



US00D953268S

(12) **United States Design Patent**  
**Cagle**

(10) **Patent No.:** **US D953,268 S**

(45) **Date of Patent:** **\*\* May 31, 2022**

(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**
- (21) Appl. No.: **29/704,575**
- (22) Filed: **Sep. 5, 2019**
- (51) **LOC (13) Cl.** ..... **13-03**
- (52) **U.S. Cl.**  
USPC ..... **D13/120**
- (58) **Field of Classification Search**  
USPC ..... D13/103, 107, 108, 109, 119, 120, 121;  
D8/70  
CPC . H01M 2220/30; H01M 50/20; H01M 50/502  
See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,477,130	A	12/1995	Hashimoto et al.
5,508,123	A	4/1996	Fan
5,568,039	A	10/1996	Fernandez
5,764,028	A	6/1998	Freiman et al.
D396,447	S	7/1998	Lloyd et al.

(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 & Freidrich LLP

(57) **CLAIM**

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

**DESCRIPTION**

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

FIG. 2 is an enlarged view of the electrical interface shown in FIG. 1.

FIG. 3 is a left top front perspective view of the electrical interface shown in FIG. 2.

FIG. 4 is a right top front perspective view of the electrical interface shown in FIG. 2.

FIG. 5 is a left side view of the electrical interface shown in FIG. 2.

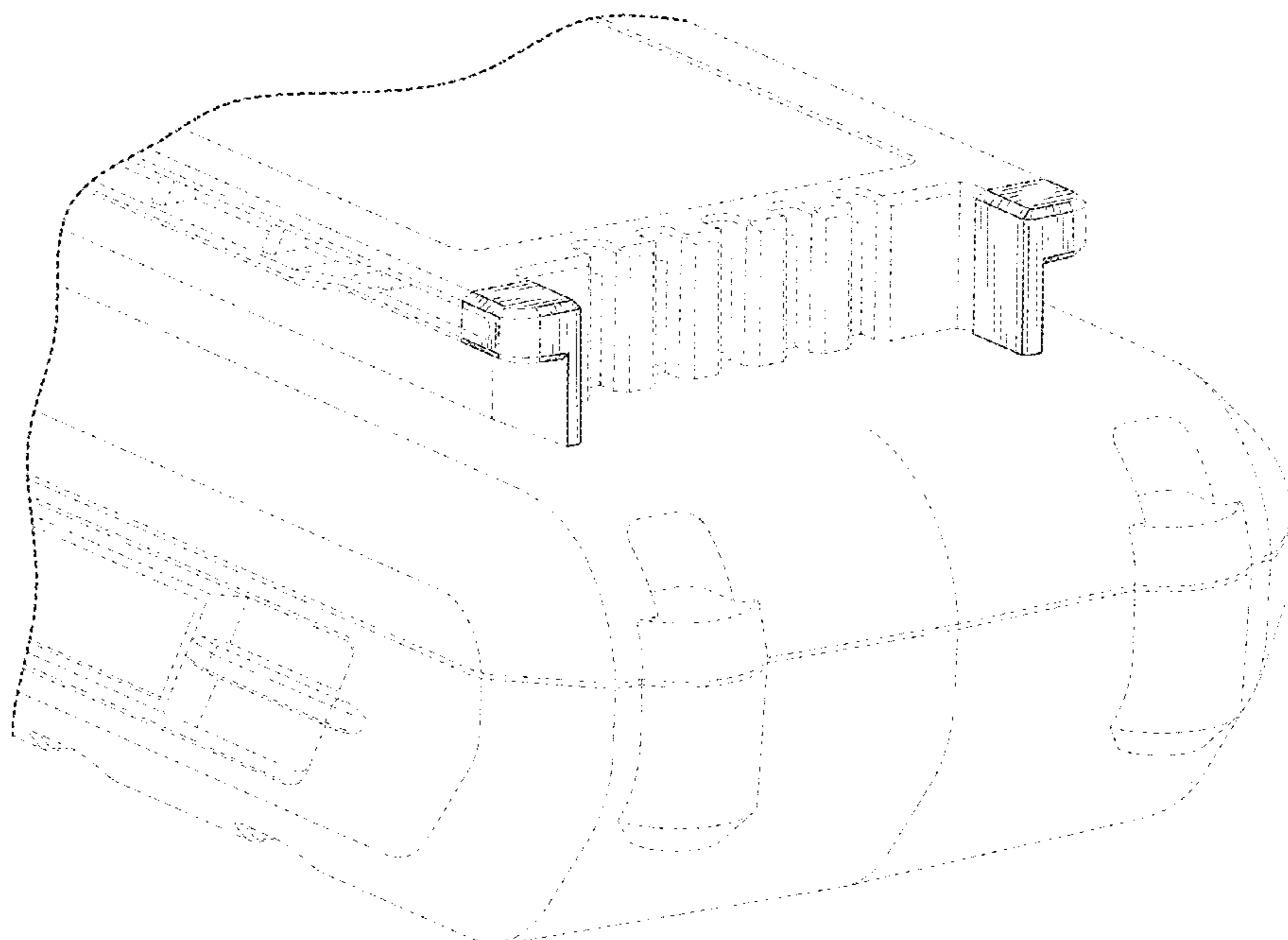
FIG. 6 is a right side view of the electrical interface shown in FIG. 2.

FIG. 7 is a front view of the electrical interface shown in FIG. 2; and,

FIG. 8 is a top view of the electrical interface shown in FIG. 2.

The 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.

**1 Claim, 8 Drawing Sheets**



(56)

References Cited

U.S. PATENT DOCUMENTS

D400,322 S	10/1998	Webster et al.	8,525,479 B2	9/2013	Meyer et al.
5,903,137 A	5/1999	Freiman et al.	8,741,461 B2	6/2014	Yoneda et al.
5,945,809 A	8/1999	Inaba et al.	8,803,481 B2	8/2014	Tachikawa et al.
5,955,867 A	9/1999	Cummings et al.	D714,721 S	10/2014	Zhang
D415,100 S	10/1999	Buck	8,933,667 B2	1/2015	Park et al.
6,191,553 B1 *	2/2001	Feng-Jung ..... H02J 7/0045	D735,960 S	8/2015	Zhang
		439/131	9,118,189 B2	8/2015	Meyer et al.
6,350,149 B1 *	2/2002	Nakane ..... H01R 13/113	D748,877 S	2/2016	Tirone et al.
		439/500	9,331,365 B2	5/2016	Cruise et al.
D463,774 S	10/2002	Buck	D767,487 S	9/2016	Huang
D468,874 S	1/2003	Nawrozki et al.	D770,377 S	11/2016	Kondo
D469,931 S	2/2003	Nawrozki et al.	D772,806 S *	11/2016	Ritterling ..... B25F 5/02
D472,879 S	4/2003	Ouchi et al.			D13/103
D509,189 S	9/2005	Buck	D782,980 S	4/2017	Zhang et al.
D511,744 S *	11/2005	Hsu ..... D13/103	D784,261 S	4/2017	Rowe et al.
D512,373 S *	12/2005	Tsai ..... D13/103	9,673,648 B2	6/2017	Johnson et al.
D514,060 S	1/2006	Wong et al.	9,680,325 B2	6/2017	Johnson et al.
D524,728 S	7/2006	Watson	D801,917 S	11/2017	Jiang
D535,253 S *	1/2007	Buck ..... D13/103	D801,920 S	11/2017	Yoon
7,157,882 B2	1/2007	Johnson et al.	9,859,548 B2	1/2018	Cruise et al.
7,157,883 B2	1/2007	Johnson et al.	9,893,384 B2	2/2018	Velderman et al.
7,164,257 B2	1/2007	Johnson et al.	D811,999 S	3/2018	Nommensen et al.
D537,408 S	2/2007	Aglassinger	D818,948 S	5/2018	Waldron
7,176,654 B2	2/2007	Meyer et al.	9,966,772 B2	5/2018	Uesugi
D545,759 S	7/2007	Ino et al.	D819,562 S	6/2018	Waldron
7,262,580 B2	8/2007	Meyer et al.	10,008,864 B2	6/2018	Meyer et al.
D550,152 S	9/2007	Okuda et al.	D831,566 S	10/2018	Nommensen et al.
7,321,219 B2	1/2008	Meyer et al.	10,124,455 B2	11/2018	Ito et al.
7,323,847 B2	1/2008	Meyer et al.	D836,552 S	12/2018	Crowe et al.
7,342,381 B2	3/2008	Johnson et al.	D840,926 S	2/2019	Howell
D584,461 S	1/2009	Sweeney	D849,681 S	5/2019	Howell
D584,732 S	1/2009	Cho et al.	D850,364 S	6/2019	Constin
7,492,124 B2	2/2009	Johnson et al.	D853,319 S	7/2019	Nommensen et al.
D587,695 S	3/2009	Leng et al.	D855,019 S	7/2019	Rustill
7,504,804 B2	3/2009	Johnson et al.	D887,969 S	6/2020	Howell
7,508,167 B2	3/2009	Meyer et al.	10,686,319 B2	6/2020	Wohltmann et al.
D596,130 S	7/2009	Chen et al.	D890,692 S	7/2020	Elder
D597,935 S	8/2009	Aglassinger	D892,586 S	8/2020	Matteo
7,570,013 B2	8/2009	Graeber et al.	D893,413 S *	8/2020	Grulke ..... D13/103
7,667,437 B2	2/2010	Johnson et al.	D894,118 S *	8/2020	Liu ..... D13/103
D614,569 S	4/2010	Yang	D894,827 S *	9/2020	Watson ..... D13/103
D615,716 S	5/2010	Tinius	D907,576 S	1/2021	Cayon et al.
D618,172 S	6/2010	Yang	D908,083 S	1/2021	Kuang et al.
7,772,805 B2	8/2010	Yamamoto et al.	D911,267 S	2/2021	Matteo
D623,131 S	9/2010	Kawakami et al.	D912,487 S	3/2021	Chandrasekharan et al.
7,791,318 B2	9/2010	Johnson et al.	D913,231 S	3/2021	Zugen et al.
D633,036 S	2/2011	Murray	10,938,079 B2	3/2021	Beyerl et al.
D635,917 S	4/2011	Okuda	2004/0087196 A1	5/2004	Lang et al.
D636,723 S	4/2011	Yamamoto et al.	2004/0106036 A1	6/2004	Geis et al.
7,944,181 B2	5/2011	Johnson et al.	2007/0285055 A1	12/2007	Meyer et al.
7,952,326 B2	5/2011	Johnson et al.	2009/0184685 A1	7/2009	Sim et al.
D640,196 S	6/2011	Shuang et al.	2011/0169457 A1	7/2011	Mitani et al.
D640,197 S *	6/2011	Park ..... D13/119	2011/0181243 A1	7/2011	Mabuchi et al.
D640,975 S *	7/2011	Okuda ..... D13/103	2012/0276776 A1	11/2012	Becker et al.
D641,111 S	7/2011	Houghton	2013/0069594 A1	3/2013	Jung
D643,809 S	8/2011	Okuda et al.	2013/0089764 A1	4/2013	Melnyk et al.
7,993,769 B2	8/2011	Tsai et al.	2013/0106363 A1	5/2013	Seman, Jr. et al.
8,018,198 B2	9/2011	Meyer et al.	2013/0330576 A1	12/2013	Kolden et al.
D647,856 S	11/2011	Chiang	2014/0106195 A1	4/2014	Milbourne et al.
D647,857 S	11/2011	Huang et al.	2014/0306660 A1	10/2014	Suzuki et al.
D651,560 S	1/2012	Park et al.	2015/0061549 A1	3/2015	Shima
D652,793 S	1/2012	Tschopp	2015/0115875 A1	4/2015	Oomiya et al.
D654,018 S	2/2012	Conley et al.	2015/0340887 A1	11/2015	Meyer et al.
D657,307 S	4/2012	Zhao	2016/0072106 A1	3/2016	Baumgartner et al.
D658,578 S	5/2012	Davis	2016/0195097 A1	7/2016	Patrick
8,212,529 B2	7/2012	Yamamoto	2016/0226290 A1 *	8/2016	Johnson ..... H02J 7/007184
8,228,036 B2	7/2012	Meyer	2017/0222454 A1	8/2017	Bakker
8,269,458 B2	9/2012	Cruise et al.	2017/0271893 A1	9/2017	Brozek
D668,219 S	10/2012	Zhao et al.	2018/0140146 A1	5/2018	Zhu et al.
8,358,108 B2	1/2013	Seman, Jr. et al.	2018/0278071 A1 *	9/2018	Murakami ..... H01M 10/441
8,378,624 B2	2/2013	Boyles et al.	2018/0309304 A1	10/2018	Meyer et al.
D682,194 S	5/2013	Jiang et al.	2019/0061652 A1	2/2019	Yeom et al.
8,441,230 B2	5/2013	Boyles et al.	2019/0067957 A1	2/2019	Yeom
D684,528 S	6/2013	Murray	2019/0089168 A1	3/2019	Yeom
D685,730 S *	7/2013	Hamm ..... D13/103	2019/0356147 A1 *	11/2019	Mueckl ..... H02J 7/00304



(56)

References Cited

U.S. PATENT DOCUMENTS

2020/0128672 A1\* 4/2020 Silha ..... H01M 10/44  
 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 Aug. 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. 2020-000517 dated Nov. 19, 2020 (19 pages including statement of relevance).

Examination Report issued by the Chilean Patent Office for Application No. 2020-000518 dated Nov. 19, 2020 (16 pages including statement of relevance).

Examination Report issued by the Chilean Patent Office for Application No. 2020-000519 dated Mar. 18, 2021 (17 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

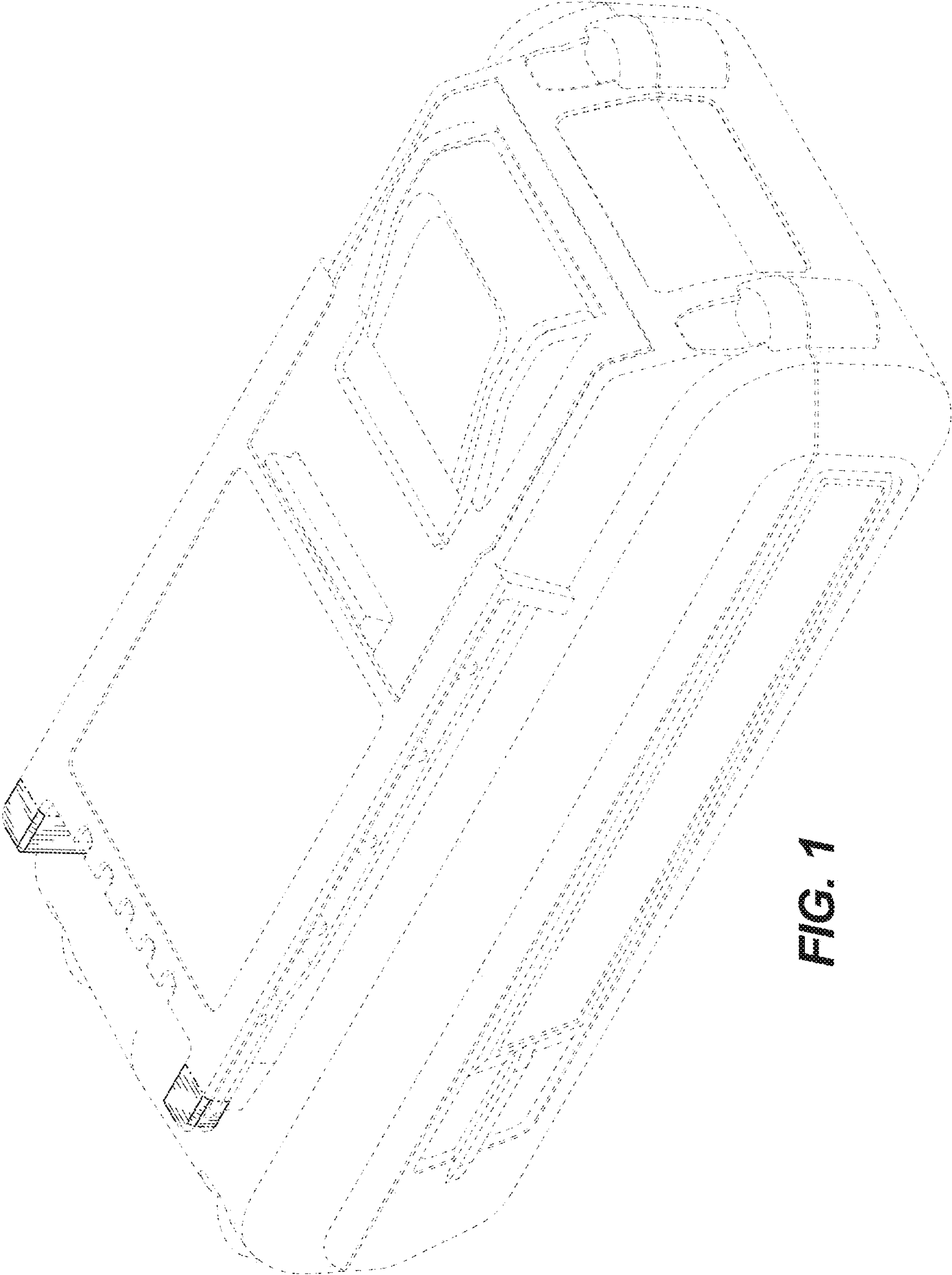


FIG. 1

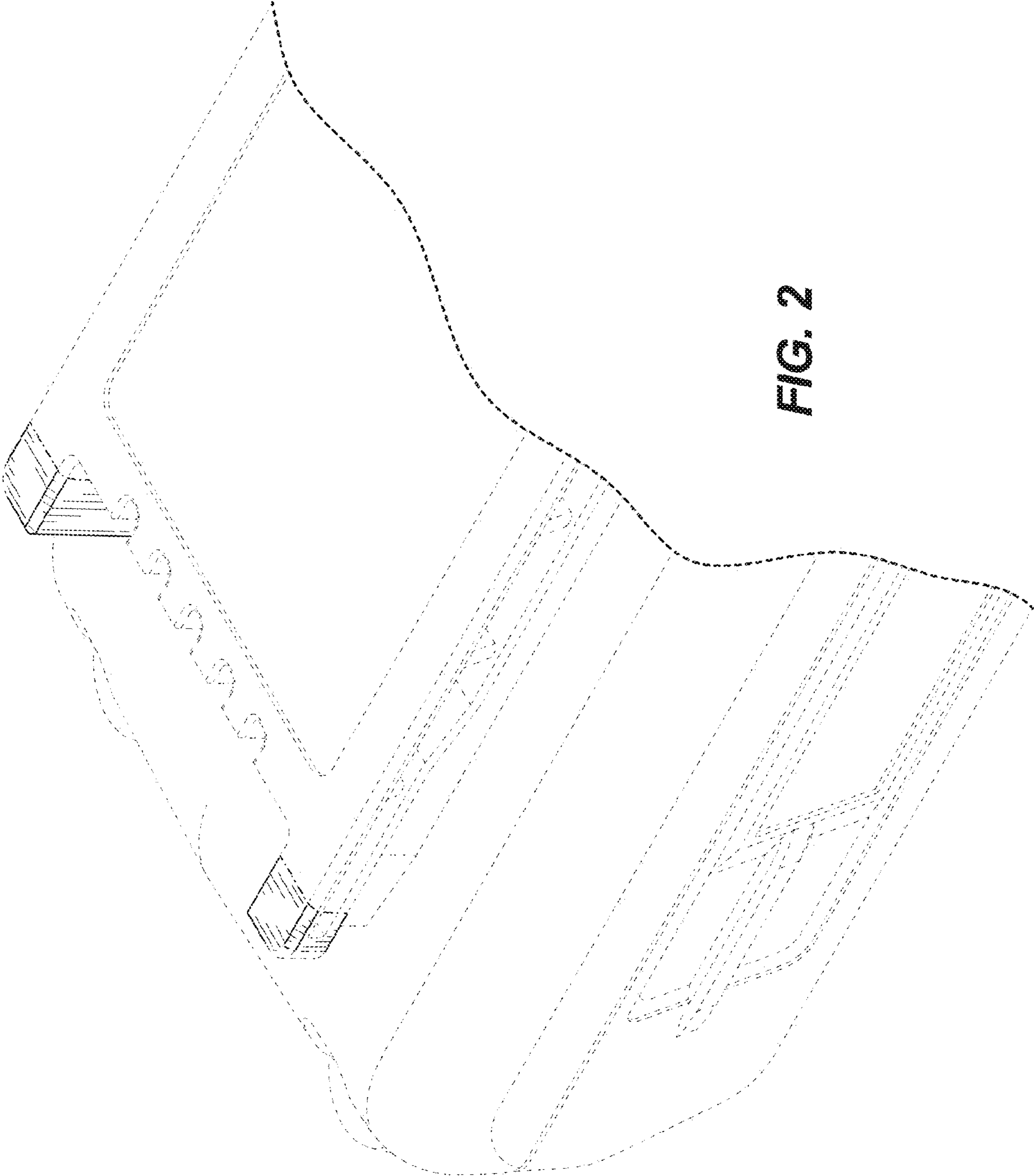


FIG. 2

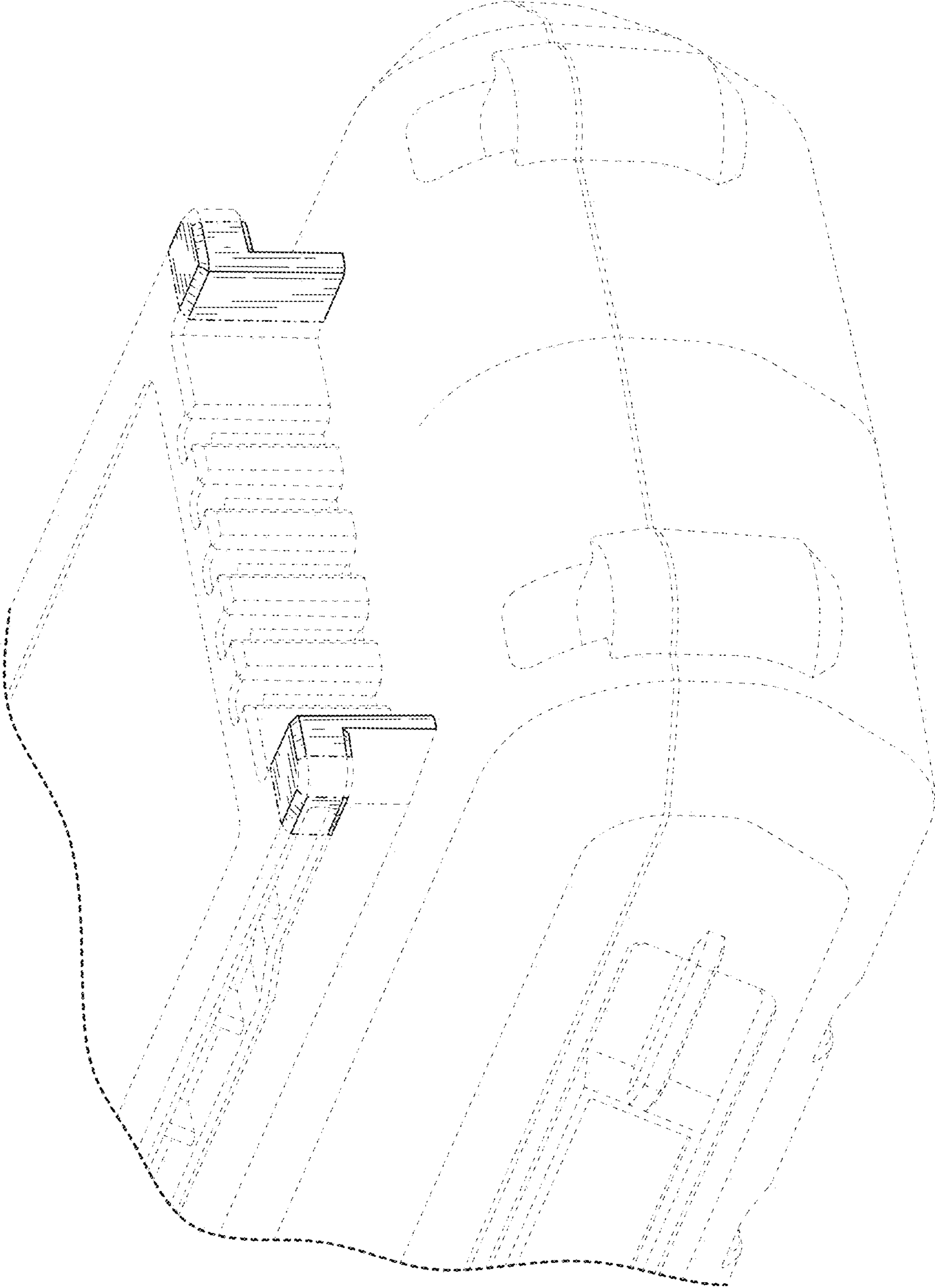


FIG. 3

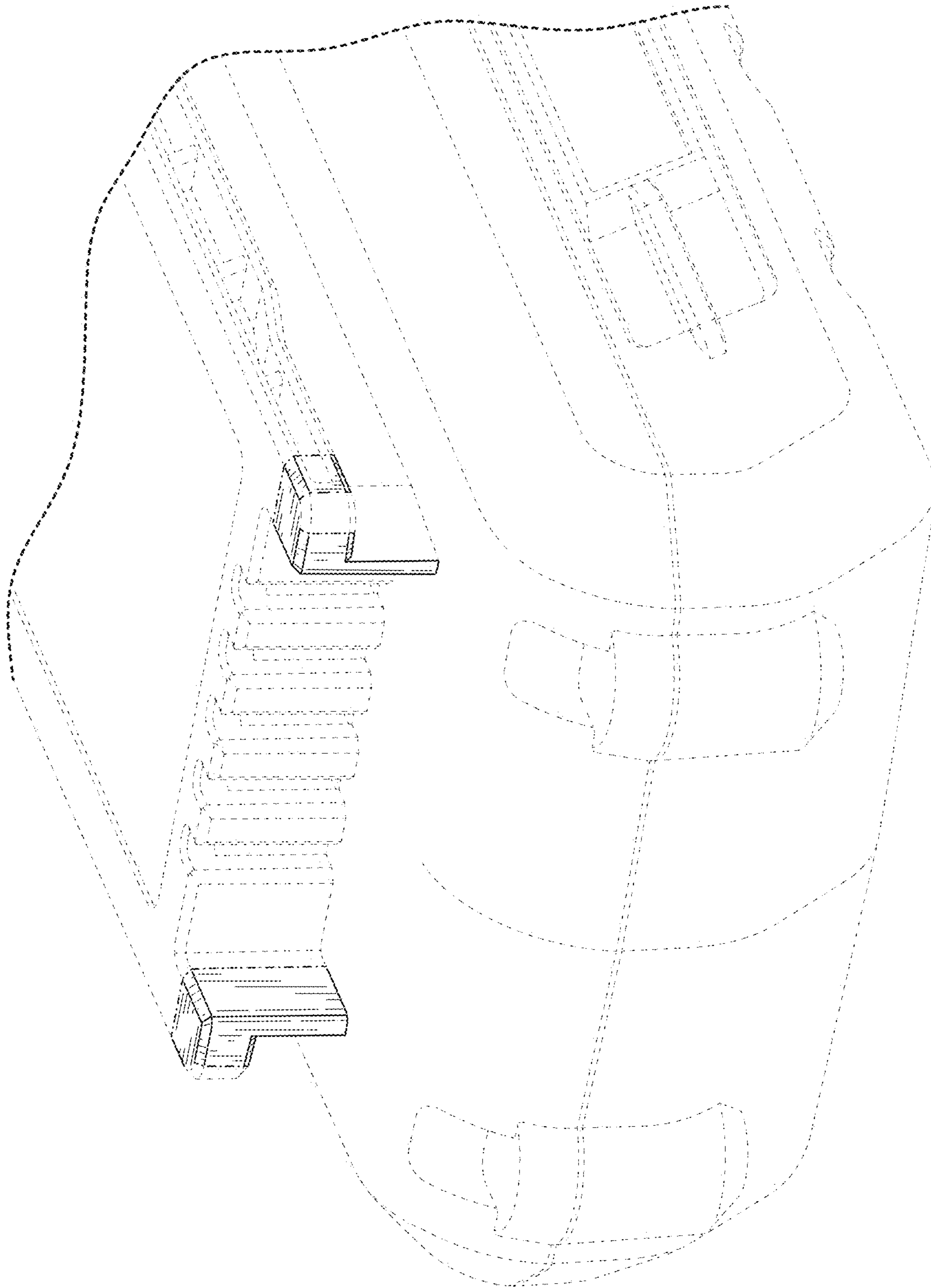


FIG. 4



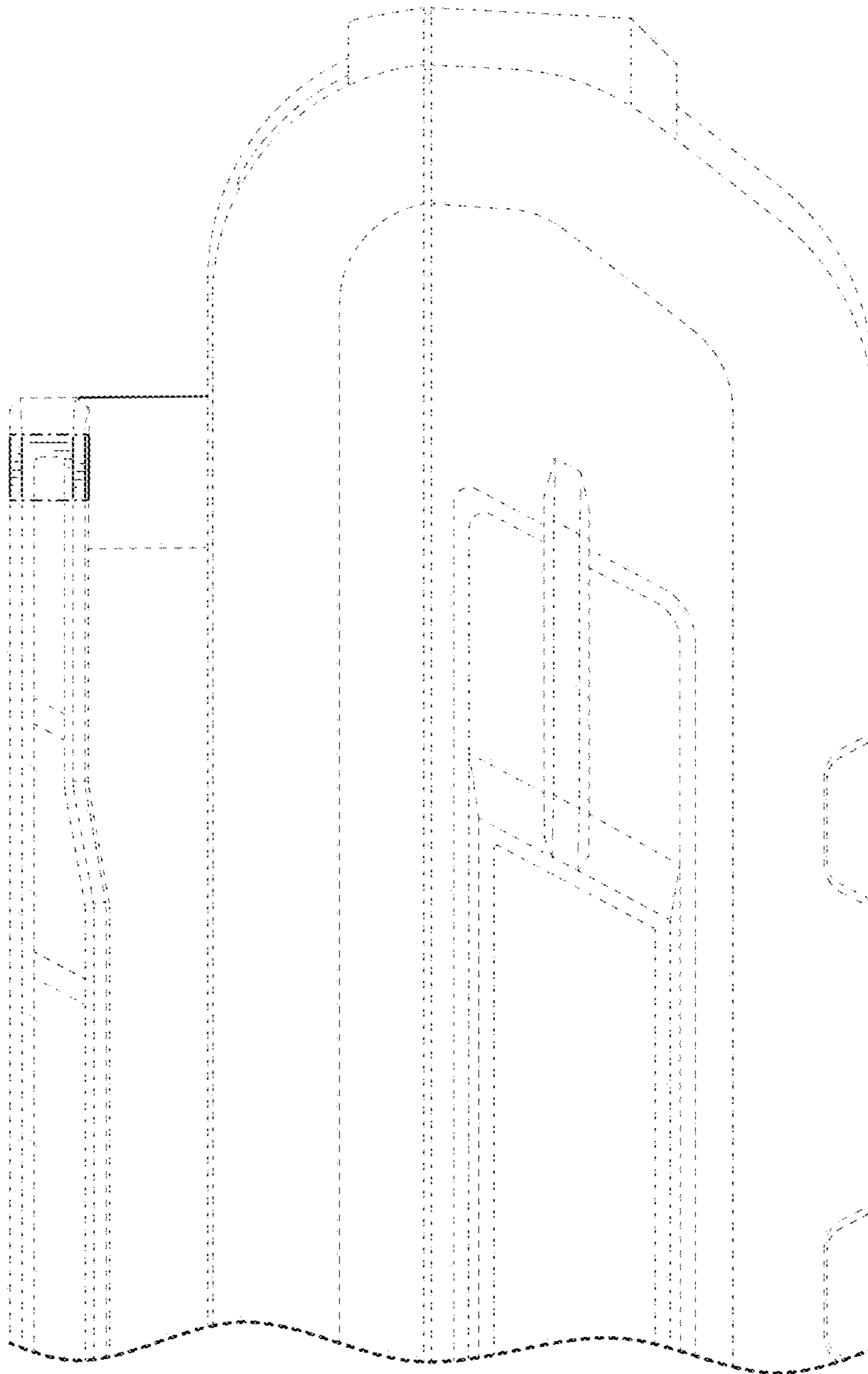


FIG. 5



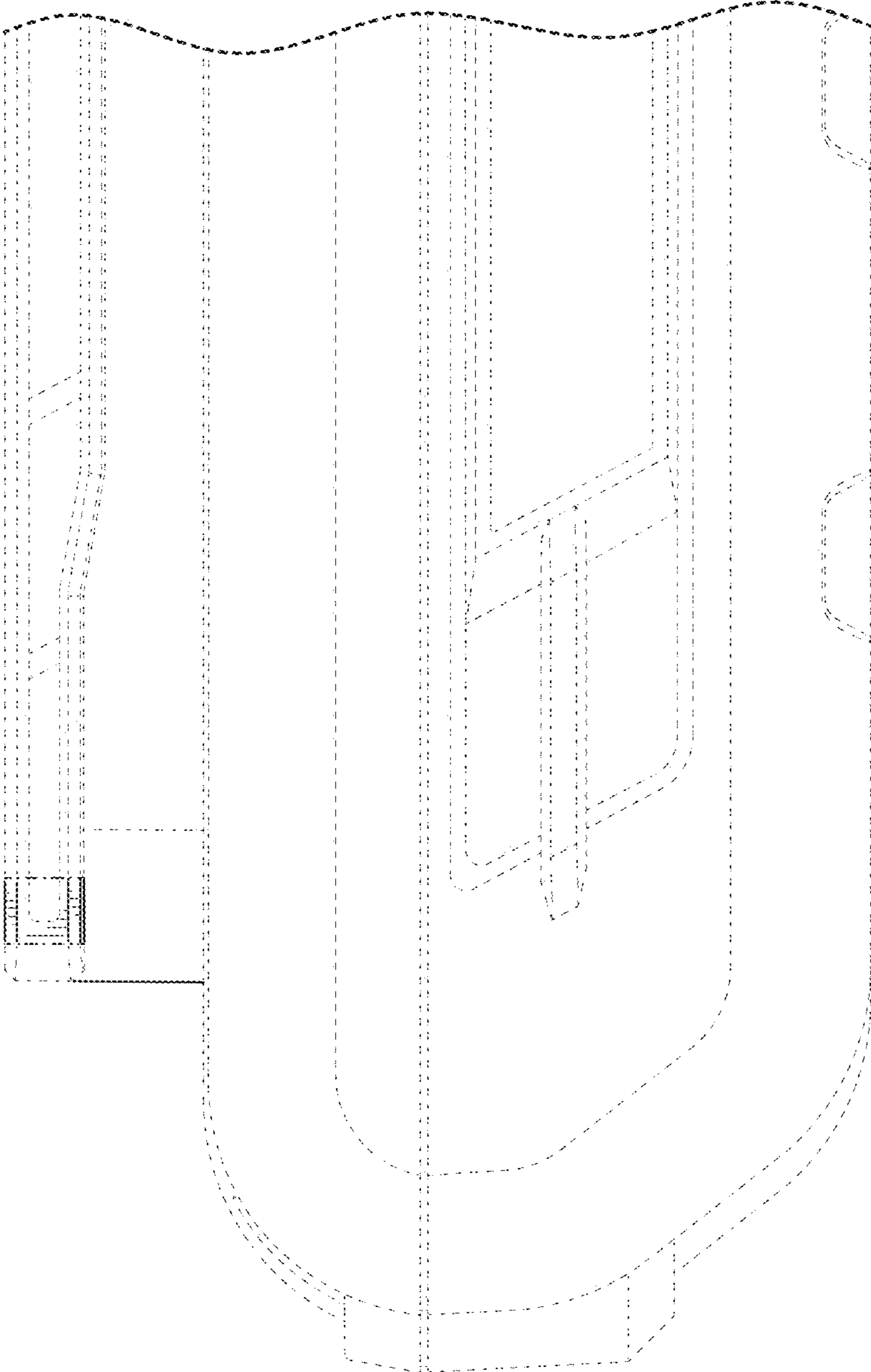
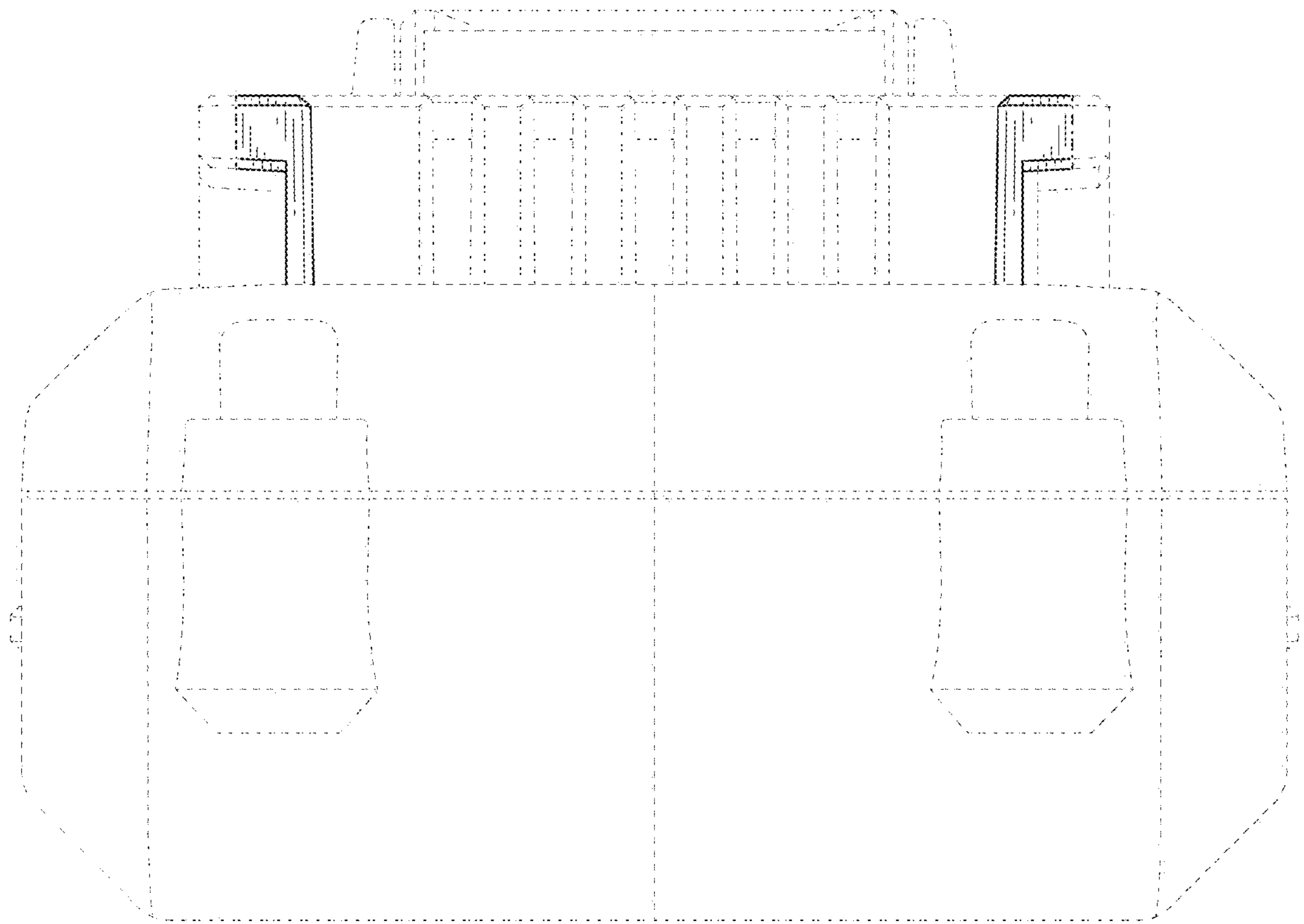
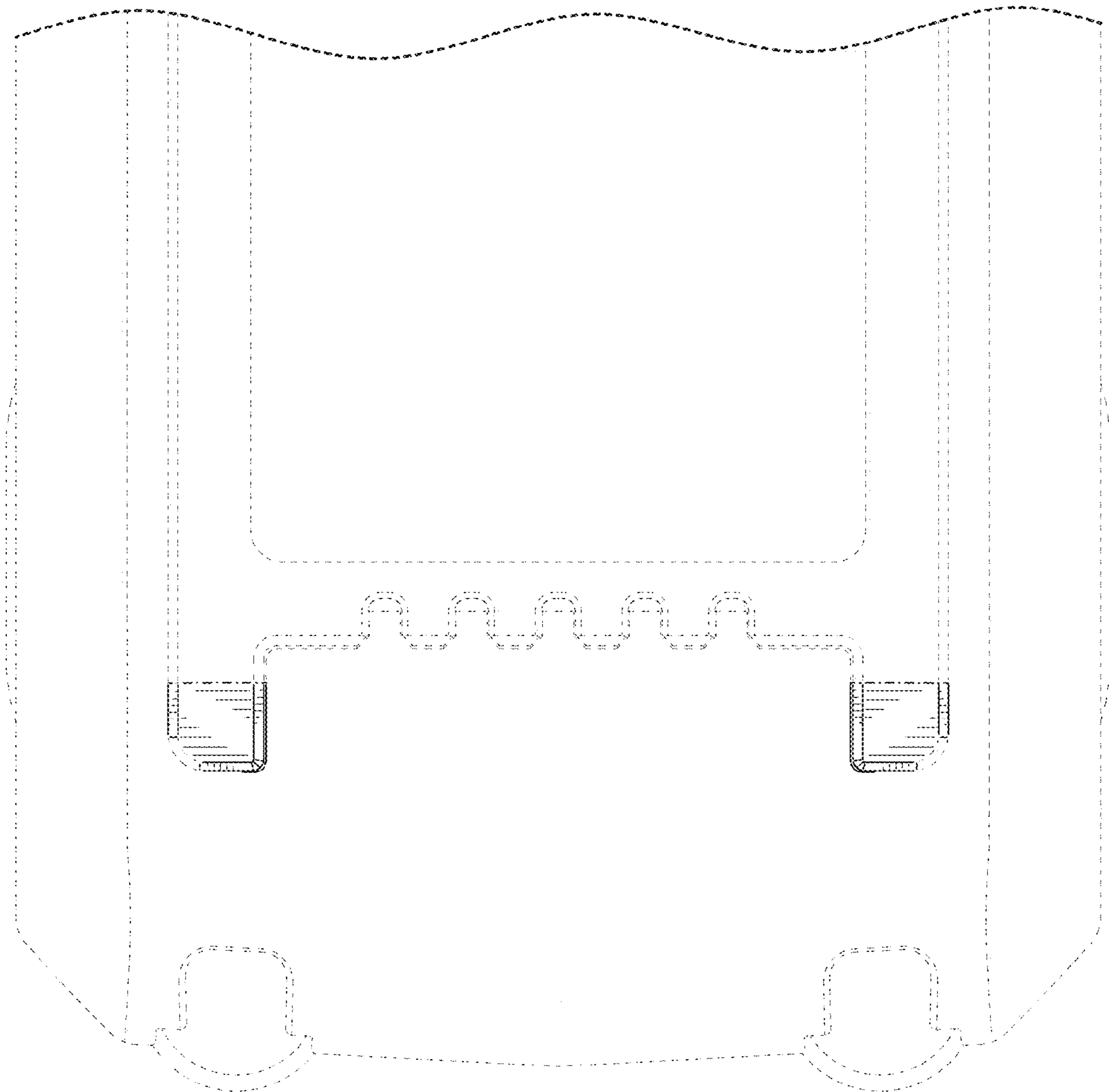


FIG. 6



**FIG. 7**



**FIG. 8**