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(12) **United States Design Patent**  
**Aprile et al.**

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(54) **OPTICAL SCANNER**

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USPC ..... **D14/420**

(58) **Field of Classification Search**

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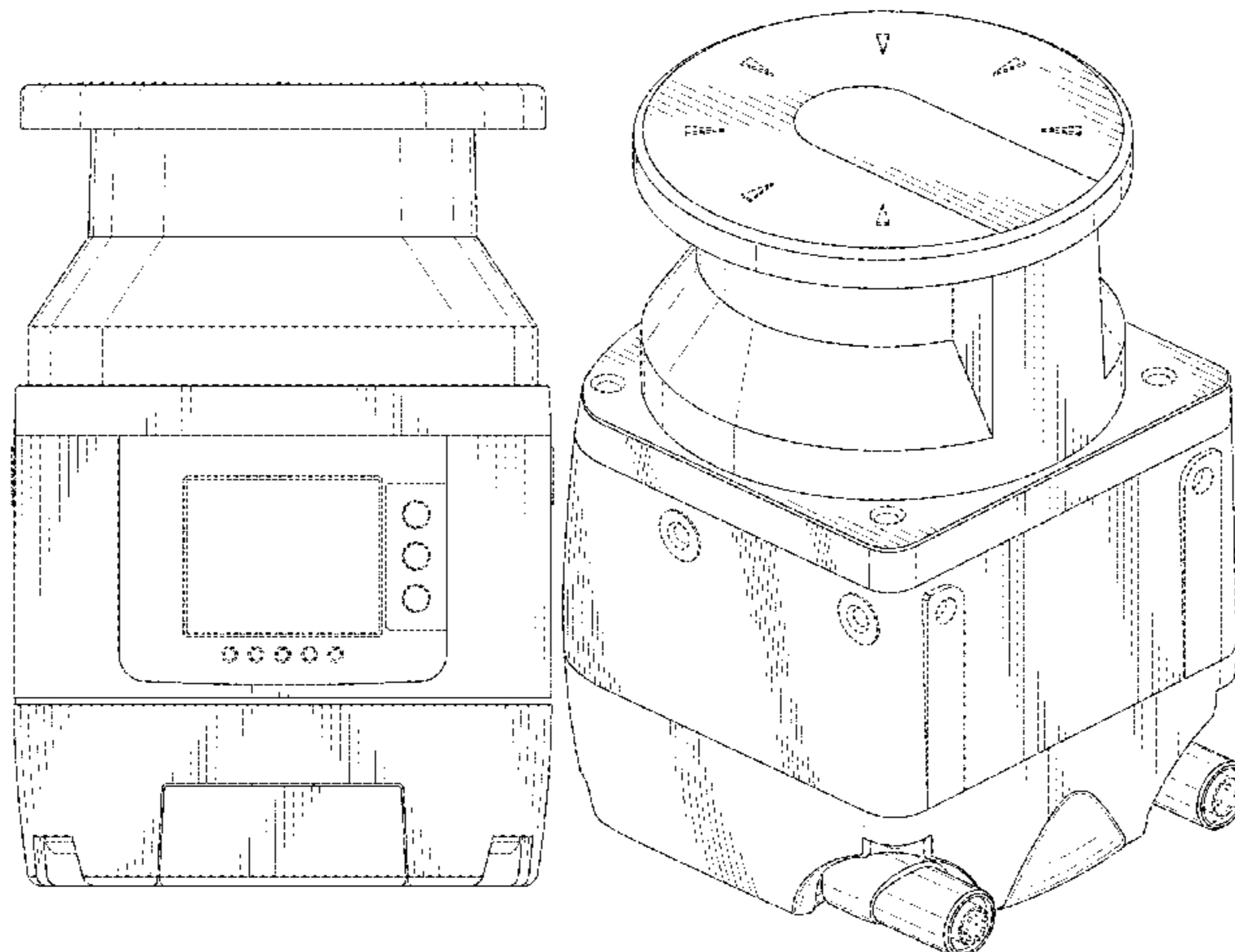
372/57, 62, 55, 68, 108, 95, 97; 348/143, 348/169; 250/328, 330, 334; 89/41.06; 701/28; 702/188; 703/6  
CPC ..... H01S 3/0315; H01S 3/0975; H01S 3/041; H01S 3/038; H01S 3/2232; H01S 3/0305; H01S 3/08081; H01S 3/08095; H01S 3/2383; G01B 11/00; G01B 11/04; G01B 11/24; G01B 11/026; G01B 11/002; G01B 11/2518; G02B 26/10; G02B 26/101; G01C 15/00; G01C 15/002; G01C 15/006; G01C 15/008; G01S 17/02; G01S 17/023; G01S 17/42; G01S 17/89; G01S 17/08; G01S 17/10; G01S 7/4817; G01S 7/497; G01S 7/487; G01S 7/481; G01S 7/4813; G01S 7/4812; G05B 9/00; G05B 9/02; H01R 29/00; G01N 27/9006; G01N 27/9013; G01J 1/0488; G01J 1/0414; G01V 8/18; G01V 8/22; G01V 8/26

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,542,986 A \* 9/1985 Berdanier ..... G01S 7/4811  
250/334  
4,626,053 A \* 12/1986 Fayfield ..... H01R 29/00  
439/222  
4,806,761 A \* 2/1989 Carson ..... H01L 27/14649  
250/332  
4,902,128 A \* 2/1990 Siebecker ..... F41G 3/065  
250/332  
4,983,837 A \* 1/1991 Cooper ..... H04N 3/09  
250/334  
5,204,489 A \* 4/1993 Pellarin ..... F41G 3/065  
359/403  
5,212,533 A \* 5/1993 Shibuya ..... G01C 1/02  
356/5.15  
5,479,016 A \* 12/1995 Curry ..... G01J 5/02  
250/332  
5,530,246 A \* 6/1996 Hawkins ..... G02B 23/04  
250/330  
5,877,688 A \* 3/1999 Morinaka ..... G01S 7/4813  
340/584  
6,034,803 A \* 3/2000 Sullivan ..... G01S 7/4811  
356/141.1  
D439,532 S \* 3/2001 Off ..... D10/81



# US D871,412 S

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6,374,024	B1 *	4/2002	Iijima .....	G02B 3/0012 257/E27.147	2013/0250302	A1 *	9/2013	Kramer .....	G01S 17/42 356/434
6,721,262	B1 *	4/2004	Jordache .....	G11B 7/1387 720/672	2014/0166866	A1 *	6/2014	Gehring .....	G01S 17/42 250/234
D504,074	S *	4/2005	Tsujimura .....	D10/46	2014/0184794	A1 *	7/2014	Coombs .....	G01N 27/90 348/143
D531,525	S *	11/2006	Dold .....	D10/46	2014/0211194	A1 *	7/2014	Pacala .....	G01S 7/4813 356/5.01
7,358,498	B2 *	4/2008	Geng .....	G08B 13/19608 250/347	2014/0240691	A1 *	8/2014	Mheen .....	G01S 17/89 356/4.07
7,545,485	B2 *	6/2009	Okada .....	G01S 7/4812 356/4.01	2016/0011594	A1 *	1/2016	Chung .....	G05D 1/0231 701/28
D606,426	S *	12/2009	Chen .....	D10/46	2016/0047901	A1 *	2/2016	Pacala .....	G01S 7/4815 356/5.01
D616,481	S *	5/2010	Wampler .....	D16/208	2016/0155306	A1 *	6/2016	Kawanaka .....	F16P 3/142 340/555
8,059,263	B2 *	11/2011	Haberer .....	G01S 7/4811 356/28.5	2016/0163171	A1 *	6/2016	Yamazaki .....	G08B 13/194 348/152
D654,383	S *	2/2012	Pfrenge .....	D10/46	2017/0269209	A1 *	9/2017	Hall .....	G01S 17/42
D659,030	S *	5/2012	Anselment .....	D10/46	2017/0299700	A1 *	10/2017	Pacala .....	G01S 17/42
8,319,171	B2 *	11/2012	Kawabata .....	G01S 7/4812 250/206.1	2017/0322074	A1 *	11/2017	Corrain .....	G01J 1/0414
8,675,181	B2 *	3/2014	Hall .....	G01C 1/04 356/3.01	2017/0322075	A1 *	11/2017	Lorenzoni .....	G01J 1/0414
8,735,792	B2 *	5/2014	Hammes .....	G06K 9/2027 250/205	2017/0347037	A1 *	11/2017	Hall .....	G02B 23/00
D712,759	S *	9/2014	Forsberg .....	D10/66	2017/0350983	A1 *	12/2017	Hall .....	G01C 1/06
8,836,922	B1 *	9/2014	Pennecot .....	G01S 17/89 356/4.01	2018/0011175	A1 *	1/2018	Faetani .....	G01S 7/4817
D737,695	S *	9/2015	Angenendt .....	D10/46	2018/0144638	A1 *	5/2018	Alessi .....	B60Q 1/525
9,225,914	B2 *	12/2015	Kingdon .....	H04N 5/33	2019/0187255	A1 *	6/2019	Jang .....	G01S 7/481
D752,998	S *	4/2016	Robinson .....	D10/65	2019/0235060	A1 *	8/2019	Iwasawa .....	G01S 17/42
D768,013	S *	10/2016	Stecker .....	D10/70	2019/0242982	A1 *	8/2019	Wang .....	G01S 7/4817
D772,737	S *	11/2016	Robinson .....	D10/65	2019/0243023	A1 *	8/2019	Steinkogler .....	G01S 17/42
D797,582	S *	9/2017	Ewringmann .....	D10/70	2019/0250251	A1 *	8/2019	Gibson .....	G01S 7/4813
9,753,178	B2 *	9/2017	Beckey .....	C09J 5/00	2019/0250255	A1 *	8/2019	Frucht .....	G01S 7/4817
RE46,672	E *	1/2018	Hall		2019/0253701	A1 *	8/2019	Himel .....	H04N 17/002
D814,950	S *	4/2018	Inskeep .....	D10/70					
D816,518	S *	5/2018	Brown .....	E06B 9/24 D10/46					
D818,853	S *	5/2018	Golnik .....	D10/70					
D821,232	S *	6/2018	Ewringmann .....	D10/70					
10,063,849	B2 *	8/2018	Pacala .....	H04N 13/395					
D830,864	S *	10/2018	Worden .....	D10/75					
10,109,183	B1 *	10/2018	Franz .....	G08C 23/04					
10,122,416	B2 *	11/2018	Berger .....	H04B 5/0037					
10,222,475	B2 *	3/2019	Pacala .....	G02B 27/0955					
D849,573	S *	5/2019	Haban .....	D10/70					
10,359,507	B2 *	7/2019	Berger .....	G01S 7/497					
10,373,451	B2 *	8/2019	Fayfield .....	G08B 21/182					
2002/0143506	A1 *	10/2002	D'Aligny .....	G01B 11/002 703/6					
2003/0090646	A1 *	5/2003	Riegl .....	G01C 15/002 356/3					
2005/0168720	A1 *	8/2005	Yamashita .....	G01S 7/4817 356/4.01					
2006/0197867	A1 *	9/2006	Johnson .....	F16M 11/10 348/373					
2008/0278715	A1 *	11/2008	Swenson .....	G01S 7/4812 356/141.5					
2009/0002678	A1 *	1/2009	Tanaka .....	G01S 7/4813 356/4.01					
2009/0166424	A1 *	7/2009	Gerst .....	G06K 7/10722 235/462.2					
2009/0168045	A1 *	7/2009	Lin .....	G01C 15/002 356/4.01					
2009/0238442	A1 *	9/2009	Upham .....	G01R 31/2896 382/145					
2010/0046953	A1 *	2/2010	Shaw .....	H01S 5/423 398/115					
2011/0032398	A1 *	2/2011	Lenchenkov .....	H01L 27/14621 348/294					
2011/0077814	A1 *	3/2011	Haberer .....	G01S 7/4812 701/28					
2011/0216304	A1 *	9/2011	Hall .....	G01S 7/4813 356/4.01					
2012/0026466	A1 *	2/2012	Zhou .....	A61B 3/1015 351/214					
2012/0249996	A1 *	10/2012	Tanaka .....	G01S 7/4817 356/4.01					

## OTHER PUBLICATIONS

Banner Engineering SX Series Safety Laser Scanner, Oct. 2018, SX5-B <https://www.bannerengineering.com/us/en/products/machine-safety/safety-laser-scanners/sx-series.html?sort=4#all> (Year: 2018).\*

\* cited by examiner

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## (57) CLAIM

We claim the ornamental design for an optical scanner, as shown and described.

## DESCRIPTION

FIG. 1 is a front isometric view of an optical scanner showing the new design;  
 FIG. 2 is a left side elevation view thereof;  
 FIG. 3 is a right side elevation view thereof;  
 FIG. 4 is a front elevation view thereof;  
 FIG. 5 is a rear elevation view thereof;  
 FIG. 6 is a top plan view thereof;  
 FIG. 7 is a bottom view thereof;  
 FIG. 8 is a front isometric view of the optical scanner according to a second embodiment;  
 FIG. 9 is a left side elevation view thereof;  
 FIG. 10 is a right side elevation view thereof;  
 FIG. 11 is a front elevation view thereof;  
 FIG. 12 is a rear elevation view thereof;  
 FIG. 13 is a top plan view thereof; and,  
 FIG. 14 is a bottom view thereof.

The broken lines and unshaded portions contained within broken lines depict unclaimed features of the optical scanner that form no part of the design claim but are shown for illustrative purposes.

**1 Claim, 14 Drawing Sheets**

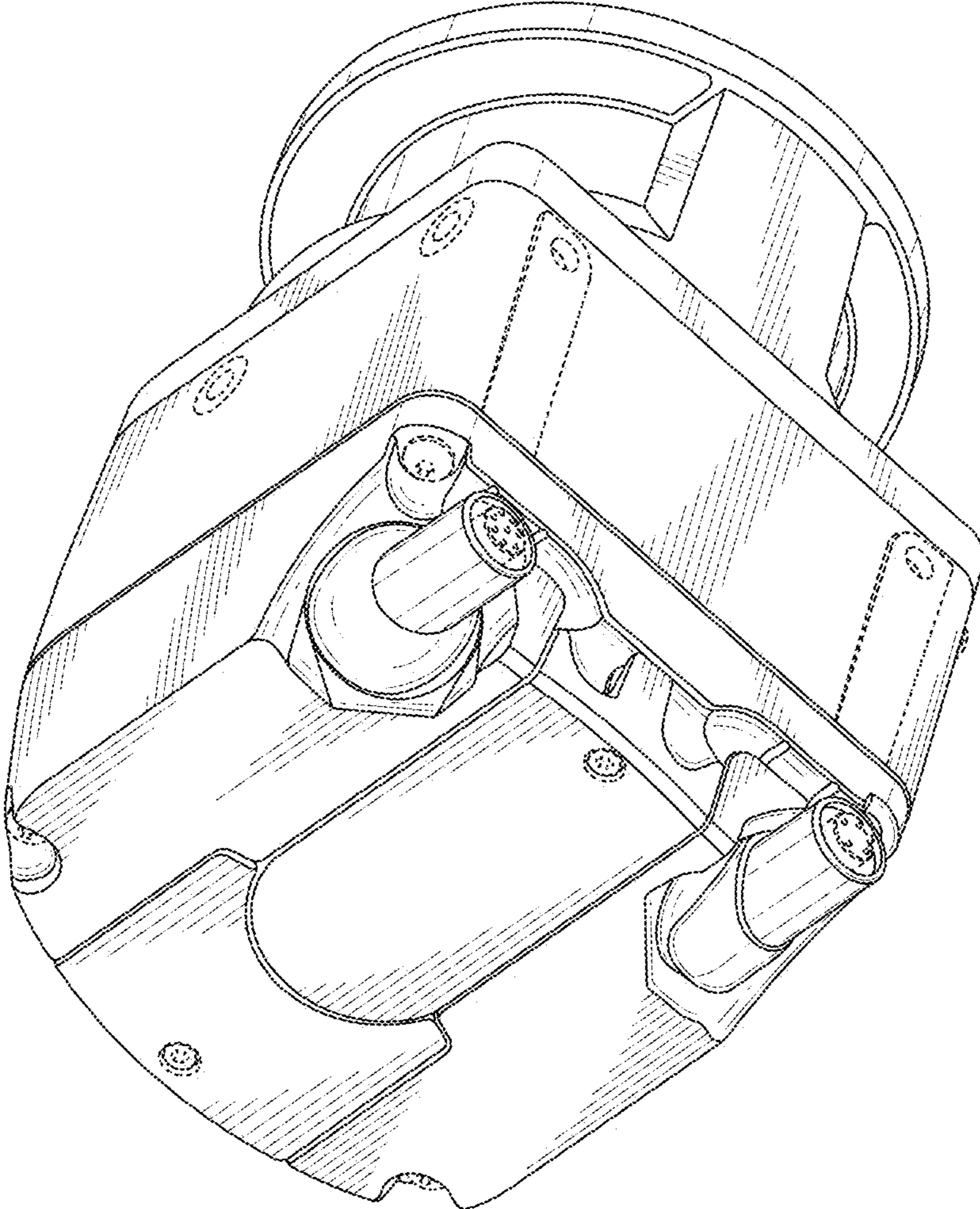


FIG. 1

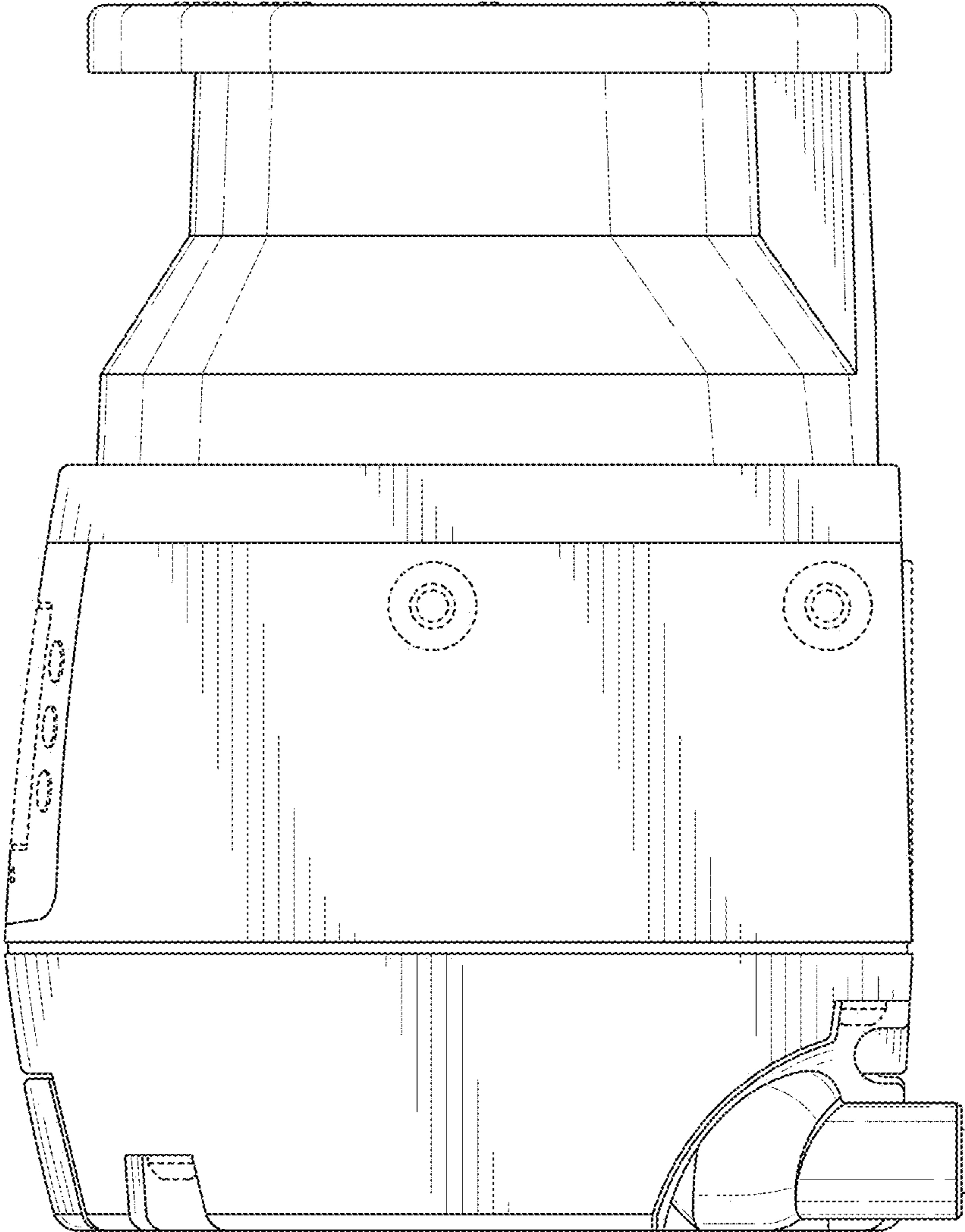


FIG. 2

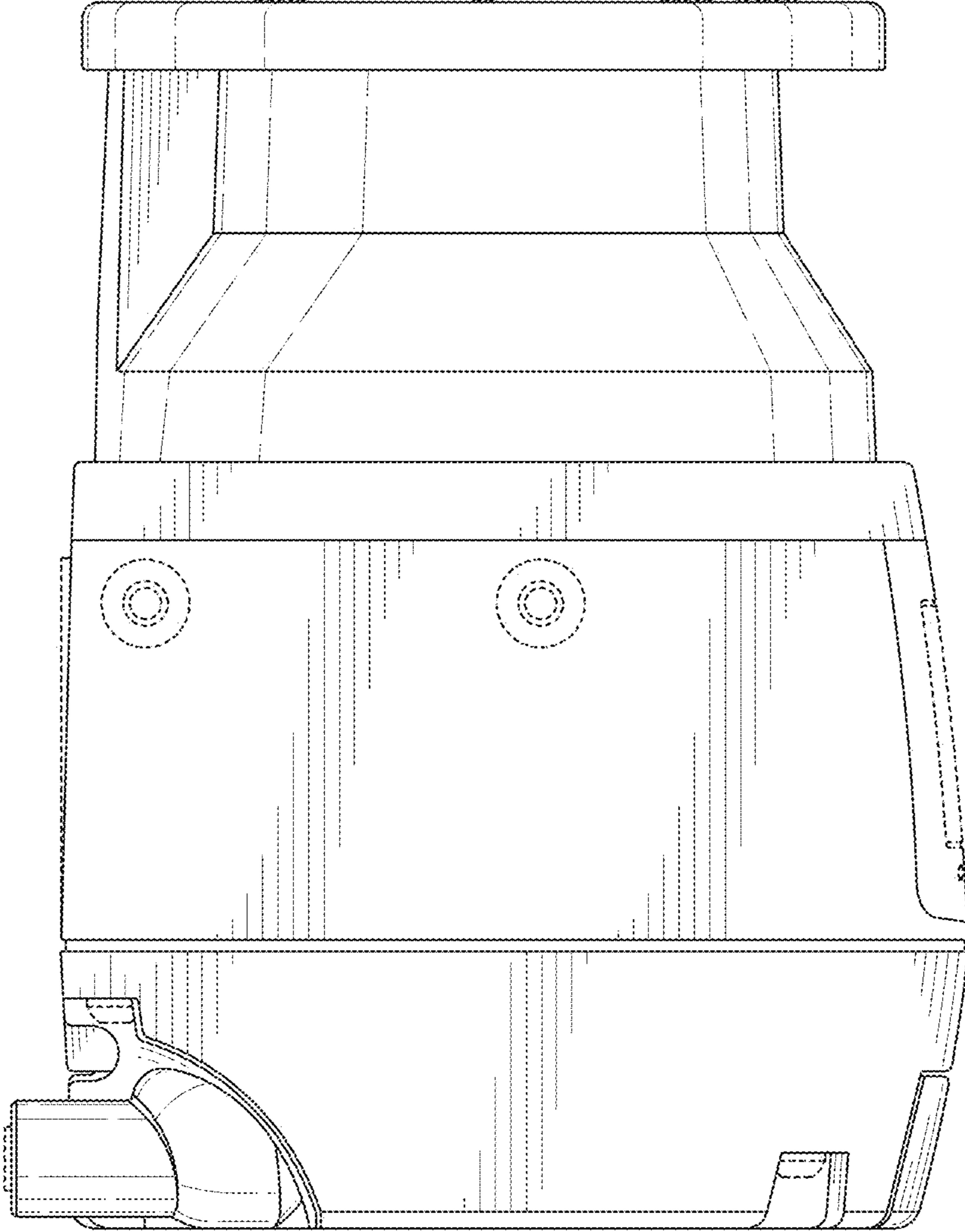


FIG. 3

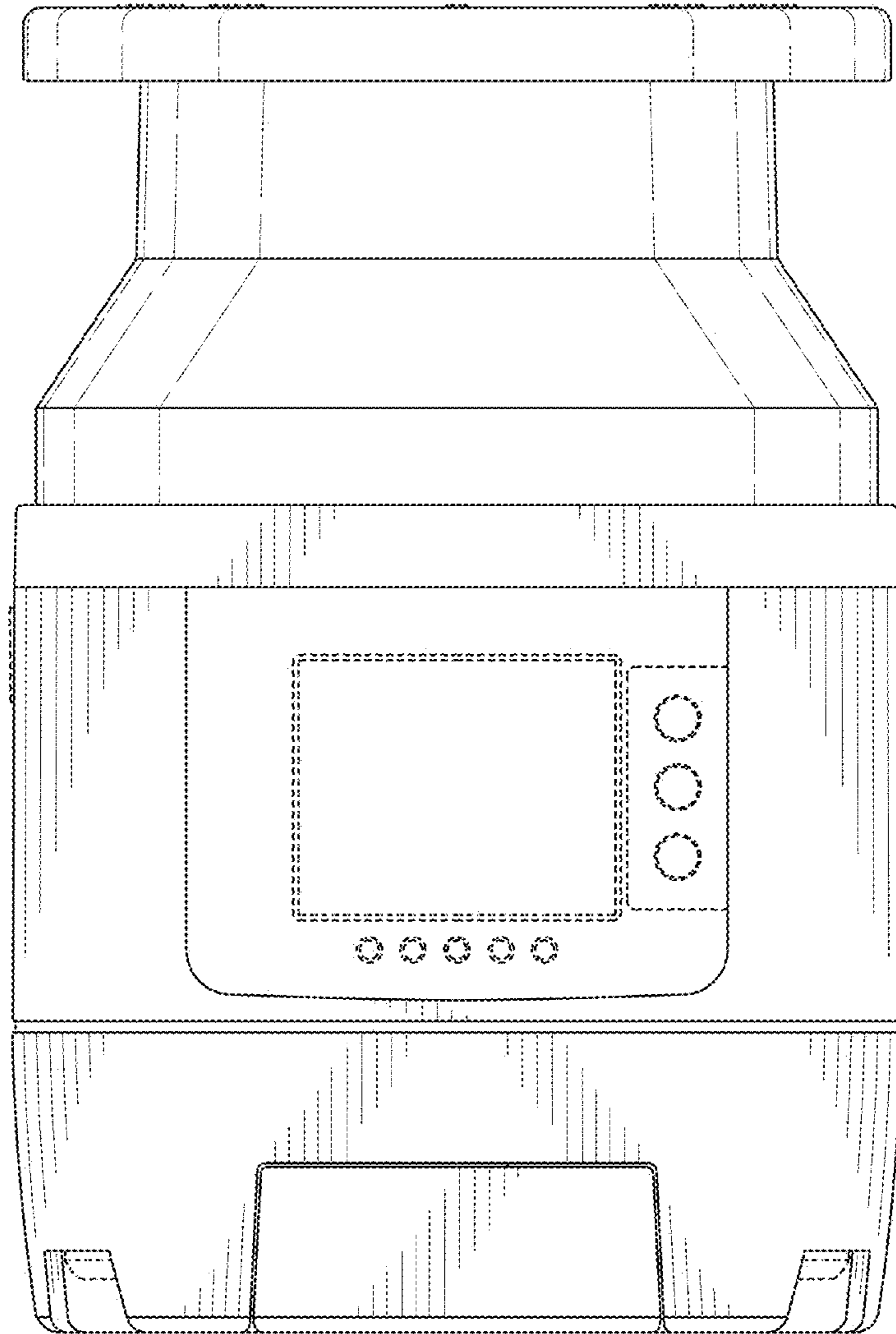


FIG. 4

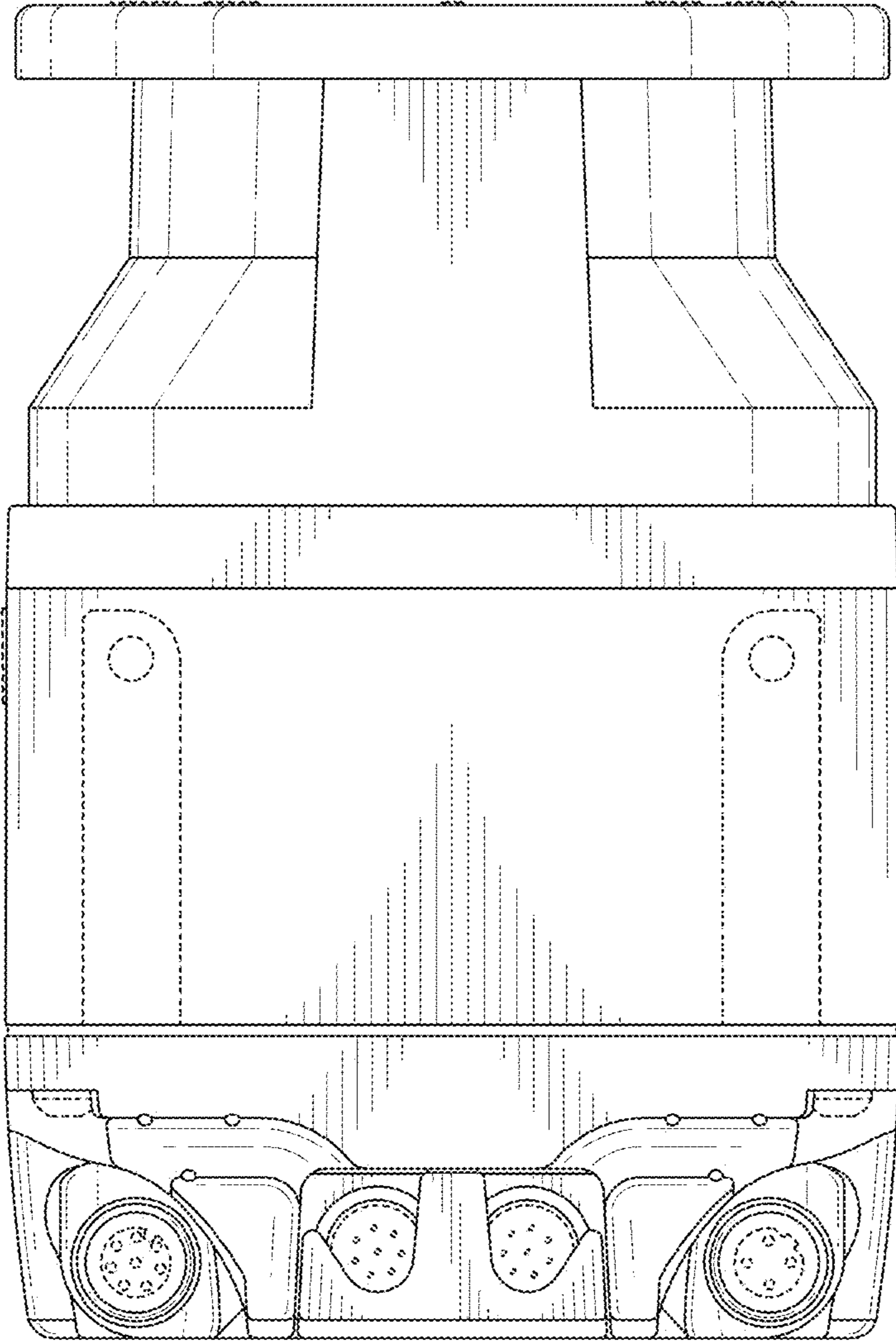


FIG. 5



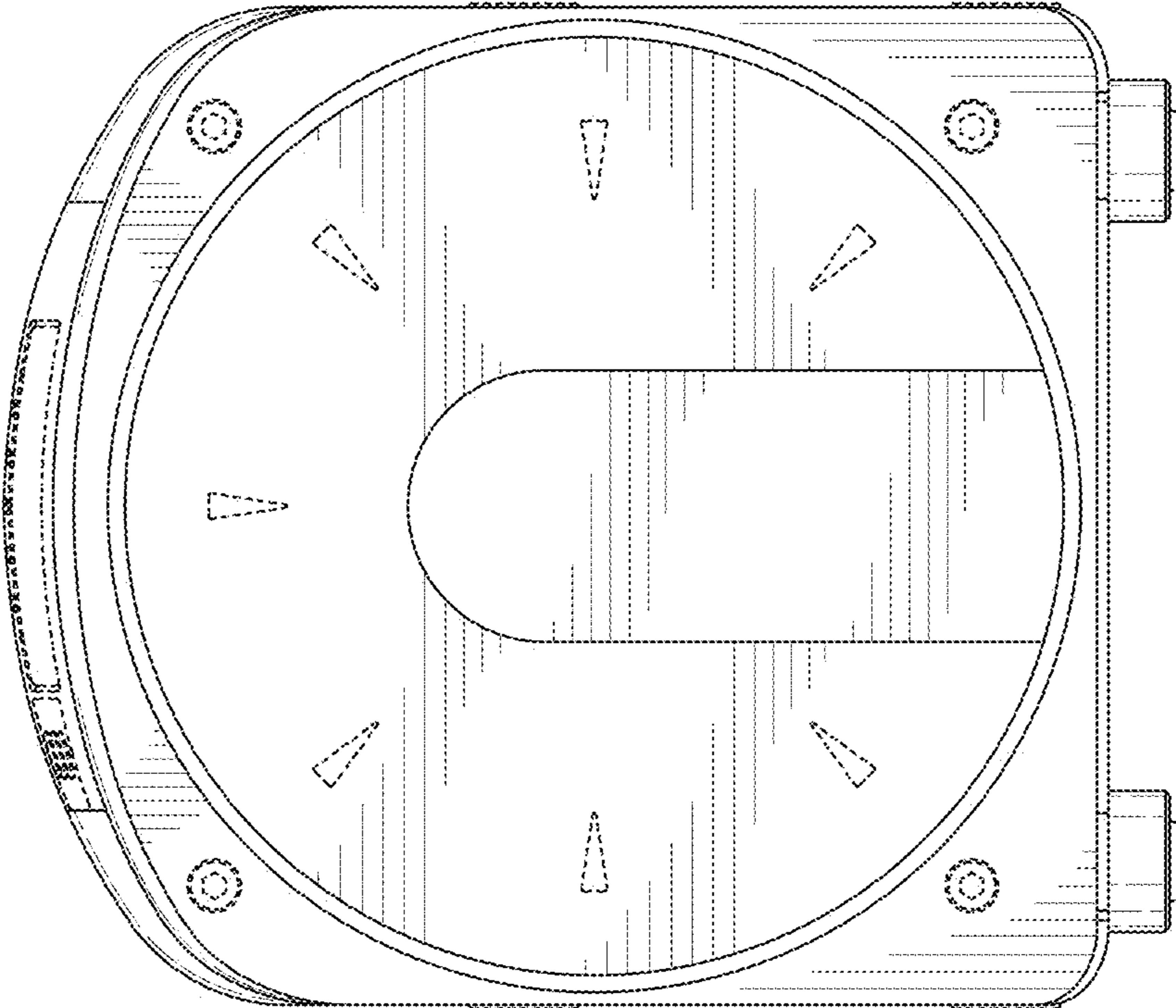


FIG. 6

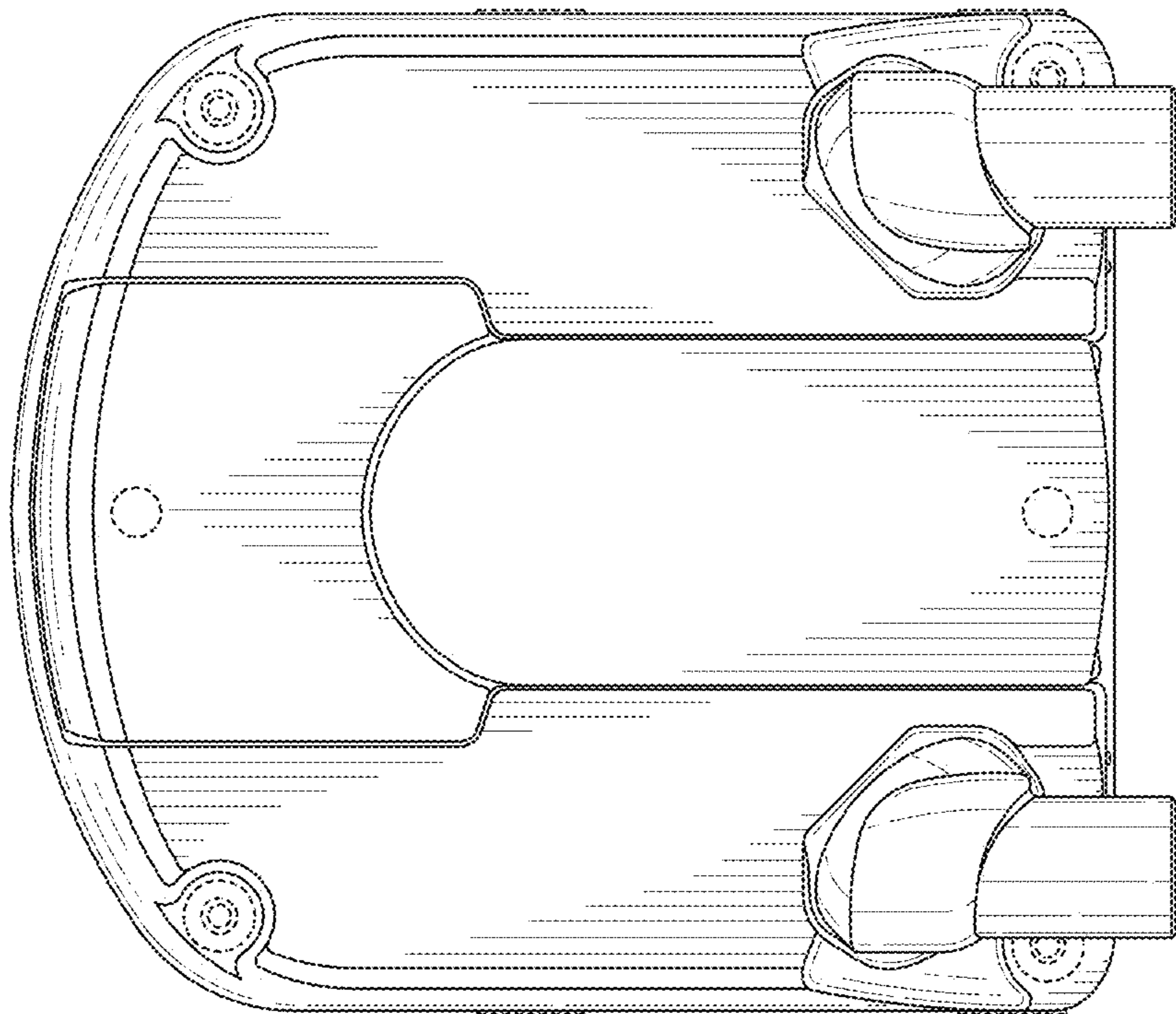


FIG. 7

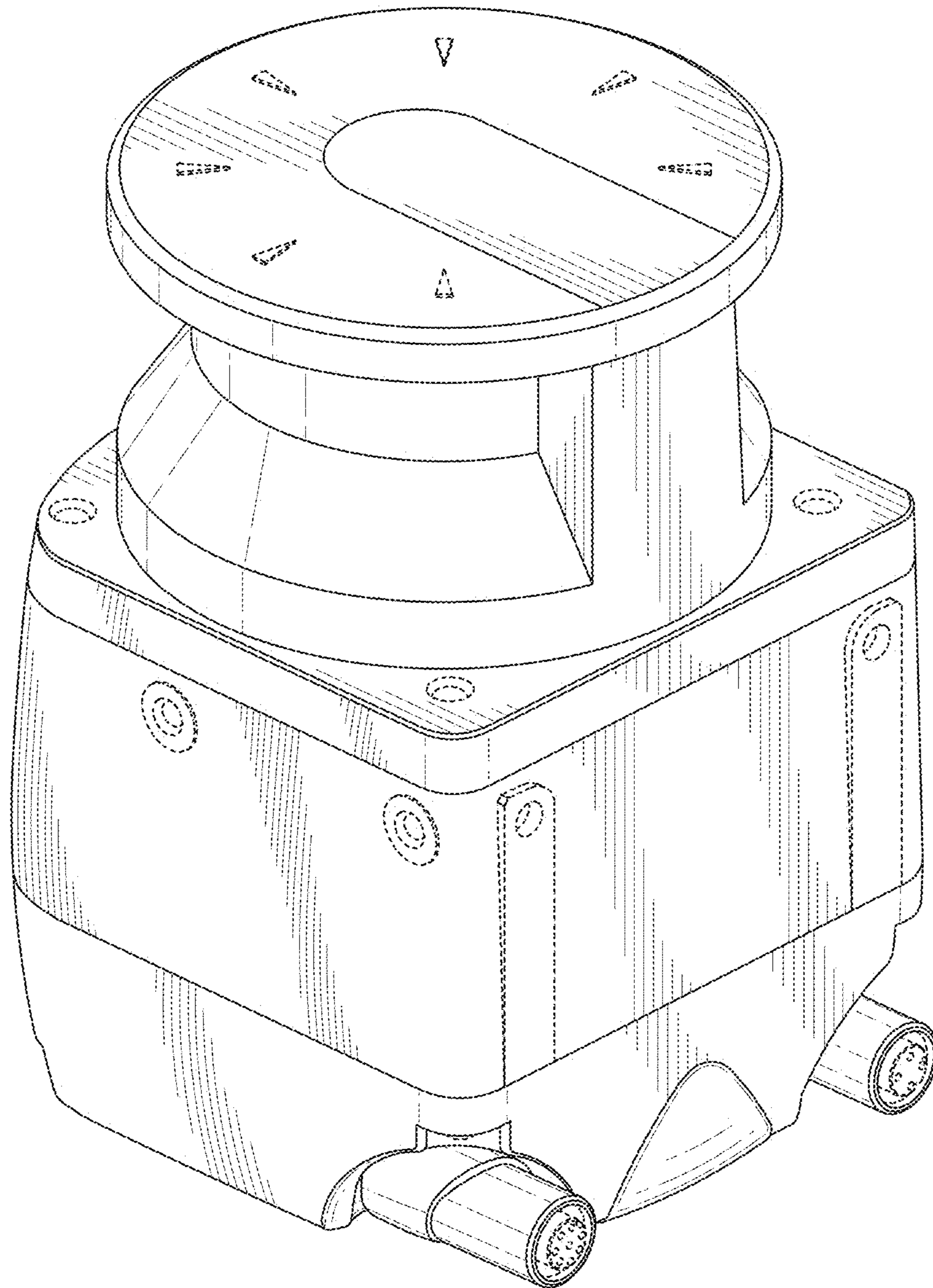


FIG. 8

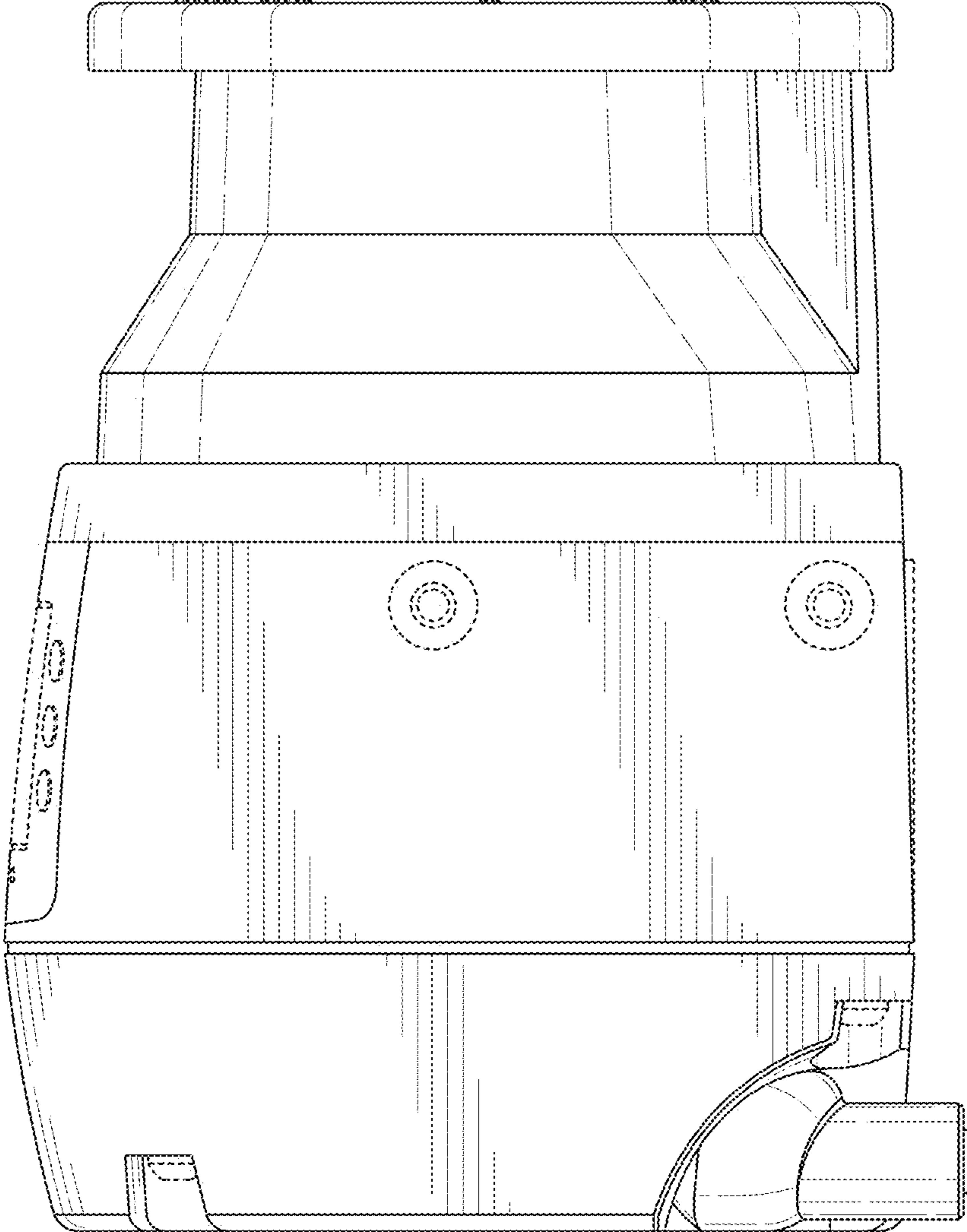


FIG. 9

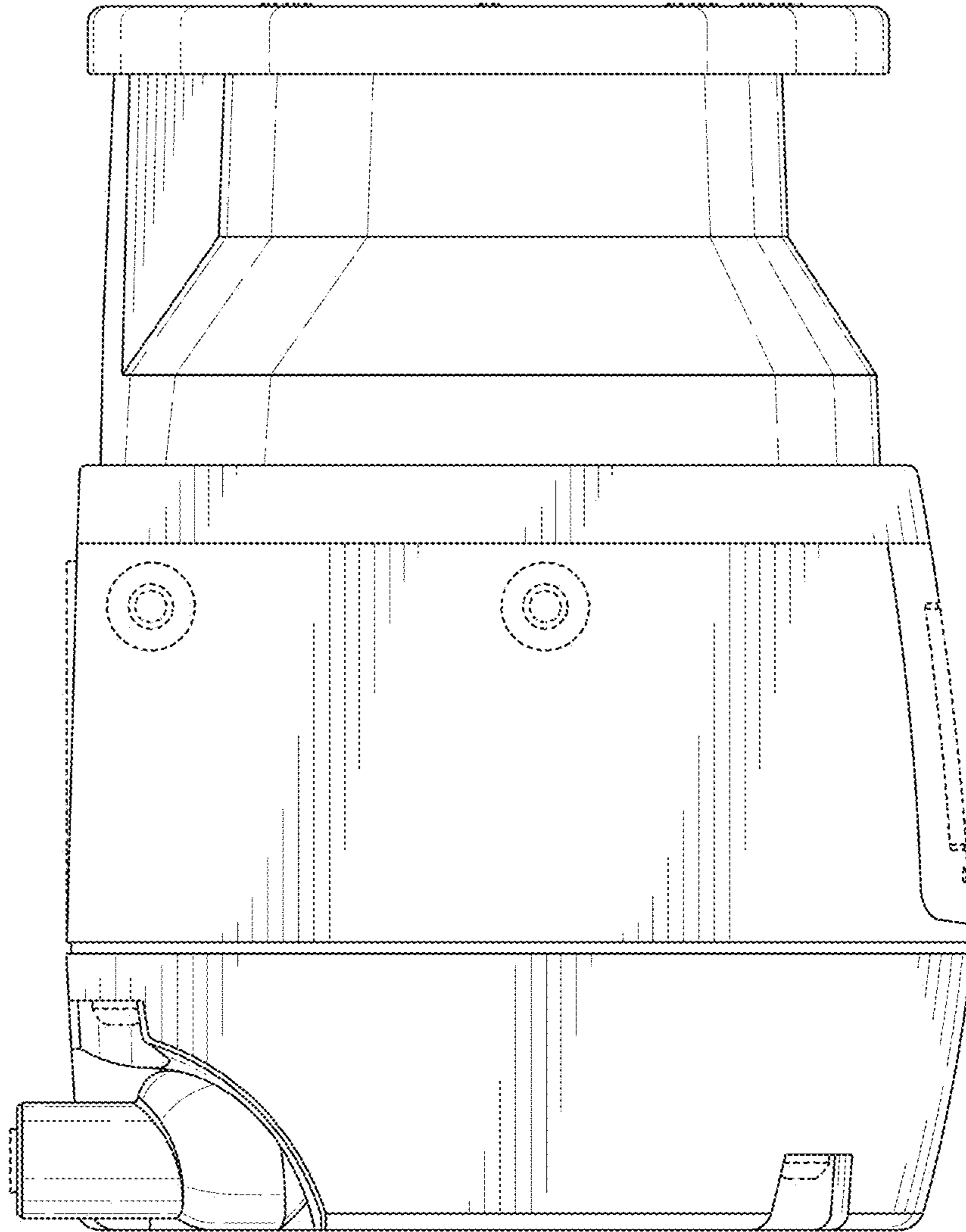


FIG. 10

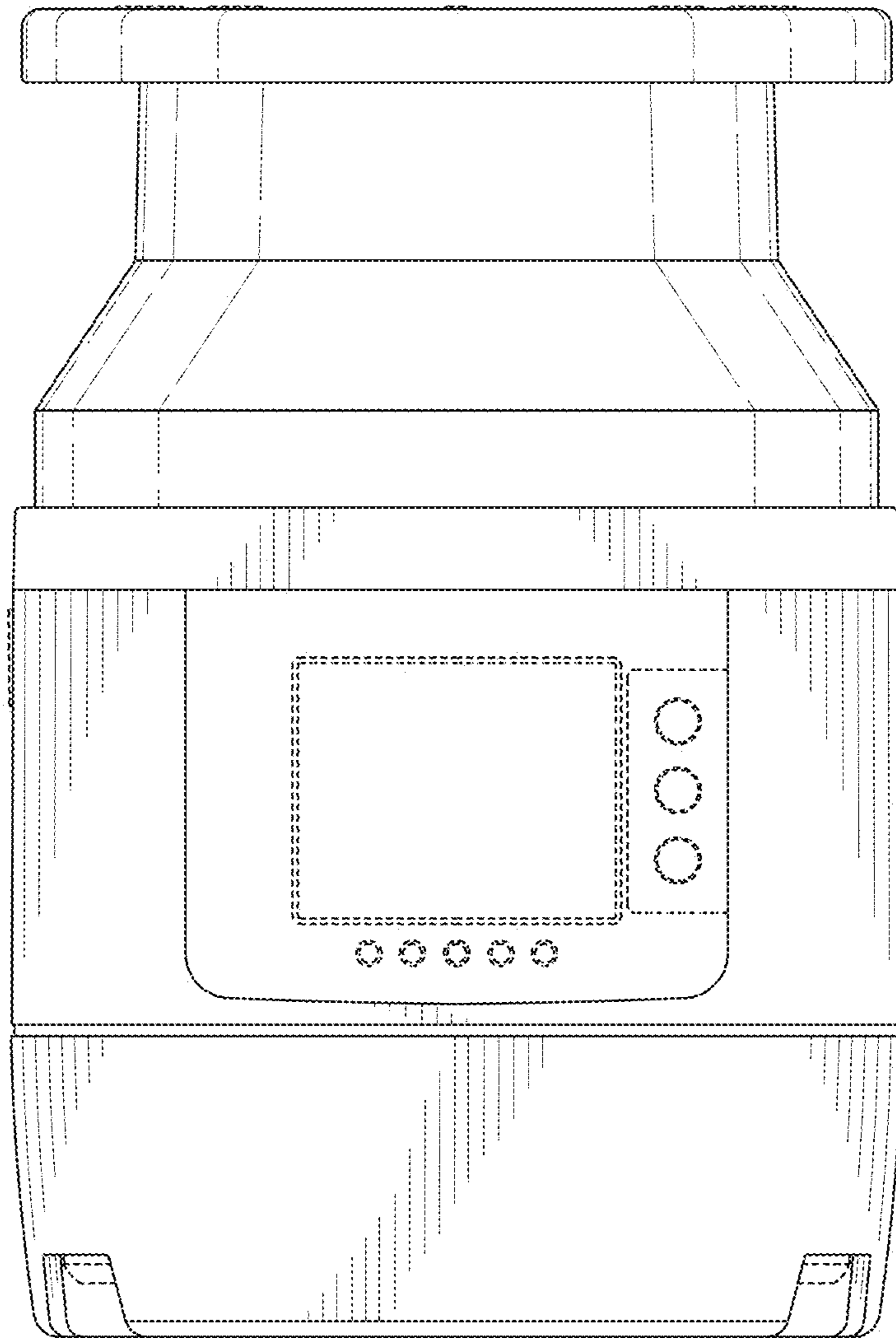


FIG. 11

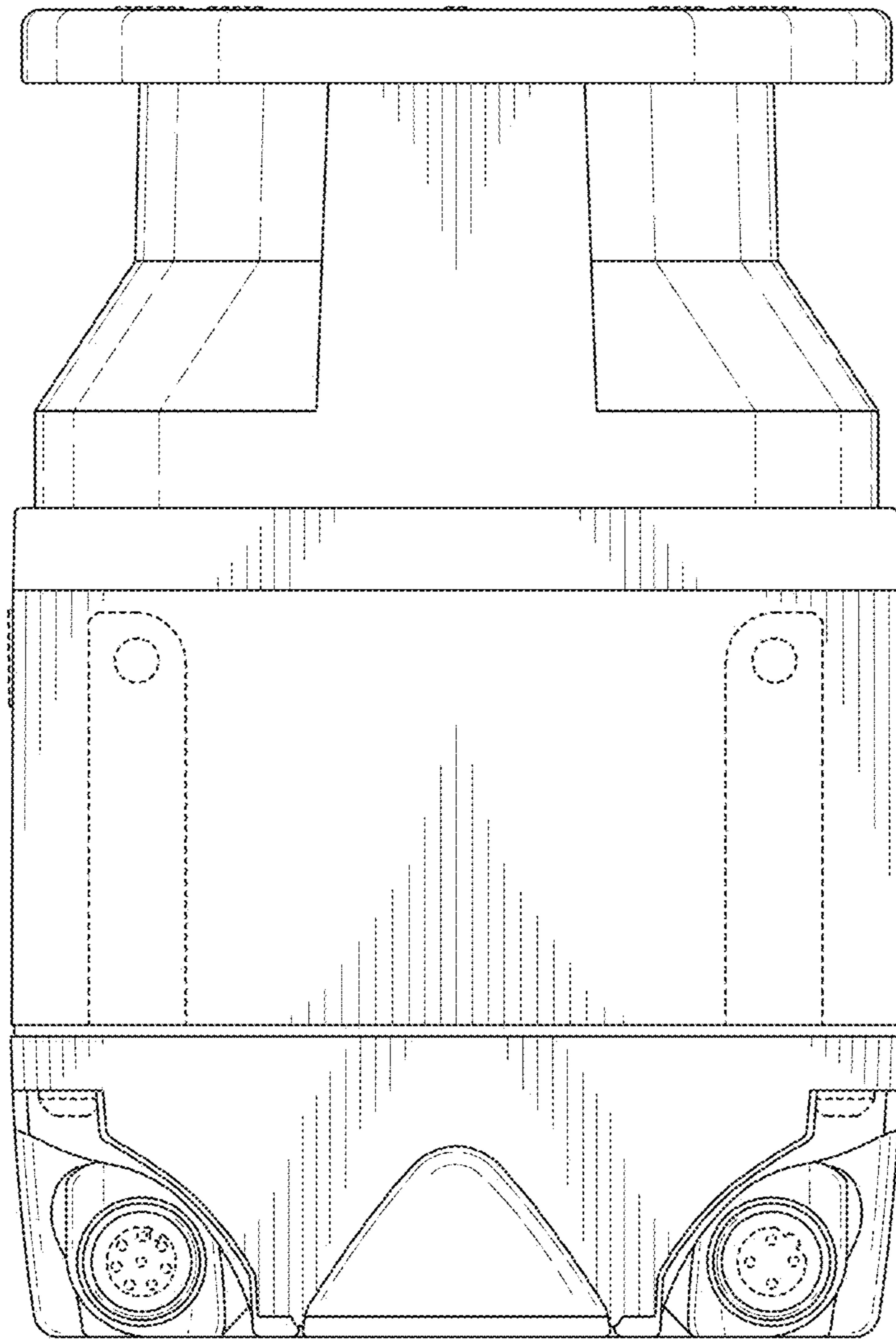


FIG. 12

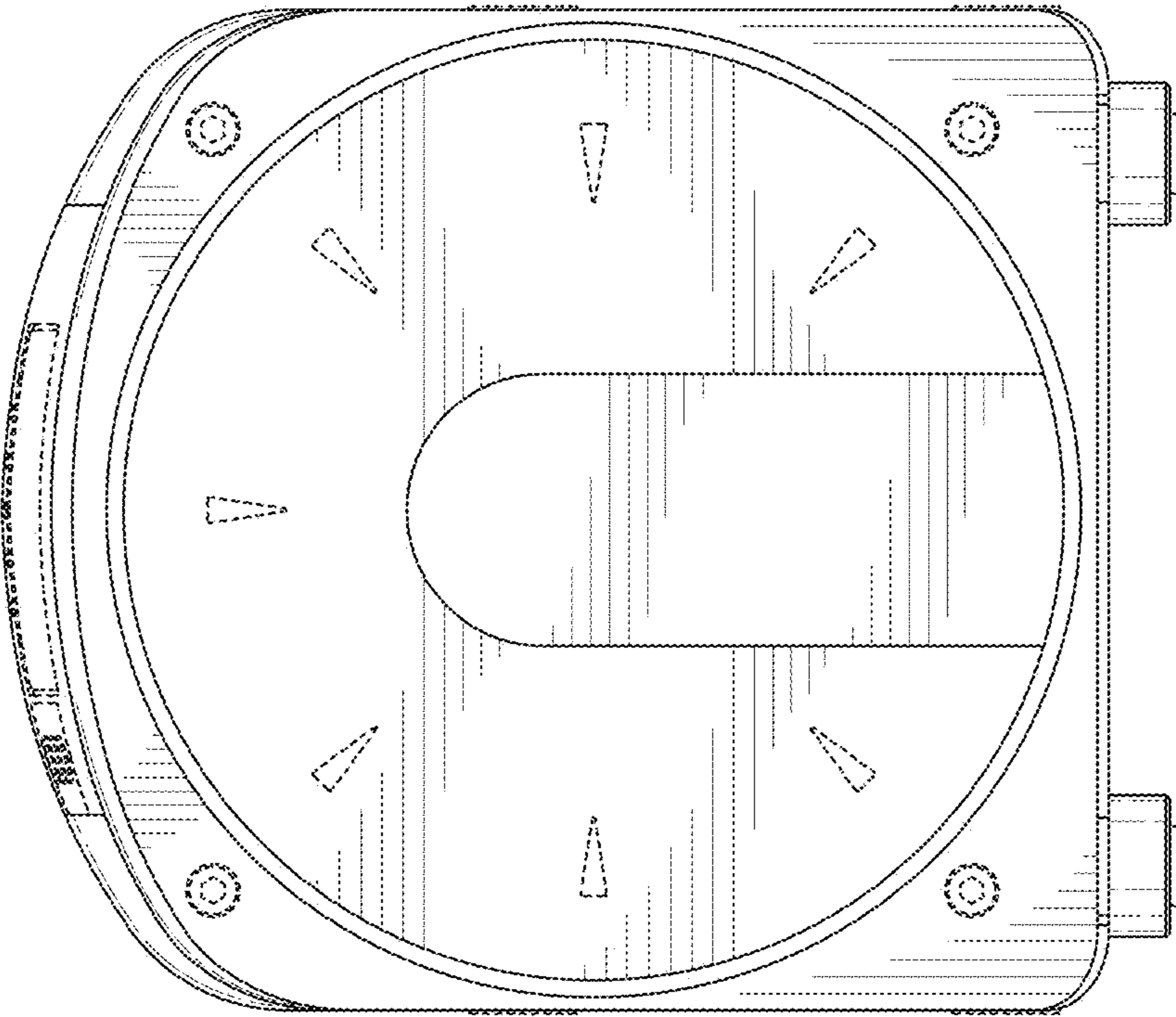


FIG. 13



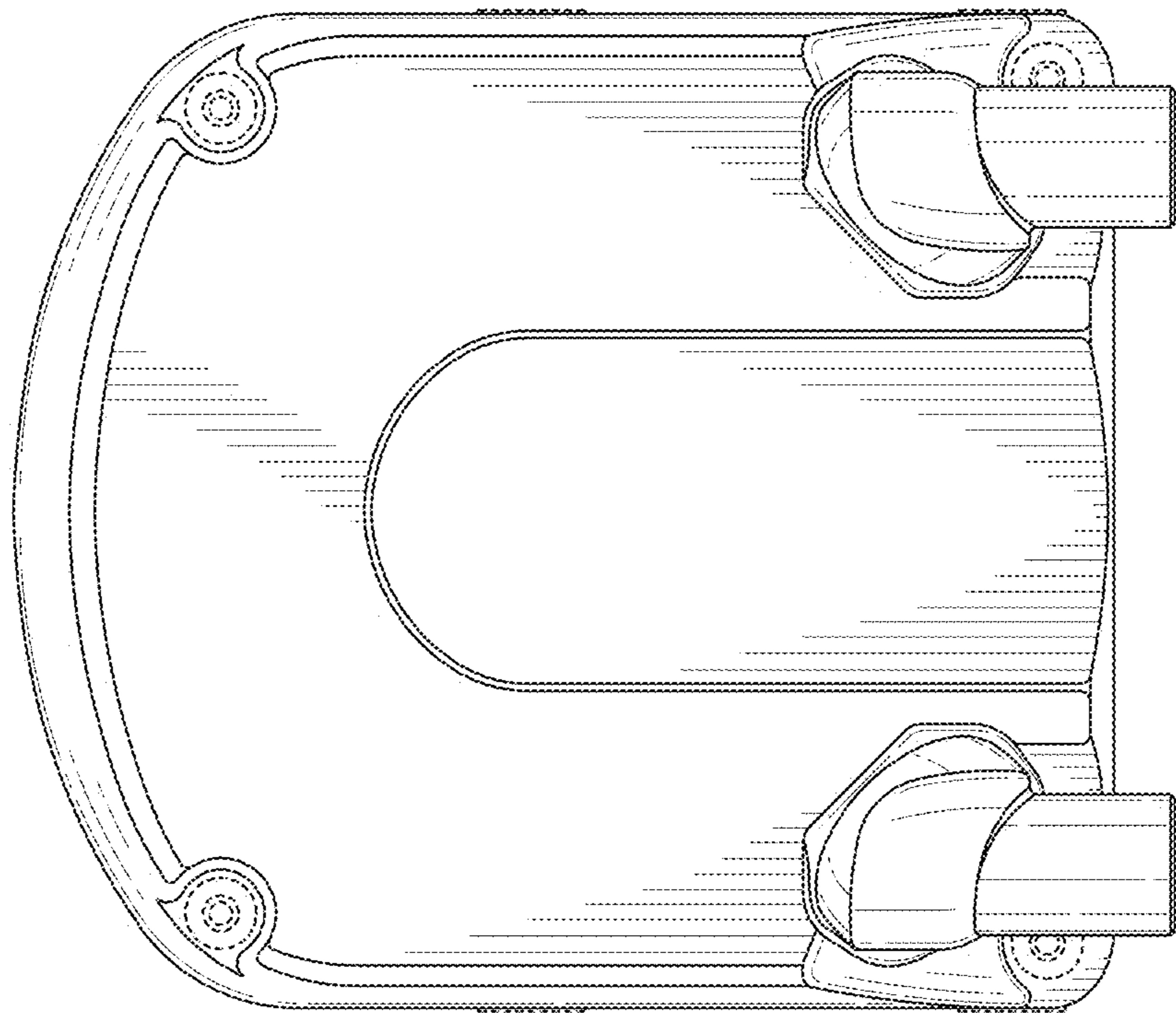


FIG. 14