



US00D962470S

(12) **United States Design Patent** (10) **Patent No.:** **US D962,470 S**
Reber et al. (45) **Date of Patent:** **** Aug. 30, 2022**

(54) **ASSAY DEVICE WITH LCD DISPLAY**

FOREIGN PATENT DOCUMENTS

(71) Applicant: **Lucira Health, Inc.**, Emeryville, CA
(US)

CA 2495252 A1 3/2004
CN 104937108 A 9/2015

(Continued)

(72) Inventors: **Clay Reber**, Oakland, CA (US); **Kelly Lewis Brezoczky**, Los Gatos, CA (US); **Thomas Brezoczky**, Los Gatos, CA (US); **Frank B. Myers, III**, Richmond, CA (US); **Debkishore Mitra**, Emeryville, CA (US)

OTHER PUBLICATIONS

FDA approves in-home, rapid result COVID-19 test. Online, published date Nov. 18, 2020. Retrieved on Sep. 17, 2021 from URL: https://www.insidenova.com/headlines/fda-approves-in-home-rapid-result-covid-19-test/article_d6e8920c-2959-11eb-9899-73786ced8b61.html.*

(Continued)

(73) Assignee: **Lucira Health, Inc.**, Emeryville, CA
(US)

Primary Examiner — Omeed Agilee

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

(74) *Attorney, Agent, or Firm* — Goodwin Procter LLP

(21) Appl. No.: **29/736,854**

(57) **CLAIM**

(22) Filed: **Jun. 3, 2020**

The ornamental design for an assay device with LCD display, as shown and described.

(51) **LOC (13) Cl.** **24-02**

(52) **U.S. Cl.**

DESCRIPTION

USPC **D24/224**

(58) **Field of Classification Search**

USPC D24/107, 164, 165, 167, 169, 185–187,
D24/216, 224, 232, 217–219; D10/81;
D14/420

CPC A61H 2201/0207; A61H 23/0263; A61B
5/0408; A61B 5/04085; A61B 5/0478;
A61B 5/04082; A61B 5/6831; G01N
21/0483; G01N 21/0303; G01N 21/642;
G01N 21/6486; G01N 35/00029; G01N
35/00019; G01N 2035/00326; G01N

(Continued)

FIG. 1 is a top front perspective view of an assay device with LCD display;

FIG. 2 is a front view of the assay device with LCD display;

FIG. 3 is a rear view of the assay device with LCD display;

FIG. 4 is a right side view of the assay device with LCD display;

FIG. 5 is a left side view of the assay device with LCD display;

FIG. 6 is a top view of the assay device with LCD display; and,

FIG. 7 is a bottom view of the assay device with LCD display.

The short dash lines in the drawings depict portions of the assay device with LCD display that form no part of the claimed design. The long dash lines in the drawings depict environmental subject matter and form no part of the claimed design.

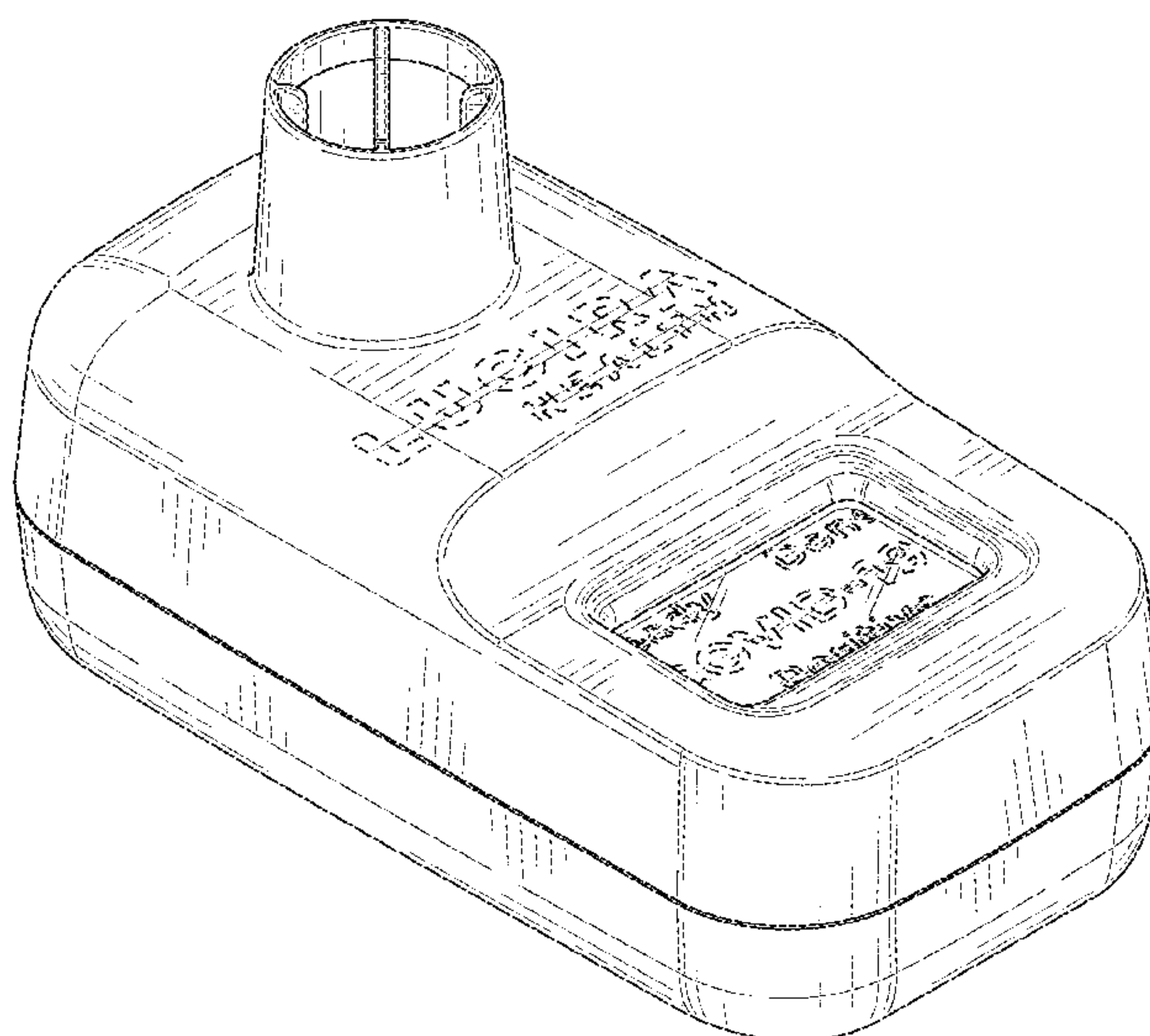
(56) **References Cited**

U.S. PATENT DOCUMENTS

D244,555 S 5/1977 Wiedmann
4,310,488 A 1/1982 Rahm et al.

(Continued)

1 Claim, 7 Drawing Sheets



(58) **Field of Classification Search**

CPC 2201/061; G01N 2035/00306; G01N
2035/00336; G01N 2030/027; G01N
21/76

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,379,848 A 4/1983 Yeaw
4,624,929 A 11/1986 Ullman
4,849,340 A 7/1989 Oberhardt
4,859,610 A 8/1989 Maggio
4,936,682 A 6/1990 Hoyt
D334,065 S 3/1993 Collister
D371,605 S 7/1996 Wong et al.
5,580,794 A 12/1996 Allen
5,801,062 A 9/1998 Sarstedt et al.
5,830,714 A 11/1998 Swaminathan et al.
5,837,546 A 11/1998 Allen et al.
5,888,826 A 3/1999 Ostgaard et al.
5,958,349 A 9/1999 Petersen et al.
6,071,394 A 6/2000 Cheng et al.
6,074,606 A 6/2000 Sayles
6,180,395 B1 1/2001 Skiffington et al.
6,198,107 B1 3/2001 Seville
6,300,142 B1 10/2001 Andrewes et al.
6,336,900 B1 1/2002 Alleckson et al.
6,352,838 B1 3/2002 Krulevitch et al.
D456,082 S 4/2002 Bouse et al.
6,564,968 B1 5/2003 Terrell et al.
6,565,808 B2 5/2003 Hudak et al.
6,817,256 B2 11/2004 Mehra et al.
6,900,059 B1 5/2005 Shinn et al.
D507,351 S 7/2005 Bimboim
7,156,809 B2 1/2007 Quy
7,256,035 B1 8/2007 Schnell et al.
D559,996 S 1/2008 Okamoto et al.
D560,812 S 1/2008 Powell et al.
D561,905 S 2/2008 Ramel et al.
D567,961 S * 4/2008 Yajima D24/232
D574,507 S 8/2008 Muir et al.
7,438,852 B2 10/2008 Tung et al.
7,452,667 B2 11/2008 Liew et al.
D602,599 S 10/2009 Xiaowei
D608,885 S 1/2010 Sneddon et al.
D618,351 S * 6/2010 Hara D24/165
7,850,922 B2 12/2010 Gallagher et al.
D631,553 S 1/2011 Niedbala et al.
D659,848 S 5/2012 TerMaat et al.
D669,375 S 10/2012 Kao et al.
D675,335 S 1/2013 Feuerabend et al.
8,372,353 B2 2/2013 Lee et al.
D683,642 S * 6/2013 Buesser D10/81
D686,311 S 7/2013 Mori
D687,564 S 8/2013 Yang et al.
8,719,989 B1 5/2014 Qanaei
9,034,606 B2 5/2015 Tanner et al.
9,074,243 B2 7/2015 Tanner et al.
9,074,249 B2 7/2015 Tanner et al.
D736,403 S 8/2015 Hudson et al.
D743,571 S 11/2015 Jackson
D748,813 S 2/2016 Ishiguro et al.
D749,420 S 2/2016 Maggio
9,278,321 B2 3/2016 Dale et al.
D773,069 S 11/2016 Curry
9,546,358 B2 1/2017 Tanner et al.
D787,682 S * 5/2017 Ockham D24/186
D791,952 S 7/2017 Florescu et al.
9,739,743 B2 8/2017 Athanasiou et al.
D800,912 S 10/2017 Uzri et al.
9,815,061 B2 11/2017 Delattre et al.
D808,833 S 1/2018 Abbott et al.
D820,130 S 6/2018 Khattak et al.
D821,602 S 6/2018 Sever et al.
9,999,889 B2 6/2018 Khattak et al.
D825,772 S 8/2018 Sever et al.

D829,336 S * 9/2018 Wohlstadter D24/216
D829,337 S * 9/2018 Klein D24/216
10,093,965 B2 10/2018 Toumazou et al.
10,146,909 B2 12/2018 Dimov et al.
D838,379 S 1/2019 Trump
D840,049 S * 2/2019 Schulz D24/224
10,195,606 B2 2/2019 Khattak et al.
10,253,357 B2 4/2019 Mitra et al.
10,272,434 B2 4/2019 Khattak et al.
D854,703 S * 7/2019 Juhlin D24/216
D855,212 S 7/2019 Komuro
10,343,160 B2 7/2019 Lemoine et al.
D859,683 S 9/2019 Harding et al.
D860,472 S 9/2019 Blake et al.
D865,212 S 10/2019 Kakuda et al.
D865,218 S * 10/2019 Mathers D24/232
10,449,538 B1 * 10/2019 Carrano B01L 9/527
D867,584 S 11/2019 Zercher et al.
D869,311 S 12/2019 Khattak et al.
10,545,161 B2 1/2020 Khattak et al.
D874,677 S 2/2020 Stamm et al.
D875,963 S * 2/2020 Gruen D24/216
10,549,275 B2 2/2020 Myers, III et al.
D879,319 S 3/2020 Kakuda et al.
D879,320 S 3/2020 Kakuda et al.
D879,994 S * 3/2020 Leimkuehler D24/216
10,589,267 B2 3/2020 Khattak et al.
10,603,664 B2 3/2020 Khattak et al.
D882,110 S * 4/2020 Klein D24/216
D883,515 S 5/2020 Jenoski et al.
D886,901 S 6/2020 Hussey et al.
10,843,185 B2 11/2020 Gorin et al.
D907,232 S * 1/2021 Reber D24/216
D923,797 S * 6/2021 Parks D24/185
D928,341 S * 8/2021 Thimm D24/217
2001/0012612 A1 8/2001 Petersen et al.
2002/0001539 A1 1/2002 DiCesare et al.
2002/0042125 A1 4/2002 Petersen et al.
2003/0064526 A1 4/2003 Niedbala et al.
2003/0123994 A1 7/2003 Weng et al.
2003/0157503 A1 8/2003 McGarry et al.
2004/0018634 A1 1/2004 Hajizadeh et al.
2004/0052689 A1 3/2004 Yao
2004/0118189 A1 6/2004 Karp et al.
2004/0166569 A1 8/2004 Marziali et al.
2004/0208792 A1 10/2004 Linton et al.
2004/0209275 A1 10/2004 Liew et al.
2005/0022895 A1 2/2005 Barth et al.
2005/0221281 A1 10/2005 Ho
2006/0078929 A1 4/2006 Bickel et al.
2006/0094004 A1 5/2006 Nakajima et al.
2006/0166354 A1 7/2006 Wikswo et al.
2006/0194207 A1 8/2006 Mitani et al.
2006/0245977 A1 11/2006 Bodner
2007/0014695 A1 1/2007 Yue et al.
2007/0166200 A1 7/2007 Zhou et al.
2007/0183934 A1 8/2007 Diercks et al.
2007/0217963 A1 9/2007 Elizarov et al.
2008/0000892 A1 1/2008 Hirano et al.
2008/0038713 A1 2/2008 Gao et al.
2008/0056948 A1 3/2008 Dale et al.
2008/0149840 A1 6/2008 Handique et al.
2008/0204380 A1 8/2008 Shin et al.
2008/0233015 A1 9/2008 Turner
2009/0004732 A1 1/2009 LaBarre et al.
2009/0048115 A1 2/2009 Liew et al.
2009/0071911 A1 3/2009 Folden et al.
2009/0151864 A1 6/2009 Burke et al.
2009/0203973 A1 8/2009 Donoghue et al.
2009/0305315 A1 12/2009 Gandola et al.
2009/0308185 A1 12/2009 Wu et al.
2009/0320684 A1 12/2009 Weaver et al.
2010/0015611 A1 1/2010 Webster et al.
2010/0229956 A1 9/2010 Luyendijk
2010/0323919 A1 12/2010 Chen et al.
2010/0331219 A1 12/2010 Munenaka
2011/0003330 A1 1/2011 Durack
2011/0005932 A1 1/2011 Jovanovich et al.
2011/0124098 A1 5/2011 Rose et al.

(56)

References Cited

U.S. PATENT DOCUMENTS

2011/0151432	A1	6/2011	Zappia et al.
2011/0294112	A1	12/2011	Bearinger et al.
2011/0294205	A1	12/2011	Hukari et al.
2012/0040445	A1	2/2012	Bouma et al.
2012/0100624	A1	4/2012	Hara et al.
2012/0105837	A1	5/2012	Ingber
2012/0285562	A1	11/2012	Richardson
2013/0003162	A1	1/2013	Leoni et al.
2013/0112296	A1	5/2013	Lee et al.
2013/0130232	A1	5/2013	Weibel et al.
2013/0244241	A1	9/2013	Carrera Fabra et al.
2013/0266948	A1	10/2013	Bird et al.
2013/0280725	A1	10/2013	Ismagilov et al.
2013/0295663	A1	11/2013	Weight et al.
2013/0323738	A1	12/2013	Tanner et al.
2013/0323793	A1	12/2013	Tanner et al.
2014/0031248	A1	1/2014	Tanner et al.
2014/0057210	A1	2/2014	Malik et al.
2014/0057268	A1	2/2014	Tanner et al.
2014/0073043	A1	3/2014	Holmes
2014/0188089	A1	7/2014	Midgett et al.
2014/0228773	A1	8/2014	Burkholz
2014/0242612	A1	8/2014	Wang et al.
2014/0335505	A1	11/2014	Holmes
2014/0356874	A1	12/2014	Bearinger
2015/0024436	A1	1/2015	Eberhart et al.
2015/0111201	A1	4/2015	Ozcan et al.
2015/0132795	A1	5/2015	Griswold et al.
2015/0151300	A1	6/2015	Williams et al.
2015/0154449	A1	6/2015	Ito et al.
2015/0182966	A1	7/2015	Coursey
2015/0240293	A1	8/2015	Tanner et al.
2015/0247190	A1	9/2015	Ismagilov et al.
2015/0298118	A1	10/2015	Chard et al.
2015/0321193	A1	11/2015	Sprague et al.
2015/0328638	A1	11/2015	Handique et al.
2015/0359458	A1	12/2015	Erickson et al.
2016/0077015	A1	3/2016	Holmes et al.
2016/0194685	A1	7/2016	Unger et al.
2016/0216287	A1	7/2016	Holmes et al.
2016/0275149	A1	9/2016	Majumdar et al.
2016/0334403	A1	11/2016	Gibbons et al.
2017/0044599	A1	2/2017	Mitra et al.
2018/0293350	A1	10/2018	Dimov et al.
2018/0372595	A1	12/2018	Pais et al.
2019/0050988	A1	2/2019	Dimov et al.
2019/0060895	A1	2/2019	Myers, III et al.
2019/0076841	A1	3/2019	Myers, III et al.
2019/0083975	A1	3/2019	Mitra et al.
2019/0094114	A1	3/2019	Myers, III et al.
2019/0309356	A1	10/2019	Mitra et al.
2019/0314810	A1	10/2019	Khattak et al.
2020/0030798	A1	1/2020	Mitra et al.
2020/0122142	A1	4/2020	Myers, III et al.
2020/0164373	A1	5/2020	Khattak et al.
2020/0290035	A1	9/2020	Samsoondar
2020/0323474	A1	10/2020	McIntosh
2021/0378643	A1	12/2021	Roswech et al.

FOREIGN PATENT DOCUMENTS

CN	105441312	A	3/2016
CN	201930535293.7		4/2020
EP	0056241	A1	7/1981
EP	0520408	A2	12/1992
EP	1557673	A1	7/2005
EP	1661988	A1	5/2006
EP	2251435	A1	11/2010
IN	287440	*	8/2019
JP	62-151198	A	7/1987
JP	2008-173218	A	7/2008
JP	2010-061383	A	3/2010
JP	2010-538801	A	12/2010
JP	2013-526867	A	6/2013
JP	2013-532488	A	8/2013

JP	2013-228350	A	11/2013
WO	1997/011723	A1	4/1997
WO	9712681	A1	4/1997
WO	1997/041421	A1	11/1997
WO	2004/024892	A2	3/2004
WO	2005/012518	A1	2/2005
WO	2008/107014	A1	9/2008
WO	2009/033178	A1	3/2009
WO	2009/039259	A1	3/2009
WO	2009/125227	A1	10/2009
WO	2010/091080	A2	8/2010
WO	2010/132453	A2	11/2010
WO	2011/110873	A1	9/2011
WO	2011/123064	A1	10/2011
WO	2011/144345	A1	11/2011
WO	2012/018741	A2	2/2012
WO	2012/045889	A1	4/2012
WO	2013/008042	A1	1/2013
WO	2013/080154	A1	6/2013
WO	2014/018828	A1	1/2014
WO	2014/020326	A2	2/2014
WO	2014/031783	A1	2/2014
WO	WO-2014/019829	A1	2/2014
WO	2014/144548	A2	9/2014
WO	WO-2015/037281	A1	3/2015
WO	2015164770	A1	10/2015
WO	2015/184360	A1	12/2015
WO	2017/160836	A1	9/2017
WO	2017/160838	A1	9/2017
WO	2017/160839	A1	9/2017
WO	2017/160840	A1	9/2017
WO	2018140540	A1	8/2018
WO	2018/185573	A1	10/2018
WO	2019/055135	A1	3/2019
WO	WO-2020/180858	A1	9/2020

OTHER PUBLICATIONS

Westcott, S.L., et al., "Broadband optical absorbance spectroscopy using a whispering gallery mode microsphere resonator," Review of Scientific Instruments, vol. 79, No. 3, Mar. 13, 2008, 9 Pages.

Goto, M., et al., "Colorimetric detection of loop-mediated isothermal amplification reaction by using hydroxy naphthol blue", Biotechniques, Mar. 1, 2009, pp. 167-172, vol. 46, No. 3.

Patent Cooperation Treaty, International Search Report and Written Opinion of the International Searching Authority, International Patent Application No. PCT/US2017/022300, dated Jul. 10, 2017, 15 Pages.

Patent Cooperation Treaty, International Search Report and Written Opinion of the International Searching Authority, International Patent Application No. PCT/US2017/022304, dated Jul. 25, 2017, 20 Pages.

Patent Cooperation Treaty, International Search Report and Written Opinion of the International Searching Authority, International Patent Application No. PCT/US2017/022306, dated Jun. 5, 2017, 18 Pages.

Patent Cooperation Treaty, International Search Report and Written Opinion of the International Searching Authority, International Patent Application No. PCT/US2017/022305, dated Jul. 19, 2017, 20 Pages.

PCT International Search Report and Written Opinion for PCT/US2018/044044, dated Sep. 26, 2018, 13 Pages.

Patent Cooperation Treaty, International Search Report and Written Opinion of the International Searching Authority, International Patent Application No. PCT/US19/55365, dated Feb. 5, 2020, 20 Pages.

Supplementary European Search Report for European Patent Application No. EP 17767338.1, dated Jan. 10, 2020, 13 Pages.

European Search Report for European Patent Application No. EP 19178796.9, dated Oct. 9, 2019, 7 Pages.

PCT International Search Report and Written Opinion for PCT/IB2018/051326, dated Jun. 26, 2018, 15 pages.

Canadian Office Action for Application No. 2,944,994, dated Aug. 8, 2019, 3 pages.

(56)

References Cited

OTHER PUBLICATIONS

Partial Supplemental European Search Report for European Patent Application No. EP 17767338.1, dated Oct. 10, 2019, 15 Pages.
European Application No. 17767336.5, Extended European Search Report dated Sep. 26, 2019, 14 pages.
European Application No. 17767337.3, Extended European Search Report dated Sep. 18, 2019, 6 pages.
European Application No. 17767339.9, Extended European Search Report dated Oct. 4, 2019, 11 pages.
Non-Final Office Action for U.S. Appl. No. 15/306,240, dated Jul. 24, 2018, 8 pages.
Non-Final Office Action for U.S. Appl. No. 16/359,913, dated Oct. 1, 2019, 9 pages.
Non-Final Office Action for U.S. Appl. No. 29/674,581, dated Jan. 8, 2020, 11 pages.
Anonymous: "Image Enhancement and Verification Tools—ABBY Mobile Imaging SDK," Jul. 13, 2014, 12 pages.
Cao et al., "Microfluidic Chip for Molecular Amplification of Influenza A RNA in Human Respiratory Specimens," PLoS One, Mar. 2012, vol. 7, Issue 3, pp. 1-11.

European Search Report, International Application No. EP18780624, dated Dec. 4, 2020, 10 pages.

Foo et al., "Rapid Tests for the Diagnosis of Influenza," Australian Prescriber, vol. 32, No. 3, Jun. 2009, pp. 64-67.

Extended European Search Report, European Published Application No. 18857052, dated May 11, 2021, 10 pages.

Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority, or the Declaration, Int'l Application No. PCT/US20/20772, dated Jun. 10, 2020, 15 pages.

Patent Cooperation Treaty, International Search Report and Written Opinion of the International Searching Authority, International Patent Application No. PCT/US2015/027556, dated Sep. 15, 2015, 18 Pages.

Supplementary European Search Report for European Patent Application No. EP 15783787, dated Nov. 28, 2017, 8 Pages.

Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority, of the Declaration, Int'l Application No. PCT/2021/049178, dated Jan. 14, 2022, 20 pages.

* cited by examiner

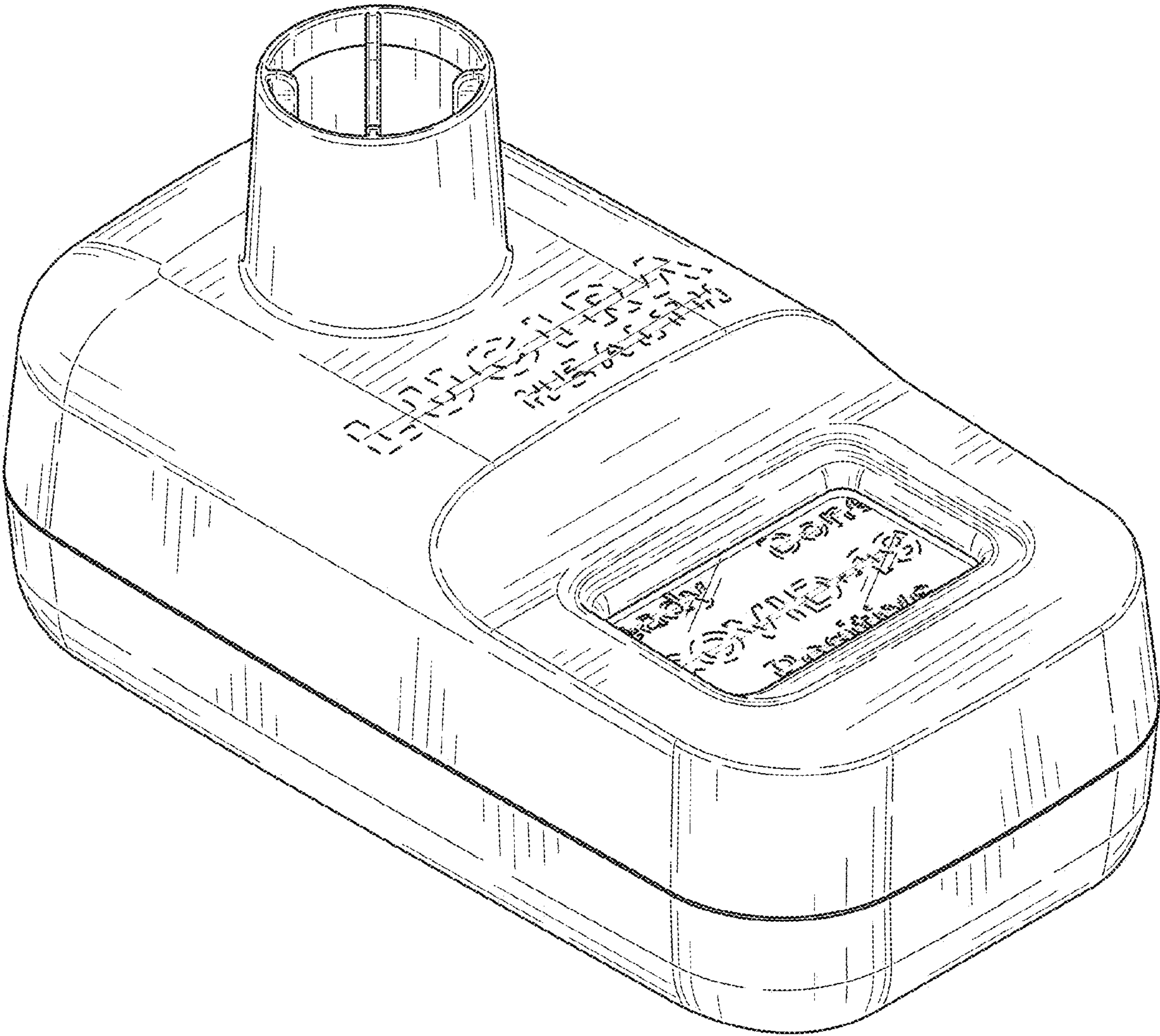


FIG. 1

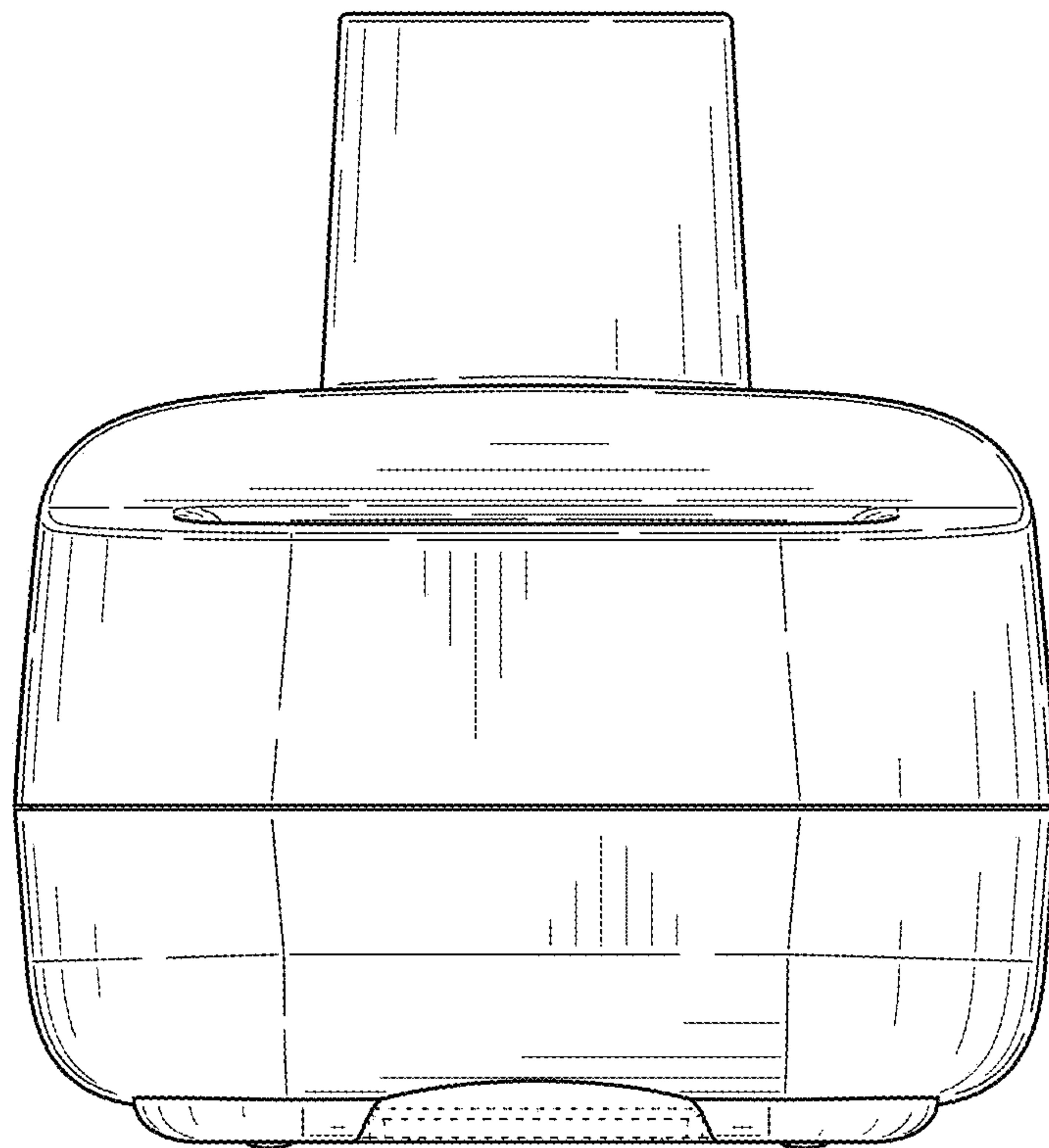


FIG. 2

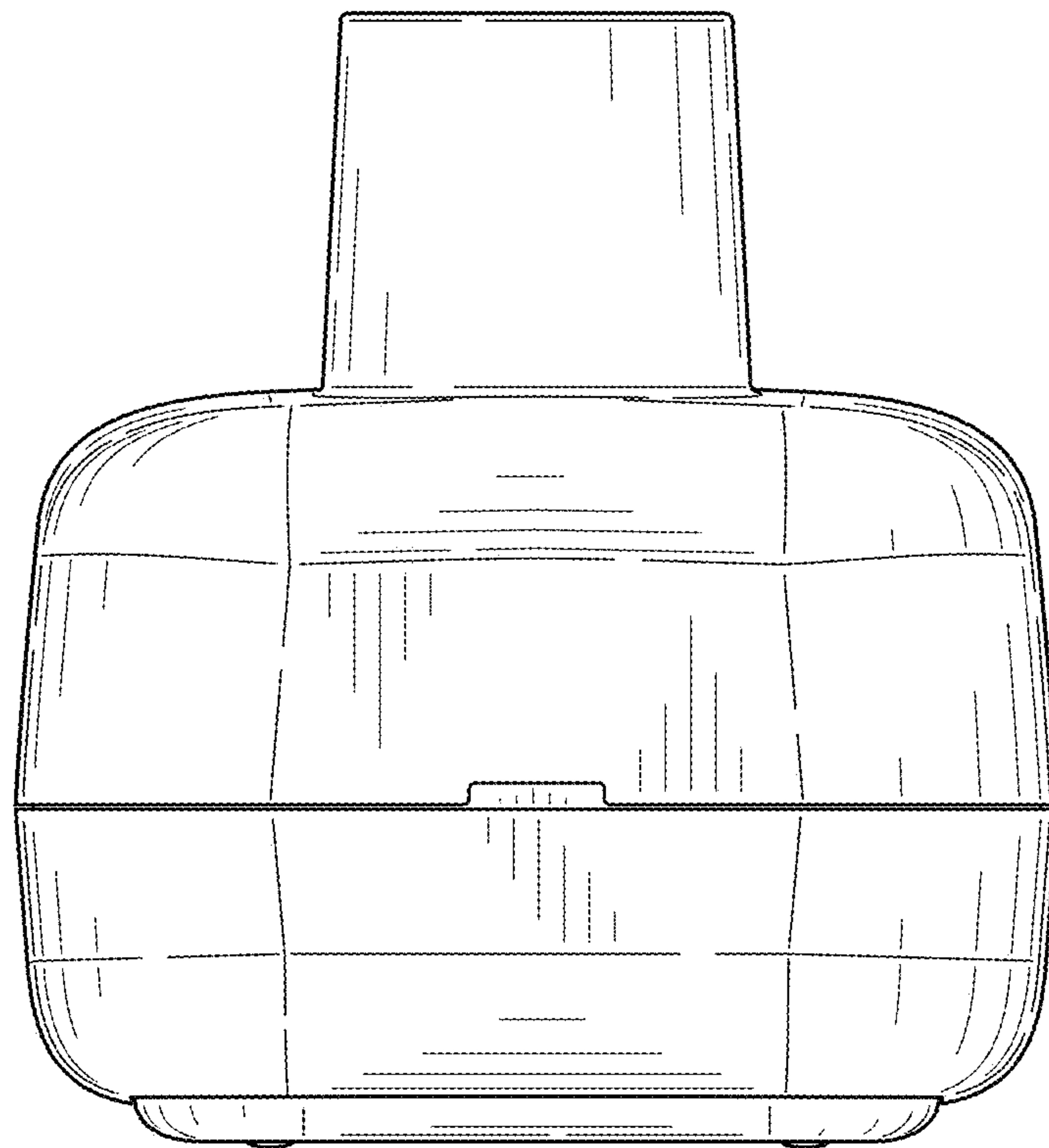


FIG. 3

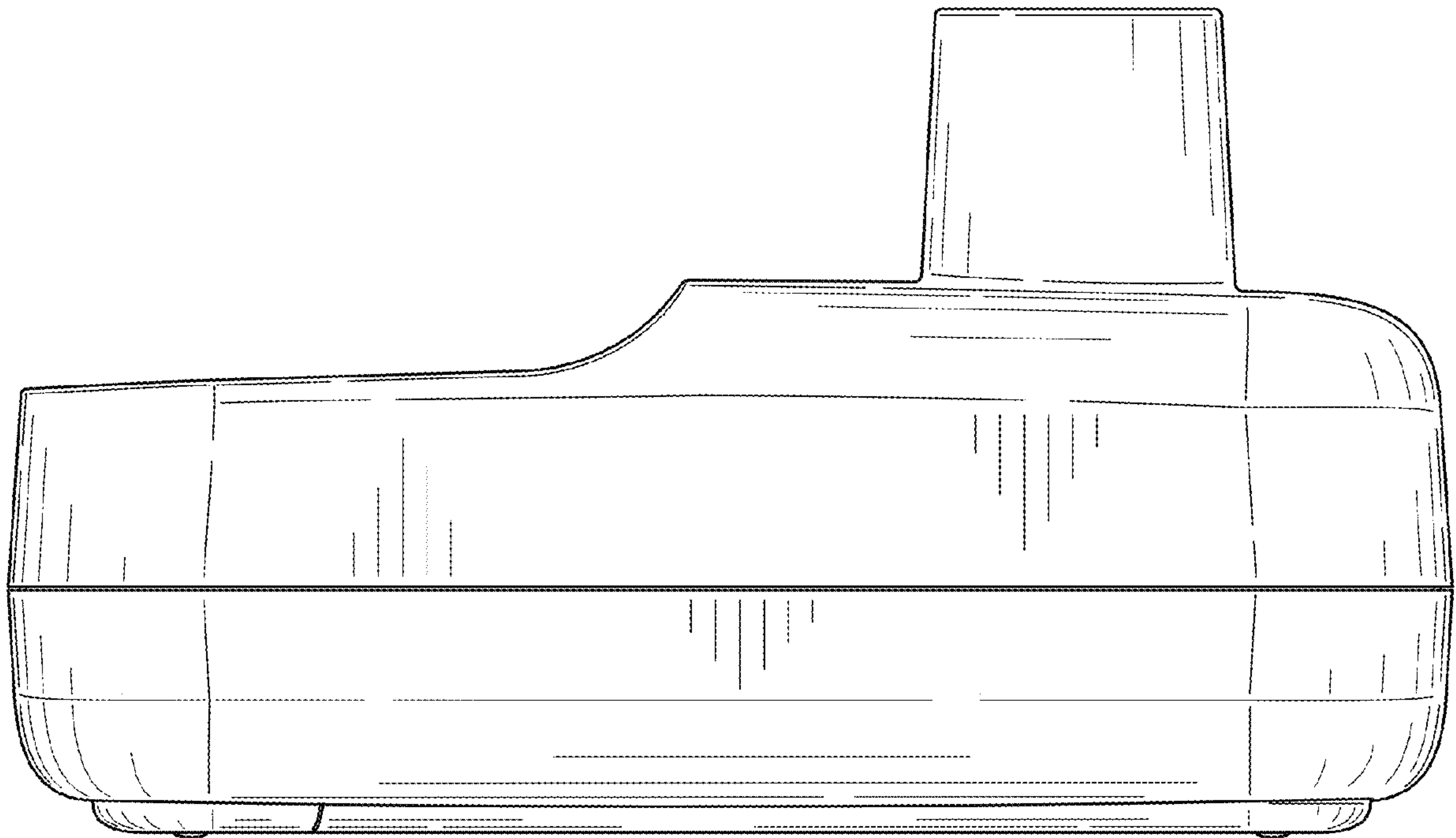


FIG. 4

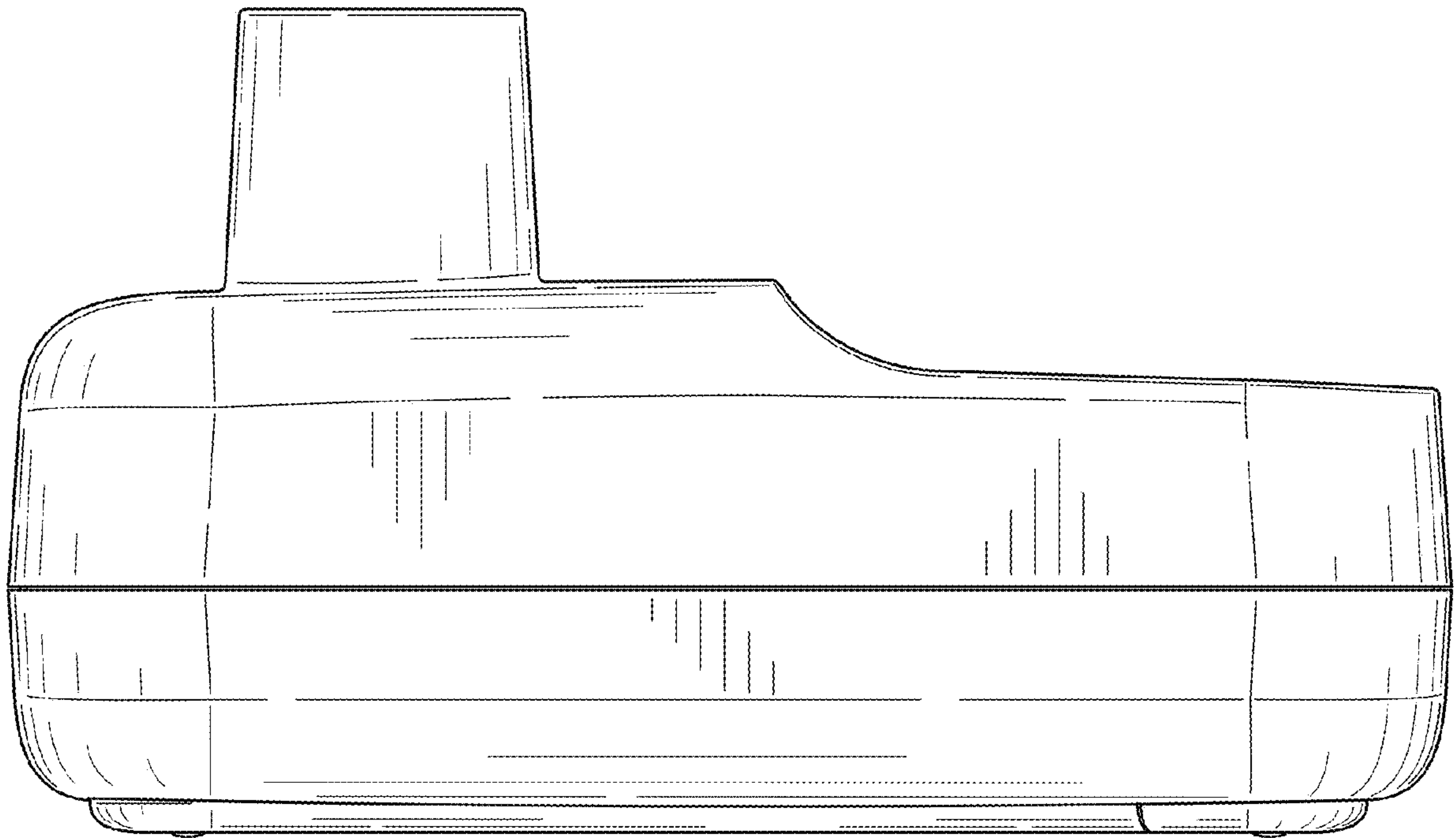


FIG. 5

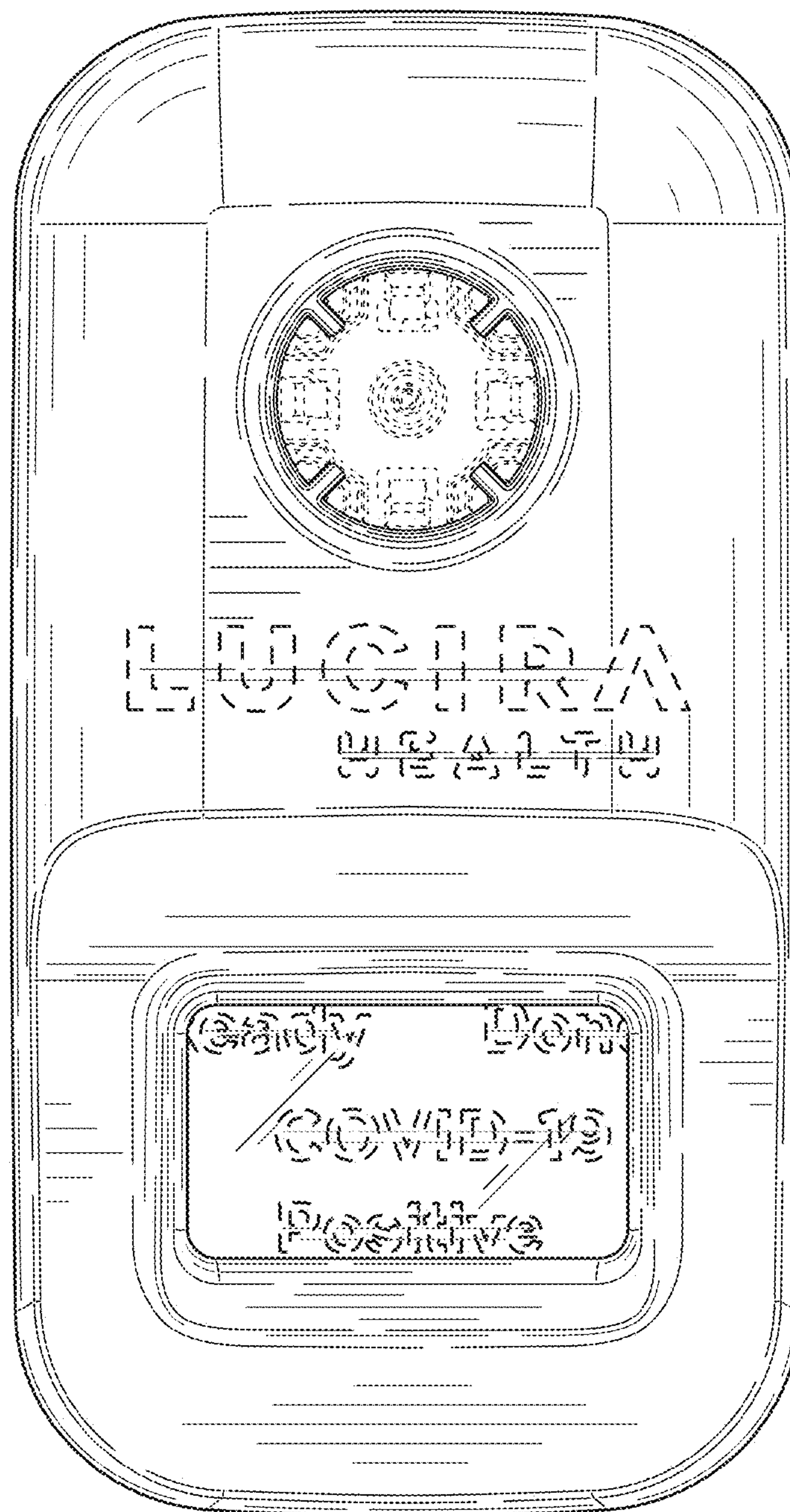


FIG. 6

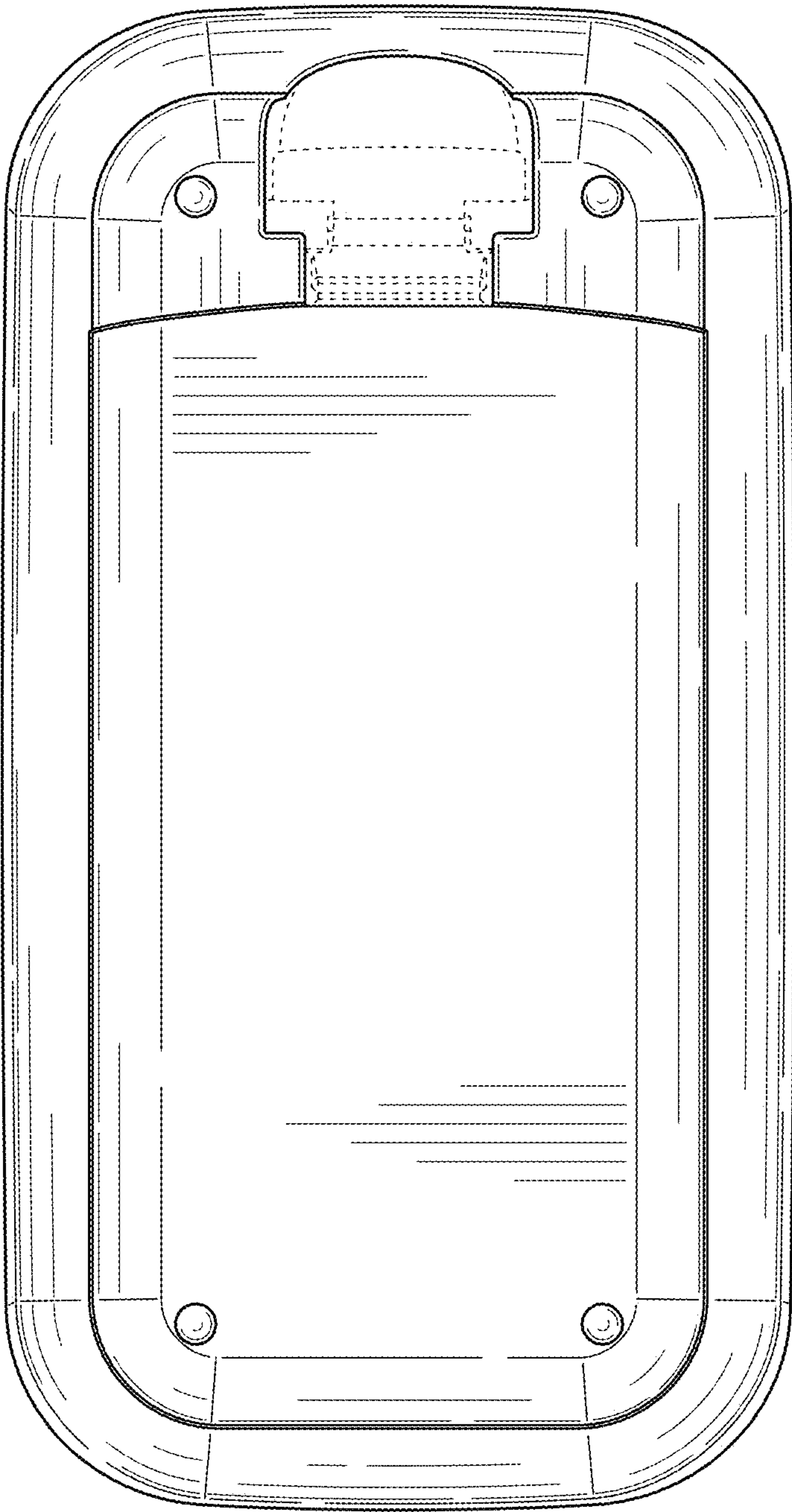


FIG. 7