



US00D546931S

(12) **United States Design Patent** (10) **Patent No.:** **US D546,931 S**
Wefler (45) **Date of Patent:** **** Jul. 17, 2007**

- (54) **DIFFUSER** 2,469,656 A 5/1949 Lienert
- (75) Inventor: **Mark E. Wefler**, Racine, WI (US) 2,557,501 A 6/1951 Fusay et al.
- (73) Assignee: **S.C. Johnson & Son, Inc.**, Racine, WI (US) 2,591,818 A 4/1952 Huff
- (**) Term: **14 Years** 2,597,195 A 5/1952 Smith
- (21) Appl. No.: **29/232,239** 2,668,993 A 2/1954 Bair
- (22) Filed: **Jun. 16, 2005** 2,931,880 A 4/1960 Yaffe
- 2,942,090 A 6/1960 Diehl
- 3,248,530 A 4/1966 Titmas
- 3,358,552 A 12/1967 Schneider
- 3,373,341 A 3/1968 Wattson
- 3,386,005 A 5/1968 Roland et al.
- 3,436,310 A 4/1969 Arnold et al.
- 3,443,083 A 5/1969 Curran

Related U.S. Application Data

- (63) Continuation-in-part of application No. 29/226,801, filed on Mar. 31, 2005.
- (51) **LOC (8) Cl.** **28-99**
- (52) **U.S. Cl.** **D23/366**
- (58) **Field of Classification Search** 392/386, 392/390-394, 398, 401, 403, 405-406; 239/135-136, 239/34, 35, 56-58, 37, 41, 42, 60; 261/DIG. 17, 261/DIG. 65, DIG. 88, DIG. 89; D23/355-369
See application file for complete search history.

References Cited

- U.S. PATENT DOCUMENTS**
- 38,150 A 4/1863 Colburn
 - 446,953 A 2/1891 Robert
 - 514,422 A 2/1894 Kellogg
 - 554,115 A 2/1896 Fisher
 - 699,652 A 5/1902 Campbell et al.
 - 1,178,575 A 4/1916 Collins
 - 1,403,548 A 1/1922 Gudeman
 - 1,712,204 A 5/1929 Gibney
 - 1,751,257 A 3/1930 Vallebuona et al.
 - 1,800,156 A 4/1931 Rotheim
 - 1,977,997 A 10/1934 Patterson et al.
 - 1,981,650 A 11/1934 Larsen
 - 1,994,932 A 3/1935 Vidal
 - 2,192,019 A 2/1940 Schepmoes
 - 2,230,265 A 2/1941 Robinson
 - 2,372,371 A 3/1945 Eisner
 - 2,424,268 A 7/1947 Delane et al.
 - 2,435,756 A 2/1948 Schlesinger

(Continued)

FOREIGN PATENT DOCUMENTS

- DE 3609511 10/1986
- DE 3701499 7/1988
- DE 4131613 3/1993
- DE 4446413 12/1994
- EP 0537130 B1 4/1993
- EP 0548274 B1 6/1993
- EP 0617667 A1 10/1994

(Continued)

Primary Examiner—Sandra S. Snapp

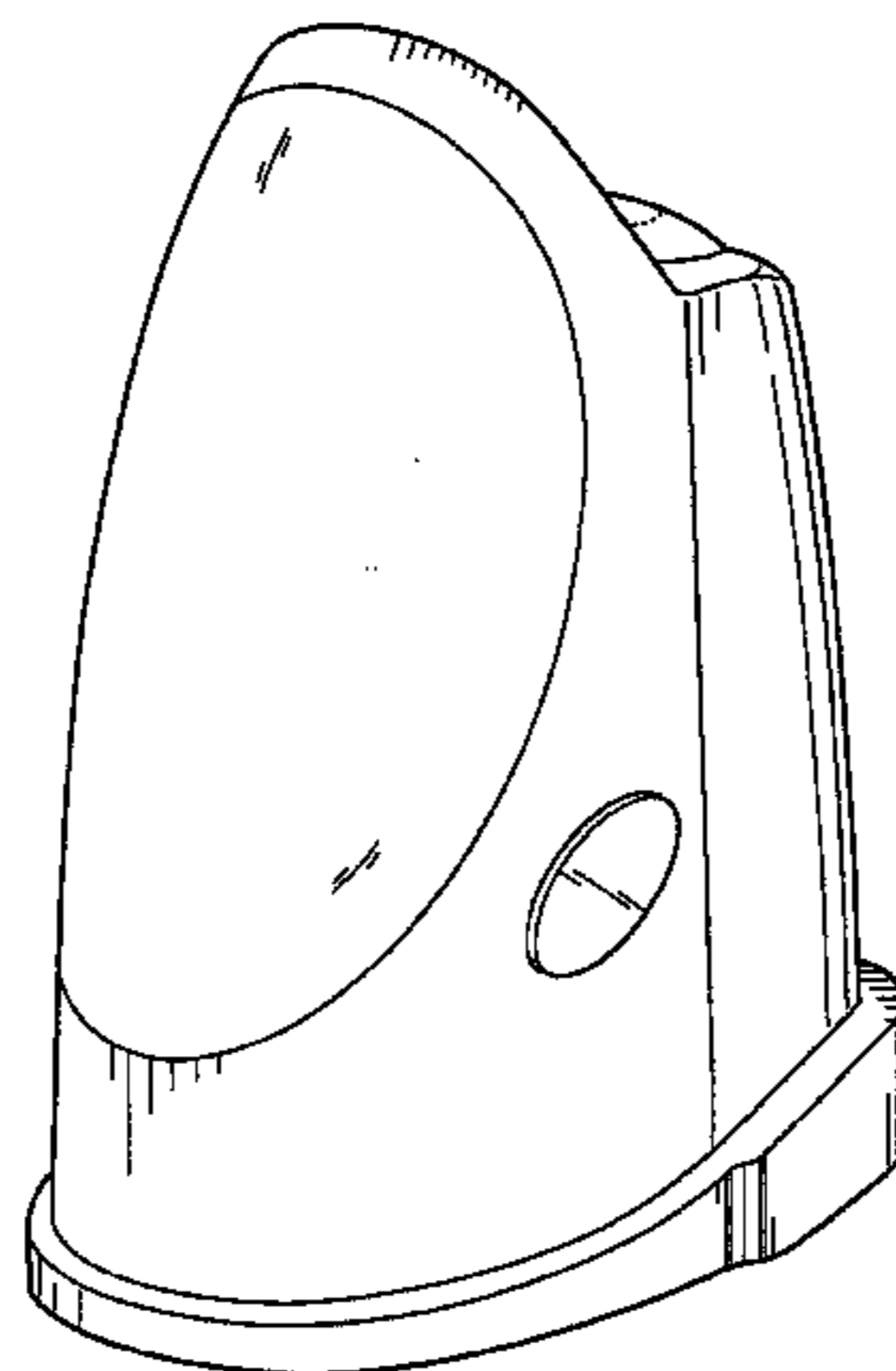
(57) **CLAIM**

The ornamental design for a diffuser, as shown and described.

DESCRIPTION

FIG. 1 is a front isometric view of the diffuser;
 FIG. 2 is a back isometric view thereof;
 FIG. 3 is a front elevational view thereof;
 FIG. 4 is a first side elevational view thereof;
 FIG. 5 is a back elevational view thereof; and,
 FIG. 6 is a plan view thereof.
 FIG. 7 is provided for context only and forms no part of the claimed design. Also, structures shown in broken lines form no part of the claimed design.
 The structures shown in broken lines are for illustrative purposes only and form no part of the claimed design.

1 Claim, 6 Drawing Sheets



US D546,931 S

| U.S. PATENT DOCUMENTS | | | | | | | |
|-----------------------|---|---------|---------------------|-----------|---|---------|----------------------------|
| 3,543,122 | A | 11/1970 | Kiebanoff et al. | 5,136,483 | A | 8/1992 | Schoniger et al. |
| 3,545,650 | A | 12/1970 | Williams | 5,147,585 | A | 9/1992 | Blum |
| 3,588,859 | A | 6/1971 | Petree | 5,175,791 | A | 12/1992 | Muderlak et al. |
| 3,615,041 | A | 10/1971 | Bischoff | 5,201,025 | A | 4/1993 | Landesberg |
| 3,747,902 | A | 7/1973 | Bailey | 5,213,523 | A | 5/1993 | Hygema et al. |
| 3,780,260 | A | 12/1973 | Elsner | 5,214,458 | A | 5/1993 | Kanai |
| 3,790,772 | A | 2/1974 | Newman et al. | 5,222,186 | A | 6/1993 | Schimanski et al. |
| 3,864,080 | A | 2/1975 | Valbona et al. | 5,230,837 | A | 7/1993 | Babasade |
| 3,872,280 | A | 3/1975 | Van Dalen | 5,233,375 | A | 8/1993 | Williams et al. |
| 3,948,445 | A | 4/1976 | Andeweg | 5,260,919 | A | 11/1993 | Tsai |
| 4,084,079 | A | 4/1978 | Costello | 5,274,215 | A | 12/1993 | Jackson |
| 4,106,671 | A | 8/1978 | Sharples | 5,283,601 | A | 2/1994 | Lowe |
| 4,166,293 | A | 9/1979 | Anis | 5,283,723 | A | 2/1994 | Wu |
| 4,184,612 | A | 1/1980 | Freyre | 5,309,185 | A | 5/1994 | Harper |
| 4,197,671 | A | 4/1980 | De Brouwer | 5,309,338 | A | 5/1994 | Liu |
| 4,202,387 | A | 5/1980 | Upton | 5,324,490 | A | 6/1994 | Van Vlahakis |
| 4,217,315 | A | 8/1980 | Keeler, II | D350,209 | S | 8/1994 | Martin |
| 4,229,415 | A | 10/1980 | Bryson | 5,370,829 | A | 12/1994 | Kunze |
| 4,244,525 | A | 1/1981 | Manna | 5,382,410 | A | 1/1995 | Peltier |
| 4,250,537 | A | 2/1981 | Roegner et al. | D357,330 | S | 4/1995 | Wong et al. |
| 4,285,028 | A | 8/1981 | Sundin et al. | 5,419,879 | A | 5/1995 | Vlahakis et al. |
| 4,301,095 | A | 11/1981 | Mettler et al. | 5,432,623 | A | 7/1995 | Egan et al. |
| 4,315,665 | A | 2/1982 | Haines | 5,449,117 | A | 9/1995 | Muderlak et al. |
| 4,338,547 | A | 7/1982 | McCaslin | 5,452,270 | A | 9/1995 | Ikeda et al. |
| 4,346,059 | A | 8/1982 | Spector | 5,464,710 | A | 11/1995 | Yang |
| 4,391,781 | A | 7/1983 | van Lit | 5,483,689 | A | 1/1996 | O'Donnell, Jr. et al. |
| 4,415,797 | A | 11/1983 | Choustoulakis | 5,484,086 | A | 1/1996 | Pu |
| 4,432,938 | A | 2/1984 | Meetze, Jr. | 5,485,308 | A | 1/1996 | Hirata et al. |
| 4,435,732 | A | 3/1984 | Hyatt | 5,497,102 | A | 3/1996 | Burrows et al. |
| 4,493,011 | A | 1/1985 | Spector | 5,498,397 | A | 3/1996 | Hornig |
| 4,549,250 | A | 10/1985 | Spector | 5,512,371 | A | 4/1996 | Gupta et al. |
| 4,571,485 | A | 2/1986 | Spector | 5,517,264 | A | 5/1996 | Sutton |
| 4,583,686 | A | 4/1986 | Martens et al. | 5,521,357 | A | 5/1996 | Lock et al. |
| 4,597,781 | A | 7/1986 | Spector | 5,524,101 | A | 6/1996 | Thorgersen et al. |
| 4,609,978 | A | 9/1986 | Hsieh et al. | D372,768 | S | 8/1996 | Miller et al. D23/366 |
| 4,611,266 | A | 9/1986 | Schwartz | D372,769 | S | 8/1996 | Ganor |
| 4,666,638 | A | 5/1987 | Baker et al. | 5,544,812 | A | 8/1996 | Torres |
| 4,670,820 | A | 6/1987 | Eddins et al. | 5,549,247 | A | 8/1996 | Rossman et al. |
| 4,689,515 | A | 8/1987 | Benndorf et al. | 5,556,192 | A | 9/1996 | Wang |
| 4,702,418 | A | 10/1987 | Carter et al. | 5,591,409 | A | 1/1997 | Watkins |
| 4,703,155 | A | 10/1987 | Suhajda | 5,616,172 | A | 4/1997 | Tuckerman et al. |
| 4,703,314 | A | 10/1987 | Spani | 5,633,623 | A | 5/1997 | Campman |
| 4,707,338 | A | 11/1987 | Spector | D381,443 | S | 7/1997 | Yuen |
| 4,714,984 | A | 12/1987 | Spector | D381,444 | S | 7/1997 | Yuen |
| 4,715,702 | A | 12/1987 | Dillon | 5,647,053 | A | 7/1997 | Schroeder et al. |
| 4,739,928 | A | 4/1988 | O'Neil | 5,662,835 | A | 9/1997 | Collingwood |
| 4,750,471 | A | 6/1988 | Hautmann et al. | 5,690,509 | A | 11/1997 | Eisenbraun |
| 4,795,883 | A | 1/1989 | Glucksman et al. | D386,974 | S | 12/1997 | Wefler |
| 4,816,973 | A | 3/1989 | Atalla et al. | 5,716,119 | A | 2/1998 | Patel |
| 4,830,791 | A | 5/1989 | Muderlak et al. | D393,063 | S | 3/1998 | Wefler |
| 4,837,421 | A | 6/1989 | Luthy | 5,752,766 | A | 5/1998 | Bailey et al. |
| 4,840,444 | A | 6/1989 | Hewitt | 5,757,111 | A | 5/1998 | Sato |
| 4,844,050 | A | 7/1989 | Hautmann et al. | 5,757,459 | A | 5/1998 | Bhalakia et al. |
| 4,849,606 | A | 7/1989 | Martens, III et al. | D395,529 | S | 6/1998 | Yuen |
| 4,856,103 | A | 8/1989 | Compton | 5,763,080 | A | 6/1998 | Stahl et al. |
| 4,858,079 | A | 8/1989 | Ohashi | 5,772,074 | A | 6/1998 | Dial et al. |
| 4,866,580 | A | 9/1989 | Blackerby | 5,788,931 | A | 8/1998 | Munoz Quintana |
| 4,870,551 | A | 9/1989 | Nagel | 5,830,578 | A | 11/1998 | Ono et al. |
| 4,873,029 | A | 10/1989 | Blum | 5,852,946 | A | 12/1998 | Cowger |
| 4,934,792 | A | 6/1990 | Tovi | 5,863,108 | A | 1/1999 | Lederer |
| 4,955,714 | A | 9/1990 | Stotler et al. | 5,871,153 | A | 2/1999 | Doggett, Jr. |
| 4,968,487 | A | 11/1990 | Yamamoto et al. | 5,875,968 | A | 3/1999 | Miller et al. |
| 5,017,909 | A | 5/1991 | Goekler | 5,876,678 | A | 3/1999 | Harrell et al. |
| 5,038,394 | A | 8/1991 | Hasegawa et al. | 5,903,710 | A | 5/1999 | Wefler et al. |
| 5,055,822 | A | 10/1991 | Campbell et al. | 5,909,845 | A | 6/1999 | Greatbatch et al. |
| 5,095,647 | A | 3/1992 | Zobebe et al. | 5,922,231 | A | 7/1999 | Karst et al. |
| 5,111,477 | A | 5/1992 | Muderlak | 5,924,784 | A | 7/1999 | Chliwnyj et al. |
| 5,115,975 | A | 5/1992 | Shilling | D412,569 | S | 8/1999 | Muller |
| 5,118,319 | A | 6/1992 | Smith et al. | 5,937,140 | A | 8/1999 | Leonard et al. |
| 5,135,485 | A | 8/1992 | Cohen et al. | 5,940,577 | A | 8/1999 | Steinel |
| | | | | 5,945,094 | A | 8/1999 | Martin et al. |

US D546,931 S

| | | | | | | | | |
|--------------|---|---------|------------------------|---------|--------------|-----------|-----------------------|---------|
| D415,267 S | * | 10/1999 | Kauzlarich et al. | D23/366 | D461,549 S | 8/2002 | Garcia | |
| 5,964,519 A | | 10/1999 | Chun-Ying | | D461,885 S | 8/2002 | Jordi | |
| 5,976,503 A | | 11/1999 | Martin et al. | | 6,431,719 B1 | 8/2002 | Lau et al. | |
| 5,980,064 A | | 11/1999 | Metroyanis | | 6,439,471 B2 | 8/2002 | Ehrlich et al. | |
| 6,016,038 A | | 1/2000 | Mueller et al. | | D462,755 S | 9/2002 | Millan | |
| 6,020,983 A | | 2/2000 | Neu et al. | | D463,610 S | 9/2002 | Piepgras | |
| 6,039,899 A | | 3/2000 | Martin et al. | | 6,446,880 B1 | 9/2002 | Schram et al. | |
| 6,044,202 A | | 3/2000 | Junkel | | D464,416 S | 10/2002 | von Dohlen et al. | |
| 6,072,606 A | | 6/2000 | Huether et al. | | 6,457,826 B1 | 10/2002 | Lett | |
| 6,097,881 A | | 8/2000 | DeWitt et al. | | 6,459,919 B1 | 10/2002 | Lys et al. | |
| 6,101,038 A | | 8/2000 | Hebert et al. | | 6,466,739 B2 | 10/2002 | Ambrosi et al. | |
| 6,104,866 A | | 8/2000 | DeWitt et al. | | D466,204 S | * 11/2002 | Wolpert et al. | D23/366 |
| 6,104,867 A | | 8/2000 | Stathakis et al. | | 6,478,440 B1 | 11/2002 | Jaworski et al. | |
| D430,657 S | * | 9/2000 | Allende | D23/360 | 6,479,594 B1 | 11/2002 | Cheung et al. | |
| 6,123,935 A | | 9/2000 | Weffler et al. | | 6,482,863 B2 | 11/2002 | Munagavalasa et al. | |
| 6,135,369 A | | 10/2000 | Prendergast et al. | | D468,033 S | 12/2002 | Warren et al. | |
| D433,521 S | | 11/2000 | Jaworski | | D468,035 S | 12/2002 | Blanc et al. | |
| D433,744 S | | 11/2000 | Basaganas | | 6,503,459 B1 | 1/2003 | Leonard et al. | |
| 6,142,653 A | | 11/2000 | Larson | | D469,862 S | 2/2003 | Cruver, IV et al. | |
| 6,145,241 A | | 11/2000 | Okuno | | 6,528,954 B1 | 3/2003 | Lys et al. | |
| 6,149,283 A | | 11/2000 | Conway et al. | | 6,536,746 B2 | 3/2003 | Watkins | |
| 6,150,774 A | | 11/2000 | Mueller et al. | | D473,638 S | 4/2003 | Cruver, IV | |
| 6,150,943 A | | 11/2000 | Lehman et al. | | 6,547,553 B2 | 4/2003 | Koch et al. | |
| 6,151,827 A | | 11/2000 | Smith et al. | | 6,548,967 B1 | 4/2003 | Dowling et al. | |
| 6,153,703 A | | 11/2000 | Lustiger et al. | | 6,554,203 B2 | 4/2003 | Hess et al. | |
| 6,154,607 A | | 11/2000 | Flashinski et al. | | 6,557,998 B2 | 5/2003 | Portney | |
| D434,842 S | | 12/2000 | Thomas et al. | | 6,558,022 B2 | 5/2003 | Kawahara | |
| 6,163,098 A | | 12/2000 | Taylor et al. | | 6,567,613 B2 | 5/2003 | Rymer | |
| 6,166,496 A | | 12/2000 | Lys et al. | | 6,569,387 B1 | 5/2003 | Furner et al. | |
| D435,895 S | * | 1/2001 | Davis | D23/366 | D475,446 S | 6/2003 | Millan | |
| D436,657 S | | 1/2001 | Heatter | | 6,575,610 B2 | 6/2003 | Natsume | |
| D437,069 S | | 1/2001 | Allison | | 6,577,080 B2 | 6/2003 | Lys et al. | |
| D437,636 S | | 2/2001 | Basaganas | | 6,581,915 B2 | 6/2003 | Bartsch et al. | |
| 6,191,826 B1 | | 2/2001 | Murakami et al. | | 6,584,986 B2 | 7/2003 | Gindi | |
| 6,196,471 B1 | | 3/2001 | Ruthenberg | | 6,588,435 B1 | 7/2003 | Gindi | |
| 6,199,983 B1 | | 3/2001 | Kato et al. | | 6,602,475 B1 | 8/2003 | Chiao | |
| 6,211,626 B1 | | 4/2001 | Lys et al. | | 6,606,548 B2 | 8/2003 | Kato et al. | |
| 6,216,925 B1 | | 4/2001 | Garon | | 6,608,453 B2 | 8/2003 | Morgan et al. | |
| 6,236,807 B1 | | 5/2001 | Ruffolo et al. | | 6,611,297 B1 | 8/2003 | Akashi et al. | |
| 6,239,216 B1 | | 5/2001 | Montanari et al. | | 6,619,559 B2 | 9/2003 | Wohrle et al. | |
| 6,241,362 B1 | | 6/2001 | Morrison | | 6,622,662 B1 | 9/2003 | Wolpert et al. | |
| 6,254,065 B1 | | 7/2001 | Ehrensperger et al. | | 6,624,597 B2 | 9/2003 | Dowling et al. | |
| 6,267,297 B1 | | 7/2001 | Contadini et al. | | D480,792 S | 10/2003 | Millan | |
| 6,268,062 B1 | | 7/2001 | DeMeuse | | 6,631,888 B1 | 10/2003 | Prueter | |
| 6,270,720 B1 | | 8/2001 | Mandish | | D481,787 S | 11/2003 | Millan | |
| 6,278,840 B1 | | 8/2001 | Basaganas Millan | | 6,644,507 B2 | 11/2003 | Borut et al. | |
| 6,281,867 B2 | | 8/2001 | Kurematsu et al. | | D483,104 S | 12/2003 | Hill et al. | |
| 6,292,196 B1 | | 9/2001 | Fukunaga et al. | | 6,661,967 B2 | 12/2003 | Levine et al. | |
| 6,292,305 B1 | | 9/2001 | Sakuma et al. | | 6,667,576 B1 | 12/2003 | Westhoff | |
| 6,292,901 B1 | | 9/2001 | Lys et al. | | 6,676,284 B1 | 1/2004 | Wynne Willson | |
| 6,302,559 B1 | | 10/2001 | Warren | | 6,682,331 B1 | 1/2004 | Peh et al. | |
| 6,337,080 B1 | | 1/2002 | Fryan et al. | | 6,685,339 B2 | 2/2004 | Daughtry et al. | |
| 6,340,868 B1 | | 1/2002 | Lys et al. | | 6,685,343 B2 | 2/2004 | Mabuchi | |
| 6,341,732 B1 | | 1/2002 | Martin et al. | | 6,688,752 B2 | 2/2004 | Moore | |
| D453,562 S | | 2/2002 | Makino | | 6,690,120 B2 | 2/2004 | Oskorep et al. | |
| 6,350,417 B1 | | 2/2002 | Lau et al. | | 6,697,571 B2 | 2/2004 | Triplett et al. | |
| 6,361,752 B1 | | 3/2002 | Demarest et al. | | 6,698,665 B2 | 3/2004 | Minamite et al. | |
| D455,486 S | | 4/2002 | Makino | | 6,713,024 B1 | 3/2004 | Arnell et al. | |
| 6,368,564 B1 | | 4/2002 | Smith | | 6,714,725 B2 | 3/2004 | Grone et al. | |
| 6,377,164 B1 | | 4/2002 | Fulmer | | 6,717,376 B2 | 4/2004 | Lys et al. | |
| D457,667 S | | 5/2002 | Piepgras | | 6,719,217 B1 | 4/2004 | Tawara et al. | |
| D457,669 S | | 5/2002 | Piepgras | | 6,720,745 B2 | 4/2004 | Lys et al. | |
| D457,974 S | | 5/2002 | Piepgras | | 6,721,102 B2 | 4/2004 | Bourdelais et al. | |
| 6,390,453 B1 | | 5/2002 | Frederickson et al. | | 6,727,332 B2 | 4/2004 | Demain | |
| 6,392,549 B1 | | 5/2002 | Wu | | 6,729,552 B1 | 5/2004 | McEwen et al. | |
| D458,395 S | | 6/2002 | Piepgras | | 6,729,746 B2 | 5/2004 | Suehiro et al. | |
| 6,398,381 B1 | | 6/2002 | Tseng | | 6,733,719 B2 | 5/2004 | DiNardo et al. | |
| D460,544 S | | 7/2002 | Garcia | | 6,733,898 B2 | 5/2004 | Kim et al. | |
| D460,573 S | | 7/2002 | Gee, II | | D491,255 S | * 6/2004 | Glucksman et al. | D23/356 |
| 6,420,877 B1 | | 7/2002 | Replogle | | D491,678 S | 6/2004 | Piepgras | |
| 6,423,892 B1 | | 7/2002 | Ramaswamy | | D492,042 S | 6/2004 | Piepgras | |

US D546,931 S

| | | | | | |
|--------------|---------|------------------------|-----------------|---------|-----------------------------|
| 6,752,327 B2 | 6/2004 | Martens, III et al. | 6,955,581 B1 | 10/2005 | Liu |
| 6,758,566 B2 | 7/2004 | Goulden et al. | 6,957,012 B2 | 10/2005 | He et al. |
| 6,759,961 B2 | 7/2004 | Fitzgerald et al. | D511,823 S * | 11/2005 | Caserta et al. D23/366 |
| 6,763,624 B2 | 7/2004 | Gow | 6,965,205 B2 | 11/2005 | Piepgas et al. |
| 6,766,773 B2 | 7/2004 | Wolpert et al. | 6,967,448 B2 | 11/2005 | Morgan et al. |
| 6,768,865 B2 | 7/2004 | Stathakis et al. | 6,969,954 B2 | 11/2005 | Lys |
| 6,774,584 B2 | 8/2004 | Lys et al. | 6,975,079 B2 | 12/2005 | Lys et al. |
| 6,775,470 B2 | 8/2004 | Zobebe et al. | D514,679 S * | 2/2006 | Wheatley D23/366 |
| 6,777,891 B2 | 8/2004 | Lys et al. | D517,181 S * | 3/2006 | Kang D23/356 |
| 6,779,905 B1 | 8/2004 | Mazursky et al. | D520,128 S * | 5/2006 | Caserta et al. D23/366 |
| 6,781,329 B2 | 8/2004 | Mueller et al. | D521,621 S * | 5/2006 | Slater D23/366 |
| 6,782,194 B2 | 8/2004 | Schneiderbauer | D523,129 S * | 6/2006 | Caserta et al. D23/366 |
| 6,788,011 B2 | 9/2004 | Mueller et al. | 2001/0011779 A1 | 8/2001 | Stover |
| 6,792,199 B2 | 9/2004 | Levine et al. | 2001/0032655 A1 | 10/2001 | Gindi |
| 6,801,003 B2 | 10/2004 | Schanberger et al. | 2002/0021892 A1 | 2/2002 | Ambrosi et al. |
| 6,802,460 B2 | 10/2004 | Hess et al. | 2002/0036617 A1 | 3/2002 | Pryor |
| 6,806,659 B1 | 10/2004 | Mueller et al. | 2002/0048169 A1 | 4/2002 | Dowling et al. |
| 6,810,204 B2 | 10/2004 | Grone et al. | 2002/0066798 A1 | 6/2002 | Laudamiel-Pellet et al. |
| 6,811,287 B2 | 11/2004 | Roller et al. | 2002/0068009 A1 | 6/2002 | Laudamiel-Pellet et al. |
| 6,813,094 B2 | 11/2004 | Kaminsky et al. | 2002/0068010 A1 | 6/2002 | Laudamiel-Pellet et al. |
| 6,819,506 B1 | 11/2004 | Taylor et al. | 2002/0075677 A1 | 6/2002 | Dokupil |
| 6,824,296 B2 | 11/2004 | Souza et al. | 2002/0097978 A1 | 7/2002 | Lowry et al. |
| 6,827,286 B2 | 12/2004 | Zobebe | 2002/0113555 A1 | 8/2002 | Lys et al. |
| 6,827,466 B2 | 12/2004 | Tsai | 2002/0113912 A1 | 8/2002 | Wright et al. |
| 6,829,852 B1 | 12/2004 | Uehran | 2002/0136542 A1 | 9/2002 | He et al. |
| 6,832,794 B2 | 12/2004 | He et al. | 2002/0136886 A1 | 9/2002 | He et al. |
| 6,837,585 B2 | 1/2005 | Roggatz | 2002/0145394 A1 | 10/2002 | Morgan et al. |
| 6,839,506 B2 | 1/2005 | He et al. | 2002/0159274 A1 | 10/2002 | Hubbell et al. |
| 6,843,965 B2 | 1/2005 | Matulevich | 2002/0172512 A1 | 11/2002 | Stathakis et al. |
| 6,843,969 B1 | 1/2005 | Anno | 2002/0195975 A1 | 12/2002 | Schanberger et al. |
| 6,846,098 B2 | 1/2005 | Bourdelais et al. | 2003/0012018 A1 | 1/2003 | Kluth |
| 6,848,795 B2 | 2/2005 | Kaminsky et al. | 2003/0028260 A1 | 2/2003 | Blackwell |
| 6,850,697 B2 | 2/2005 | Basaganas Millan | 2003/0028888 A1 | 2/2003 | Hunter et al. |
| 6,854,717 B2 | 2/2005 | Millan | 2003/0035917 A1 | 2/2003 | Hyman |
| 6,857,579 B2 | 2/2005 | Harris | 2003/0057887 A1 | 3/2003 | Dowling et al. |
| D502,540 S | 3/2005 | Cruver, IV et al. | 2003/0063902 A1 | 4/2003 | Pedrotti et al. |
| 6,862,402 B2 | 3/2005 | Kim | 2003/0076281 A1 | 4/2003 | Morgan |
| 6,864,110 B2 | 3/2005 | Summers et al. | 2003/0137258 A1 | 7/2003 | Piepgas et al. |
| 6,869,204 B2 | 3/2005 | Morgan et al. | 2003/0138241 A1 | 7/2003 | Pedrotti et al. |
| 6,871,794 B2 | 3/2005 | McEwen | 2003/0147243 A1 | 8/2003 | Alduby |
| 6,871,982 B2 | 3/2005 | Homan et al. | 2003/0168524 A1 | 9/2003 | Hess et al. |
| D504,171 S | 4/2005 | Ibarra et al. | 2003/0168751 A1 | 9/2003 | Bartsch et al. |
| 6,883,929 B2 | 4/2005 | Dowling | 2003/0169400 A1 | 9/2003 | Buazza et al. |
| 6,885,811 B2 | 4/2005 | He et al. | 2003/0169513 A1 | 9/2003 | Kaminsky et al. |
| 6,888,322 B2 | 5/2005 | Dowling et al. | 2003/0169514 A1 | 9/2003 | Bourdelais et al. |
| 6,889,003 B2 | 5/2005 | Triplett et al. | 2003/0175019 A1 | 9/2003 | Bresolin et al. |
| 6,890,642 B2 | 5/2005 | Kaminsky et al. | 2003/0175148 A1 | 9/2003 | Kvietok et al. |
| 6,895,177 B2 | 5/2005 | He et al. | 2003/0194355 A1 | 10/2003 | Pedrotti et al. |
| 6,897,381 B2 | 5/2005 | He et al. | 2003/0205364 A1 | 11/2003 | Sauciuc et al. |
| 6,897,624 B2 | 5/2005 | Lys et al. | 2003/0206411 A9 | 11/2003 | Dowling et al. |
| 6,899,280 B2 | 5/2005 | Kotary et al. | 2003/0214080 A1 | 11/2003 | Maki et al. |
| 6,901,215 B2 | 5/2005 | He et al. | 2003/0222587 A1 | 12/2003 | Dowling et al. |
| 6,901,925 B2 | 6/2005 | Coughlin | 2004/0004839 A1 | 1/2004 | Souza et al. |
| 6,909,840 B2 | 6/2005 | Harwig et al. | 2004/0007710 A1 | 1/2004 | Roy et al. |
| 6,917,402 B2 | 7/2005 | Hosoda et al. | 2004/0007787 A1 | 1/2004 | Kvietok et al. |
| 6,917,754 B2 | 7/2005 | Pedrotti et al. | 2004/0009103 A1 | 1/2004 | Westring |
| 6,920,282 B2 | 7/2005 | He et al. | 2004/0016818 A1 | 1/2004 | Murdell et al. |
| D508,558 S | 8/2005 | Wolpert et al. | 2004/0028551 A1 | 2/2004 | Kvietok et al. |
| 6,923,383 B1 | 8/2005 | Joshi | 2004/0033067 A1 | 2/2004 | He et al. |
| 6,924,233 B1 | 8/2005 | Chua et al. | 2004/0033171 A1 | 2/2004 | Kvietok et al. |
| 6,926,435 B2 | 8/2005 | Li | 2004/0035409 A1 | 2/2004 | Harwig et al. |
| 6,931,202 B2 | 8/2005 | Pedrotti et al. | 2004/0036006 A1 | 2/2004 | Dowling |
| 6,933,680 B2 | 8/2005 | Oskorep et al. | 2004/0044106 A1 | 3/2004 | Portnoy et al. |
| 6,936,978 B2 | 8/2005 | Morgan et al. | 2004/0076410 A1 | 4/2004 | Zobebe et al. |
| D510,135 S * | 9/2005 | Mariotti D23/366 | 2004/0090191 A1 | 5/2004 | Mueller et al. |
| 6,938,883 B2 | 9/2005 | Adams et al. | 2004/0090787 A1 | 5/2004 | Dowling et al. |
| 6,945,468 B1 | 9/2005 | Rodriguez et al. | 2004/0095746 A1 | 5/2004 | Mason |
| 6,946,805 B2 | 9/2005 | Segan et al. | 2004/0105261 A1 | 6/2004 | Ducharme |
| 6,950,607 B2 | 9/2005 | Yip et al. | 2004/0105264 A1 | 6/2004 | Spero |
| 6,953,260 B1 | 10/2005 | Allen | 2004/0105669 A1 | 6/2004 | He et al. |
| 6,953,265 B2 | 10/2005 | Suehiro et al. | 2004/0113568 A1 | 6/2004 | Dowling et al. |

| | | | | | |
|-----------------|---------|--------------------------|-----------------|---------|-----------------|
| 2004/0130909 A1 | 7/2004 | Mueller et al. | 2005/0211790 A1 | 9/2005 | Kvietok et al. |
| 2004/0131509 A1 | 7/2004 | He et al. | 2005/0212404 A1 | 9/2005 | Chen et al. |
| 2004/0141315 A1 | 7/2004 | Sherburne | 2005/0213352 A1 | 9/2005 | Lys et al. |
| 2004/0141321 A1 | 7/2004 | Dowling et al. | 2005/0213353 A1 | 9/2005 | Lys et al. |
| 2004/0144884 A1 | 7/2004 | He et al. | 2005/0214158 A1 | 9/2005 | Kvietok et al. |
| 2004/0145067 A1 | 7/2004 | Millan | 2005/0218243 A1 | 10/2005 | Zobebe et al. |
| 2004/0150993 A1 | 8/2004 | McElhaney et al. | 2005/0218838 A1 | 10/2005 | Lys et al. |
| 2004/0150994 A1 | 8/2004 | Kazar et al. | 2005/0218870 A1 | 10/2005 | Lys et al. |
| 2004/0155609 A1 | 8/2004 | Lys et al. | 2005/0219838 A1 | 10/2005 | Belliveau |
| 2004/0160199 A1 | 8/2004 | Morgan et al. | 2005/0219872 A1 | 10/2005 | Lys et al. |
| 2004/0178751 A1 | 9/2004 | Mueller et al. | 2005/0225856 A1 | 10/2005 | Kokuzawa et al. |
| 2004/0179167 A1 | 9/2004 | Dahi et al. | 2005/0226788 A1 | 10/2005 | Hrybyk et al. |
| 2004/0208675 A1 | 10/2004 | Horikoshi et al. | 2005/0231133 A1 | 10/2005 | Lys et al. |
| 2004/0212993 A1 | 10/2004 | Morgan et al. | 2005/0232831 A1 | 10/2005 | Taylor et al. |
| 2004/0240890 A1 | 12/2004 | Lys et al. | 2005/0236029 A1 | 10/2005 | Dowling |
| 2004/0247300 A1 | 12/2004 | He et al. | 2005/0236998 A1 | 10/2005 | Mueller et al. |
| 2004/0249094 A1 | 12/2004 | Demain | 2005/0248299 A1 | 11/2005 | Chemel et al. |
| 2004/0257007 A1 | 12/2004 | Lys et al. | 2005/0253533 A1 | 11/2005 | Lys et al. |
| 2005/0002105 A1 | 1/2005 | Nemoto et al. | 2005/0275626 A1 | 12/2005 | Mueller et al. |
| 2005/0024868 A1 | 2/2005 | Nagai et al. | 2005/0276053 A1 | 12/2005 | Nortrup |
| 2005/0029688 A1 | 2/2005 | Hagmann et al. | 2005/0285547 A1 | 12/2005 | Piepgras |
| 2005/0030744 A1 | 2/2005 | Ducharme | 2006/0002110 A1 | 1/2006 | Dowling et al. |
| 2005/0035728 A1 | 2/2005 | Schanberger et al. | 2006/0012987 A9 | 1/2006 | Ducharme |
| 2005/0036300 A1 | 2/2005 | Dowling et al. | 2006/0016960 A1 | 1/2006 | Morgan et al. |
| 2005/0040774 A1 | 2/2005 | Mueller et al. | | | |
| 2005/0041161 A1 | 2/2005 | Dowling et al. | | | |
| 2005/0041424 A1 | 2/2005 | Ducharme | | | |
| 2005/0044617 A1 | 3/2005 | Mueller et al. | | | |
| 2005/0047132 A1 | 3/2005 | Dowling et al. | | | |
| 2005/0047134 A1 | 3/2005 | Mueller et al. | | | |
| 2005/0053368 A1 | 3/2005 | Pesu et al. | | | |
| 2005/0053528 A1 | 3/2005 | Rymer | | | |
| 2005/0062440 A1 | 3/2005 | Lys et al. | | | |
| 2005/0063194 A1 | 3/2005 | Lys et al. | | | |
| 2005/0068777 A1 | 3/2005 | Popovic | | | |
| 2005/0069304 A1 | 3/2005 | He et al. | | | |
| 2005/0069306 A1 | 3/2005 | He et al. | | | |
| 2005/0069307 A1 | 3/2005 | He et al. | | | |
| 2005/0099824 A1 | 5/2005 | Dowling et al. | | | |
| 2005/0105186 A1 | 5/2005 | Kaminsky et al. | | | |
| 2005/0105296 A1 | 5/2005 | French | | | |
| 2005/0105303 A1 | 5/2005 | Emde | | | |
| 2005/0116667 A1 | 6/2005 | Mueller et al. | | | |
| 2005/0117365 A1 | 6/2005 | Menke | | | |
| 2005/0122065 A1 | 6/2005 | Young | | | |
| 2005/0122292 A1 | 6/2005 | Schmitz et al. | | | |
| 2005/0122721 A1 | 6/2005 | Hori | | | |
| 2005/0122722 A1 | 6/2005 | Menke | | | |
| 2005/0128743 A1 | 6/2005 | Chuey et al. | | | |
| 2005/0128751 A1 | 6/2005 | Roberge et al. | | | |
| 2005/0133617 A1 | 6/2005 | Hidalgo et al. | | | |
| 2005/0146893 A1 | 7/2005 | Ford et al. | | | |
| 2005/0147523 A1 | 7/2005 | Laudamiel-Pelleet et al. | | | |
| 2005/0147539 A1 | 7/2005 | Laudamiel-Pellet et al. | | | |
| 2005/0151489 A1 | 7/2005 | Lys et al. | | | |
| 2005/0157499 A1 | 7/2005 | Kim | | | |
| 2005/0167522 A1 | 8/2005 | Wheatley et al. | | | |
| 2005/0168986 A1 | 8/2005 | Wegner | | | |
| 2005/0174473 A1 | 8/2005 | Morgan et al. | | | |
| 2005/0174777 A1 | 8/2005 | Cooper et al. | | | |
| 2005/0178345 A1 | 8/2005 | Crapser | | | |
| 2005/0180736 A1 | 8/2005 | Zobebe | | | |
| 2005/0185392 A1 | 8/2005 | Walter et al. | | | |
| 2005/0185395 A1 | 8/2005 | Pinter | | | |
| 2005/0191481 A1 | 9/2005 | He et al. | | | |
| 2005/0194460 A1 | 9/2005 | Selander | | | |
| 2005/0195598 A1 | 9/2005 | Dancs et al. | | | |
| 2005/0196159 A1 | 9/2005 | Zobebe | | | |
| 2005/0201107 A1 | 9/2005 | Seki | | | |
| 2005/0201944 A1 | 9/2005 | Kvietok et al. | | | |
| 2005/0205916 A1 | 9/2005 | Conway et al. | | | |

FOREIGN PATENT DOCUMENTS

| | | | |
|----|------------------|--|---------|
| EP | 0705281 | | 4/1996 |
| EP | 0736248 A1 | | 10/1996 |
| EP | 0945062 B1 | | 9/1999 |
| EP | 0956868 B1 | | 11/1999 |
| EP | 1332765 A1 | | 8/2003 |
| EP | 1422249 A1 | | 5/2004 |
| ES | 1005422 | | 11/1988 |
| ES | 1015255 | | 6/1991 |
| GB | 2277267 A | | 10/1994 |
| GB | 2369816 A | | 6/2002 |
| JP | 62094169 | | 4/1987 |
| JP | 1295808 | | 11/1989 |
| JP | 2078077 | | 3/1990 |
| JP | 2138577 | | 5/1990 |
| JP | 2242633 | | 9/1990 |
| JP | 3240701 | | 10/1991 |
| JP | 5003744 | | 1/1993 |
| JP | 6003627 | | 1/1994 |
| JP | 6155489 | | 6/1994 |
| JP | 6205929 | | 7/1994 |
| JP | 06-262057 | | 9/1994 |
| JP | 07-009744 | | 2/1995 |
| JP | 7230847 | | 8/1995 |
| JP | 08-084551 | | 4/1996 |
| JP | 8278413 | | 10/1996 |
| JP | 09-074971 | | 3/1997 |
| JP | 9107861 | | 4/1997 |
| JP | 308422 | | 12/1997 |
| JP | 10014467 | | 1/1998 |
| JP | 10057464 | | 3/1998 |
| JP | 2004057548 | | 2/2004 |
| JP | 2004275371 | | 10/2004 |
| WO | WO 91/15249 | | 10/1991 |
| WO | WO 96/04021 | | 2/1996 |
| WO | WO 97/13539 | | 4/1997 |
| WO | WO 98/19526 | | 5/1998 |
| WO | WO 98/58692 | | 12/1998 |
| WO | WO 01/43785 A1 | | 6/2001 |
| WO | WO 01/79752 | | 10/2001 |
| WO | WO 2003098971 A1 | | 11/2003 |
| WO | WO 2004071935 A2 | | 8/2004 |
| WO | WO 05/030276 | | 4/2005 |
| WO | WO 05/092400 | | 10/2005 |

* cited by examiner

FIG. 1

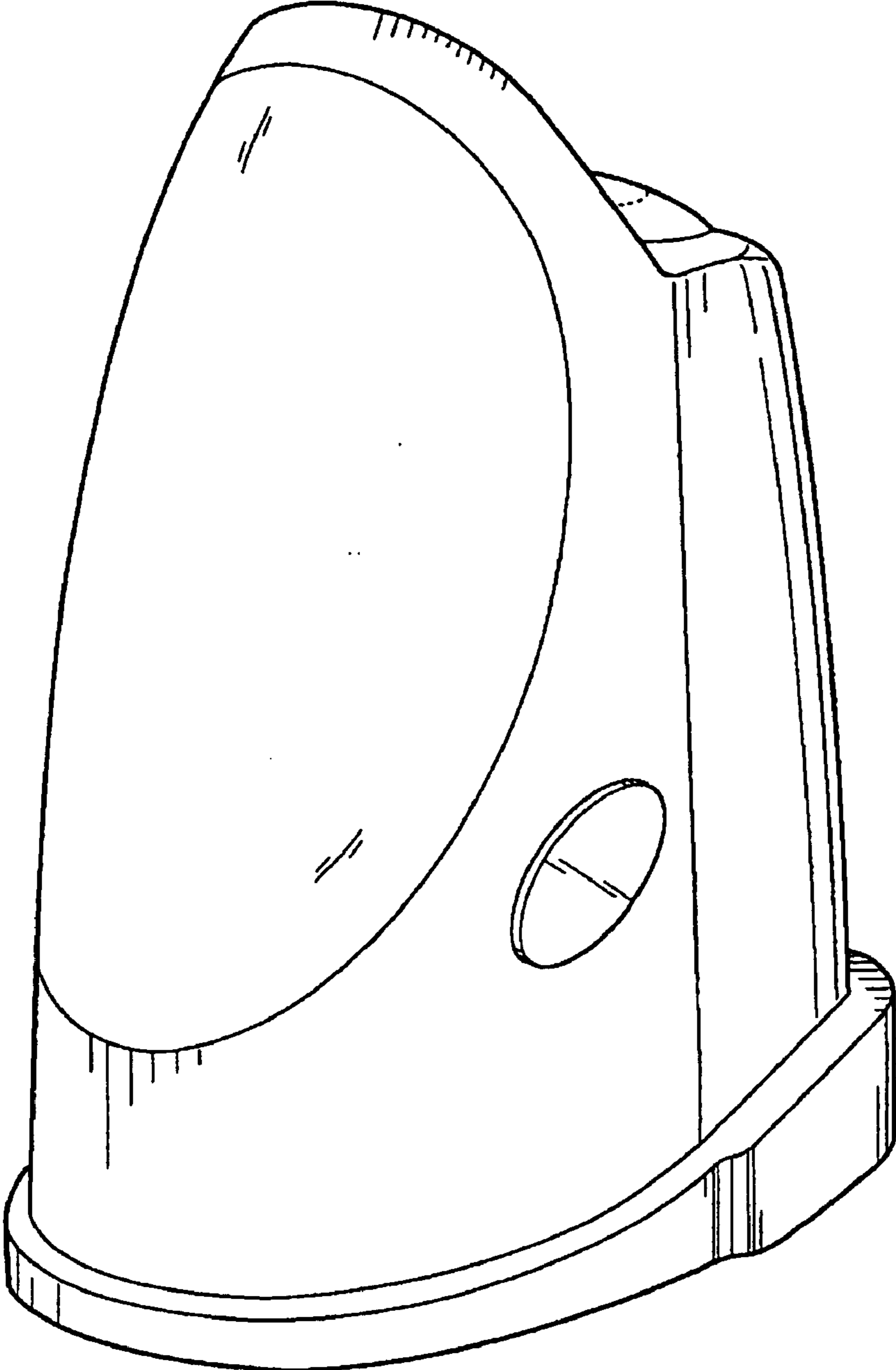


FIG. 2

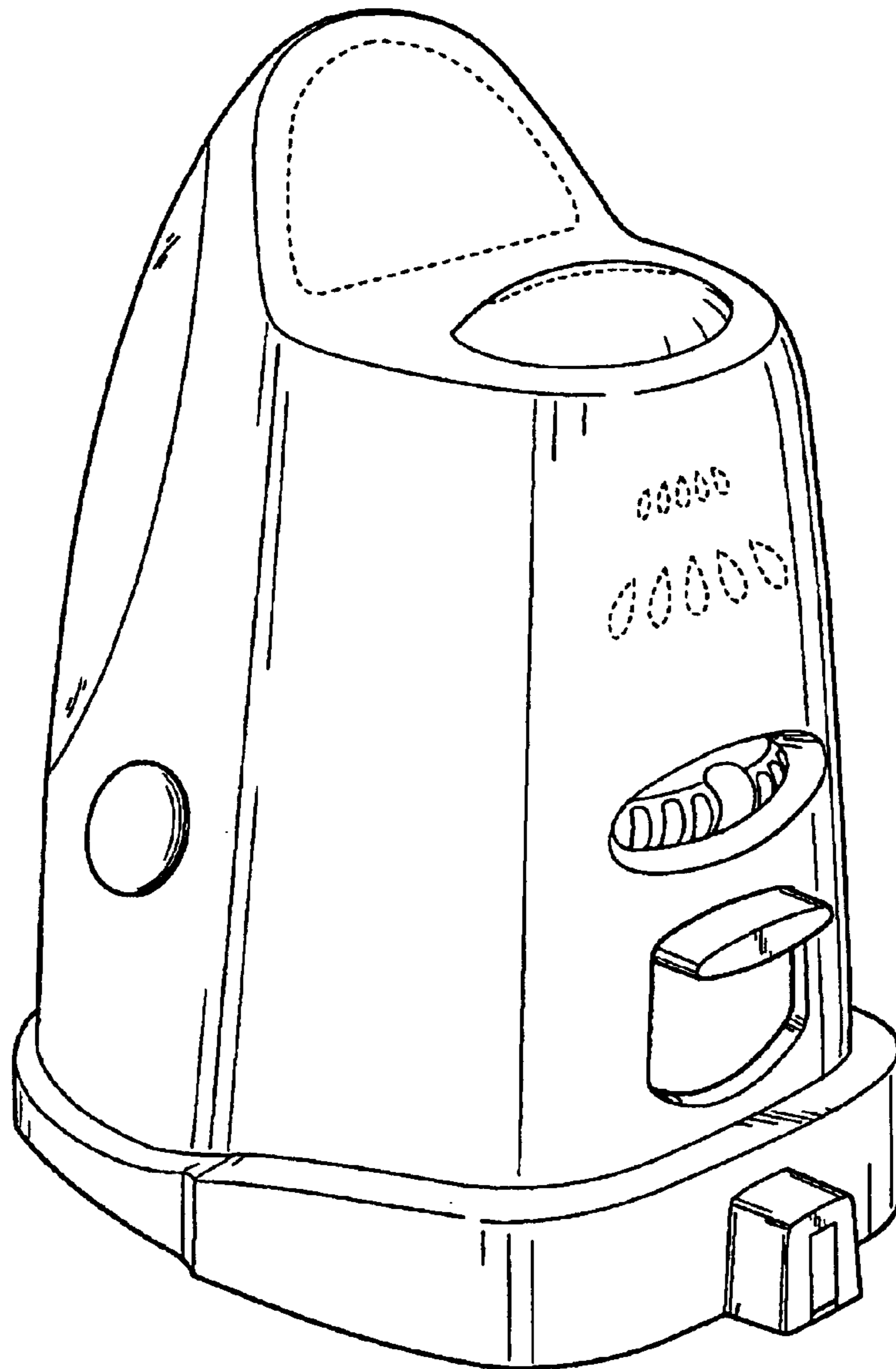


FIG. 3

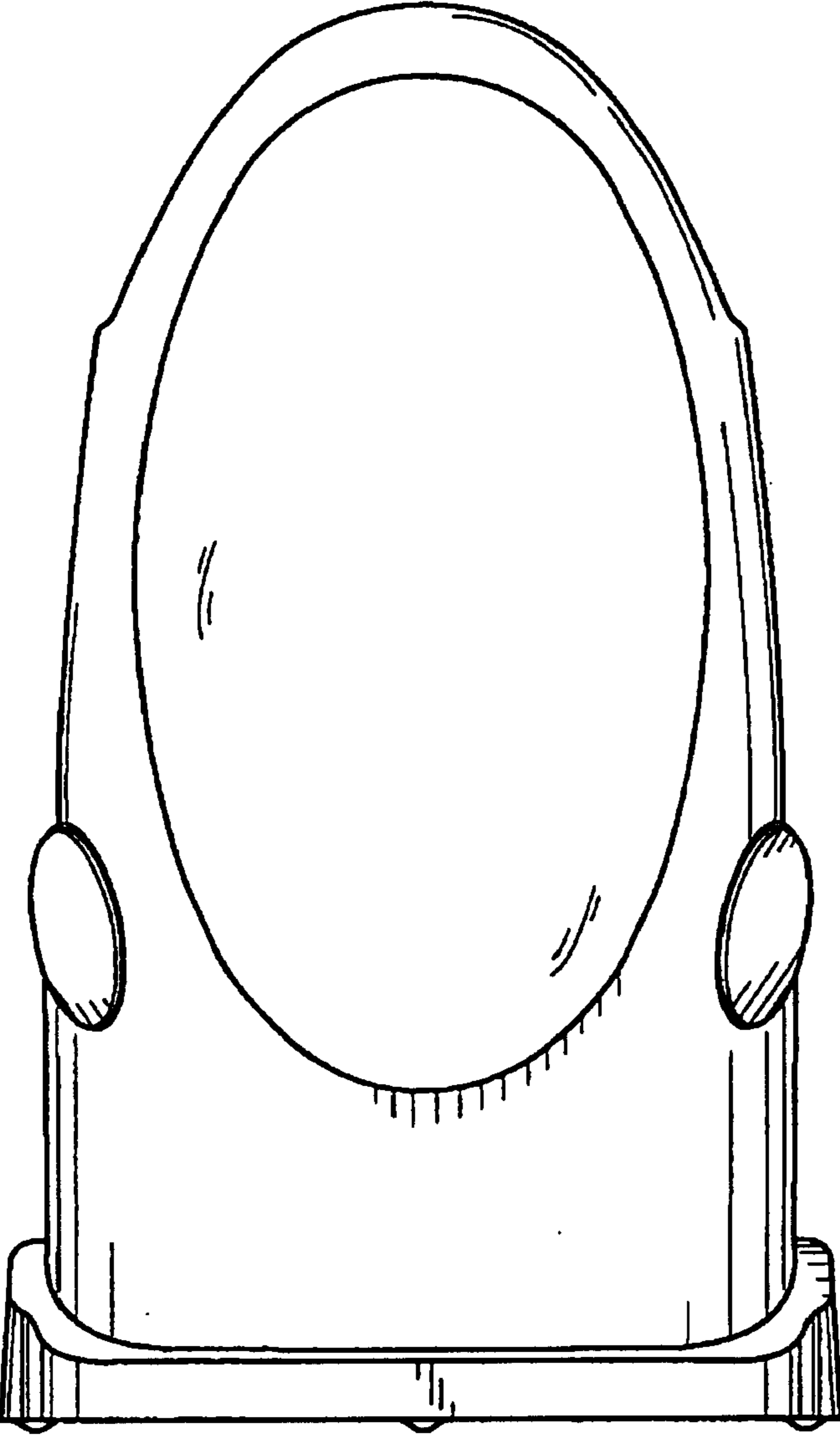


FIG. 4

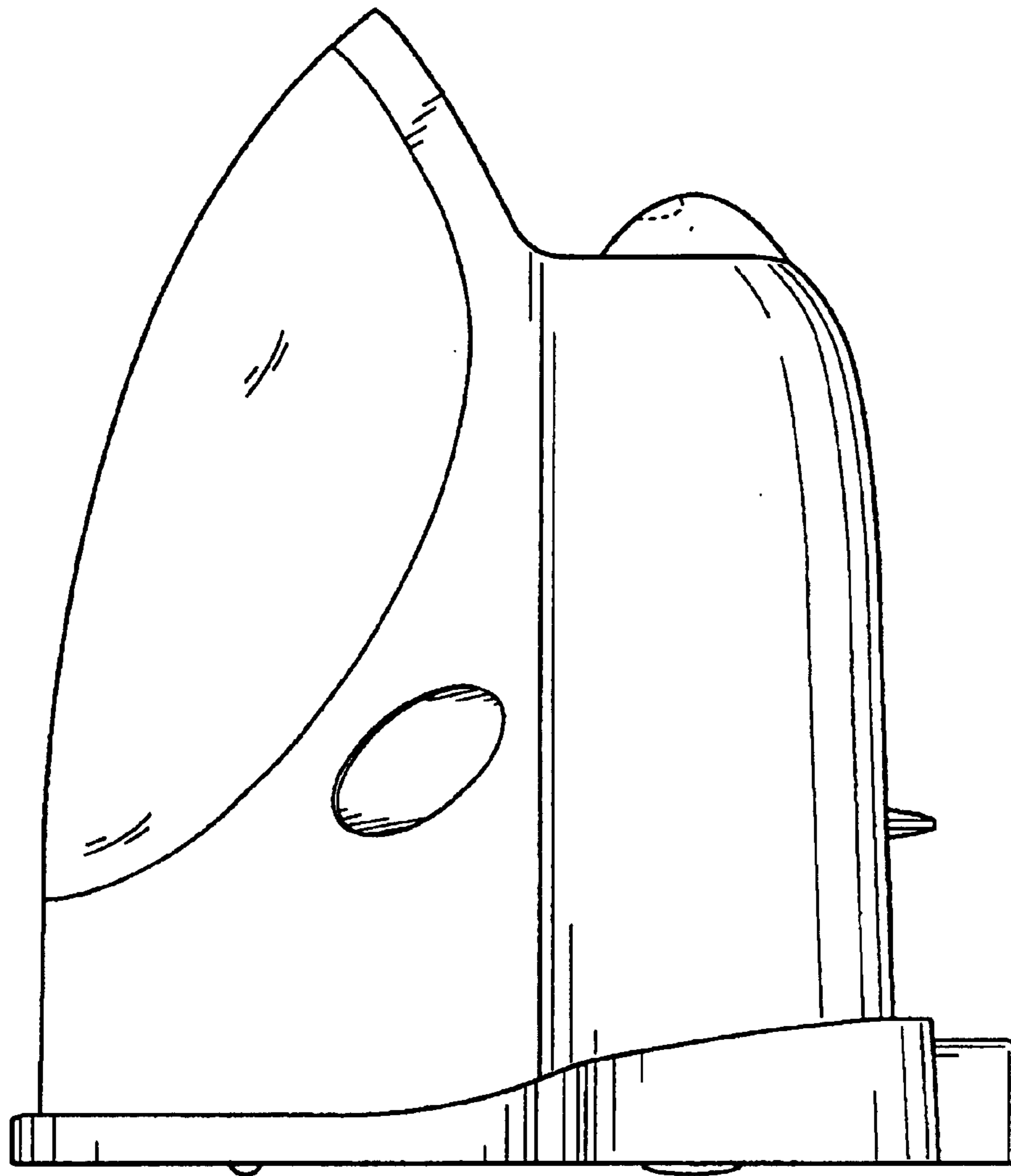


FIG. 5

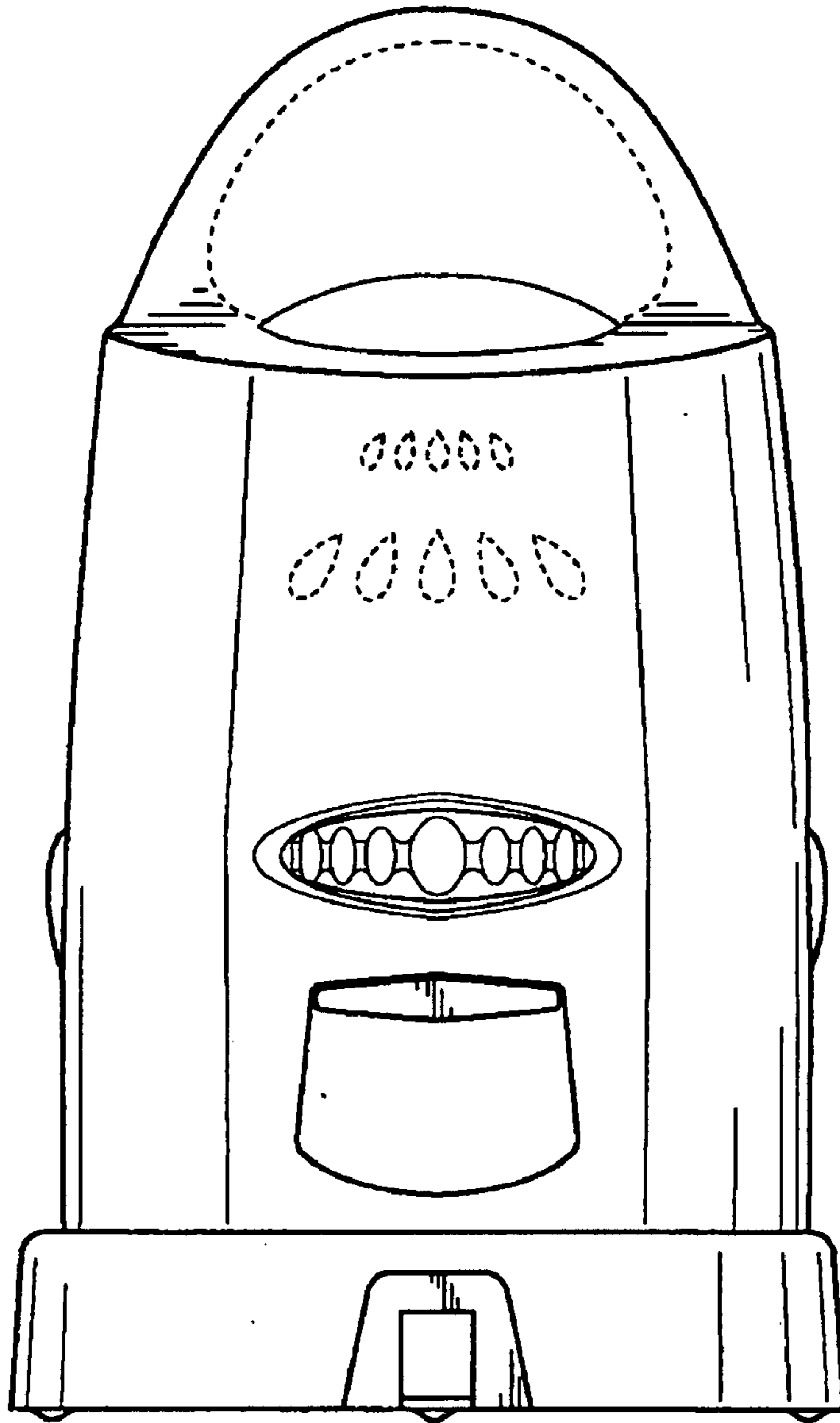


FIG. 6

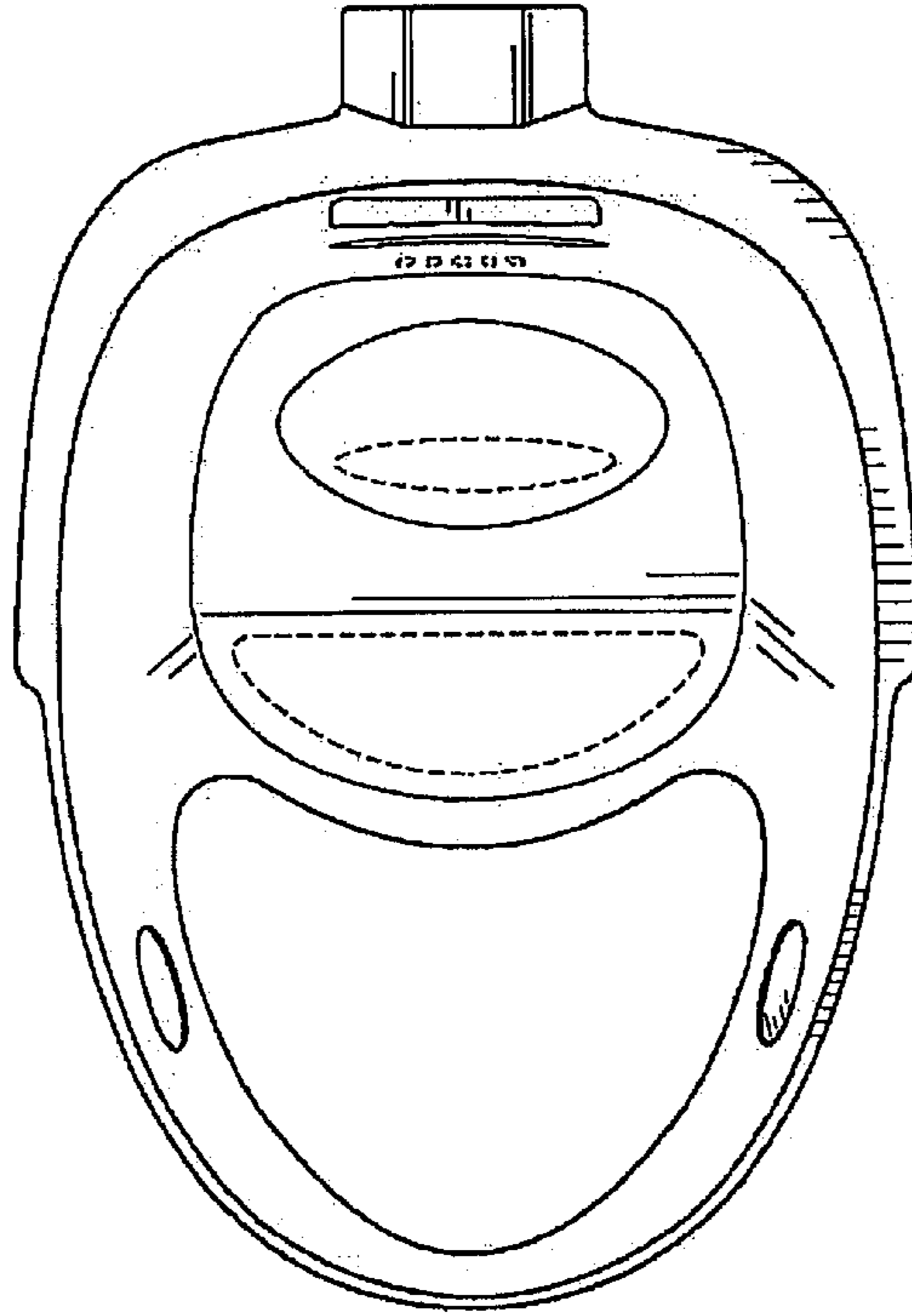


FIG. 7

