton, IV et al.  | 2018/0168641 | A1  | 6/2018  | Harris et al.              |
| 2018/0132845 | A1 | 5/2018 | Schmid et al.       | 2018/0168642 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0132849 | A1 | 5/2018 | Miller et al.       | 2018/0168643 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0132850 | A1 | 5/2018 | Leimbach et al.     | 2018/0168644 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0132851 | A1 | 5/2018 | Hall et al.         | 2018/0168645 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0132926 | A1 | 5/2018 | Asher et al.        | 2018/0168646 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0132952 | A1 | 5/2018 | Spivey et al.       | 2018/0168647 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0133856 | A1 | 5/2018 | Shelton, IV et al.  | 2018/0168648 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0140299 | A1 | 5/2018 | Weaner et al.       | 2018/0168649 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0140368 | A1 | 5/2018 | Shelton, IV et al.  | 2018/0168650 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0146960 | A1 | 5/2018 | Shelton, IV et al.  | 2018/0168651 | A1  | 6/2018  | Shelton, IV et al.         |
| 2018/0153542 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0199940 | A1  | 7/2018  | Zergiebel et al.           |
| 2018/0161034 | A1 | 6/2018 | Scheib et al.       | 2018/0206843 | A1  | 7/2018  | Yates et al.               |
| 2018/0168575 | A1 | 6/2018 | Simms et al.        | 2018/0206906 | A1  | 7/2018  | Moua et al.                |
| 2018/0168576 | A1 | 6/2018 | Hunter et al.       | 2018/0214147 | A1  | 8/2018  | Merchant et al.            |
| 2018/0168577 | A1 | 6/2018 | Aronhalt et al.     | 2018/0221046 | A1  | 8/2018  | Demmy et al.               |
| 2018/0168578 | A1 | 6/2018 | Aronhalt et al.     | 2018/0221050 | A1  | 8/2018  | Kostrzewski et al.         |
| 2018/0168579 | A1 | 6/2018 | Aronhalt et al.     | 2018/0228490 | A1  | 8/2018  | Richard et al.             |
| 2018/0168580 | A1 | 6/2018 | Hunter et al.       | 2018/0242962 | A1  | 8/2018  | Walen et al.               |
| 2018/0168581 | A1 | 6/2018 | Hunter et al.       | 2018/0250001 | A1  | 9/2018  | Aronhalt et al.            |
| 2018/0168582 | A1 | 6/2018 | Swayze et al.       | 2018/0250020 | A1  | 9/2018  | Carusillo                  |
| 2018/0168583 | A1 | 6/2018 | Hunter et al.       | 2018/0256184 | A1  | 9/2018  | Shelton, IV et al.         |
| 2018/0168584 | A1 | 6/2018 | Harris et al.       | 2018/0271520 | A1  | 9/2018  | Shelton, IV et al.         |
| 2018/0168585 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0273597 | A1  | 9/2018  | Stimson                    |
| 2018/0168586 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0280020 | A1  | 10/2018 | Hess et al.                |
| 2018/0168589 | A1 | 6/2018 | Swayze et al.       | 2018/0286274 | A1  | 10/2018 | Kamiguchi et al.           |
| 2018/0168590 | A1 | 6/2018 | Overmyer et al.     | 2018/0289369 | A1  | 10/2018 | Shelton, IV et al.         |
| 2018/0168591 | A1 | 6/2018 | Swayze et al.       | 2018/0296211 | A1  | 10/2018 | Timm et al.                |
| 2018/0168592 | A1 | 6/2018 | Overmyer et al.     | 2018/0296215 | A1  | 10/2018 | Baxter, III et al.         |
| 2018/0168593 | A1 | 6/2018 | Overmyer et al.     | 2018/0296216 | A1  | 10/2018 | Shelton, IV et al.         |
| 2018/0168594 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0296217 | A1  | 10/2018 | Moore et al.               |
| 2018/0168595 | A1 | 6/2018 | Overmyer et al.     | 2018/0303481 | A1  | 10/2018 | Shelton, IV et al.         |
| 2018/0168596 | A1 | 6/2018 | Beckman et al.      | 2018/0303482 | A1  | 10/2018 | Shelton, IV et al.         |
| 2018/0168597 | A1 | 6/2018 | Fanelli et al.      | 2018/0310931 | A1  | 11/2018 | Hall et al.                |
| 2018/0168598 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0311002 | A1  | 11/2018 | Giordano et al.            |
| 2018/0168599 | A1 | 6/2018 | Bakos et al.        | 2018/0317907 | A1  | 11/2018 | Kostrzewski                |
| 2018/0168600 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0317916 | A1  | 11/2018 | Wixey                      |
| 2018/0168601 | A1 | 6/2018 | Bakos et al.        | 2018/0317917 | A1  | 11/2018 | Huang et al.               |
| 2018/0168602 | A1 | 6/2018 | Bakos et al.        | 2018/0317918 | A1  | 11/2018 | Shelton, IV                |
| 2018/0168603 | A1 | 6/2018 | Morgan et al.       | 2018/0317919 | A1  | 11/2018 | Shelton, IV et al.         |
| 2018/0168604 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0325528 | A1  | 11/2018 | Windolf et al.             |
| 2018/0168605 | A1 | 6/2018 | Baber et al.        | 2018/0333155 | A1  | 11/2018 | Hall et al.                |
| 2018/0168606 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0333169 | A1  | 11/2018 | Leimbach et al.            |
| 2018/0168607 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0344319 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168608 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0353170 | A1  | 12/2018 | Overmyer et al.            |
| 2018/0168609 | A1 | 6/2018 | Fanelli et al.      | 2018/0353176 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168610 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0353177 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168611 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0353178 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168613 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0353179 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168614 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360443 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168615 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360445 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168616 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360446 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168617 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360447 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168618 | A1 | 6/2018 | Scott et al.        | 2018/0360448 | A1* | 12/2018 | Harris ..... A61B 17/07207 |
| 2018/0168619 | A1 | 6/2018 | Scott et al.        | 2018/0360449 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168620 | A1 | 6/2018 | Huang et al.        | 2018/0360450 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168621 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360452 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168623 | A1 | 6/2018 | Simms et al.        | 2018/0360454 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168624 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360455 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168625 | A1 | 6/2018 | Posada et al.       | 2018/0360456 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168626 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360471 | A1  | 12/2018 | Parfett et al.             |
| 2018/0168627 | A1 | 6/2018 | Weaner et al.       | 2018/0360472 | A1  | 12/2018 | Harris et al.              |
| 2018/0168628 | A1 | 6/2018 | Hunter et al.       | 2018/0360473 | A1  | 12/2018 | Shelton, IV et al.         |
| 2018/0168629 | A1 | 6/2018 | Shelton, IV et al.  | 2018/0360549 | A1  | 12/2018 | Hares et al.               |
|              |    |        |                     | 2018/0368822 | A1  | 12/2018 | Shelton, IV et al.         |
|              |    |        |                     | 2018/0368833 | A1  | 12/2018 | Shelton, IV et al.         |
|              |    |        |                     | 2018/0368837 | A1  | 12/2018 | Morgan et al.              |
|              |    |        |                     | 2018/0368838 | A1  | 12/2018 | Shelton, IV et al.         |



(56)

## References Cited

## U.S. PATENT DOCUMENTS

|              |    |         |                    |              |    |        |                    |
|--------------|----|---------|--------------------|--------------|----|--------|--------------------|
| 2018/0368839 | A1 | 12/2018 | Shelton, IV et al. | 2019/0099181 | A1 | 4/2019 | Shelton, IV et al. |
| 2018/0368840 | A1 | 12/2018 | Shelton, IV et al. | 2019/0099182 | A1 | 4/2019 | Bakos et al.       |
| 2018/0368841 | A1 | 12/2018 | Shelton, IV et al. | 2019/0099183 | A1 | 4/2019 | Leimbach et al.    |
| 2018/0368842 | A1 | 12/2018 | Shelton, IV et al. | 2019/0099184 | A1 | 4/2019 | Setser et al.      |
| 2018/0368843 | A1 | 12/2018 | Shelton, IV et al. | 2019/0099224 | A1 | 4/2019 | Leimbach et al.    |
| 2018/0368844 | A1 | 12/2018 | Bakos et al.       | 2019/0099229 | A1 | 4/2019 | Spivey et al.      |
| 2018/0368845 | A1 | 12/2018 | Bakos et al.       | 2019/0102930 | A1 | 4/2019 | Leimbach et al.    |
| 2018/0368846 | A1 | 12/2018 | Shelton, IV et al. | 2019/0105035 | A1 | 4/2019 | Shelton, IV et al. |
| 2018/0368847 | A1 | 12/2018 | Shelton, IV et al. | 2019/0105036 | A1 | 4/2019 | Morgan et al.      |
| 2019/0000446 | A1 | 1/2019  | Shelton, IV et al. | 2019/0105037 | A1 | 4/2019 | Morgan et al.      |
| 2019/0000448 | A1 | 1/2019  | Shelton, IV et al. | 2019/0105038 | A1 | 4/2019 | Schmid et al.      |
| 2019/0000450 | A1 | 1/2019  | Shelton, IV et al. | 2019/0105039 | A1 | 4/2019 | Morgan et al.      |
| 2019/0000454 | A1 | 1/2019  | Swayze et al.      | 2019/0105043 | A1 | 4/2019 | Jaworek et al.     |
| 2019/0000456 | A1 | 1/2019  | Shelton, IV et al. | 2019/0105044 | A1 | 4/2019 | Shelton, IV et al. |
| 2019/0000457 | A1 | 1/2019  | Shelton, IV et al. | 2019/0105049 | A1 | 4/2019 | Moore et al.       |
| 2019/0000458 | A1 | 1/2019  | Shelton, IV et al. | 2019/0110791 | A1 | 4/2019 | Shelton, IV et al. |
| 2019/0000459 | A1 | 1/2019  | Shelton, IV et al. | 2019/0110792 | A1 | 4/2019 | Shelton, IV et al. |
| 2019/0000460 | A1 | 1/2019  | Shelton, IV et al. | 2019/0110793 | A1 | 4/2019 | Parihar et al.     |
| 2019/0000461 | A1 | 1/2019  | Shelton, IV et al. | 2019/0117216 | A1 | 4/2019 | Overmyer et al.    |
| 2019/0000462 | A1 | 1/2019  | Shelton, IV et al. | 2019/0117217 | A1 | 4/2019 | Overmyer et al.    |
| 2019/0000463 | A1 | 1/2019  | Shelton, IV et al. | 2019/0117222 | A1 | 4/2019 | Shelton, IV et al. |
| 2019/0000464 | A1 | 1/2019  | Shelton, IV et al. | 2019/0117224 | A1 | 4/2019 | Setser et al.      |
| 2019/0000465 | A1 | 1/2019  | Shelton, IV et al. | 2019/0117225 | A1 | 4/2019 | Moore et al.       |
| 2019/0000466 | A1 | 1/2019  | Shelton, IV et al. | 2019/0125343 | A1 | 5/2019 | Wise et al.        |
| 2019/0000467 | A1 | 1/2019  | Shelton, IV et al. | 2019/0125344 | A1 | 5/2019 | DiNardo et al.     |
| 2019/0000468 | A1 | 1/2019  | Adams et al.       | 2019/0125345 | A1 | 5/2019 | Baber et al.       |
| 2019/0000469 | A1 | 1/2019  | Shelton, IV et al. | 2019/0125365 | A1 | 5/2019 | Parfett et al.     |
| 2019/0000470 | A1 | 1/2019  | Yates et al.       | 2019/0125380 | A1 | 5/2019 | Hunter et al.      |
| 2019/0000471 | A1 | 1/2019  | Shelton, IV et al. | 2019/0125475 | A1 | 5/2019 | Wise et al.        |
| 2019/0000472 | A1 | 1/2019  | Shelton, IV et al. | 2019/0133585 | A1 | 5/2019 | Smith et al.       |
| 2019/0000473 | A1 | 1/2019  | Shelton, IV et al. | 2019/0142421 | A1 | 5/2019 | Shelton, IV        |
| 2019/0000474 | A1 | 1/2019  | Shelton, IV et al. | 2019/0183490 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000475 | A1 | 1/2019  | Shelton, IV et al. | 2019/0183491 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000476 | A1 | 1/2019  | Shelton, IV et al. | 2019/0183492 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000477 | A1 | 1/2019  | Shelton, IV et al. | 2019/0183493 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000478 | A1 | 1/2019  | Messerly et al.    | 2019/0183494 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000479 | A1 | 1/2019  | Harris et al.      | 2019/0183495 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000525 | A1 | 1/2019  | Messerly et al.    | 2019/0183496 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000528 | A1 | 1/2019  | Yates et al.       | 2019/0183497 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000530 | A1 | 1/2019  | Yates et al.       | 2019/0183498 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000531 | A1 | 1/2019  | Messerly et al.    | 2019/0183499 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000534 | A1 | 1/2019  | Messerly et al.    | 2019/0183500 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000538 | A1 | 1/2019  | Widenhouse et al.  | 2019/0183501 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000555 | A1 | 1/2019  | Schings et al.     | 2019/0183502 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0000565 | A1 | 1/2019  | Shelton, IV et al. | 2019/0183503 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0003292 | A1 | 1/2019  | Balan et al.       | 2019/0183504 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0008509 | A1 | 1/2019  | Shelton, IV et al. | 2019/0183505 | A1 | 6/2019 | Vendely et al.     |
| 2019/0008511 | A1 | 1/2019  | Kerr et al.        | 2019/0183592 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0015096 | A1 | 1/2019  | Shelton, IV et al. | 2019/0183594 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0015102 | A1 | 1/2019  | Baber et al.       | 2019/0183597 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0015165 | A1 | 1/2019  | Giordano et al.    | 2019/0192137 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0029675 | A1 | 1/2019  | Yates et al.       | 2019/0192138 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0029676 | A1 | 1/2019  | Yates et al.       | 2019/0192141 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0029677 | A1 | 1/2019  | Yates et al.       | 2019/0192144 | A1 | 6/2019 | Parfett et al.     |
| 2019/0029678 | A1 | 1/2019  | Shelton, IV et al. | 2019/0192145 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0029681 | A1 | 1/2019  | Swayze et al.      | 2019/0192146 | A1 | 6/2019 | Widenhouse et al.  |
| 2019/0029682 | A1 | 1/2019  | Huitema et al.     | 2019/0192147 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0029701 | A1 | 1/2019  | Shelton, IV et al. | 2019/0192148 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0033955 | A1 | 1/2019  | Leimbach et al.    | 2019/0192149 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0038279 | A1 | 2/2019  | Shelton, IV et al. | 2019/0192150 | A1 | 6/2019 | Widenhouse et al.  |
| 2019/0038281 | A1 | 2/2019  | Shelton, IV et al. | 2019/0192151 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0038282 | A1 | 2/2019  | Shelton, IV et al. | 2019/0192152 | A1 | 6/2019 | Morgan et al.      |
| 2019/0038283 | A1 | 2/2019  | Shelton, IV et al. | 2019/0192153 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0038292 | A1 | 2/2019  | Zhang              | 2019/0192154 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0038371 | A1 | 2/2019  | Wixey et al.       | 2019/0192155 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0046181 | A1 | 2/2019  | McCuen             | 2019/0192156 | A1 | 6/2019 | Simms et al.       |
| 2019/0046187 | A1 | 2/2019  | Yates et al.       | 2019/0192157 | A1 | 6/2019 | Scott et al.       |
| 2019/0059886 | A1 | 2/2019  | Shelton, IV et al. | 2019/0192158 | A1 | 6/2019 | Scott et al.       |
| 2019/0090870 | A1 | 3/2019  | Shelton, IV et al. | 2019/0192159 | A1 | 6/2019 | Simms et al.       |
| 2019/0090871 | A1 | 3/2019  | Shelton, IV et al. | 2019/0192227 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0091183 | A1 | 3/2019  | Tomat et al.       | 2019/0192235 | A1 | 6/2019 | Harris et al.      |
| 2019/0099177 | A1 | 4/2019  | Yates et al.       | 2019/0192236 | A1 | 6/2019 | Shelton, IV et al. |
| 2019/0099178 | A1 | 4/2019  | Leimbach et al.    | 2019/0200895 | A1 | 7/2019 | Shelton, IV et al. |
| 2019/0099179 | A1 | 4/2019  | Leimbach et al.    | 2019/0200991 | A1 | 7/2019 | Moore et al.       |
| 2019/0099180 | A1 | 4/2019  | Leimbach et al.    | 2019/0200992 | A1 | 7/2019 | Moore et al.       |
|              |    |         |                    | 2019/0200993 | A1 | 7/2019 | Moore et al.       |
|              |    |         |                    | 2019/0200994 | A1 | 7/2019 | Moore et al.       |
|              |    |         |                    | 2019/0209164 | A1 | 7/2019 | Timm et al.        |
|              |    |         |                    | 2019/0209165 | A1 | 7/2019 | Timm et al.        |

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2019/0209171 A1 7/2019 Shelton, IV et al.  
 2019/0209172 A1 7/2019 Shelton, IV et al.  
 2019/0209247 A1 7/2019 Giordano et al.  
 2019/0209248 A1 7/2019 Giordano et al.  
 2019/0209249 A1 7/2019 Giordano et al.  
 2019/0209250 A1 7/2019 Giordano et al.  
 2019/0216558 A1 7/2019 Giordano et al.  
 2019/0223865 A1 7/2019 Shelton, IV et al.  
 2019/0223871 A1 7/2019 Moore et al.  
 2019/0261991 A1 8/2019 Beckman et al.  
 2019/0267403 A1 8/2019 Li et al.  
 2019/0269400 A1 9/2019 Mandakolathur Vasudevan et al.  
 2019/0269402 A1 9/2019 Murray et al.  
 2019/0269403 A1 9/2019 Baxter, III et al.  
 2019/0269407 A1 9/2019 Swensgard et al.  
 2019/0290263 A1 9/2019 Morgan et al.  
 2019/0290264 A1 9/2019 Morgan et al.  
 2019/0290265 A1 9/2019 Shelton, IV et al.  
 2019/0290274 A1 9/2019 Shelton, IV

## FOREIGN PATENT DOCUMENTS

CA 1015829 A 8/1977  
 CA 1125615 A 6/1982  
 CA 2520413 A1 3/2007  
 CA 2725181 A1 11/2007  
 CA 2851239 A1 11/2007  
 CA 2664874 A1 11/2009  
 CA 2813230 A1 4/2012  
 CA 2940510 A1 8/2015  
 CN 1163558 A 10/1997  
 CN 2488482 Y 5/2002  
 CN 1634601 A 7/2005  
 CN 2716900 Y 8/2005  
 CN 2738962 Y 11/2005  
 CN 1777406 A 5/2006  
 CN 2796654 Y 7/2006  
 CN 2868212 Y 2/2007  
 CN 200942099 Y 9/2007  
 CN 200984209 Y 12/2007  
 CN 200991269 Y 12/2007  
 CN 201001747 Y 1/2008  
 CN 101143105 A 3/2008  
 CN 201029899 Y 3/2008  
 CN 101378791 A 3/2009  
 CN 101522120 A 9/2009  
 CN 101669833 A 3/2010  
 CN 101721236 A 6/2010  
 CN 101828940 A 9/2010  
 CN 101873834 A 10/2010  
 CN 201719298 U 1/2011  
 CN 102038532 A 5/2011  
 CN 201879759 U 6/2011  
 CN 201949071 U 8/2011  
 CN 102217963 A 10/2011  
 CN 101779977 B 12/2011  
 CN 101912284 B 7/2012  
 CN 102125450 B 7/2012  
 CN 202313537 U 7/2012  
 CN 202397539 U 8/2012  
 CN 202426586 U 9/2012  
 CN 202489990 U 10/2012  
 CN 102228387 B 11/2012  
 CN 102835977 A 12/2012  
 CN 202568350 U 12/2012  
 CN 103690212 A 4/2014  
 CN 203564285 U 4/2014  
 CN 203564287 U 4/2014  
 CN 203597997 U 5/2014  
 CN 103829981 A 6/2014  
 CN 103829983 A 6/2014  
 CN 103908313 A 7/2014  
 CN 203693685 U 7/2014  
 CN 203736251 U 7/2014  
 CN 103981635 A 8/2014

CN 203815517 U 9/2014  
 CN 102783741 B 10/2014  
 CN 102973300 B 10/2014  
 CN 104337556 A 2/2015  
 CN 204158440 U 2/2015  
 CN 204158441 U 2/2015  
 CN 102469995 B 3/2015  
 CN 204636451 U 9/2015  
 CN 103860225 B 3/2016  
 CN 103750872 B 5/2016  
 DE 273689 C 5/1914  
 DE 1775926 A 1/1972  
 DE 3036217 A1 4/1982  
 DE 3210466 A1 9/1983  
 DE 3709067 A1 9/1988  
 DE 19534043 A1 3/1997  
 DE 19851291 A1 1/2000  
 DE 19924311 A1 11/2000  
 DE 20016423 U1 2/2001  
 DE 20112837 U1 10/2001  
 DE 20121753 U1 4/2003  
 DE 202004012389 U1 9/2004  
 DE 10314072 A1 10/2004  
 DE 102004014011 A1 10/2005  
 DE 102004063606 A1 7/2006  
 DE 202007003114 U1 6/2007  
 DE 102010013150 A1 9/2011  
 EP 0000756 A1 2/1979  
 EP 0122046 A1 10/1984  
 EP 0129442 B1 11/1987  
 EP 0255631 A1 2/1988  
 EP 0169044 B1 6/1991  
 EP 0541950 A1 5/1993  
 EP 0548998 A1 6/1993  
 EP 0594148 A1 4/1994  
 EP 0646357 A1 4/1995  
 EP 0505036 B1 5/1995  
 EP 0669104 A1 8/1995  
 EP 0705571 A1 4/1996  
 EP 0528478 B1 5/1996  
 EP 0770355 A1 5/1997  
 EP 0625335 B1 11/1997  
 EP 0879742 A1 11/1998  
 EP 0650701 B1 3/1999  
 EP 0923907 A1 6/1999  
 EP 0484677 B2 7/2000  
 EP 1034747 A1 9/2000  
 EP 1034748 A1 9/2000  
 EP 0726632 B1 10/2000  
 EP 1053719 A1 11/2000  
 EP 1055399 A1 11/2000  
 EP 1055400 A1 11/2000  
 EP 1080694 A1 3/2001  
 EP 1090592 A1 4/2001  
 EP 1095627 A1 5/2001  
 EP 0806914 B1 9/2001  
 EP 1234587 A1 8/2002  
 EP 1284120 A1 2/2003  
 EP 0717967 B1 5/2003  
 EP 0869742 B1 5/2003  
 EP 1374788 A1 1/2004  
 EP 1407719 A2 4/2004  
 EP 0996378 B1 6/2004  
 EP 1157666 B1 9/2005  
 EP 0880338 B1 10/2005  
 EP 1158917 B1 11/2005  
 EP 1344498 B1 11/2005  
 EP 1330989 B1 12/2005  
 EP 1632191 A2 3/2006  
 EP 1082944 B1 5/2006  
 EP 1253866 B1 7/2006  
 EP 1723914 A1 11/2006  
 EP 1285633 B1 12/2006  
 EP 1011494 B1 1/2007  
 EP 1767163 A1 3/2007  
 EP 1837041 A1 9/2007  
 EP 0922435 B1 10/2007  
 EP 1599146 B1 10/2007  
 EP 1330201 B1 6/2008

(56)

## References Cited

## FOREIGN PATENT DOCUMENTS

|    |           |    |         |    |             |    |         |
|----|-----------|----|---------|----|-------------|----|---------|
| EP | 2039302   | A2 | 3/2009  | JP | H08507708   | A  | 8/1996  |
| EP | 1719461   | B1 | 6/2009  | JP | H08229050   | A  | 9/1996  |
| EP | 2116196   | A2 | 11/2009 | JP | H08289895   | A  | 11/1996 |
| EP | 1769754   | B1 | 6/2010  | JP | H09-323068  | A  | 12/1997 |
| EP | 2236096   | A1 | 10/2010 | JP | H10118090   | A  | 5/1998  |
| EP | 1627605   | B1 | 12/2010 | JP | H10-200699  | A  | 7/1998  |
| EP | 2316345   | A1 | 5/2011  | JP | H10296660   | A  | 11/1998 |
| EP | 1962711   | B1 | 2/2012  | JP | 2000014632  | A  | 1/2000  |
| EP | 2486862   | A2 | 8/2012  | JP | 2000033071  | A  | 2/2000  |
| EP | 2486868   | A2 | 8/2012  | JP | 2000112002  | A  | 4/2000  |
| EP | 2517638   | A1 | 10/2012 | JP | 2000166932  | A  | 6/2000  |
| EP | 2606812   | A1 | 6/2013  | JP | 2000171730  | A  | 6/2000  |
| EP | 2649948   | A1 | 10/2013 | JP | 2000271141  | A  | 10/2000 |
| EP | 2649949   | A1 | 10/2013 | JP | 2000287987  | A  | 10/2000 |
| EP | 2668910   | A2 | 12/2013 | JP | 2000325303  | A  | 11/2000 |
| EP | 2687164   | A2 | 1/2014  | JP | 2001087272  | A  | 4/2001  |
| EP | 2713902   | A1 | 4/2014  | JP | 2001514541  | A  | 9/2001  |
| EP | 2743042   | A2 | 6/2014  | JP | 2001276091  | A  | 10/2001 |
| EP | 2764827   | A2 | 8/2014  | JP | 2002051974  | A  | 2/2002  |
| EP | 2777524   | A2 | 9/2014  | JP | 2002054903  | A  | 2/2002  |
| EP | 2842500   | A1 | 3/2015  | JP | 2002085415  | A  | 3/2002  |
| EP | 2853220   | A1 | 4/2015  | JP | 2002143078  | A  | 5/2002  |
| EP | 2298220   | B1 | 6/2016  | JP | 2002153481  | A  | 5/2002  |
| EP | 2510891   | B1 | 6/2016  | JP | 2002528161  | A  | 9/2002  |
| EP | 3031404   | A1 | 6/2016  | JP | 2002314298  | A  | 10/2002 |
| EP | 3047806   | A1 | 7/2016  | JP | 2003135473  | A  | 5/2003  |
| EP | 3078334   | A1 | 10/2016 | JP | 2003521301  | A  | 7/2003  |
| EP | 2364651   | B1 | 11/2016 | JP | 3442423     | B2 | 9/2003  |
| EP | 2747235   | B1 | 11/2016 | JP | 2003300416  | A  | 10/2003 |
| EP | 2789299   | B1 | 5/2017  | JP | 2004147701  | A  | 5/2004  |
| EP | 3225190   | A2 | 10/2017 | JP | 2004162035  | A  | 6/2004  |
| EP | 3363378   | A1 | 8/2018  | JP | 2004229976  | A  | 8/2004  |
| FR | 459743    | A  | 11/1913 | JP | 2005013573  | A  | 1/2005  |
| FR | 999646    | A  | 2/1952  | JP | 2005080702  | A  | 3/2005  |
| FR | 1112936   | A  | 3/1956  | JP | 2005131163  | A  | 5/2005  |
| FR | 2598905   | A1 | 11/1987 | JP | 2005131164  | A  | 5/2005  |
| FR | 2689749   | B1 | 7/1994  | JP | 2005131173  | A  | 5/2005  |
| FR | 2765794   | A1 | 1/1999  | JP | 2005131211  | A  | 5/2005  |
| FR | 2815842   | A1 | 5/2002  | JP | 2005131212  | A  | 5/2005  |
| GB | 939929    | A  | 10/1963 | JP | 2005137423  | A  | 6/2005  |
| GB | 1210522   | A  | 10/1970 | JP | 2005187954  | A  | 7/2005  |
| GB | 1217159   | A  | 12/1970 | JP | 2005211455  | A  | 8/2005  |
| GB | 1339394   | A  | 12/1973 | JP | 2005328882  | A  | 12/2005 |
| GB | 2024012   | A  | 1/1980  | JP | 2005335432  | A  | 12/2005 |
| GB | 2109241   | A  | 6/1983  | JP | 2005342267  | A  | 12/2005 |
| GB | 2090534   | B  | 6/1984  | JP | 3791856     | B2 | 6/2006  |
| GB | 2272159   | A  | 5/1994  | JP | 2006187649  | A  | 7/2006  |
| GB | 2336214   | A  | 10/1999 | JP | 2006218228  | A  | 8/2006  |
| GB | 2509523   | A  | 7/2014  | JP | 2006281405  | A  | 10/2006 |
| GR | 930100110 | A  | 11/1993 | JP | 2006346445  | A  | 12/2006 |
| JP | S4711908  | Y1 | 5/1972  | JP | 2008220032  | A  | 9/2008  |
| JP | S5033988  | U  | 4/1975  | JP | 2009507526  | A  | 2/2009  |
| JP | S56112235 | A  | 9/1981  | JP | 2009189838  | A  | 8/2009  |
| JP | S60113007 | A  | 6/1985  | JP | 2009189846  | A  | 8/2009  |
| JP | S62170011 | U  | 10/1987 | JP | 2009207260  | A  | 9/2009  |
| JP | S63270040 | A  | 11/1988 | JP | 2009226028  | A  | 10/2009 |
| JP | H0129503  | B2 | 6/1989  | JP | 2009538684  | A  | 11/2009 |
| JP | H0378514  | U  | 8/1991  | JP | 2009539420  | A  | 11/2009 |
| JP | H0385009  | U  | 8/1991  | JP | 2010069307  | A  | 4/2010  |
| JP | H04215747 | A  | 8/1992  | JP | 2010069310  | A  | 4/2010  |
| JP | H04131860 | U  | 12/1992 | JP | 2010098844  | A  | 4/2010  |
| JP | H0584252  | A  | 4/1993  | JP | 2010214128  | A  | 9/2010  |
| JP | H05123325 | A  | 5/1993  | JP | 2011072574  | A  | 4/2011  |
| JP | H05226945 | A  | 9/1993  | JP | 4722849     | B2 | 7/2011  |
| JP | H0630945  | A  | 2/1994  | JP | 2011524199  | A  | 9/2011  |
| JP | H06237937 | A  | 8/1994  | JP | 2012143283  | A  | 8/2012  |
| JP | H06327684 | A  | 11/1994 | JP | 2012145767  | A  | 8/2012  |
| JP | H079622   | U  | 2/1995  | JP | 2012232121  | A  | 11/2012 |
| JP | H07124166 | A  | 5/1995  | JP | 5154710     | B1 | 2/2013  |
| JP | H07163573 | A  | 6/1995  | JP | 2014121599  | A  | 7/2014  |
| JP | H07255735 | A  | 10/1995 | JP | 2016512057  | A  | 4/2016  |
| JP | H07285089 | A  | 10/1995 | KR | 20100110134 | A  | 10/2010 |
| JP | H0833642  | A  | 2/1996  | KR | 20110003229 | A  | 1/2011  |
| JP | H08164141 | A  | 6/1996  | RU | 1814161     | C  | 5/1993  |
| JP | H08182684 | A  | 7/1996  | RU | 2008830     | C1 | 3/1994  |
|    |           |    |         | RU | 2052979     | C1 | 1/1996  |
|    |           |    |         | RU | 2066128     | C1 | 9/1996  |
|    |           |    |         | RU | 2069981     | C1 | 12/1996 |
|    |           |    |         | RU | 2098025     | C1 | 12/1997 |

(56)

## References Cited

## FOREIGN PATENT DOCUMENTS

RU 2104671 C1 2/1998  
 RU 2110965 C1 5/1998  
 RU 2141279 C1 11/1999  
 RU 2144791 C1 1/2000  
 RU 2161450 C1 1/2001  
 RU 2181566 C2 4/2002  
 RU 2187249 C2 8/2002  
 RU 32984 U1 10/2003  
 RU 2225170 C2 3/2004  
 RU 42750 U1 12/2004  
 RU 61114 U1 2/2007  
 RU 61122 U1 2/2007  
 SU 189517 A 1/1967  
 SU 297156 A 5/1971  
 SU 328636 A 9/1972  
 SU 511939 A1 4/1976  
 SU 674747 A1 7/1979  
 SU 728848 A1 4/1980  
 SU 1009439 A 4/1983  
 SU 1271497 A1 11/1986  
 SU 1333319 A2 8/1987  
 SU 1377052 A1 2/1988  
 SU 1377053 A1 2/1988  
 SU 1443874 A1 12/1988  
 SU 1509051 A1 9/1989  
 SU 1561964 A1 5/1990  
 SU 1708312 A1 1/1992  
 SU 1722476 A1 3/1992  
 SU 1752361 A1 8/1992  
 SU 1814161 A1 5/1993  
 WO WO-9315648 A1 8/1993  
 WO WO-9420030 A1 9/1994  
 WO WO-9517855 A1 7/1995  
 WO WO-9520360 A1 8/1995  
 WO WO-9623448 A1 8/1996  
 WO WO-9635464 A1 11/1996  
 WO WO-9639086 A1 12/1996  
 WO WO-9639088 A1 12/1996  
 WO WO-9724073 A1 7/1997  
 WO WO-9734533 A1 9/1997  
 WO WO-9903407 A1 1/1999  
 WO WO-9903409 A1 1/1999  
 WO WO-9948430 A1 9/1999  
 WO WO-0024322 A1 5/2000  
 WO WO-0024330 A1 5/2000  
 WO WO-0053112 A2 9/2000  
 WO WO-0057796 A1 10/2000  
 WO WO-0105702 A1 1/2001  
 WO WO-0154594 A1 8/2001  
 WO WO-0158371 A1 8/2001  
 WO WO-0162164 A2 8/2001  
 WO WO-0162169 A2 8/2001  
 WO WO-0191646 A1 12/2001  
 WO WO-0219932 A1 3/2002  
 WO WO-0226143 A1 4/2002  
 WO WO-0236028 A1 5/2002  
 WO WO-02065933 A2 8/2002  
 WO WO-03055402 A1 7/2003  
 WO WO-03094747 A1 11/2003  
 WO WO-03079909 A3 3/2004  
 WO WO-2004019803 A1 3/2004  
 WO WO-2004032783 A1 4/2004  
 WO WO-2004047626 A1 6/2004  
 WO WO-2004047653 A2 6/2004  
 WO WO-2004056277 A1 7/2004  
 WO WO-2004078050 A2 9/2004  
 WO WO-2004078051 A2 9/2004  
 WO WO-2004096015 A2 11/2004  
 WO WO-2006044581 A2 4/2006  
 WO WO-2006051252 A1 5/2006  
 WO WO-2006059067 A1 6/2006  
 WO WO-2006073581 A2 7/2006  
 WO WO-2006085389 A1 8/2006  
 WO WO-2007015971 A2 2/2007  
 WO WO-2007074430 A1 7/2007

WO WO-2007129121 A1 11/2007  
 WO WO-2007137304 A2 11/2007  
 WO WO-2007142625 A2 12/2007  
 WO WO-2008021969 A2 2/2008  
 WO WO-2008061566 A1 5/2008  
 WO WO-2008089404 A2 7/2008  
 WO WO-2009005969 A2 1/2009  
 WO WO-2009067649 A2 5/2009  
 WO WO-2009091497 A2 7/2009  
 WO WO-2010126129 A1 11/2010  
 WO WO-2010134913 A1 11/2010  
 WO WO-2011008672 A2 1/2011  
 WO WO-2011044343 A2 4/2011  
 WO WO-2012006306 A2 1/2012  
 WO WO-2012013577 A1 2/2012  
 WO WO-2012044606 A2 4/2012  
 WO WO-2012061725 A1 5/2012  
 WO WO-2012072133 A1 6/2012  
 WO WO-2012166503 A1 12/2012  
 WO WO-2013087092 A1 6/2013  
 WO WO-2013151888 A1 10/2013  
 WO WO-2014004209 A2 1/2014  
 WO WO-2014113438 A1 7/2014  
 WO WO-2015032797 A1 3/2015  
 WO WO-2015138760 A1 9/2015  
 WO WO-2015187107 A1 12/2015  
 WO WO-2016057225 A1 4/2016

## OTHER PUBLICATIONS

Miyata et al., "Biomolecule-Sensitive Hydrogels," *Advanced Drug Delivery Reviews*, 54 (2002) pp. 79-98.  
 Jeong et al., "Thermosensitive Sol-Gel Reversible Hydrogels," *Advanced Drug Delivery Reviews*, 54 (2002) pp. 37-51.  
 Covidien Brochure, "Endo GIA™ Ultra Universal Stapler," (2010), 2 pages.  
 Qiu et al., "Environment-Sensitive Hydrogels for Drug Delivery," *Advanced Drug Delivery Reviews*, 53 (2001) pp. 321-339.  
 Hoffman, "Hydrogels for Biomedical Applications," *Advanced Drug Delivery Reviews*, 43 (2002) pp. 3-12.  
 Peppas, "Physiologically Responsive Hydrogels," *Journal of Bioactive and Compatible Polymers*, vol. 6 (Jul. 1991) pp. 241-246.  
 Peppas, Editor "Hydrogels in Medicine and Pharmacy," vol. I, *Fundamentals*, CRC Press, 1986.  
 Young, "Microcellular foams via phase separation," *Journal of Vacuum Science & Technology A* 4(3), (May/Jun. 1986).  
 Ebara, "Carbohydrate-Derived Hydrogels and Microgels," *Engineered Carbohydrate-Based Materials for Biomedical Applications: Polymers, Surfaces, Dendrimers, Nanoparticles, and Hydrogels*, Edited by Ravin Narain, 2011, pp. 337-345.  
 D. Tuite, Ed., "Get The Lowdown On Ultracapacitors," Nov. 15, 2007; [online] URL: <http://electronicdesign.com/Articles/Print.cfm?ArticleID=17465>, accessed Jan. 15, 2008 (5 pages).  
 Datasheet for Panasonic TK Relays Ultra Low Profile 2 A Polarized Relay, Copyright Matsushita Electric Works, Ltd. (Known of at least as early as Aug. 17, 2010), 5 pages.  
 B.R. Coolman, DVM, MS et al., "Comparison of Skin Staples With Sutures for Anastomosis of the Small Intestine in Dogs," Abstract; <http://www.blackwell-synergy.com/doi/abs/10.1053/jvet.2000.7539?cookieSet=1&journalCode=vsv which redirects to http://www3.interscience.wiley.com/journal/119040681/abstract?CRETRY=1&SRETRY=0>; [online] accessed: Sep. 22, 2008 (2 pages).  
 Disclosed Anonymously, "Motor-Driven Surgical Stapler Improvements," *Research Disclosure Database No. 526041*, Published: Feb. 2008.  
 Van Meer et al., "A Disposable Plastic Compact Wrist for Smart Minimally Invasive Surgical Tools," *LAAS/CNRS* (Aug. 2005).  
 Breedveld et al., "A New, Easily Miniaturized Sterrable Endoscope," *IEEE Engineering in Medicine and Biology Magazine* (Nov./Dec. 2005).  
 ASTM procedure D2240-00, "Standard Test Method for Rubber Property-Durometer Hardness," (Published Aug. 2000).  
 ASTM procedure D2240-05, "Standard Test Method for Rubber Property-Durometer Hardness," (Published Apr. 2010).

(56)

## References Cited

## OTHER PUBLICATIONS

Solorio et al., "Gelatin Microspheres Crosslinked with Genipin for Local Delivery of Growth Factors," *J. Tissue Eng. Regen. Med.* (2010), 4(7): pp. 514-523.

Pitt et al., "Attachment of Hyaluronan to Metallic Surfaces," *J. Biomed. Mater. Res.* 68A: pp. 95-106, 2004.

Covidien iDrive™ Ultra in Service Reference Card, "iDrive™ Ultra Powered Stapling Device," (4 pages).

Covidien iDrive™ Ultra Powered Stapling System brochure, "The Power of iDrive™ Ultra Powered Stapling System and Tri-Staple™ Technology," (23 pages).

Covidien "iDrive™ Ultra Powered Stapling System, A Guide for Surgeons," (6 pages).

Covidien "iDrive™ Ultra Powered Stapling System, Cleaning and Sterilization Guide," (2 pages).

"Indian Standard: Automotive Vehicles—Brakes and Braking Systems (IS 11852-1:2001)," Mar. 1, 2001.

Covidien Brochure "iDrive™ Ultra Powered Stapling System," (6 pages).

Allegro MicroSystems, LLC, Automotive Full Bridge MOSFET Driver, A3941-DS, Rev. 5, 21 pages, <http://www.allegromicro.com/~media/Files/Datasheets/A3941-Datasheet.ashx?la=en>.

Data Sheet of LM4F230H5QR, 2007.

Covidien Brochure, "Endo GIA™ Reloads with Tri-Staple™ Technology," (2010), 1 page.

Covidien Brochure, "Endo GIA™ Reloads with Tri-Staple™ Technology and Endo GIA™ Ultra Universal Staplers," (2010), 2 pages.

Covidien Brochure, "Endo GIA™ Curved Tip Reload with Tri-Staple™ Technology," (2012), 2 pages.

Covidien Brochure, "Endo GIA™ Reloads with Tri-Staple™ Technology," (2010), 2 pages.

<http://ninpgan.net/publications/51-100/89.pdf>; 2004, Ning Pan, On Uniqueness of Fibrous Materials, *Design & Nature II*. Eds: Colins, M. and Brebbia, C. WIT Press, Boston, 493-504.

Seils et al., Covidien Summary: Clinical Study "UCONN Biodynamics: Final Report on Results," (2 pages).

Byrne et al., "Molecular Imprinting Within Hydrogels," *Advanced Drug Delivery Reviews*, 54 (2002) pp. 149-161.

Fast, Versatile Blackfin Processors Handle Advanced RFID Reader Applications; *Analog Dialogue*: vol. 40—Sep. 2006; <http://www.analog.com/library/analogDialogue/archives/40-09/rfid.pdf>; Wayback Machine to Feb. 15, 2012.

Chen et al., "Elastomeric Biomaterials for Tissue Engineering," *Progress in Polymer Science* 38 (2013), pp. 584-671.

Matsuda, "Thermodynamics of Formation of Porous Polymeric Membrane from Solutions," *Polymer Journal*, vol. 23, No. 5, pp. 435-444 (1991).

Covidien Brochure, "Endo GIA™ Black Reload with Tri-Staple™ Technology," (2012), 2 pages.

"Biomedical Coatings," Fort Wayne Metals, Research Products Corporation, obtained online at [www.fwmetals.com](http://www.fwmetals.com) on Jun. 21, 2010 (1 page).

The Sodem Aseptic Battery Transfer Kit, Sodem Systems, 2000, 3 pages.

C.C. Thompson et al., "Peroral Endoscopic Reduction of Dilated Gastrojejunal Anastomosis After Roux-en-Y Gastric Bypass: A Possible New Option for Patients with Weight Regain," *Surg Endosc* (2006) vol. 20., pp. 1744-1748.

Serial Communication Protocol; Michael Lemmon Feb. 1, 2009; <http://www3.nd.edu/~lemmon/courses/ee224/web-manual/web-manual/lab12/node2.html>; Wayback Machine to Apr. 29, 2012.

Lyon et al. "The Relationship Between Current Load and Temperature for Quasi-Steady State and Transient Conditions," *SPIE—International Society for Optical Engineering. Proceedings*, vol. 4020, (pp. 62-70), Mar. 30, 2000.

Anonymous: "Sense & Control Application Note Current Sensing Using Linear Hall Sensors," Feb. 3, 2009, pp. 1-18. Retrieved from the Internet: URL: [http://www.infineon.com/dgdl/Current\\_Sensing\\_Rev.1.1.pdf?fileId=db3a304332d040720132d939503e5f17](http://www.infineon.com/dgdl/Current_Sensing_Rev.1.1.pdf?fileId=db3a304332d040720132d939503e5f17) [retrieved on Oct. 18, 2016].

Mouser Electronics, "LM317M 3-Terminal Adjustable Regulator with Overcurrent/Overtemperature Self Protection", Mar. 31, 2014 (Mar. 31, 2014), XP0555246104, Retrieved from the Internet: URL: <http://www.mouser.com/ds/2/405/lm317m-440423.pdf>, pp. 1-8.

Mouser Electronics, "LM317 3-Terminal Adjustable Regulator with Overcurrent/Overtemperature Self Protection", Sep. 30, 2016 (Sep. 30, 2016), XP0555246104, Retrieved from the Internet: URL: <http://www.mouser.com/ds/2/405/lm317m-440423.pdf>, pp. 1-9.

Cuper et al., "The Use of Near-Infrared Light for Safe and Effective Visualization of Subsurface Blood Vessels to Facilitate Blood Withdrawal in Children," *Medical Engineering & Physics*, vol. 35, No. 4, pp. 433-440 (2013).

Yan et al, Comparison of the effects of Mg—6Zn and Ti—3Al—2.5V alloys on TGF-β/TNF-α/VEGF/b-FGF in the healing of the intestinal track in vivo, *Biomed. Mater.* 9 (2014), 11 pages.

Pellicer et al. "On the biodegradability, mechanical behavior, and cytocompatibility of amorphous Mg72Zn23Ca5 and crystalline Mg70Zn23Ca5Pd2 alloys as temporary implant materials," *J Biomed Mater Res Part A*, 2013:101A:502-517.

Anonymous, Analog Devices Wiki, Chapter 11: The Current Mirror, Aug. 20, 2017, 22 pages. <https://wiki.analog.com/university/courses/electronics/text/chapter-11?rev=1503222341>.

Yan et al., "Comparison of the effects of Mg—6Zn and titanium on intestinal tract in vivo," *J Mater Sci: Mater Med* (2013), 11 pages.

Brar et al., "Investigation of the mechanical and degradation properties of Mg—Sr and Mg—Zn—Sr alloys for use as potential biodegradable implant materials," *J. Mech. Behavior of Biomed. Mater.* 7 (2012) pp. 87-95.

Texas Instruments: "Current Recirculation and Decay Modes," Application Report SLVA321—Mar. 2009; Retrieved from the Internet: URL:<http://www.ti.com/lit/an/slva321/slva321> [retrieved on Apr. 25, 2017], 7 pages.

Qiu Li Loh et al.: "Three-Dimensional Scaffolds for Tissue Engineering Applications: Role of Porosity and Pore Size", *Tissue Engineering Part B-Reviews*, vol. 19, No. 6, Dec. 1, 2013, pp. 485-502.

Gao et al., "Mechanical Signature Enhancement of Response Vibrations in the Time Lag Domain," *Fifth International Congress on Sound and Vibration*, Dec. 15-18, 1997, pp. 1-8.

Trendafilova et al., "Vibration-based Methods for Structural and Machinery Fault Diagnosis Based on Nonlinear Dynamics Tools," In: *Fault Diagnosis in Robotic and Industrial Systems*, IConcept Press LTD, 2012, pp. 1-29.

Youtube.com; video by Fibran (retrieved from URL <https://www.youtube.com/watch?v=vN2Qjt51gFQ>); (Year: 2018).

"Foot and Ankle: Core Knowledge in Orthopaedics"; by DiGiovanni MD, Elsevier; (p. 27, left column, heading "Materials for Soft Orthoses", 7th bullet point); (Year: 2007).

Lee, Youbok, "Antenna Circuit Design for RFID Applications," 2003, pp. 1-50, DS00710C, Microchip Technology Inc., Available: <http://ww1.microchip.com/downloads/en/AppNotes/00710c.pdf>.

Kawamura, Atsuo, et al. "Wireless Transmission of Power and Information Through One High-Frequency Resonant AC Link Inverter for Robot Manipulator Applications," *Journal*, May/June. 1996, pp. 503-508, vol. 32, No. 3, *IEEE Transactions on Industry Applications*.

Honda HS1332AT and ATD Model Info, [powerequipment.honda.com](http://powerequipment.honda.com) [online], published on or before Mar. 22, 2016, [retrieved on May 31, 2019], retrieved from the Internet [URL: <https://powerequipment.honda.com/snowblowers/models/hss1332at-hss1332atd>] (Year: 2016).

Slow Safety Sign, [shutterstock.com](http://shutterstock.com) [online], published on or before May 9, 2017, [retrieved on May 31, 2019], retrieved from the <https://www.shutterstock.com/image-vector/slow-safety-sign-two-dimensional-turtle-symbolizing-...> (Year: 2017).

Warning Sign Beveled Buttons, by Peter, [flarestock.com](http://flarestock.com) [online], published on or before Jan. 1, 2017, [retrieved on Jun. 4, 2019], retrieved from the Internet [URL: <https://www.flarestock.com/stock-images/warning-sign-beveled-buttons/70257>] (Year: 2017).

Arrow Sign Icon Next Button, by Blan-k, [shutterstock.com](http://shutterstock.com) [online], published on or before Aug. 6, 2014, [retrieved on Jun. 4, 2019], retrieved from the Internet [URL:<https://www.shutterstock.com/de/>

(56)

**References Cited**

## OTHER PUBLICATIONS

image-vector/arrow-sign-icon-next-button-navigation-207700303?irgwc=1&utm . . . ] (Year: 2014).

Elite Icons, by smart/icons, iconfinder.com [online], published on Aug. 18, 2016, [retrieved on Jun. 4, 2019], retrieved from the Internet [URL: <https://www.iconfinder.com/iconsets/elite>] (Year: 2016).

“Tutorial overview of inductively coupled RFID Systems,” UPM, May 2003, pp. 1-7, UPM Rafsec, <<http://cdn.mobiusconsulting.com/papers/rfidsystems.pdf>>.

Schroeter, John, “Demystifying UHF Gen 2 RFID, HF RFID,” Online Article, Jun. 2, 2008, pp. 1-3, <<https://www.edn.com/design/industrial-control/4019123/Demystifying-UHF-Gen-2-RFID-HF-RFID>>.

Adeeb, et al.. “An Inductive Link-Based Wireless Power Transfer System for Biomedical Applications,” Research Article, Nov. 14, 2011, pp. 1-12, vol. 2012. Article ID 879294, Hindawi Publishing Corporation.

“Pushing Pixels (GIF)”, published on dribbble.com, 2013.

“Sodium stearate C<sub>18</sub>H<sub>35</sub>NaO<sub>2</sub>”, Chemspider Search and Share Chemistry, Royal Society of Chemistry, pp. 1-3, 2015, <http://www.chemspider.com/Chemical-Structure.12639.html>, accessed May 23, 2016.

NF Monographs: Sodium Stearate, U.S. Pharmacopeia, [http://www.pharmacopeia.cn/v29240/usp29nf24s0\\_m77360.html](http://www.pharmacopeia.cn/v29240/usp29nf24s0_m77360.html), accessed May 23, 2016.

Fischer, Martin H, “Colloid-Chemical Studies on Soaps”, The Chemical Engineer, pp. 184-193, Aug. 1919.

V.K. Ahluwalia and Madhuri Goyal, A Textbook of Organic Chemistry, Section 19.11.3, p. 356, 2000.

A.V. Kasture and S.G. Wadodkar, Pharmaceutical Chemistry-II: Second Year Diploma in Pharmacy, Nirali Prakashan, p. 339, 2007.

\* cited by examiner

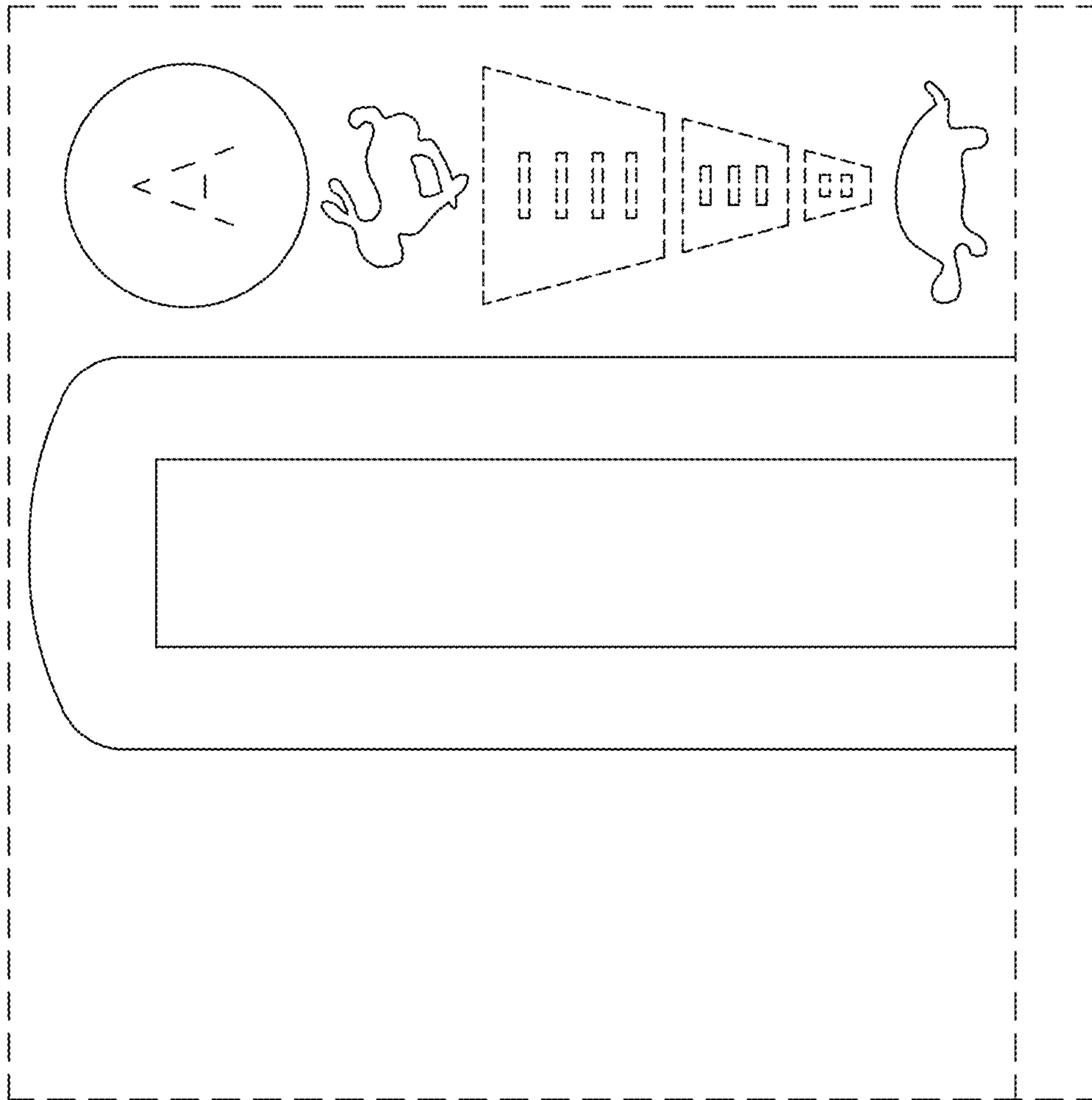


FIG. 1

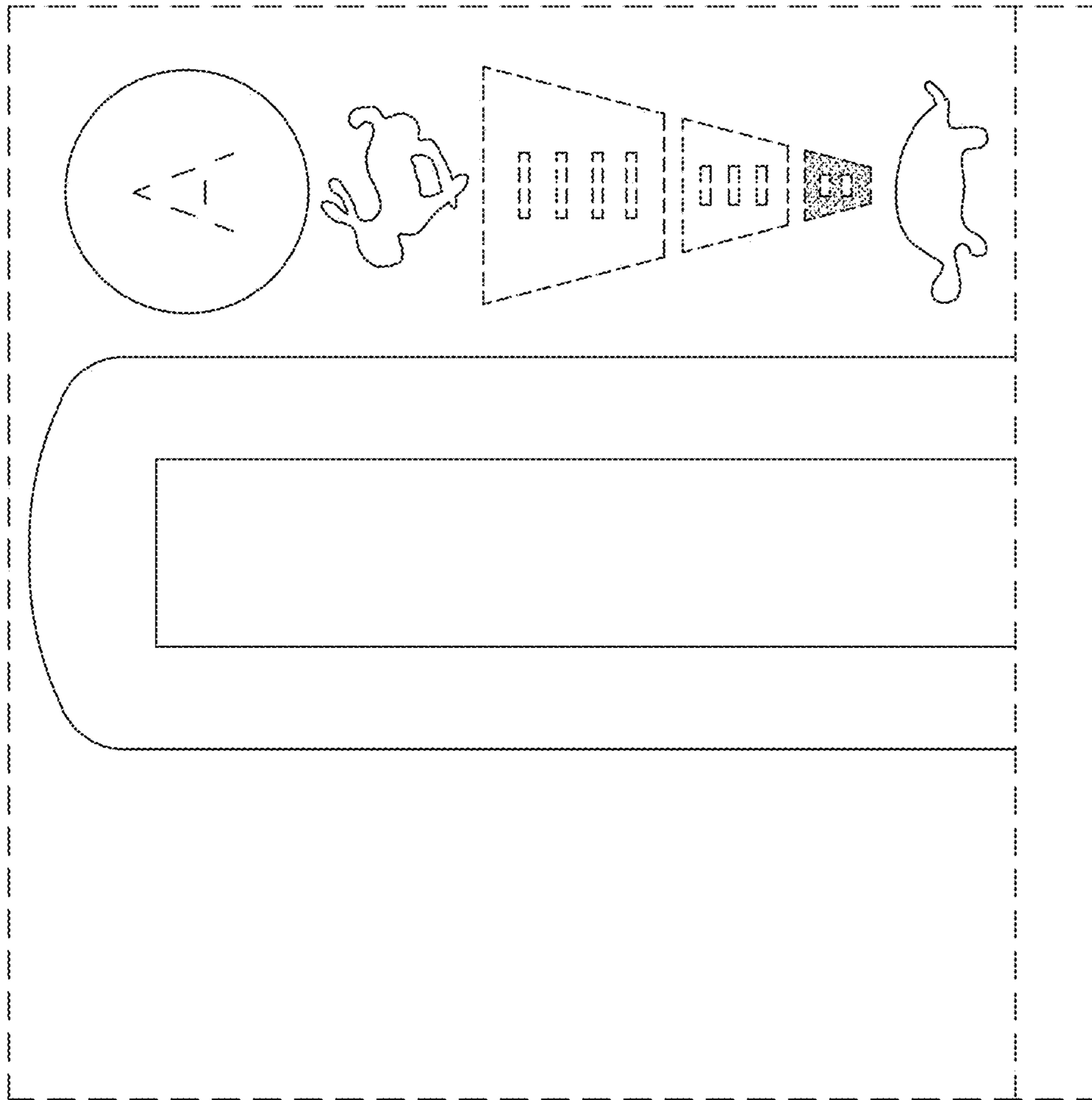


FIG. 2



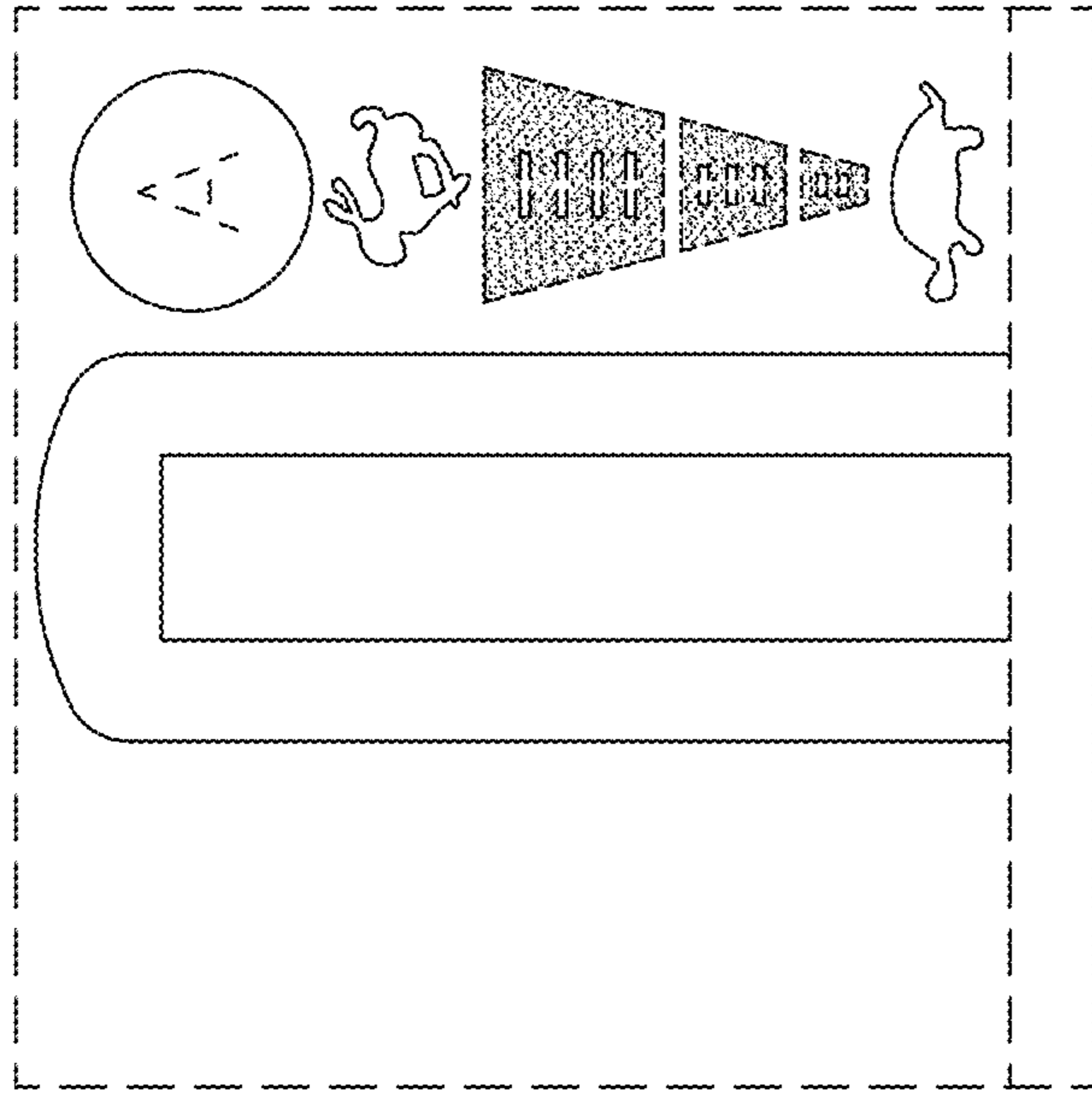


FIG. 4

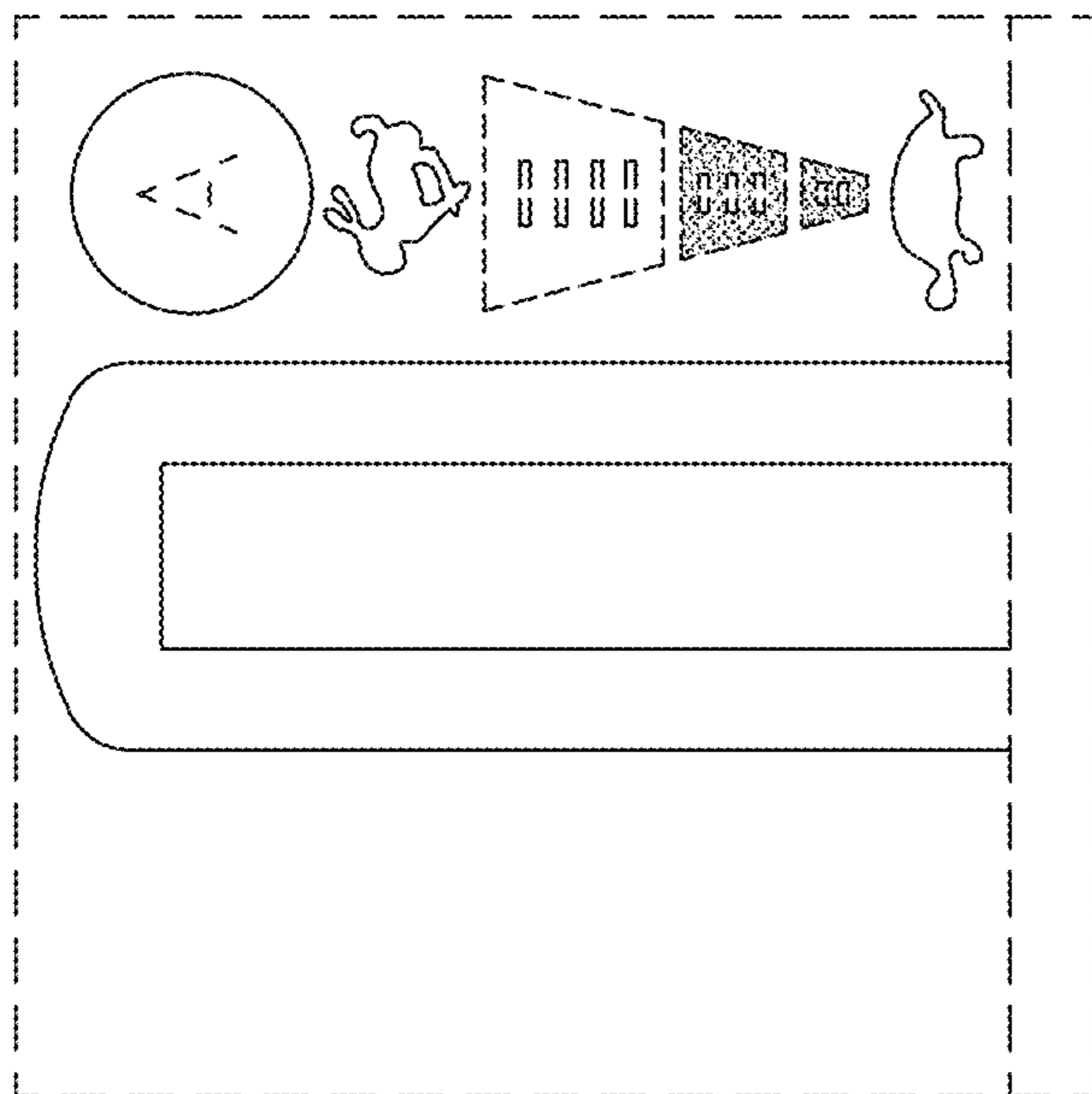


FIG. 3

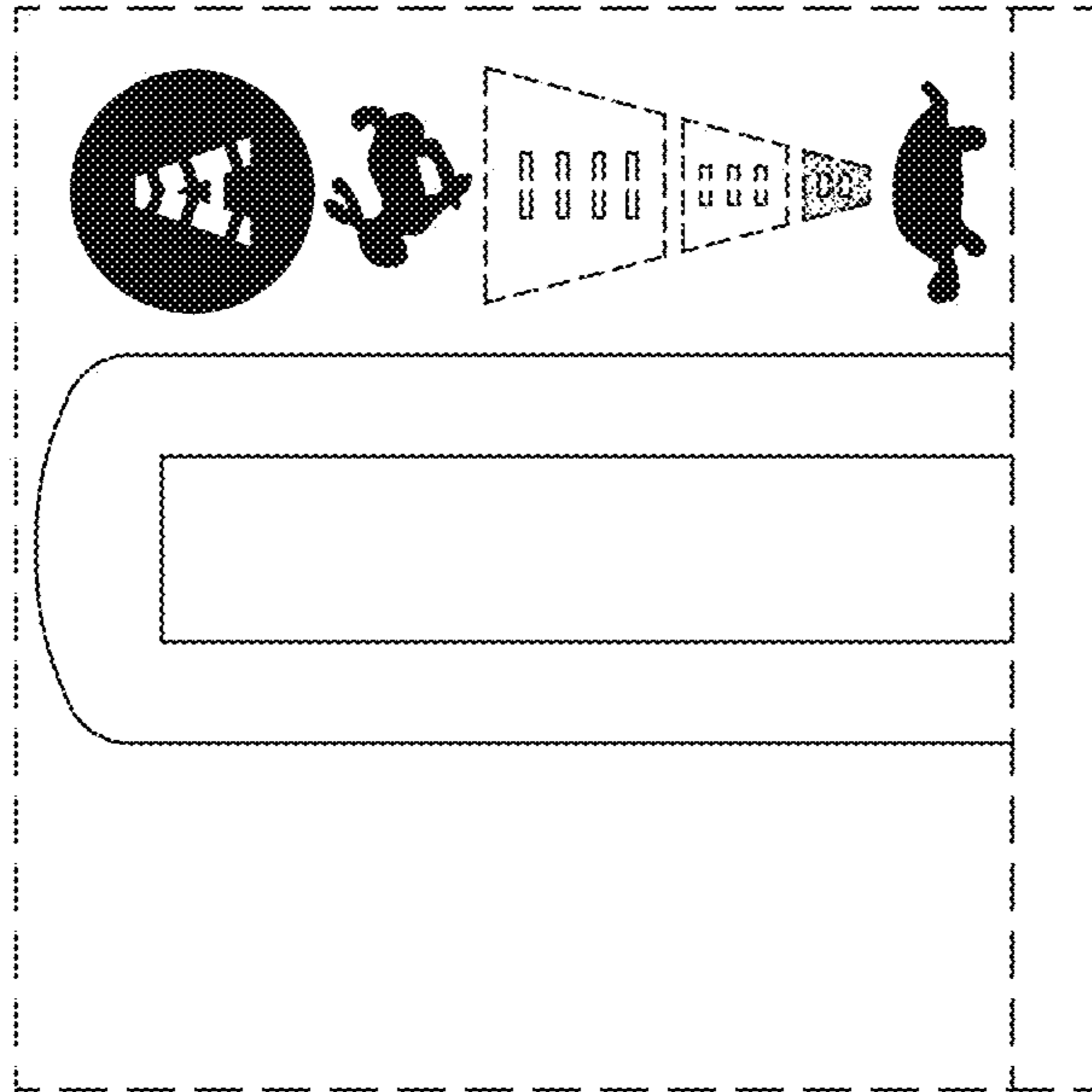


FIG. 6

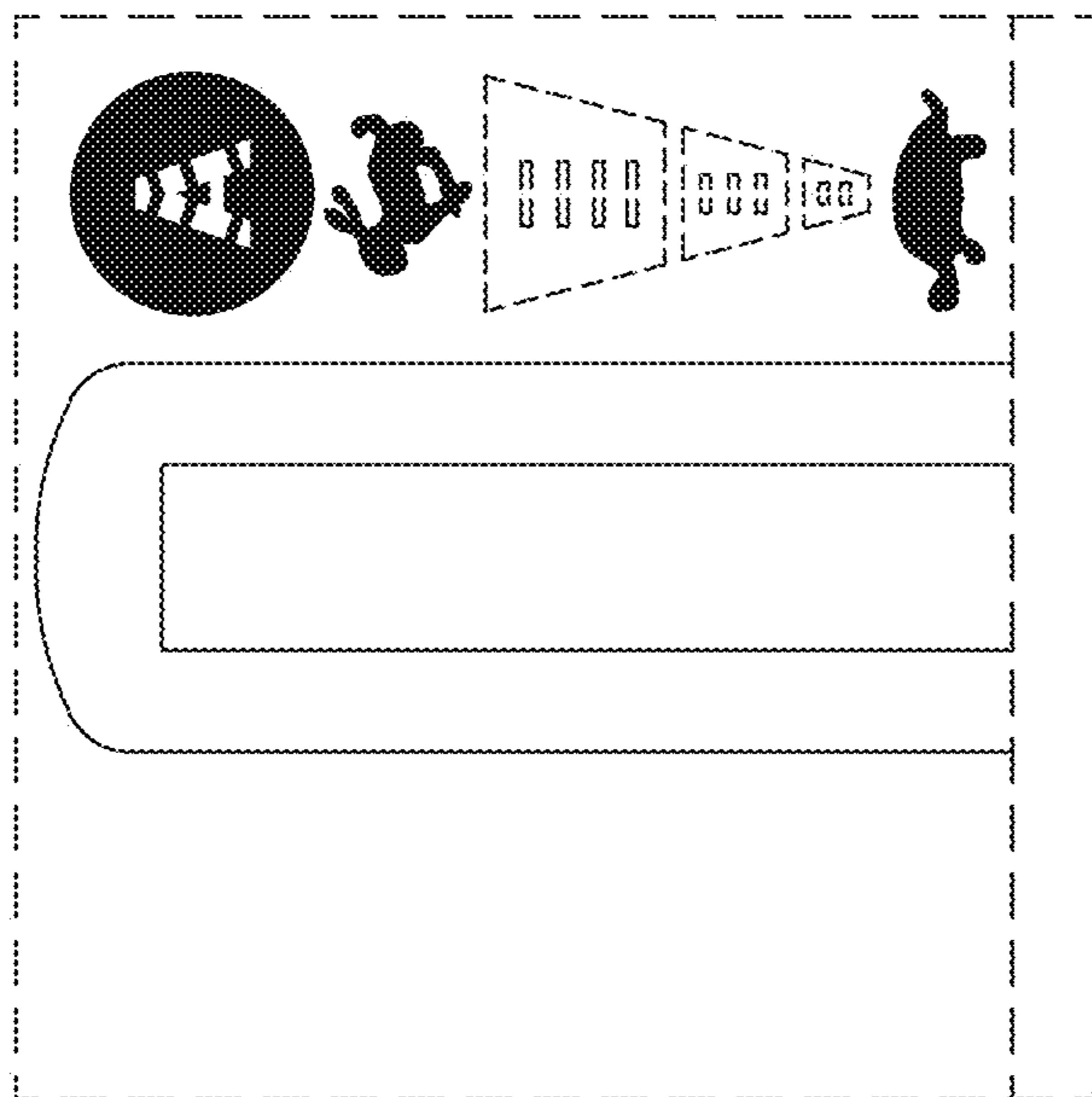


FIG. 5

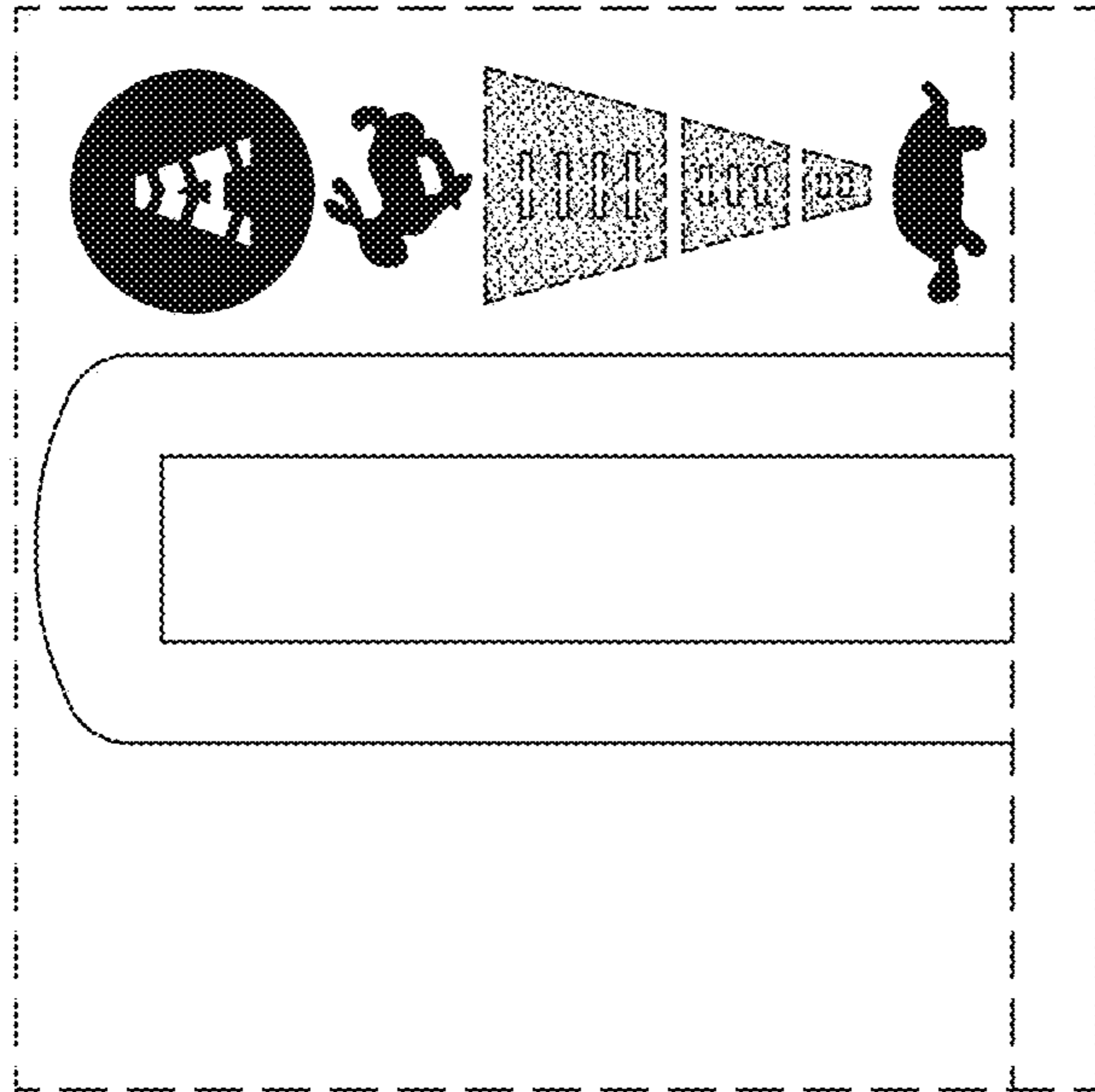


FIG. 8

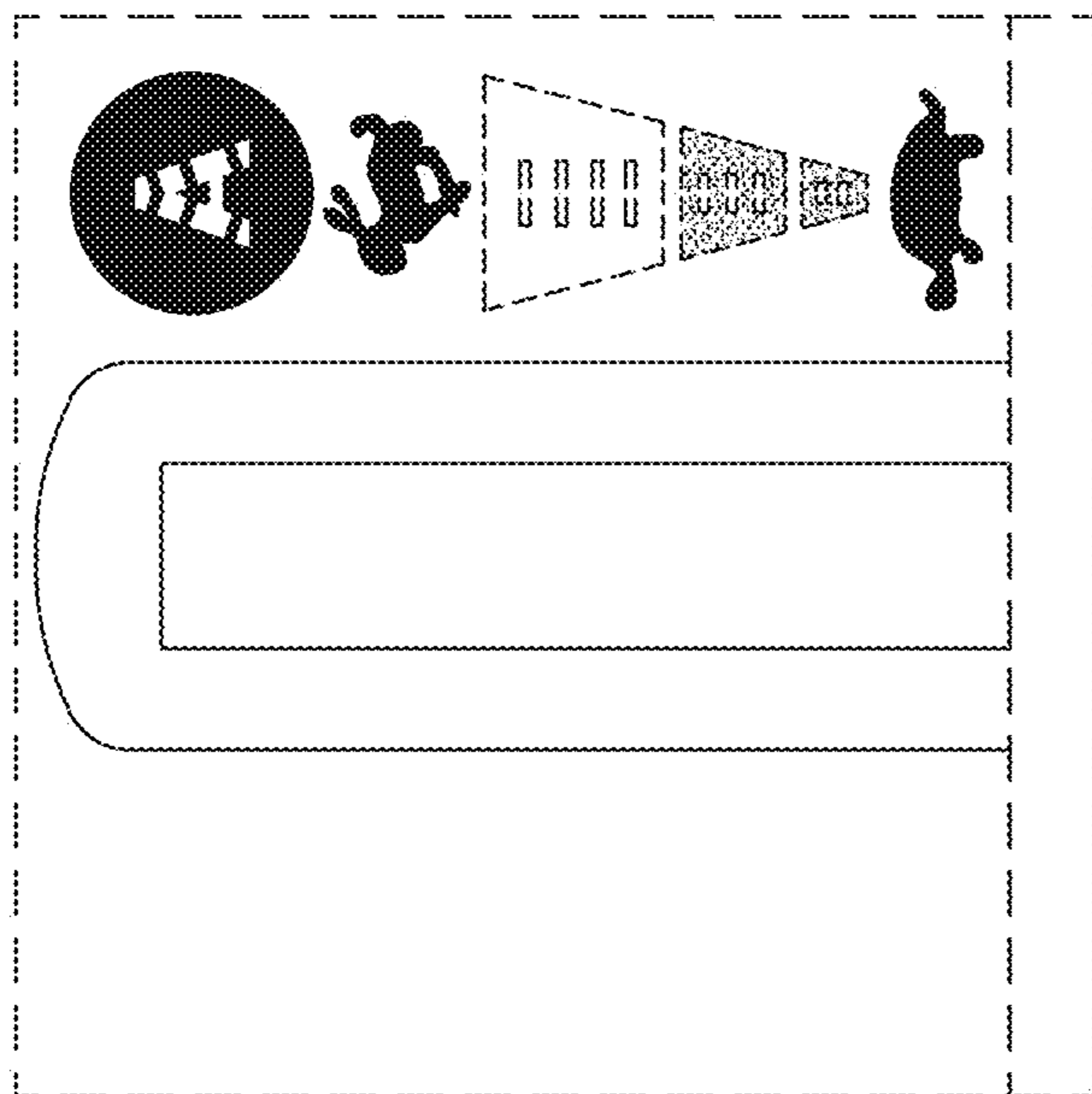


FIG. 7