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(12) **United States Design Patent** (10) **Patent No.:** **US D929,335 S**
Cagle (45) **Date of Patent:** **** Aug. 31, 2021**

(54) **ELECTRICAL INTERFACE**

(71) Applicant: **TECHTRONIC CORDLESS GP,**
Anderson, SC (US)

(72) Inventor: **Clint Cagle,** Easley, SC (US)

(73) Assignee: **TECHTRONIC CORDLESS GP,**
Anderson, SC (US)

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

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

(52) **U.S. Cl.**
USPC **D13/120**

(58) **Field of Classification Search**
USPC D13/103, 107, 108, 109, 119, 120, 121;
D8/70

(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,477,130 A 12/1995 Hashimoto et al.
5,508,123 A 4/1996 Fan

(Continued)

FOREIGN PATENT DOCUMENTS

AU 2019100756 A4 8/2019
CA 3090555 A1 8/2019

(Continued)

OTHER PUBLICATIONS

Energup, "Bateria de litio (Energup)," <amazon.com> Chilean examination report alleges a publication date of Sep. 21, 2018 (1 page).

(Continued)

Primary Examiner — Jennifer O King

(74) *Attorney, Agent, or Firm* — Michael Best & Friedrich LLP

(57) **CLAIM**

I claim the ornamental design for an electrical interface, as shown and described.

DESCRIPTION

FIG. 1 is a right front top perspective view of an electrical interface.

FIG. 2 is a left front top perspective view of the electrical interface shown in FIG. 1.

FIG. 3 is a right rear top perspective view of the electrical interface shown in FIG. 1.

FIG. 4 is a left rear top perspective view of the electrical interface shown in FIG. 1.

FIG. 5 is a detail view of the electrical interface shown in FIG. 1.

FIG. 6 is a detail view of the electrical interface shown in FIG. 2.

FIG. 7 is a detail view of the electrical interface shown in FIG. 3.

FIG. 8 is a detail view of the electrical interface shown in FIG. 4.

FIG. 9 is a front detail view of the electrical interface shown in FIG. 1.

FIG. 10 is a top detail view of the electrical interface shown in FIG. 1.

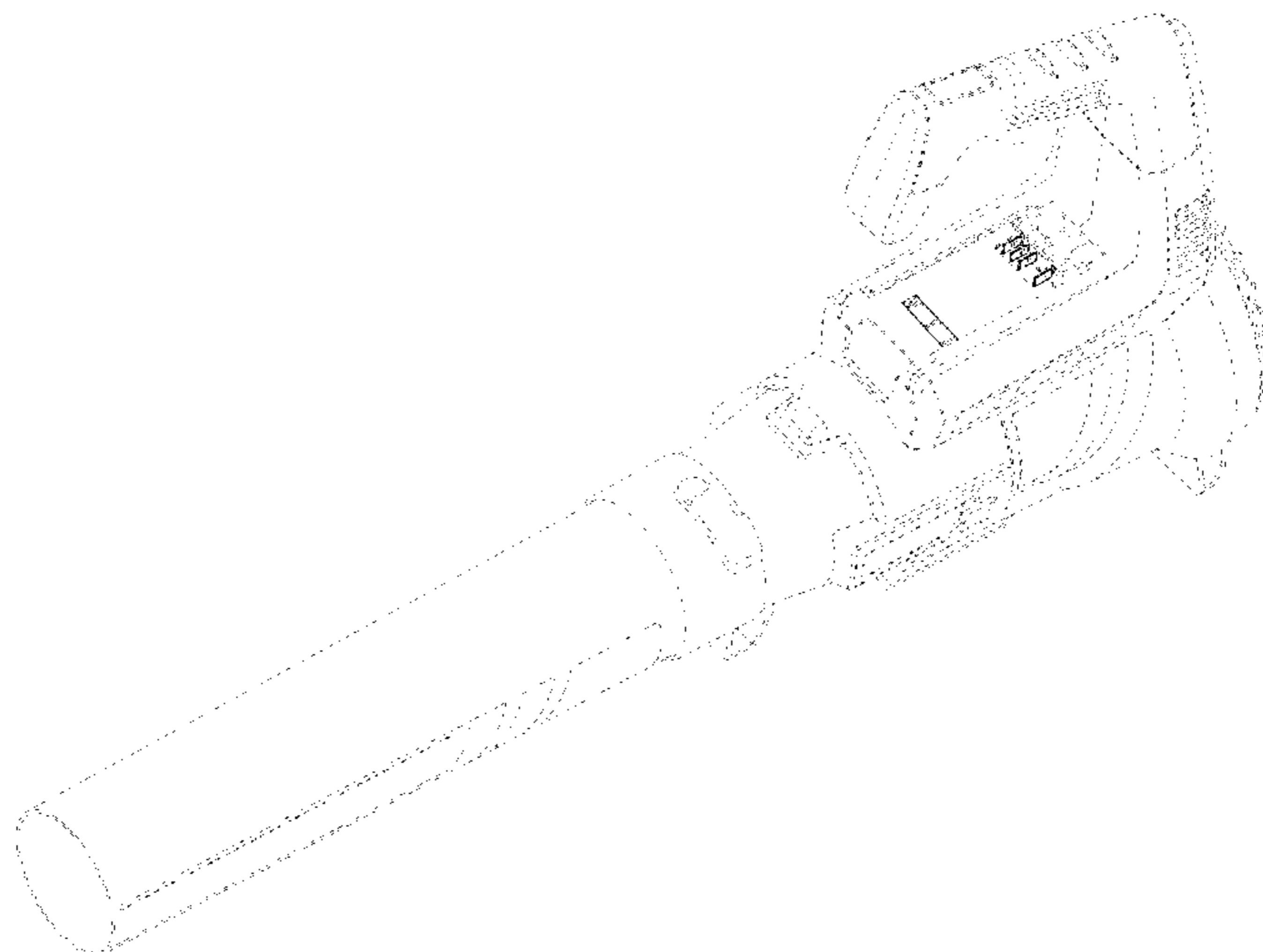
FIG. 11 is a front view of the electrical interface shown in FIG. 1; and,

FIG. 12 is a top view of the electrical interface shown in FIG. 1.

The even broken lines represent portions of the electrical interface that form no part of the claimed design. The uneven broken lines represent boundaries of the design and form no part of the claimed design.

With respect to FIGS. 1-12, the claimed electrical interface is not visible in the orthogonal right side, orthogonal left side, orthogonal bottom, and orthogonal rear views, which are therefore omitted.

1 Claim, 9 Drawing Sheets



(58) **Field of Classification Search**
 CPC . H01M 2220/30; H01M 50/20; H01M 50/502
 See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,568,039 A 10/1996 Fernandez
 5,764,028 A 6/1998 Freiman et al.
 D396,447 S 7/1998 Lloyd et al.
 D400,322 S 10/1998 Webster et al.
 5,903,137 A 5/1999 Freiman et al.
 5,945,809 A 8/1999 Inaba et al.
 5,955,867 A 9/1999 Cummings et al.
 D415,100 S 10/1999 Buck
 D463,774 S 10/2002 Buck
 D468,874 S 1/2003 Nawrozki et al.
 D469,931 S 2/2003 Nawrozki et al.
 D472,879 S 4/2003 Ouchi et al.
 D509,189 S 9/2005 Buck
 D511,744 S 11/2005 Hsu et al.
 D512,373 S 12/2005 Tsai et al.
 D514,060 S 1/2006 Wong et al.
 D524,728 S 7/2006 Watson
 D535,253 S 1/2007 Buck
 7,157,882 B2 1/2007 Johnson et al.
 7,157,883 B2 1/2007 Johnson et al.
 7,164,257 B2 1/2007 Johnson et al.
 D537,408 S 2/2007 Aglassinger
 7,176,654 B2 2/2007 Meyer et al.
 D545,759 S 7/2007 Ino et al.
 7,262,580 B2 8/2007 Meyer et al.
 D550,152 S 9/2007 Okuda et al.
 7,321,219 B2 1/2008 Meyer et al.
 7,323,847 B2 1/2008 Meyer et al.
 7,342,381 B2 3/2008 Johnson et al.
 D584,461 S 1/2009 Sweeney
 D584,732 S 1/2009 Cho et al.
 7,492,124 B2 2/2009 Johnson et al.
 D587,695 S 3/2009 Leng et al.
 7,504,804 B2 3/2009 Johnson et al.
 7,508,167 B2 3/2009 Meyer et al.
 D596,130 S 7/2009 Chen et al.
 D597,935 S 8/2009 Aglassinger
 7,570,013 B2 8/2009 Graeber et al.
 7,667,437 B2 2/2010 Johnson et al.
 D614,569 S * 4/2010 Yang D13/120
 D615,716 S 5/2010 Tinius
 D618,172 S * 6/2010 Yang D13/120
 7,772,805 B2 8/2010 Yamamoto et al.
 D623,131 S 9/2010 Kawakami et al.
 7,791,318 B2 9/2010 Johnson et al.
 D633,036 S 2/2011 Murray
 D635,917 S 4/2011 Okuda
 D636,723 S 4/2011 Yamamoto et al.
 7,944,181 B2 5/2011 Johnson et al.
 7,952,326 B2 5/2011 Johnson et al.
 D640,196 S 6/2011 Shuang et al.
 D640,197 S 6/2011 Park et al.
 D640,975 S 7/2011 Okuda et al.
 D641,111 S 7/2011 Houghton
 D643,809 S 8/2011 Okuda et al.
 7,993,769 B2 8/2011 Tsai et al.
 8,018,198 B2 9/2011 Meyer et al.
 D647,856 S * 11/2011 Chiang D13/146
 D647,857 S 11/2011 Huang et al.
 D651,560 S 1/2012 Park et al.
 D652,793 S 1/2012 Tschopp
 D654,018 S 2/2012 Conley et al.
 D657,307 S 4/2012 Zhao
 D658,578 S 5/2012 Davis
 8,212,529 B2 7/2012 Yamamoto
 8,228,036 B2 7/2012 Meyer
 8,269,458 B2 9/2012 Cruise et al.
 D668,219 S 10/2012 Zhao et al.
 8,358,108 B2 1/2013 Seman, Jr. et al.
 8,378,624 B2 2/2013 Boyles et al.

D682,194 S 5/2013 Jiang et al.
 8,441,230 B2 5/2013 Boyles et al.
 D684,528 S 6/2013 Murray
 D685,730 S 7/2013 Hamm et al.
 8,525,479 B2 9/2013 Meyer et al.
 8,741,461 B2 6/2014 Yoneda et al.
 8,803,481 B2 8/2014 Tachikawa et al.
 D714,721 S 10/2014 Zhang
 8,933,667 B2 1/2015 Park et al.
 D735,960 S 8/2015 Zhang
 9,118,189 B2 8/2015 Meyer et al.
 D748,877 S 2/2016 Tirone et al.
 9,331,365 B2 5/2016 Cruise et al.
 D767,487 S 9/2016 Huang
 D770,377 S 11/2016 Kondo
 D782,980 S * 4/2017 Zhang D13/147
 D784,261 S * 4/2017 Rowe D13/119
 9,673,648 B2 6/2017 Johnson et al.
 9,680,325 B2 6/2017 Johnson et al.
 D801,917 S 11/2017 Jiang
 D801,920 S 11/2017 Koon
 9,859,548 B2 1/2018 Cruise et al.
 9,893,384 B2 * 2/2018 Velderman H01M 10/4207
 D811,999 S 3/2018 Nommensen et al.
 D818,948 S 5/2018 Waldron
 9,966,772 B2 5/2018 Uesugi
 D819,562 S 6/2018 Waldron
 10,008,864 B2 6/2018 Meyer et al.
 D831,566 S * 10/2018 Nommensen D13/107
 10,124,455 B2 11/2018 Ito et al.
 D836,552 S * 12/2018 Crowe D13/119
 D840,926 S * 2/2019 Howell D13/107
 D849,681 S 5/2019 Howell
 D850,364 S * 6/2019 Constin D13/103
 D853,319 S 7/2019 Nommensen et al.
 D855,019 S 7/2019 Rustill
 D887,969 S 6/2020 Howell
 10,686,319 B2 6/2020 Wohltmann et al.
 D890,692 S 7/2020 Elder
 D892,586 S * 8/2020 Matteo D8/70
 D893,413 S 8/2020 Grulke
 D894,118 S 8/2020 Lui et al.
 D894,827 S 9/2020 Watson
 D907,576 S 1/2021 Cayon et al.
 D908,083 S 1/2021 Kuang et al.
 D911,267 S 2/2021 Matteo
 D912,487 S 3/2021 Chandrasekharan et al.
 D913,231 S 3/2021 Zugen et al.
 10,938,079 B2 3/2021 Beyerl et al.
 2004/0087196 A1 5/2004 Lang et al.
 2004/0106036 A1 6/2004 Geis et al.
 2007/0285055 A1 12/2007 Meyer et al.
 2009/0184685 A1 7/2009 Sim et al.
 2011/0169457 A1 7/2011 Mitani et al.
 2011/0181243 A1 7/2011 Mabuchi et al.
 2012/0276776 A1 11/2012 Becker et al.
 2013/0069594 A1 3/2013 Jung
 2013/0089764 A1 4/2013 Melnyk et al.
 2013/0106363 A1 5/2013 Seman, Jr. et al.
 2013/0330576 A1 12/2013 Kolden et al.
 2014/0106195 A1 4/2014 Milbourne et al.
 2014/0306660 A1 10/2014 Suzuki et al.
 2015/0061549 A1 3/2015 Shima
 2015/0115875 A1 4/2015 Oomiya et al.
 2015/0340887 A1 11/2015 Meyer et al.
 2016/0072106 A1 3/2016 Baumgartner et al.
 2016/0195097 A1 7/2016 Patrick
 2017/0222454 A1 8/2017 Bakker
 2017/0271893 A1 9/2017 Brozek
 2018/0140146 A1 5/2018 Zhu et al.
 2018/0309304 A1 10/2018 Meyer et al.
 2019/0061652 A1 2/2019 Yeom et al.
 2019/0067957 A1 2/2019 Yeom

(56)

References Cited

U.S. PATENT DOCUMENTS

2019/0089168 A1 3/2019 Yeom
2021/0083237 A1 3/2021 Cherry et al.

FOREIGN PATENT DOCUMENTS

CL	201903645	7/2020
CL	201903647	7/2020
CL	201903648	7/2020
CN	1532988 A	9/2004
CN	1870346 A	11/2006
CN	1897399 A	1/2007
CN	1909325 A	2/2007
CN	101017984 A	8/2007
CN	101043149 A	9/2007
CN	101399386 A	4/2009
CN	101716762 A	6/2010
CN	102035054 A	4/2011
CN	102055246 A	5/2011
CN	103135062 A	6/2013
CN	103390917 A	11/2013
CN	103580087 A	2/2014
CN	203434607 U	2/2014
CN	103730699 A	4/2014
CN	104901354 A	9/2015
CN	105322611 A	2/2016
CN	105449790 A	3/2016
CN	105453375 A	3/2016
CN	105648962 A	6/2016
CN	106160067 A	11/2016
CN	106786964 A	5/2017
CN	107732329 A	2/2018
CN	107919690 A	4/2018
CN	207910511 U	9/2018
CN	109066940 A	12/2018
CN	109120037 A	1/2019
CN	208316322 U	1/2019
DE	102014205116 A1	9/2015
EP	2083495 B1	7/2009
EP	004104453	10/2017
EP	004663953	9/2018
EP	004682623	12/2018
WO	2018028639 A1	2/2018
WO	2018143562 A1	8/2018

OTHER PUBLICATIONS

Greenworks, “Greenworks 29842 24V,” <amazon.com> Chilean examination report alleges a publication date of Jun. 29, 2016 (1 page).

Makita, “DC18RC—Cargador de bateria Makita,” <amazon.com> Chilean examination report alleges a publication date of Jun. 6, 2018 (1 page).

Ridgid, “Ridgid 105 MPH Cordless GEN5X 18-Volt Jobsite Handheld Blower,” <https://www.amazon.com/RIDGID-Cordless-18-Volt-Jobsite-Handheld/dp/B078ZRG57H> Chilean examination report alleges a publication date of August 15, 2018.

Ryobi, “18 Volt One+ Blower,” Operator’s Manual, Revision 05, Mar. 22, 2019 (26 pages).

Ryobi, “40V Lithium Ion Battery Charger,” Operator’s Manual, Revision 02, Aug. 23, 2019 (16 pages).

Ryobi, “Ryobi 1004-040-931,” <amazon.com> Chilean examination report alleges a publication date of Jun. 4, 2019 (1 page).

Ryobi, “Ryobi ry24602,” <amazon.com> Chilean examination report alleges a publication date of Sep. 23, 2015 (1 page).

Vanon, “2Pack 6000mAh High Capacity (Vanon),” <amazon.com> Chilean examination report alleges a publication date of Mar. 25, 2019 (1 page).

Libater, “Battery 40V Max 5.0Ah,” <amazon.com> Chilean examination report alleges a publication date of May 19, 2019 (1 page).

Examination Report issued by the Chilean Patent Office for Application No. 2020-000520 dated Nov. 19, 2020 (20 pages including statement of relevance).

Examination Report issued by the Chilean Patent Office for Application No. 2020-000520 dated Mar. 17, 2021 (18 pages including statement of relevance).

Examination Report issued by the Chilean Patent Office for Application No. 2020-000521 dated Mar. 18, 2021 (18 pages including statement of relevance).

LiBatter, “LiBatter 40V 5.0 Ah Replacement Battery DCB404 DCB406 DCB407 DCB114, Lithium Ion Premium Battery Compatible with Dewalt All 40V Max Tools,” <https://www.amazon.com/LiBatter-Lithium-Premium-Battery-Compatible/dp/B07RPLWRH5> date first available: May 2019.

* cited by examiner

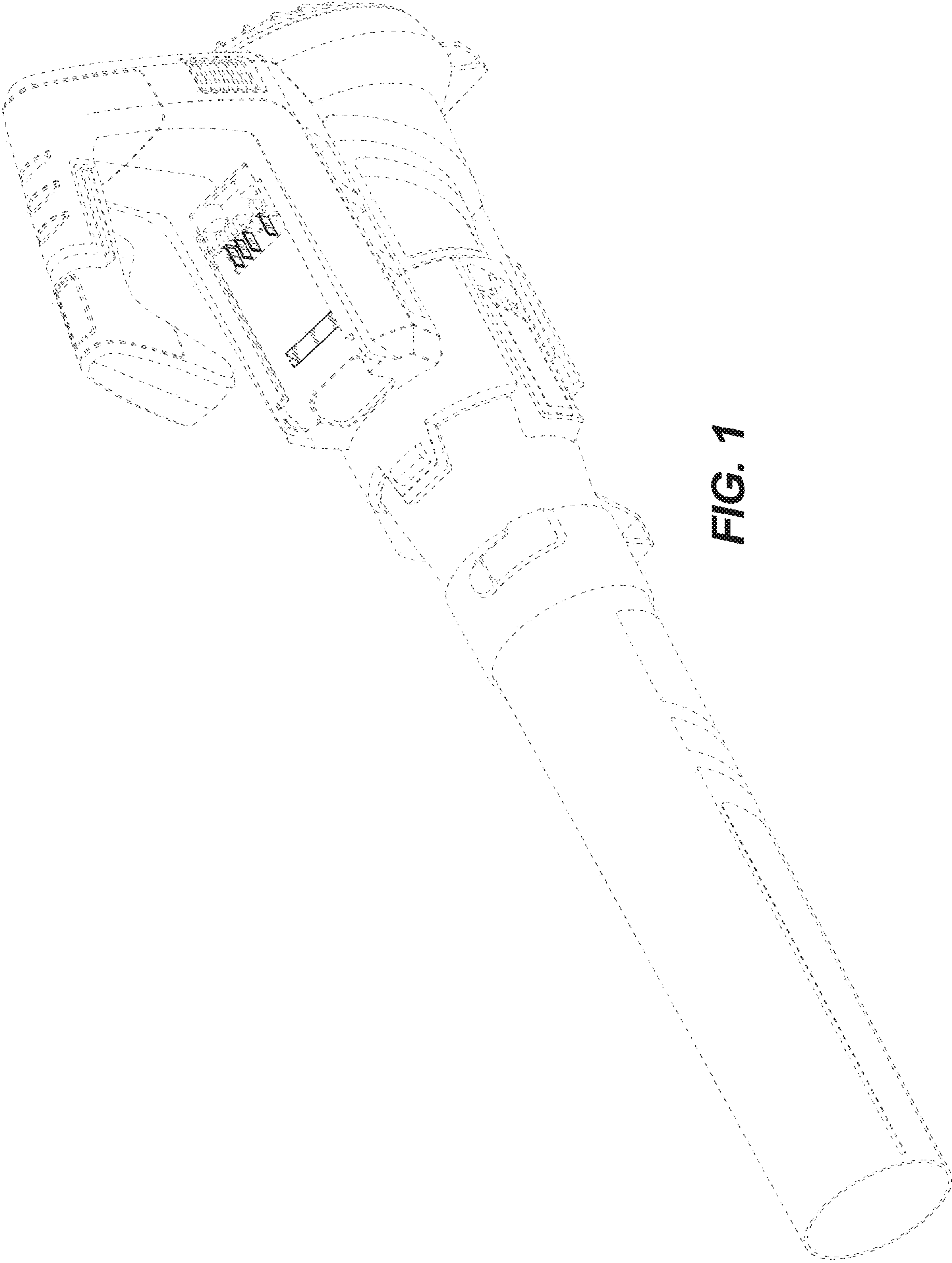


FIG. 1

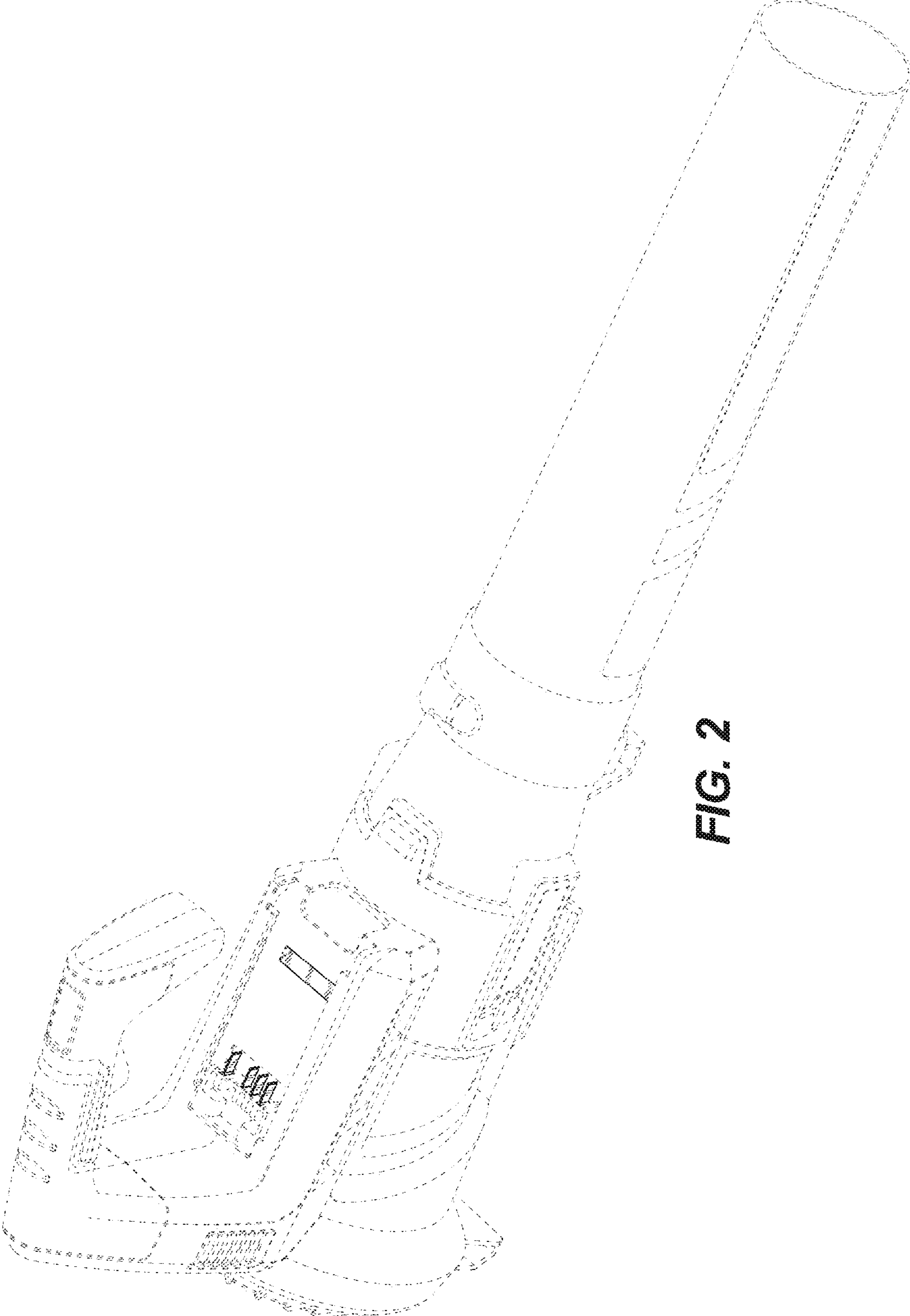


FIG. 2

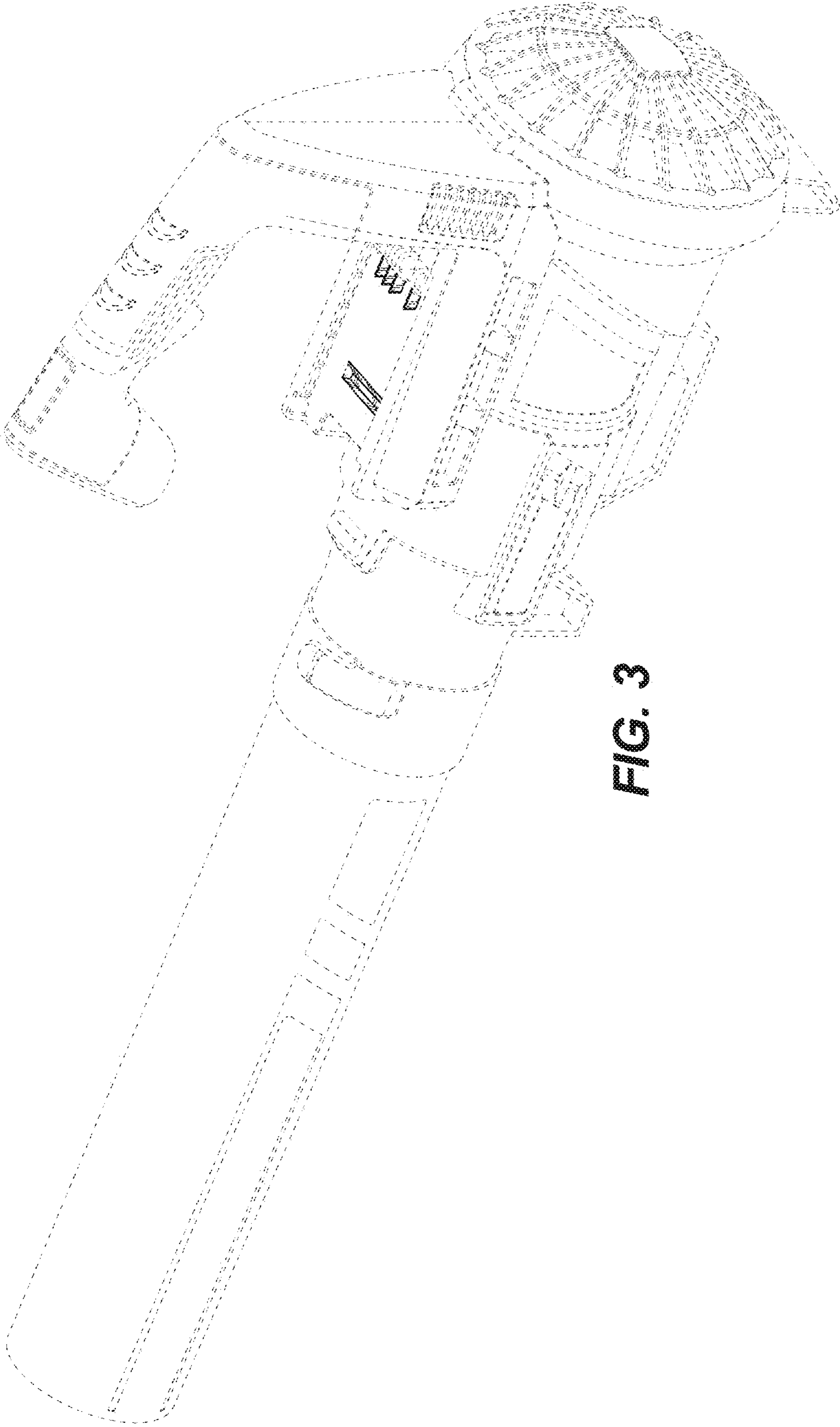


FIG. 3

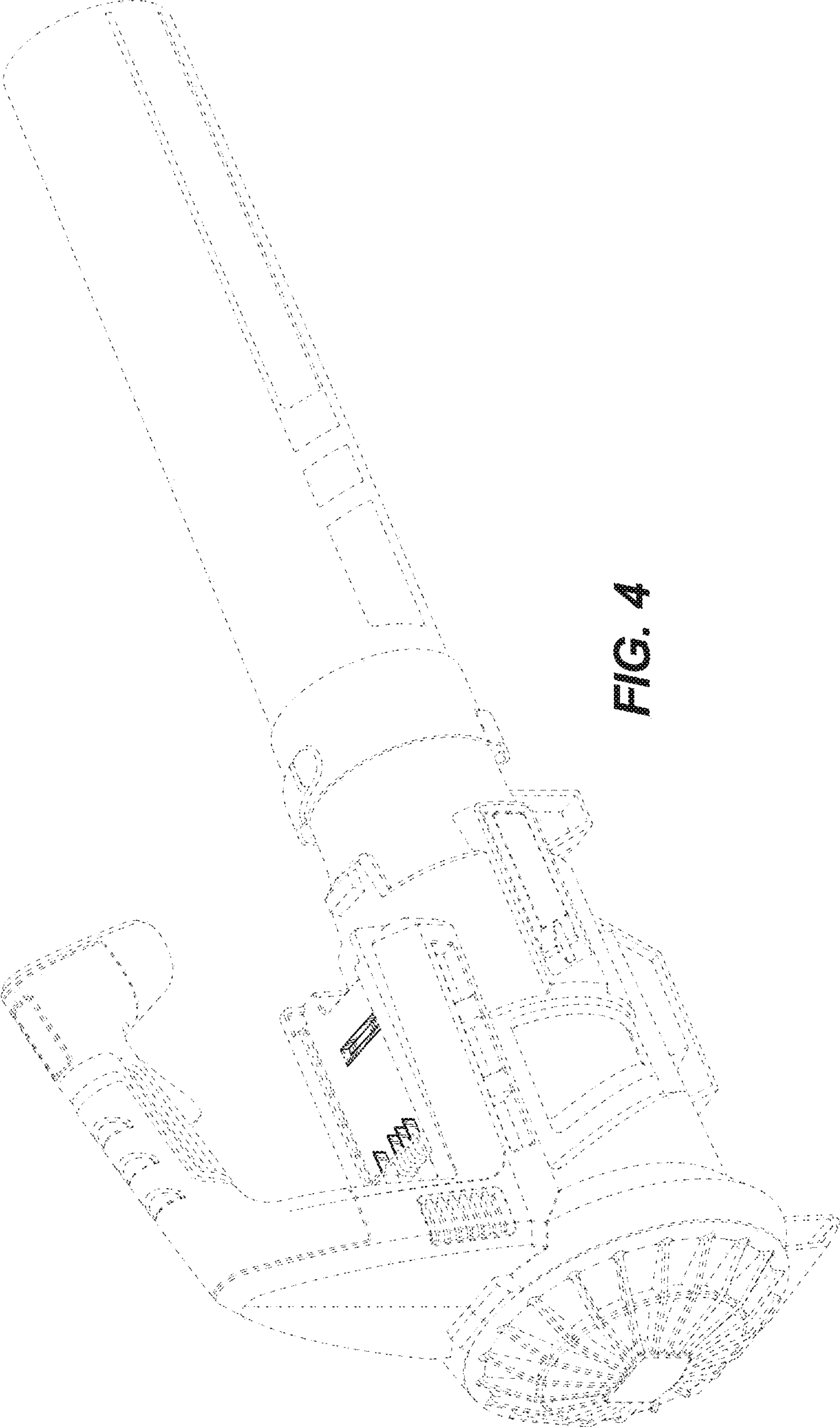
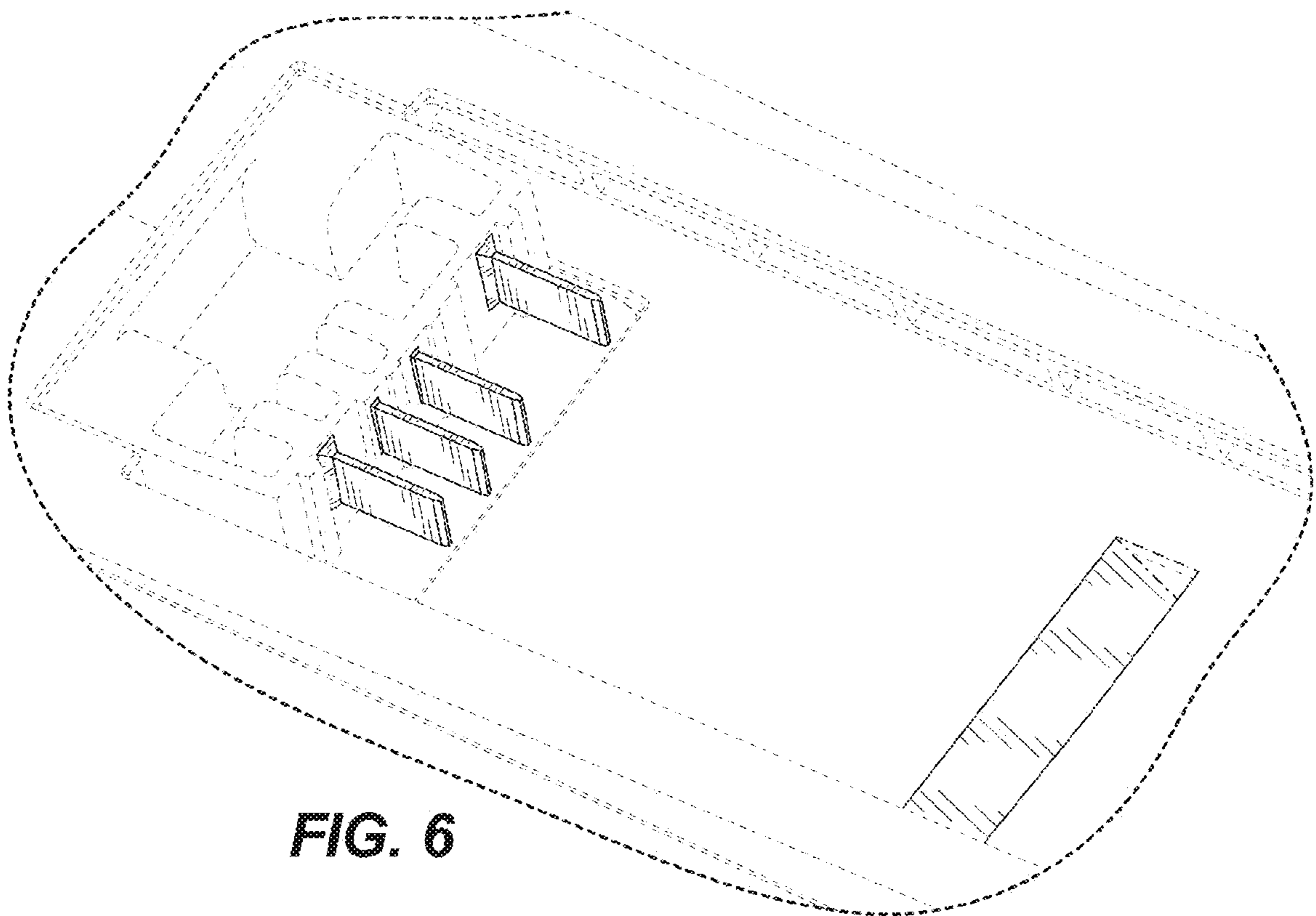
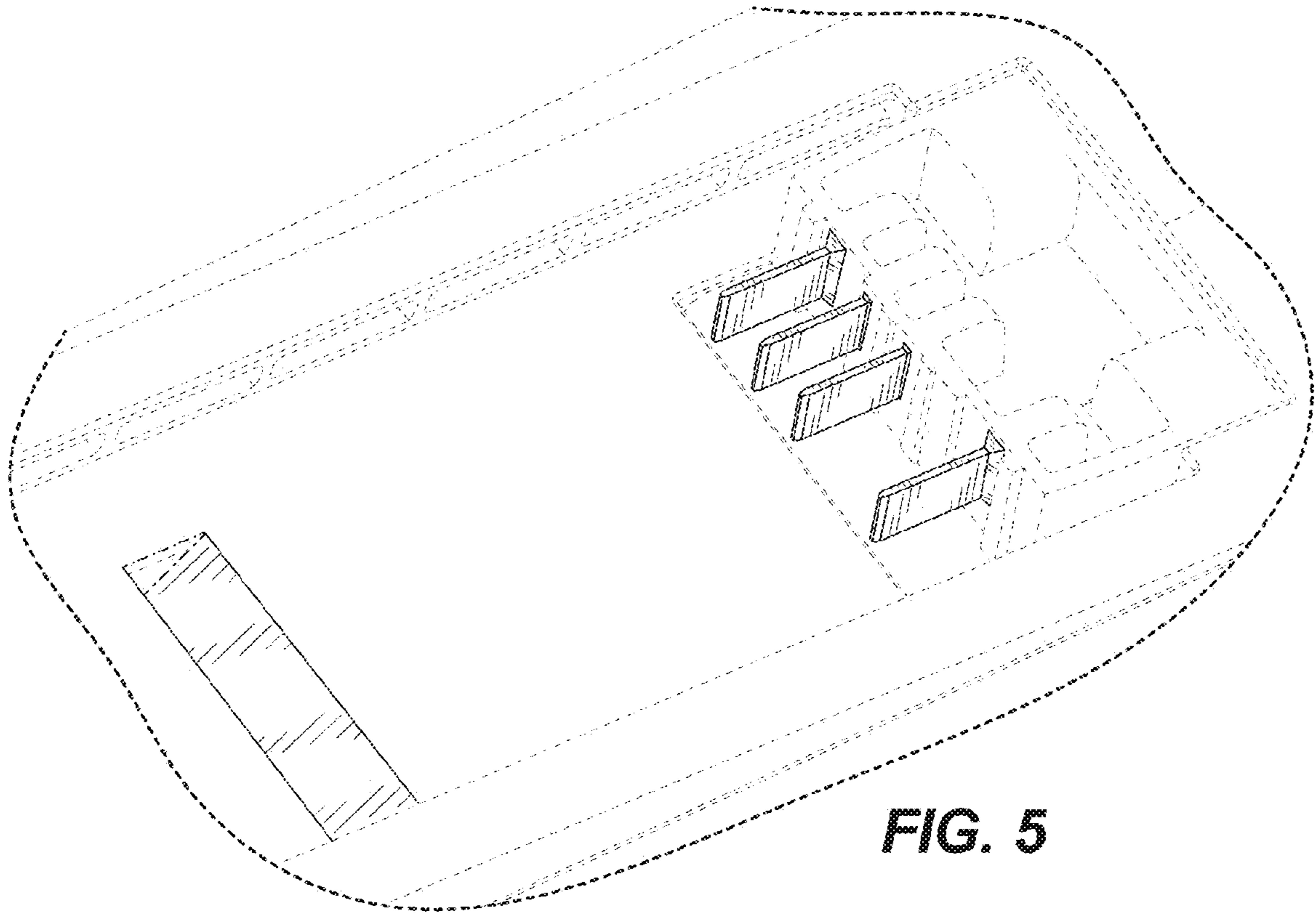


FIG. 4



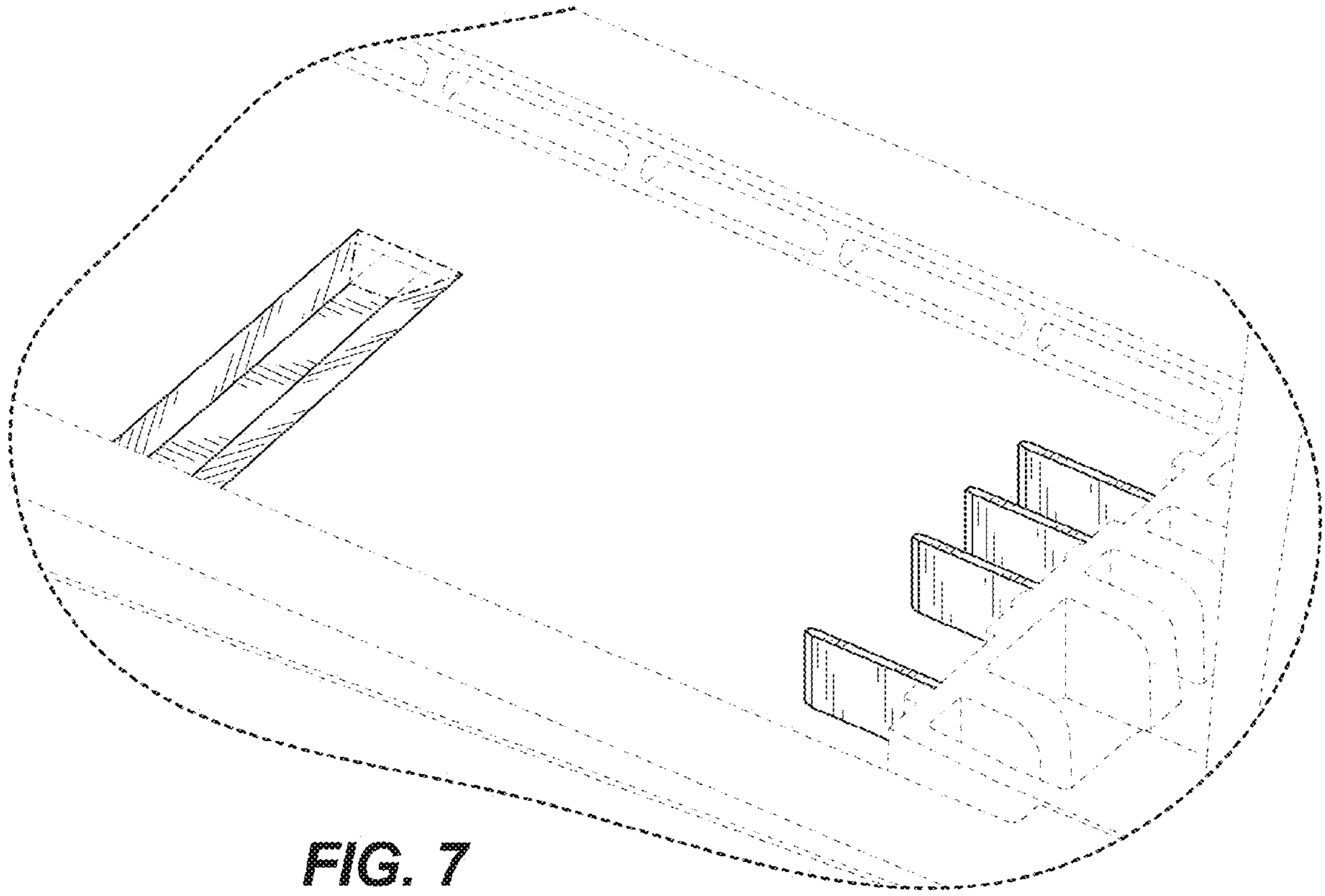


FIG. 7

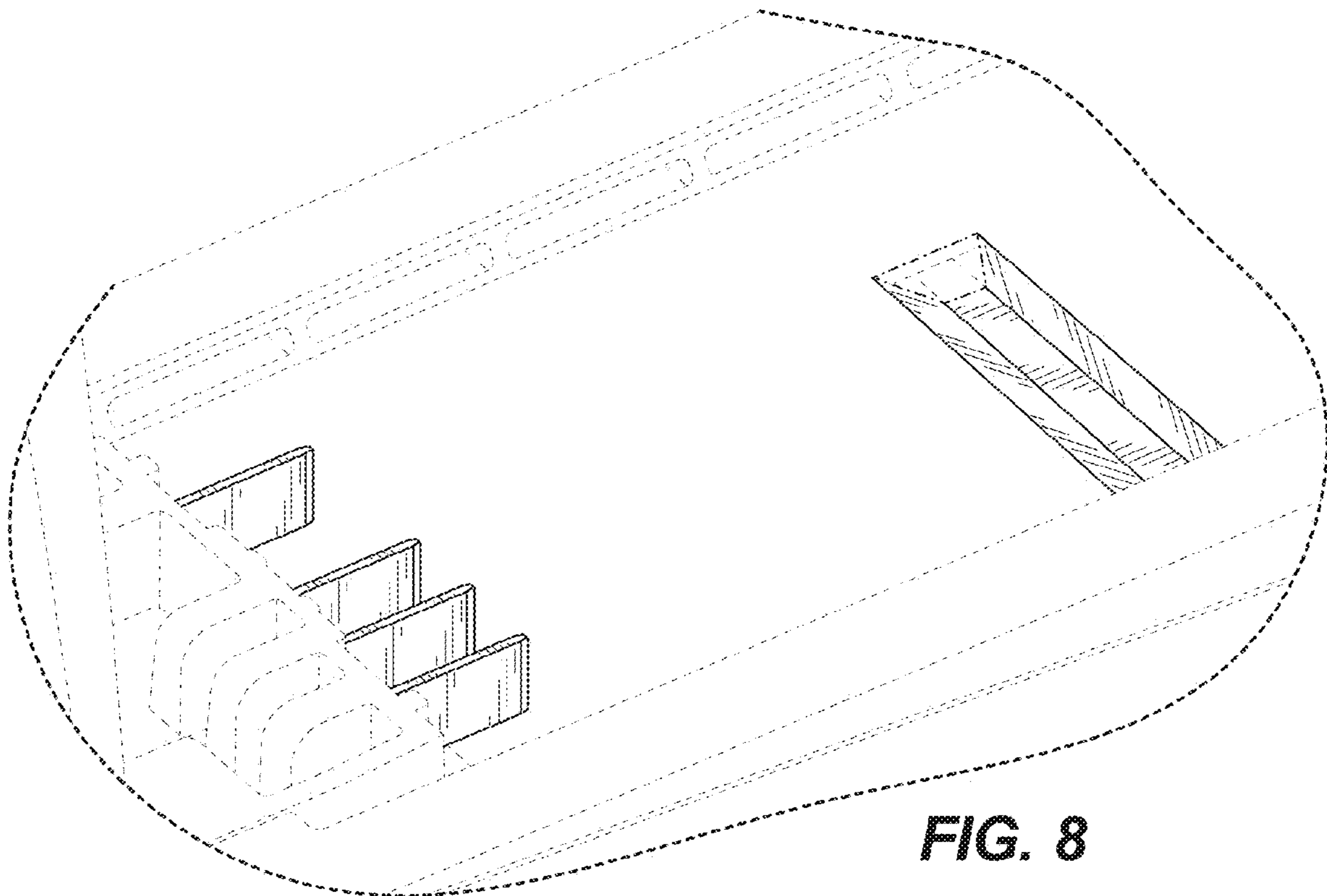


FIG. 8

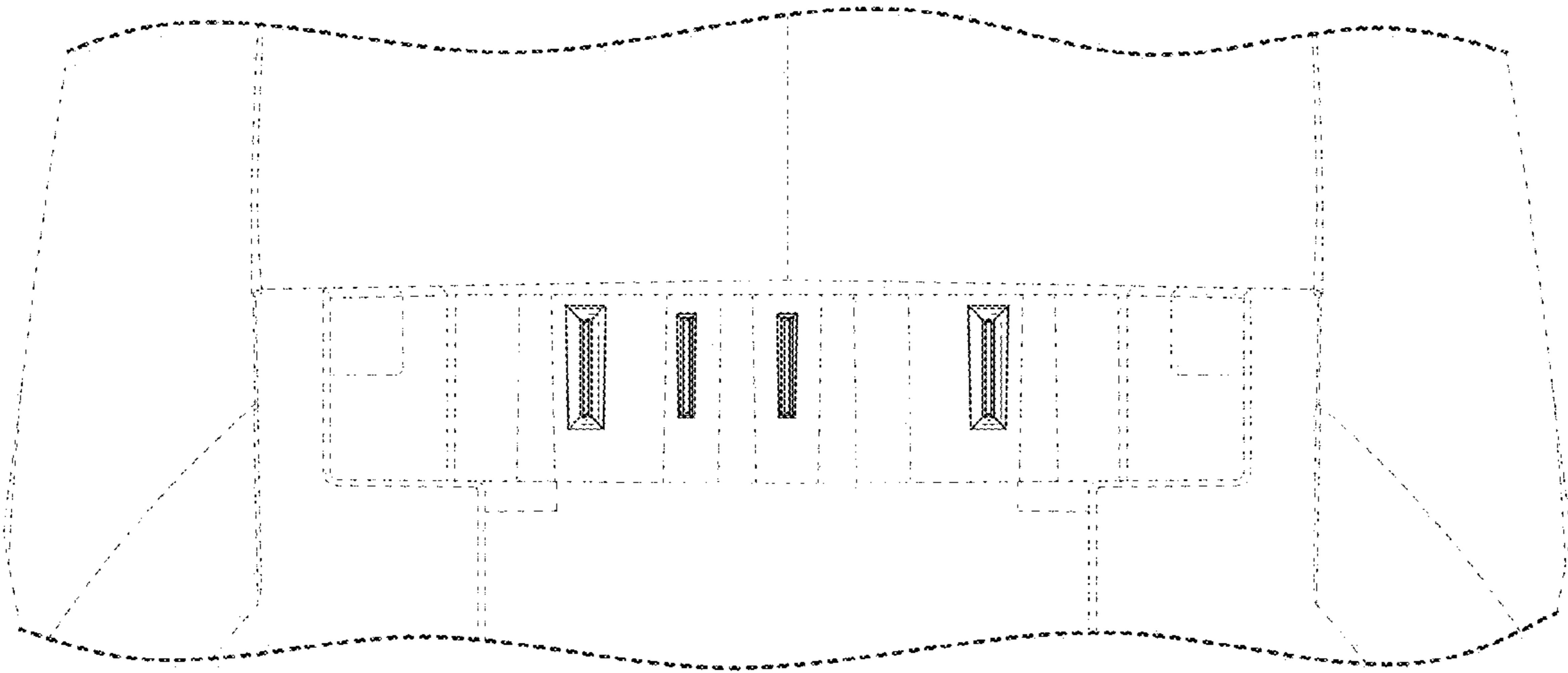


FIG. 9

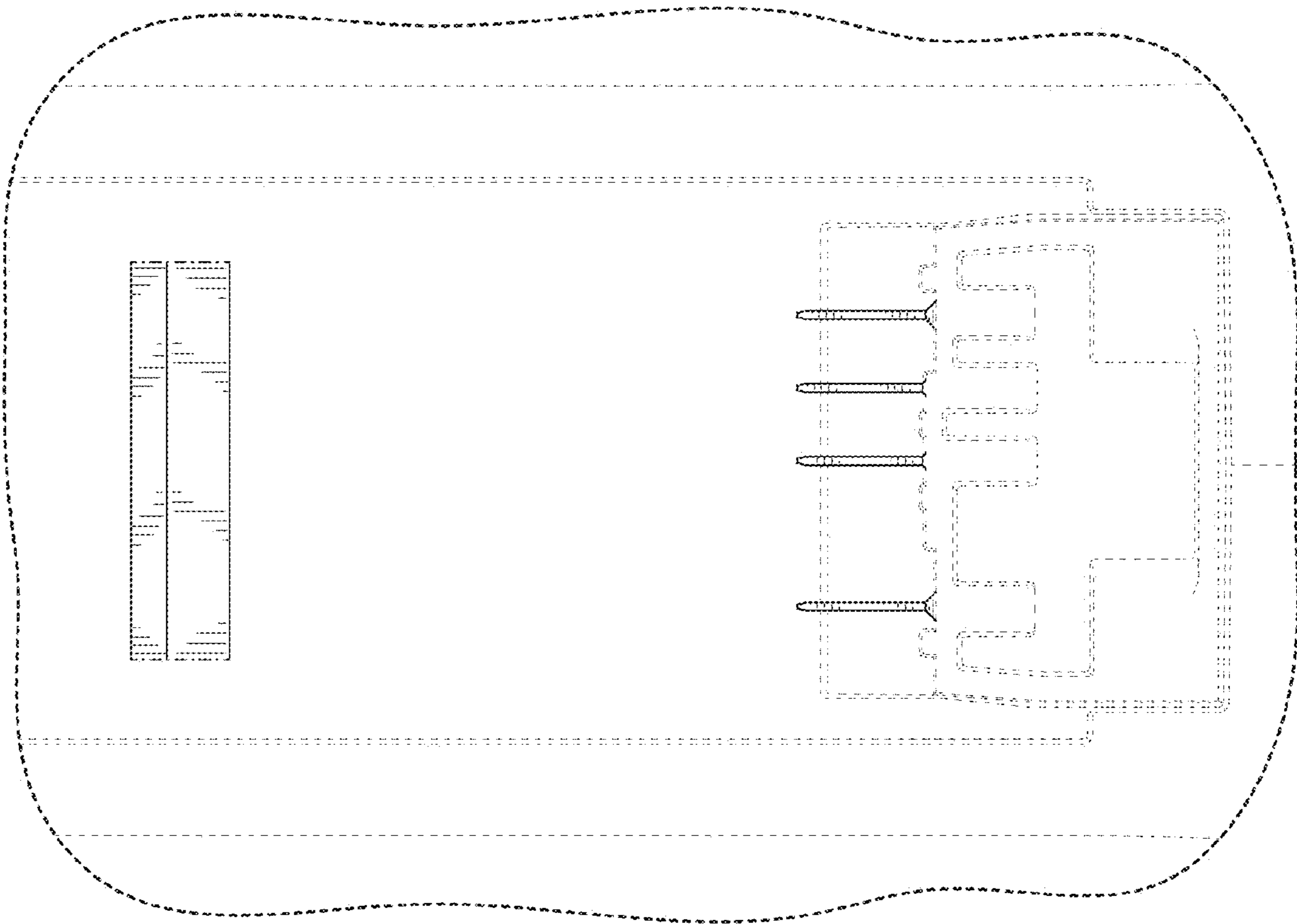


FIG. 10

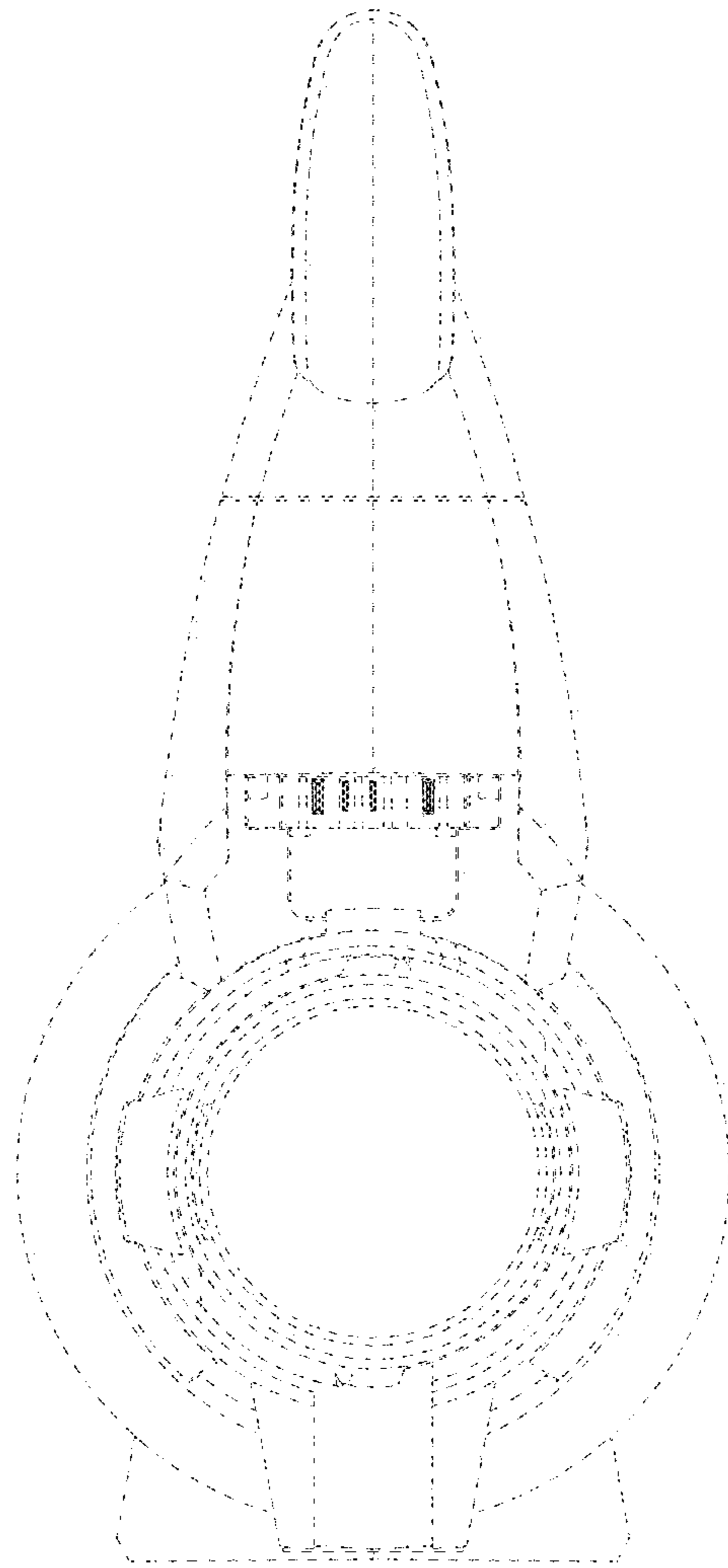


FIG. 11

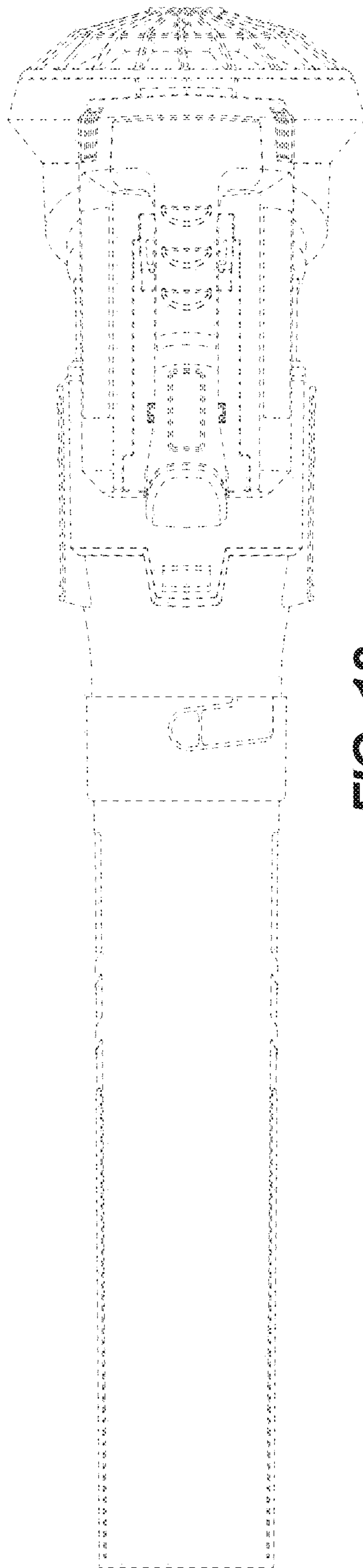


FIG. 12