



US00D900330S

(12) **United States Design Patent** (10) **Patent No.:** **US D900,330 S**  
**Kayyem et al.** (45) **Date of Patent:** **\*\* Oct. 27, 2020**

(54) **INSTRUMENT**

(71) Applicant: **GenMark Diagnostics, Inc.**, Carlsbad, CA (US)

(72) Inventors: **Jon Faiz Kayyem**, Boulder, CO (US); **Matthew Sean Thomas**, McKinney, TX (US); **Mathieu Dominic Turpault**, Pennington, NJ (US); **Christopher John Murray**, Philadelphia, PA (US)

(73) Assignee: **GenMark Diagnostics, Inc.**, Carlsbad, CA (US)

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

(21) Appl. No.: **29/675,465**

(22) Filed: **Jan. 2, 2019**

**Related U.S. Application Data**

(63) Continuation of application No. 15/901,489, filed on Feb. 21, 2018, which is a continuation of application No. 14/062,865, filed on Oct. 24, 2013, now Pat. No. 9,957,553.

(51) **LOC (12) Cl.** ..... **24-01**

(52) **U.S. Cl.**  
USPC ..... **D24/216**

(58) **Field of Classification Search**  
USPC ..... D10/81; D24/107, 186, 216, 219, 220, D24/221, 223–227, 231, 232  
CPC ..... G01N 2035/00306; G01N 2035/00326; G01N 2035/00336; G01N 2030/027; G01N 21/76; G01N 1/28; G01N 33/50; G01N 35/025

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

D60,340 S 2/1922 Grier  
D202,013 S 8/1965 Hamilton  
3,641,909 A 2/1972 Baker

3,687,051 A 8/1972 Baker et al.  
3,776,425 A 12/1973 Baker et al.  
3,820,149 A 6/1974 Baker et al.  
D234,404 S 2/1975 Merrill  
4,007,010 A 2/1977 Woodbridge, III  
4,065,263 A 12/1977 Woodbridge, III  
D253,126 S 10/1979 Baxter  
4,182,447 A 1/1980 Kay  
D268,130 S 3/1983 Easton

(Continued)

**FOREIGN PATENT DOCUMENTS**

EP 583833 2/1994  
EP 870541 10/1998

(Continued)

**OTHER PUBLICATIONS**

Sample to Answer Genetic System—Key Tech. Available in 2017.\*  
U.S. Appl. No. 11/883,896, filed Oct. 2009, Graeme Huntley.  
U.S. Appl. No. 11/993,705, filed Aug. 2010, John McDevitt et al.  
U.S. Appl. No. 62/396,449, filed Sep. 2016, Nguyen.

(Continued)

*Primary Examiner* — Anhdao Doan

(74) *Attorney, Agent, or Firm* — Brinks Gilson & Lione

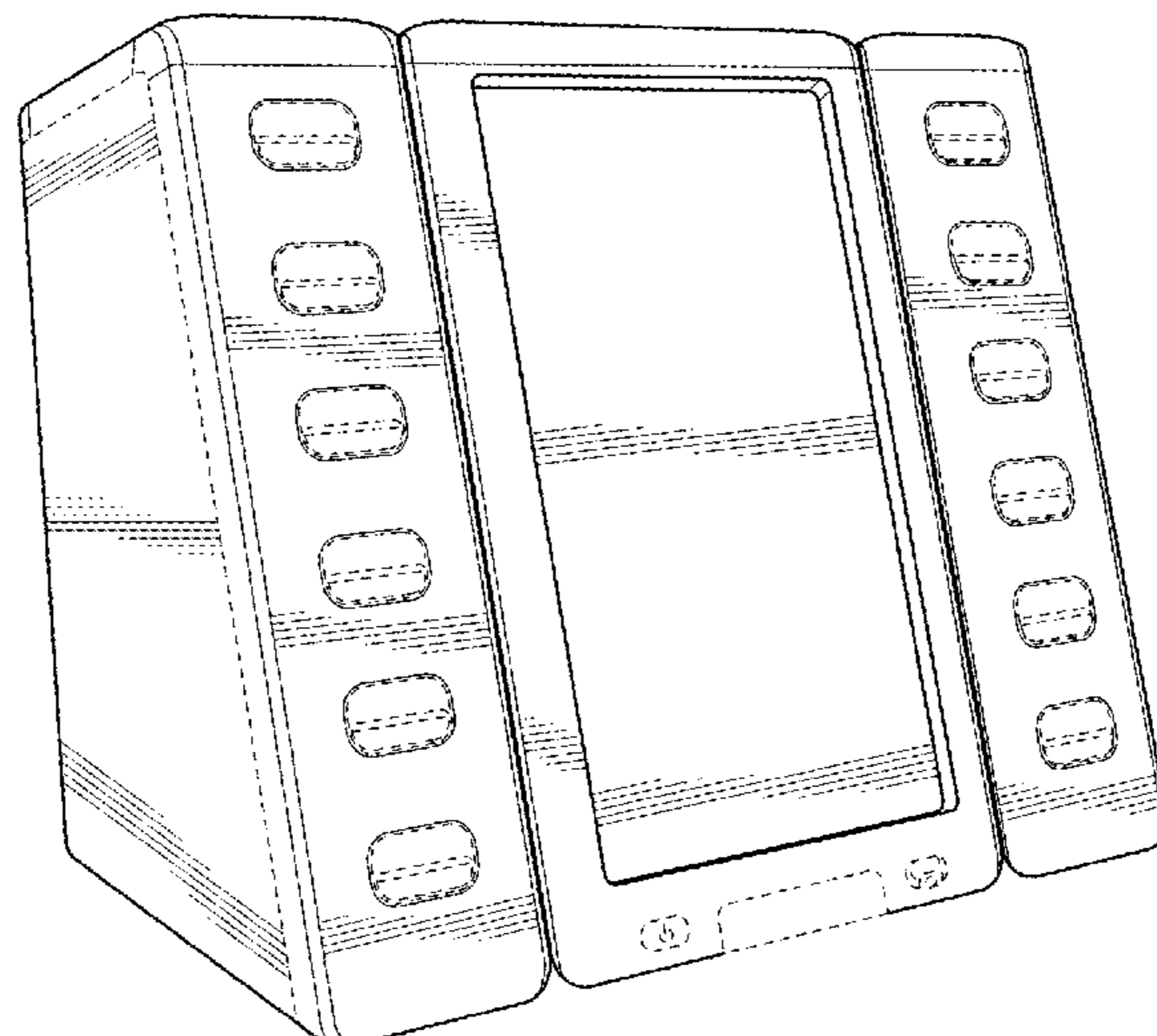
(57) **CLAIM**

The ornamental design for an instrument, as shown and described.

**DESCRIPTION**

FIG. 1 is a perspective view of an instrument.  
FIG. 2 is a front view of the instrument shown in FIG. 1; and,  
FIG. 3 is a right side view of the instrument shown in FIG. 1.  
The bottom, top, and rear views are not shown and form no part of the claimed design.  
The broken lines illustrate portions of the instrument that form no part of the claimed design.

**1 Claim, 2 Drawing Sheets**



(56)

## References Cited

## U.S. PATENT DOCUMENTS

4,429,792 A	2/1984	Machbitz	6,063,573 A	5/2000	Kayyem
4,469,863 A	9/1984	Ts'o et al.	6,065,641 A	5/2000	Laguna Valderrama
4,526,320 A	7/1985	Von Philipp et al.	6,067,157 A	5/2000	Altendorf
D287,760 S	1/1987	Discko, Jr.	6,071,478 A	6/2000	Chow
4,739,903 A	4/1988	Bedwell et al.	6,090,933 A	7/2000	Kayyem et al.
4,769,333 A	9/1988	Dole et al.	6,091,502 A	7/2000	Weigl et al.
4,844,251 A	7/1989	Gueret	6,096,273 A	8/2000	Kayyem et al.
4,859,603 A	8/1989	Dole et al.	6,098,795 A	8/2000	Mollstam et al.
4,887,455 A	12/1989	Payne et al.	6,110,354 A	8/2000	Saban et al.
4,978,502 A	12/1990	Dole et al.	6,123,798 A	9/2000	Gandhi et al.
5,034,506 A	7/1991	Summerton et al.	6,134,950 A	10/2000	Forster et al.
5,089,233 A	2/1992	Devaney, Jr. et al.	6,136,272 A	10/2000	Weigl et al.
5,098,660 A	3/1992	Devaney, Jr.	6,159,739 A	12/2000	Weigl et al.
D327,363 S	6/1992	Farb	6,167,910 B1	1/2001	Chow
5,154,888 A	10/1992	Zander et al.	6,171,865 B1	1/2001	Weigl et al.
5,216,141 A	6/1993	Benner	6,180,064 B1	1/2001	Persaud et al.
5,229,297 A	7/1993	Schnipelsky et al.	6,180,114 B1	1/2001	Yager et al.
5,234,809 A	8/1993	Boom et al.	6,190,858 B1	2/2001	Persaud et al.
5,235,033 A	8/1993	Summerton et al.	6,192,351 B1	2/2001	Persaud
5,254,479 A	10/1993	Chemelli	6,221,583 B1	4/2001	Kayyem et al.
5,288,463 A	2/1994	Chemelli	6,221,677 B1	4/2001	Wu et al.
5,290,518 A	3/1994	Johnson	6,227,809 B1	5/2001	Forster et al.
D350,478 S	9/1994	Fuller	6,230,884 B1	5/2001	Coory
D351,996 S	11/1994	Kalvelage	6,232,062 B1	5/2001	Kayyem et al.
5,374,395 A	12/1994	Robinson et al.	6,235,501 B1	5/2001	Gautsch et al.
5,386,023 A	1/1995	Sanghvi et al.	6,236,951 B1	5/2001	Payne et al.
5,399,486 A	3/1995	Cathey	6,248,229 B1	6/2001	Meade
5,422,271 A	6/1995	Chen et al.	6,255,477 B1	7/2001	Kleiber et al.
5,449,096 A	9/1995	Sedlmeier	6,264,825 B1	7/2001	Blackburn et al.
5,460,780 A	10/1995	Devaney, Jr. et al.	6,265,155 B1	7/2001	Meade et al.
5,468,366 A	11/1995	Wegner et al.	6,268,136 B1	7/2001	Shuber et al.
5,512,439 A	4/1996	Hornes et al.	6,277,641 B1	8/2001	Yager
5,529,188 A	6/1996	Coggsweil	6,290,839 B1	9/2001	Kayyem et al.
5,591,578 A	1/1997	Meade et al.	6,297,061 B1	10/2001	Wu et al.
5,593,804 A	1/1997	Chemelli et al.	6,300,138 B1	10/2001	Gleason et al.
5,602,240 A	2/1997	De Mesmaeker et al.	6,321,791 B1	11/2001	Chow
5,637,684 A	6/1997	Cook et al.	6,361,958 B1	3/2002	Shieh et al.
5,644,048 A	7/1997	Yau	6,366,924 B1	4/2002	Parce
5,652,149 A	7/1997	Mileaf et al.	6,376,232 B1	4/2002	Payne et al.
5,674,653 A	10/1997	Chemelli et al.	6,387,290 B1	5/2002	Brody et al.
5,681,702 A	10/1997	Collins et al.	6,391,558 B1	5/2002	Henkens et al.
5,692,644 A	12/1997	Gueret	6,391,622 B1	5/2002	Knapp et al.
5,705,348 A	1/1998	Meade et al.	6,399,023 B1	6/2002	Chow
5,705,628 A	1/1998	Hawkins	6,399,025 B1	6/2002	Chow
5,714,380 A	2/1998	Neri et al.	6,403,338 B1	6/2002	Knapp et al.
5,716,852 A	2/1998	Yager et al.	6,404,493 B1	6/2002	Altendorf
5,726,404 A	3/1998	Brody	6,406,857 B1	6/2002	Shuber et al.
5,726,751 A	3/1998	Altendorf et al.	6,408,884 B1	6/2002	Kamholz et al.
5,747,349 A	5/1998	Van Den Engh et al.	6,409,832 B2	6/2002	Weigl et al.
5,748,827 A	5/1998	Holl et al.	6,415,821 B2	7/2002	Kamholz et al.
5,770,365 A	6/1998	Lane et al.	6,426,230 B1	7/2002	Feistel
5,807,701 A	9/1998	Payne et al.	6,431,016 B1	8/2002	Payne
5,820,826 A	10/1998	Moorman	6,431,212 B1	8/2002	Hayenga et al.
5,824,473 A	10/1998	Meade et al.	6,431,476 B1	8/2002	Taylor et al.
5,842,787 A	12/1998	Kopf-Sill et al.	6,432,720 B2	8/2002	Chow
5,849,486 A	12/1998	Heller et al.	6,432,723 B1	8/2002	Plaxco et al.
5,851,536 A	12/1998	Yager et al.	6,433,160 B1	8/2002	Collis
5,873,990 A	2/1999	Wojciechowski et al.	6,440,725 B1	8/2002	Pourahmadi et al.
5,876,187 A	3/1999	Afromowitz et al.	6,443,179 B1	9/2002	Benavides
5,882,497 A	3/1999	Persaud et al.	6,443,307 B1	9/2002	Burridge
5,898,071 A	4/1999	Hawkins	6,451,606 B1	9/2002	Konig et al.
5,932,100 A	8/1999	Yager et al.	6,454,945 B1	9/2002	Weigl et al.
5,948,684 A	9/1999	Weigl et al.	6,479,240 B1	11/2002	Kayyem et al.
5,955,028 A	9/1999	Chow	6,482,306 B1	11/2002	Yager et al.
5,957,579 A	9/1999	Kopf-Sill et al.	6,488,895 B1	12/2002	Kennedy
5,971,158 A	10/1999	Yager et al.	6,488,896 B2	12/2002	Weigl et al.
5,972,710 A	10/1999	Weigl et al.	6,494,230 B2	12/2002	Chow
5,973,138 A	10/1999	Collis	6,495,104 B1	12/2002	Unno et al.
5,974,867 A	11/1999	Forster et al.	6,495,323 B1	12/2002	Kayyem et al.
6,003,728 A	12/1999	Elliott	6,503,757 B1	1/2003	Chow
6,007,775 A	12/1999	Yager	6,518,024 B2	2/2003	Choong et al.
6,013,170 A	1/2000	Meade	6,524,456 B1	2/2003	Ramsey et al.
6,013,459 A	1/2000	Meade	6,537,501 B1	3/2003	Holl et al.
6,033,601 A	3/2000	Persaud et al.	6,541,213 B1	4/2003	Weigl et al.
6,039,897 A	3/2000	Lochhead et al.	6,541,617 B1	4/2003	Bamdad et al.
			6,557,427 B2	5/2003	Weigl et al.
			6,562,568 B1	5/2003	Kleiber et al.
			6,565,727 B1	5/2003	Shenderov
			6,575,188 B2	6/2003	Parunak

(56)

## References Cited

## U.S. PATENT DOCUMENTS

6,576,194 B1	6/2003	Holl et al.	7,238,268 B2	7/2007	Ramsey et al.
6,581,899 B2	6/2003	Williams	7,255,780 B2	8/2007	Shenderov
6,582,963 B1	6/2003	Weigl et al.	7,258,837 B2	8/2007	Yager et al.
6,591,852 B1	7/2003	McNeely	7,267,939 B2	9/2007	Meade
6,596,483 B1	7/2003	Choong et al.	7,270,786 B2	9/2007	Parunak et al.
6,600,026 B1	7/2003	Yu	7,271,007 B2	9/2007	Weigl et al.
6,602,400 B1	8/2003	Choong et al.	7,312,087 B2	12/2007	Duong et al.
6,627,412 B1	9/2003	Manning et al.	7,323,140 B2	1/2008	Handique et al.
6,642,046 B1	11/2003	McGarry et al.	7,343,248 B2	3/2008	Parce et al.
6,645,758 B1	11/2003	Schnipelsky et al.	7,364,886 B2	4/2008	Hasenbank et al.
6,647,397 B2	11/2003	Parce	7,371,830 B2	5/2008	Kleiber et al.
6,648,015 B1	11/2003	Chow	7,381,525 B1	6/2008	Kayyem et al.
6,655,010 B1	12/2003	Hatfield et al.	7,381,533 B2	6/2008	Kayyem et al.
6,656,431 B2	12/2003	Holl et al.	7,384,749 B2	6/2008	Kayyem et al.
6,660,480 B2	12/2003	Ramsey et al.	7,393,645 B2	7/2008	Kayyem et al.
6,664,104 B2	12/2003	Pourahmadi et al.	7,405,054 B1	7/2008	Hasenbank et al.
6,674,525 B2	1/2004	Bardell et al.	7,416,791 B1	8/2008	Carlson et al.
6,686,150 B1	2/2004	Blackburn et al.	7,416,892 B2	8/2008	Battrell et al.
6,695,147 B1	2/2004	Yager et al.	7,419,575 B2	9/2008	Culbertson et al.
6,706,498 B2	3/2004	Gautsch et al.	7,419,638 B2	9/2008	Saltsman et al.
6,712,925 B1	3/2004	Holl et al.	7,439,014 B2	10/2008	Pamula et al.
6,739,531 B2	5/2004	Taylor	7,449,096 B2	11/2008	Berndt et al.
6,740,518 B1	5/2004	Duong et al.	7,473,397 B2	1/2009	Griffin et al.
6,742,661 B1	6/2004	Schulte et al.	7,491,495 B2	2/2009	Zielenski et al.
6,743,399 B1	6/2004	Weigl et al.	7,497,997 B2	3/2009	Glezer et al.
6,753,143 B2	6/2004	Tao et al.	7,514,228 B2	4/2009	Meade
6,761,816 B1	7/2004	Blackburn et al.	7,534,331 B2	5/2009	Kayyem
6,773,566 B2	8/2004	Shenderov	7,544,506 B2	6/2009	Breidford et al.
6,783,647 B2	8/2004	Culbertson et al.	7,550,267 B2	6/2009	Hawkins et al.
6,790,341 B1	9/2004	Saban et al.	7,560,237 B2	7/2009	O'Connor et al.
6,811,668 B1	11/2004	Berndt et al.	7,566,534 B2	7/2009	Meade
6,824,669 B1	11/2004	Li et al.	7,569,346 B2	8/2009	Petersen et al.
6,830,729 B1	12/2004	Holl et al.	7,579,145 B2	8/2009	Meade
6,833,267 B1	12/2004	Kayyem	D599,832 S	9/2009	Chapin et al.
6,852,284 B1	2/2005	Holl et al.	D600,503 S	9/2009	Ragsdale
6,857,449 B1	2/2005	Chow	7,582,419 B2	9/2009	Meade
6,875,619 B2	4/2005	Blackburn	7,595,153 B2	9/2009	Meade
6,878,540 B2	4/2005	Pourahmadi et al.	7,601,507 B2	10/2009	O'Connor et al.
6,881,312 B2	4/2005	Kopf-Sill et al.	7,607,460 B2	10/2009	Johns et al.
6,881,541 B2	4/2005	Petersen et al.	7,644,898 B2	1/2010	White et al.
6,887,693 B2	5/2005	McMillan et al.	7,648,835 B2	1/2010	Breidford et al.
6,893,879 B2	5/2005	Petersen et al.	7,655,129 B2	2/2010	Blackburn et al.
6,914,137 B2	7/2005	Baker	7,655,190 B2	2/2010	Satou et al.
6,919,444 B2	7/2005	Harttig et al.	7,659,089 B2	2/2010	Hasenbank et al.
6,942,771 B1	9/2005	Kayyem	7,669,597 B2	3/2010	Sullivan et al.
6,951,759 B2	10/2005	Travers et al.	7,670,559 B2	3/2010	Chien et al.
6,960,437 B2	11/2005	Enzelberger et al.	7,713,711 B2	5/2010	O'Connor et al.
6,960,467 B2	11/2005	Shieh et al.	7,727,723 B2	6/2010	Pollack et al.
6,967,489 B2	11/2005	Brooks et al.	7,731,906 B2	6/2010	Handique et al.
6,968,978 B1	11/2005	Matthews	7,736,891 B2	6/2010	Nelson et al.
6,977,151 B2	12/2005	Kayyem et al.	7,759,073 B2	7/2010	O'Connor et al.
6,979,424 B2	12/2005	Northrup et al.	7,763,453 B2	7/2010	Clemmens et al.
7,010,391 B2	3/2006	Handique et al.	7,763,471 B2	7/2010	Pamula et al.
7,011,791 B2	3/2006	Weigl et al.	7,789,270 B2	9/2010	Tanaami et al.
7,014,992 B1	3/2006	Kayyem et al.	7,794,669 B2	9/2010	Gyonouchi et al.
7,018,523 B2	3/2006	Meade	7,815,871 B2	10/2010	Pamula et al.
7,030,989 B2	4/2006	Yager et al.	7,816,121 B2	10/2010	Pollack et al.
7,045,285 B1	5/2006	Kayyem et al.	7,820,030 B2	10/2010	Althaus et al.
7,056,475 B2	6/2006	Lum et al.	7,820,391 B2	10/2010	Chunlin
7,056,669 B2	6/2006	Kayyem et al.	7,822,510 B2	10/2010	Paik et al.
7,087,148 B1	8/2006	Blackburn et al.	7,833,708 B2	11/2010	Enzelberger et al.
7,090,804 B2	8/2006	Kayyem et al.	7,851,184 B2	12/2010	Pollack et al.
7,119,194 B2	10/2006	Uematsu et al.	7,854,897 B2	12/2010	Tanaami et al.
7,125,668 B2	10/2006	Kayyem et al.	7,858,045 B2	12/2010	Tanaami et al.
7,141,429 B2	11/2006	Munson et al.	7,863,035 B2	1/2011	Clemens et al.
7,155,344 B1	12/2006	Parce et al.	7,867,757 B2	1/2011	Karlsen et al.
7,160,678 B1	1/2007	Kayyem et al.	7,901,947 B2	3/2011	Pollack et al.
7,163,612 B2	1/2007	Sterling et al.	7,910,294 B2	3/2011	Karlsen
7,169,358 B2	1/2007	Henkens et al.	7,914,994 B2	3/2011	Petersen et al.
7,172,897 B2	2/2007	Blackburn et al.	7,919,330 B2	4/2011	De Guzman et al.
7,192,557 B2	3/2007	Wu et al.	7,935,316 B2	5/2011	Gyonouchi et al.
7,201,881 B2	4/2007	Cox et al.	7,935,481 B1	5/2011	Umek et al.
7,208,271 B2	4/2007	Bost et al.	7,935,537 B2	5/2011	Haley
7,223,371 B2	5/2007	Hayenga et al.	7,939,021 B2	5/2011	Smith et al.
7,226,562 B2	6/2007	Holl et al.	7,943,030 B2	5/2011	Shenderov
			7,955,836 B2	6/2011	Clemmens et al.
			7,987,022 B2	7/2011	Handique et al.
			7,998,436 B2	8/2011	Pollack et al.
			7,998,708 B2	8/2011	Handique et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

8,007,739 B2	8/2011	Pollack et al.	8,658,111 B2	2/2014	Srinivasan et al.
8,012,743 B2	9/2011	Bamdad et al.	8,663,974 B2	3/2014	Brown et al.
8,017,340 B2	9/2011	Collier et al.	D702,364 S	4/2014	Iqbal
8,041,463 B2	10/2011	Pollack et al.	8,685,344 B2	4/2014	Sudarsan et al.
8,048,628 B2	11/2011	Pollack et al.	8,685,754 B2	4/2014	Pollack et al.
8,053,239 B2	11/2011	Wheeler et al.	8,701,906 B1	4/2014	Anderson
8,088,578 B2	1/2012	Hua et al.	8,795,607 B2	8/2014	Kurowski et al.
8,093,062 B2	1/2012	Winger	8,951,781 B2	2/2015	Reed et al.
8,101,403 B2	1/2012	Yager et al.	9,040,288 B2	5/2015	Handique et al.
8,101,431 B2	1/2012	McDevitt et al.	9,211,538 B2	12/2015	Weber
8,105,477 B2	1/2012	Althaus et al.	9,222,623 B2	12/2015	Wright et al.
8,105,783 B2	1/2012	Handique	9,260,475 B2	2/2016	Irvine et al.
8,105,849 B2	1/2012	McDevitt et al.	9,410,663 B2	8/2016	Wright et al.
8,110,392 B2	2/2012	Battrell et al.	9,453,613 B2	9/2016	Wright et al.
8,114,661 B2	2/2012	O'Connor et al.	9,498,778 B2	11/2016	Corey et al.
8,129,118 B2	3/2012	Weindel et al.	9,557,295 B2	1/2017	Kayyem
8,133,671 B2	3/2012	Williams et al.	9,598,722 B2	3/2017	Wright et al.
8,133,703 B2	3/2012	Ching et al.	D800,337 S	10/2017	Daines
8,137,917 B2	3/2012	Pollack et al.	D804,808 S	12/2017	Ukrainsky
8,168,442 B2	5/2012	Petersen et al.	D815,752 S	4/2018	Jackson
8,187,864 B2	5/2012	Wheeler et al.	D815,754 S	4/2018	Morkos et al.
8,201,765 B2	6/2012	Rajagopal et al.	D819,225 S *	5/2018	Mead ..... D24/233
8,202,686 B2	6/2012	Pamula et al.	9,957,553 B2	5/2018	Kayyem et al.
8,202,736 B2	6/2012	Mousa et al.	D830,573 S	10/2018	Poirier
8,208,146 B2	6/2012	Srinivasan et al.	D831,224 S	10/2018	Hsu
8,216,529 B2	7/2012	Ade et al.	D845,503 S *	4/2019	Jensen ..... D24/216
8,216,832 B2	7/2012	Battrell et al.	10,391,489 B2	8/2019	Wright et al.
8,222,023 B2	7/2012	Battrell et al.	10,495,656 B2	12/2019	Kayyem et al.
8,247,176 B2	8/2012	Petersen et al.	D881,409 S	4/2020	Kayyem et al.
8,247,191 B2	8/2012	Ritzen et al.	2002/0006643 A1	1/2002	Kayyem et al.
8,268,246 B2	9/2012	Srinivasan et al.	2002/0066677 A1	6/2002	Moscovitz
8,273,308 B2	9/2012	Handique et al.	2002/0068357 A1	6/2002	Mathies et al.
8,304,253 B2	11/2012	Yi et al.	2003/0025129 A1	2/2003	Hahn et al.
8,313,698 B2	11/2012	Pollack et al.	2003/0034271 A1	2/2003	Burrige
8,313,895 B2	11/2012	Pollack et al.	2003/0038040 A1	2/2003	Bertl et al.
8,317,990 B2	11/2012	Pamula et al.	2003/0048631 A1	3/2003	Ladyjensky
8,318,109 B2	11/2012	Saltsman et al.	2003/0197139 A1	10/2003	Williams
8,318,439 B2	11/2012	Battrell et al.	2004/0037739 A1	2/2004	McNeely et al.
8,323,900 B2	12/2012	Handique et al.	2004/0053290 A1	3/2004	Terbrueggen et al.
8,329,453 B2	12/2012	Battrell et al.	2004/0137607 A1	7/2004	Tanaami et al.
8,338,166 B2	12/2012	Beer et al.	2004/0185551 A1	9/2004	Niehaus
8,342,367 B2	1/2013	Tuyls	2004/0189311 A1	9/2004	Giezer
8,343,636 B2	1/2013	Jen et al.	2004/0229378 A1	11/2004	Schulte et al.
8,349,276 B2	1/2013	Pamula et al.	2004/0254559 A1	12/2004	Tanaami et al.
8,356,763 B2	1/2013	Rajagopal et al.	2005/0003399 A1	1/2005	Blackburn et al.
8,364,315 B2	1/2013	Sturmer et al.	2005/0064423 A1	3/2005	Higuchi et al.
8,367,370 B2	2/2013	Wheeler et al.	2005/0164373 A1	7/2005	Oldham et al.
8,372,340 B2	2/2013	Bird et al.	2005/0182301 A1	8/2005	Acker et al.
8,388,909 B2	3/2013	Pollack et al.	2005/0201903 A1	9/2005	Weigl et al.
8,389,297 B2	3/2013	Pamula et al.	2005/0205816 A1	9/2005	Hayenga et al.
8,394,608 B2	3/2013	Ririe et al.	2005/0233440 A1	10/2005	Scurati et al.
8,394,641 B2	3/2013	Winger	2005/0244308 A1	11/2005	Tanaami et al.
8,404,440 B2	3/2013	Solli et al.	2006/0040379 A1	2/2006	Tanaami et al.
8,426,213 B2	4/2013	Eckhardt et al.	2006/0057581 A1	3/2006	Karlsen et al.
8,426,214 B2	4/2013	Stayton et al.	2006/0079834 A1	4/2006	Tennican et al.
8,431,389 B2	4/2013	Battrell et al.	2006/0166233 A1	7/2006	Wu et al.
8,440,392 B2	5/2013	Pamula et al.	2006/0183216 A1	8/2006	Handique et al.
8,454,905 B2	6/2013	Pope et al.	2006/0246575 A1	11/2006	Lancaster et al.
8,460,528 B2	6/2013	Pollack et al.	2006/0257993 A1	11/2006	McDevitt et al.
8,470,606 B2	6/2013	Srinivasan et al.	2006/0264782 A1	11/2006	Holmes et al.
8,481,125 B2	7/2013	Yi et al.	2006/0275813 A1	12/2006	Tanaami et al.
8,492,168 B2	7/2013	Srinivasan et al.	2006/0275852 A1	12/2006	Montagu et al.
8,501,921 B2	8/2013	Bamdad et al.	2007/0013733 A1	1/2007	Katsurai et al.
8,506,908 B2	8/2013	Benn et al.	2007/0017927 A1	1/2007	D'Amore et al.
8,518,662 B2	8/2013	Ritzen et al.	2007/0039974 A1	2/2007	Lloyd
8,541,176 B2	9/2013	Pamula et al.	2007/0042427 A1	2/2007	Gerdes et al.
8,551,424 B2	10/2013	Abraham-Fuchs et al.	2007/0098600 A1	5/2007	Kayyem
8,557,198 B2	10/2013	Saltsman et al.	2007/0178529 A1	8/2007	Breidford et al.
8,562,807 B2	10/2013	Srinivasan et al.	2007/0184547 A1	8/2007	Handique et al.
8,580,209 B2	11/2013	Kurowski et al.	2007/0219480 A1	9/2007	Kamen et al.
8,591,830 B2	11/2013	Sudarsan et al.	2007/0241068 A1	10/2007	Pamula et al.
8,592,217 B2	11/2013	Eckhardt	2007/0242105 A1	10/2007	Srinivasan et al.
8,613,889 B2	12/2013	Pollack et al.	2007/0248958 A1	10/2007	Jovanovich
8,637,317 B2	1/2014	Pamula et al.	2007/0275415 A1	11/2007	Srinivasan et al.
8,637,324 B2	1/2014	Pollack et al.	2007/0292941 A1	12/2007	Handique et al.
			2008/0038810 A1	2/2008	Pollack et al.
			2008/0050287 A1	2/2008	Araragi et al.
			2008/0056948 A1	3/2008	Dale et al.
			2008/0108122 A1	5/2008	Paul

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2008/0182301	A1	7/2008	Handique et al.	2011/0180571	A1	7/2011	Srinivasan et al.
2008/0227185	A1	9/2008	Schonfeld et al.	2011/0186433	A1	8/2011	Pollack et al.
2008/0230386	A1	9/2008	Srinivasan et al.	2011/0186466	A1	8/2011	Kurowski et al.
2008/0248590	A1	10/2008	Gulliksen et al.	2011/0203930	A1	8/2011	Pamula et al.
2008/0274513	A1	11/2008	Shenderov et al.	2011/0207209	A1	8/2011	Hammons
2008/0283439	A1	11/2008	Sullivan et al.	2011/0207621	A1	8/2011	Montagu et al.
2008/0314167	A1	12/2008	Kahl	2011/0209998	A1	9/2011	Shenderov
2009/0022624	A1	1/2009	Saltsman et al.	2011/0240471	A1	10/2011	Wheeler et al.
2009/0061450	A1	3/2009	Hunter	2011/0303542	A1	12/2011	Srinivasan et al.
2009/0148847	A1	6/2009	Kokoris et al.	2011/0311980	A1	12/2011	Pollack et al.
2009/0155902	A1	6/2009	Pollack et al.	2011/0318824	A1	12/2011	Tanaami et al.
2009/0171311	A1	7/2009	Genosar	2011/0319279	A1	12/2011	Montagu et al.
2009/0180931	A1	7/2009	Silbert et al.	2012/0018306	A1	1/2012	Srinivasan et al.
2009/0182575	A1	7/2009	Warner et al.	2012/0022695	A1	1/2012	Handique et al.
2009/0197778	A1	8/2009	Lepschi et al.	2012/0044299	A1	2/2012	Winger
2009/0221059	A1	9/2009	Williams et al.	2012/0064597	A1	3/2012	Clemmens et al.
2009/0221091	A1	9/2009	Mogi et al.	2012/0071342	A1	3/2012	Lochhead et al.
2009/0223989	A1	9/2009	Gelardi	2012/0083046	A1	4/2012	Watson et al.
2009/0263834	A1	10/2009	Sista et al.	2012/0085645	A1	4/2012	Mousa et al.
2009/0298059	A1	12/2009	Gumbrecht et al.	2012/0107811	A1	5/2012	Kelso et al.
2009/0304944	A1	12/2009	Sudarsan et al.	2012/0122108	A1	5/2012	Handique
2009/0325276	A1	12/2009	Battrell et al.	2012/0132528	A1	5/2012	Shenderov et al.
2010/0021910	A1	1/2010	Cao	2012/0142070	A1	6/2012	Battrell et al.
2010/0025250	A1	2/2010	Pamula et al.	2012/0156112	A1	6/2012	Sprague et al.
2010/0032293	A1	2/2010	Pollack et al.	2012/0156750	A1	6/2012	Battrell et al.
2010/0035349	A1	2/2010	Bau et al.	2012/0160826	A1	6/2012	Handique
2010/0048410	A1	2/2010	Shenderov et al.	2012/0164627	A1	6/2012	Battrell et al.
2010/0068764	A1	3/2010	Sista et al.	2012/0165238	A1	6/2012	Pamula et al.
2010/0087012	A1	4/2010	Shenderov	2012/0171759	A1	7/2012	Williams et al.
2010/0093019	A1	4/2010	Ditcham	2012/0177543	A1	7/2012	Battrell et al.
2010/0116640	A1	5/2010	Pamula et al.	2012/0187117	A1	7/2012	Weber
2010/0120130	A1	5/2010	Srinivasan et al.	2012/0196280	A1	8/2012	Karlsen et al.
2010/0130369	A1	5/2010	Shenderov et al.	2012/0252008	A1	10/2012	Brown et al.
2010/0136554	A1	6/2010	Parthasarathy	2012/0261264	A1	10/2012	Srinivasan et al.
2010/0150783	A1	6/2010	Araragi et al.	2012/0270305	A1	10/2012	Reed et al.
2010/0151475	A1	6/2010	Tanaami et al.	2012/0271127	A1	10/2012	Battrell et al.
2010/0173394	A1	7/2010	Colston	2012/0329142	A1	12/2012	Battrell et al.
2010/0178697	A1	7/2010	Doebler et al.	2013/0011912	A1	1/2013	Battrell et al.
2010/0190263	A1	7/2010	Srinivasan et al.	2013/0017544	A1	1/2013	Eckhardt et al.
2010/0194408	A1	8/2010	Sturmer et al.	2013/0018611	A1	1/2013	Sturmer
2010/0206094	A1	8/2010	Shenderov	2013/0020202	A1	1/2013	Feiglin
2010/0224511	A1	9/2010	Boatner	2013/0059366	A1	3/2013	Pollack et al.
2010/0226199	A1	9/2010	Mogi et al.	2013/0118901	A1	5/2013	Pollack et al.
2010/0233824	A1	9/2010	Verhoeckx et al.	2013/0130262	A1	5/2013	Battrell et al.
2010/0236928	A1	9/2010	Srinivasan et al.	2013/0130936	A1	5/2013	Eckhardt
2010/0236929	A1	9/2010	Pollack et al.	2013/0142708	A1	6/2013	Battrell et al.
2010/0270156	A1	10/2010	Srinivasan et al.	2013/0146461	A1	6/2013	Pamula et al.
2010/0279374	A1	11/2010	Sista et al.	2013/0164742	A1	6/2013	Pollack et al.
2010/0282608	A1	11/2010	Srinivasan et al.	2013/0178374	A1	7/2013	Eckhardt et al.
2010/0282609	A1	11/2010	Pollack et al.	2013/0178968	A1	7/2013	Sturmer et al.
2010/0288789	A1	11/2010	Tanaami et al.	2013/0203606	A1	8/2013	Pollack et al.
2010/0291578	A1	11/2010	Pollack et al.	2013/0217103	A1	8/2013	Bauer
2010/0291588	A1	11/2010	McDevitt et al.	2013/0217113	A1	8/2013	Srinivasan et al.
2010/0297754	A1	11/2010	Solli et al.	2013/0225450	A1	8/2013	Pollack et al.
2010/0304986	A1	12/2010	Chen et al.	2013/0225452	A1	8/2013	Pollack et al.
2010/0307917	A1	12/2010	Srinivasan et al.	2013/0230875	A1	9/2013	Pamula et al.
2010/0307922	A1	12/2010	Wu	2013/0233425	A1	9/2013	Srinivasan et al.
2010/0308051	A1	12/2010	Weber	2013/0233712	A1	9/2013	Pamula et al.
2010/0311599	A1	12/2010	Wheeler et al.	2013/0252262	A1	9/2013	Srinivasan et al.
2010/0317093	A1	12/2010	Turewicz et al.	2013/0302787	A1	11/2013	Agarwal et al.
2010/0323405	A1	12/2010	Pollack et al.	2013/0327672	A1	12/2013	Kurowski et al.
2010/0331522	A1	12/2010	Irvine et al.	2013/0331298	A1	12/2013	Rea
2011/0048951	A1	3/2011	Wu	2013/0341231	A1	12/2013	Lange et al.
2011/0053289	A1	3/2011	Lowe et al.	2014/0000223	A1	1/2014	Osterloh et al.
2011/0076692	A1	3/2011	Sista et al.	2014/0000735	A1	1/2014	Weber et al.
2011/0086377	A1	4/2011	Thwar et al.	2014/0045275	A1	2/2014	Rothacher et al.
2011/0091989	A1	4/2011	Sista et al.	2014/0127773	A1	5/2014	Brown et al.
2011/0097763	A1	4/2011	Pollack et al.	2014/0160877	A1	6/2014	Lange et al.
2011/0104725	A1	5/2011	Pamula et al.	2014/0170641	A1	6/2014	Macemon
2011/0104747	A1	5/2011	Pollack et al.	2014/0194305	A1	7/2014	Kayyem et al.
2011/0104816	A1	5/2011	Pollack et al.	2014/0220702	A1	8/2014	Johnson et al.
2011/0114490	A1	5/2011	Pamula et al.	2014/0252079	A1	9/2014	Bjerke et al.
2011/0129931	A1	6/2011	Reboud	2014/0255275	A1	9/2014	Barry et al.
2011/0143339	A1	6/2011	Wisniewski	2014/0261708	A1	9/2014	Wright et al.
2011/0159578	A1	6/2011	Godsey et al.	2014/0263439	A1	9/2014	Wright et al.
				2014/0322706	A1	10/2014	Kayyem et al.
				2014/0370609	A1	12/2014	Frank et al.
				2015/0024436	A1	1/2015	Eberhart et al.
				2015/0024480	A1	1/2015	Doebler et al.

(56)

## References Cited

## OTHER PUBLICATIONS

## U.S. PATENT DOCUMENTS

2015/0132860	A1	5/2015	Cook et al.
2015/0298118	A1	10/2015	Chard et al.
2015/0323555	A1	11/2015	Kayyem et al.
2015/0346097	A1	12/2015	Battrell et al.
2016/0129437	A1	5/2016	Kayyem et al.
2016/0129445	A1	5/2016	Corey et al.
2016/0130640	A1	5/2016	Wright et al.
2016/0131672	A1	5/2016	Tieman
2016/0146803	A1	5/2016	Allen et al.
2016/0339426	A1	11/2016	Wright et al.
2017/0181314	A1	6/2017	Leigh et al.
2018/0015454	A1	1/2018	Wright
2018/0095100	A1	4/2018	Nguyen
2018/0223345	A1	8/2018	Kayyem et al.

## FOREIGN PATENT DOCUMENTS

JP	2009534653	9/2009
JP	2011520449	7/2011
JP	2011252768	12/2011
JP	2012055321	3/2012
WO	WO 2004/034028	4/2004
WO	WO 2007/044917	4/2007
WO	WO 2007/112114	10/2007
WO	WO 2007/120241	10/2007
WO	WO 2010/025302	3/2010
WO	WO 2011/106314	9/2011
WO	WO 2011/127040	10/2011
WO	WO 2012/151192	11/2012
WO	WO 2013/059750	4/2013
WO	WO 2014/049371	4/2014
WO	WO 2014/066704	5/2014
WO	WO 2015/191916	12/2015

Beaucage et al., "Tetrahedron Report No. 329: The Functionalization of Oligonucleotides via Phosphoramidite Derivatives," Tetrahedron vol. 49, No. 10, pp. 1925-2963 (1993).

Erickson et al., "Integrated Microfluidic Devices," Elsevier B.V., 16 pages (2003).

Findlay et al., "Automated Closed-Vessel System for in Vitro Diagnostics Based on Polymerase Chain Reaction," Clinical Chemistry, 39:9, pp. 1927-1933, 1993).

Focke et al., "Lab-on-a-Foil: Microfluidics on Thin and Flexible Films," The Royal Society of Chemistry, pp. 1365-1386 (2010).

Letsinger et al., "Hybridization of Alternating Cationic/ Anionic Oligonucleotides to RNA Segments," Nucleosides & Nucleotides vol. 13, No. 6&7, pp. 1597-1605 (1994).

Malic et al., "Current State of Intellectual Property in Microfluidic Nucleic Acid Analysis," McGill University, Bentham Science Publishers, 18 pages (2007).

Mesmaeker et al., "Comparison of Rigid and Flexible Backbones in Antisense Oligonucleotides," Bioorganic & Medicinal Chem. Letters, vol. 4, No. 3, pp. 395-398 (1994).

Vandevanter et al., "Mechanical Disruption of Lysis-Resistant Bacterial Cells by Use of a Miniature, Low-Power, Disposable Device," American Society for Microbiology, Journal of Clinical Microbiology, 49:7, pp. 2533-2539 (Jul. 2011).

Non-final Office Action of U.S. Appl. No. 29/623,931 dated Feb. 21, 2019, 14 pages.

Respiratory Pathogen (RP) Panel. Online, published date unknown. Retrieved on Dec. 23, 2018 from URL: <https://www.genmarkdx.com/solutions/panels/eplax-panels/respiratory-pathogen-panel/>.

Non-Final Office Action in U.S. Appl. No. 29/623,925, 9 pages, (dated Sep. 6, 2018).

Office Action in U.S. Appl. No. 16/541,893, dated Feb. 28, 2020, 14 pages.

\* cited by examiner

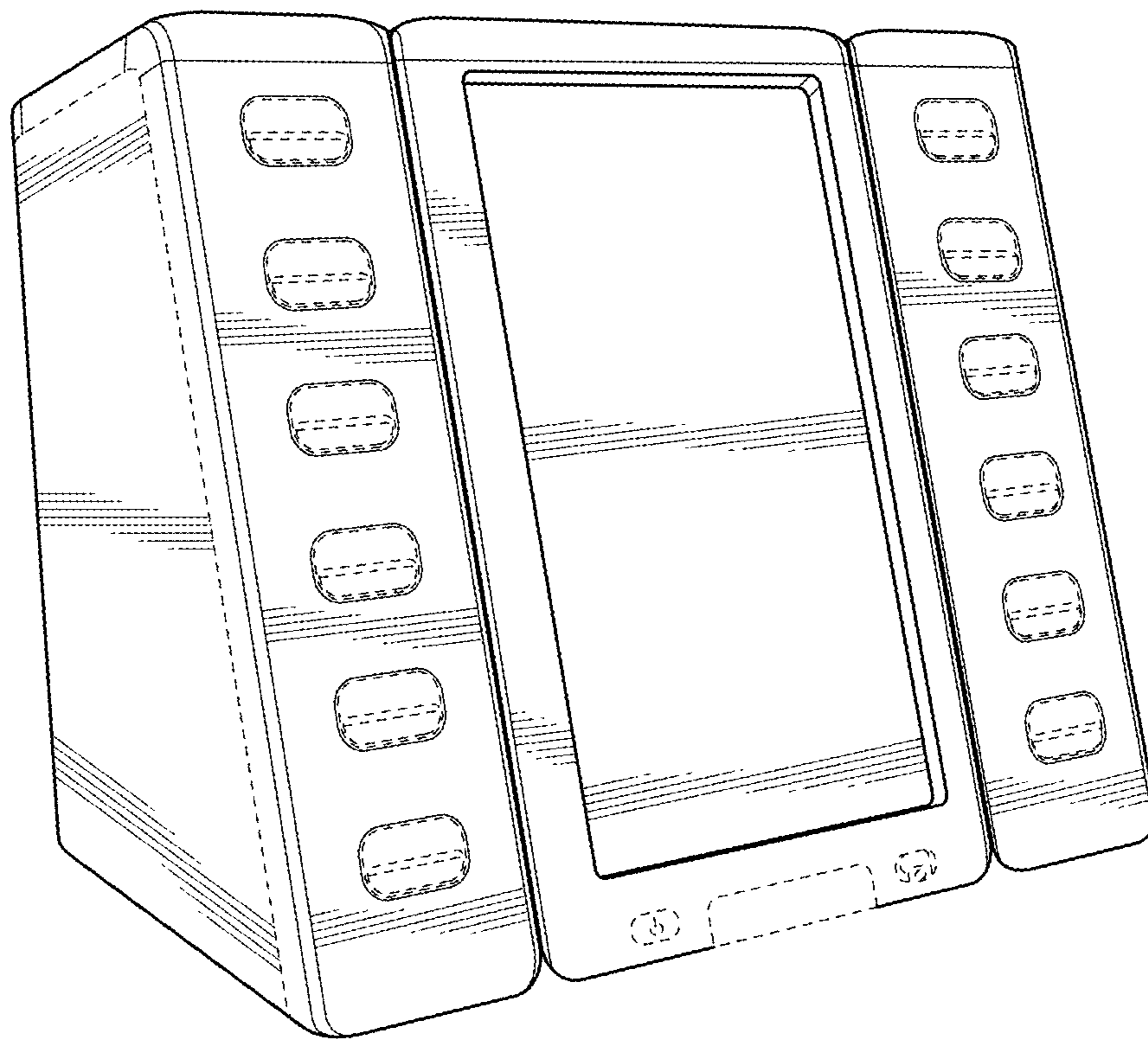


FIG. 1

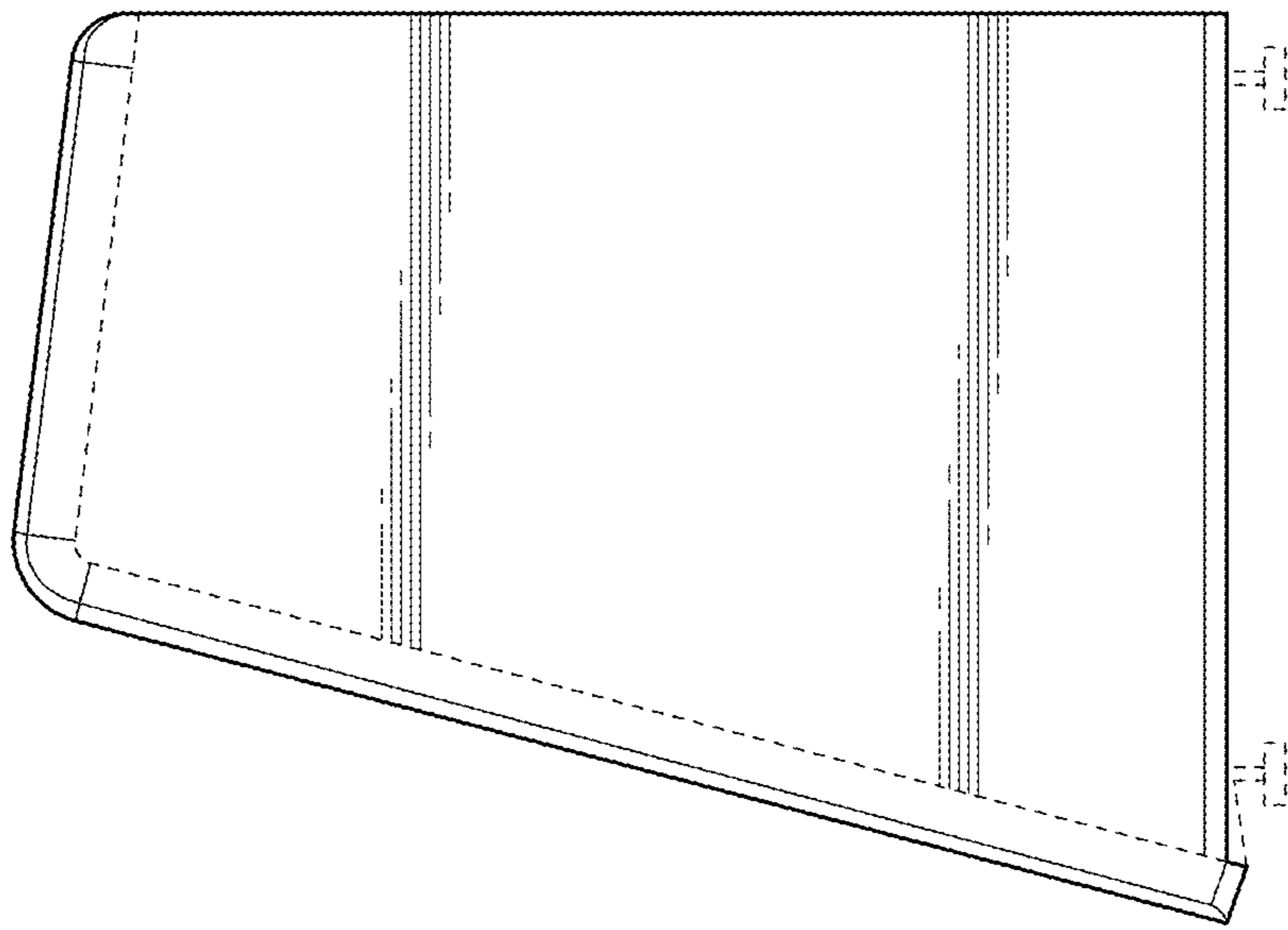


FIG. 3

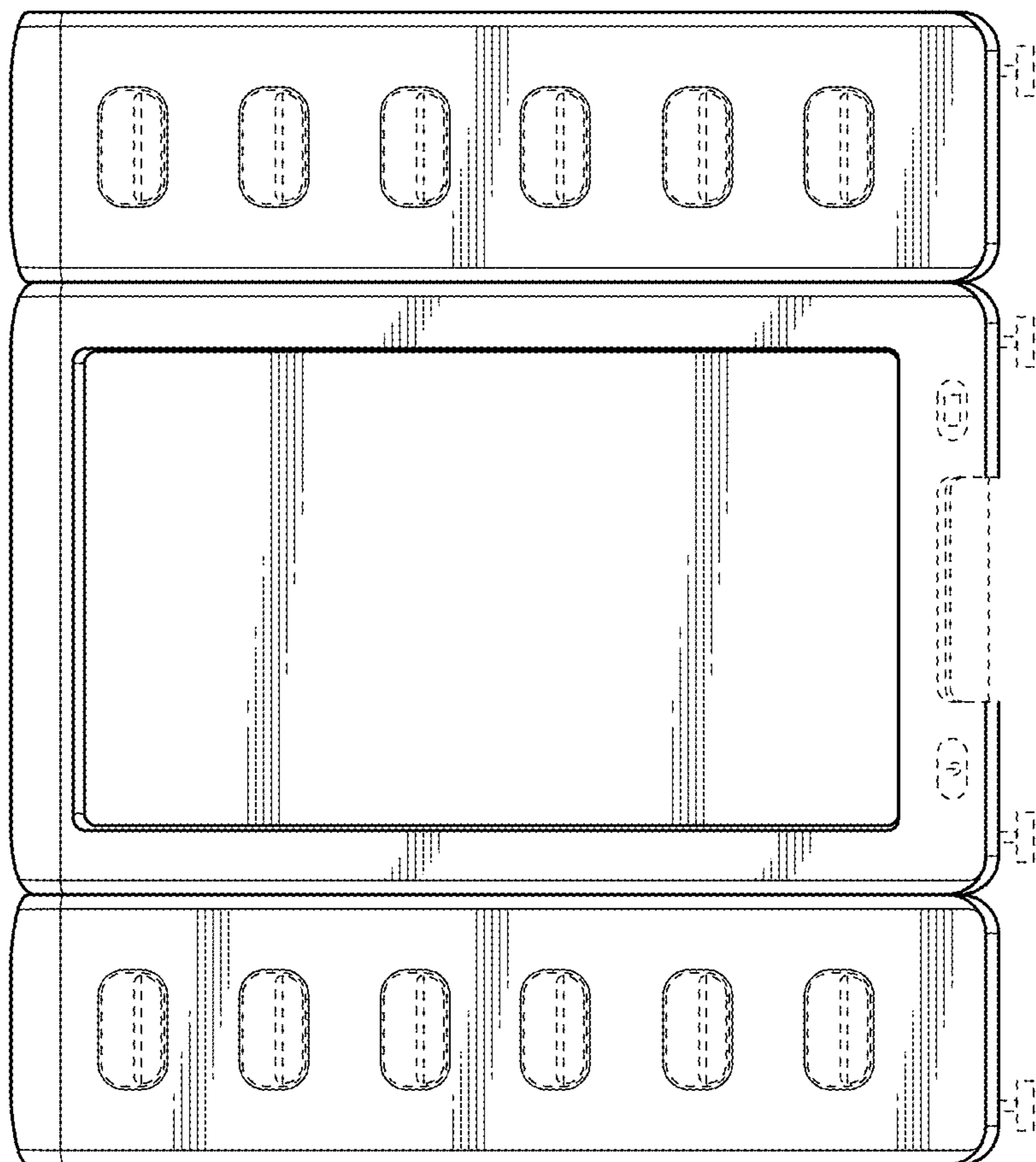


FIG. 2