

US00D864927S

(12) **United States Design Patent** (10) **Patent No.:** **US D864,927 S**
Wallace et al. (45) **Date of Patent:** **** Oct. 29, 2019**

(54) **NAVIGATION SATELLITE SYSTEM ANTENNA MOUNT**

(71) Applicant: **Trimble Inc.**, Sunnyvale, CA (US)

(72) Inventors: **Gregory Craig Wallace**, Arvada, CO (US); **Michael Sanders**, Ilam (NZ); **Shawn D. Weisenburger**, Denver, CO (US)

(73) Assignee: **Trimble Inc.**, Sunnyvale, CA (US)

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

(21) Appl. No.: **29/661,003**

(22) Filed: **Aug. 23, 2018**

Related U.S. Application Data

(62) Division of application No. 29/604,907, filed on May 22, 2017, now Pat. No. Des. 829,696, which is a (Continued)

(51) **LOC (12) Cl.** **14-03**

(52) **U.S. Cl.**
USPC **D14/238**

(58) **Field of Classification Search**
USPC D14/230–238, 138, 172, 188, 203.1, D14/203.3, 203.6, 204, 216, 221, 238.1, (Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

D225,221 S 11/1972 Sikorski
D227,785 S 7/1973 Kaysen
(Continued)

FOREIGN PATENT DOCUMENTS

EP 0 508 405 10/1992
EP 2 275 778 A1 1/2011
(Continued)

OTHER PUBLICATIONS

“Trimble Catalyst brings high-accuracy positioning to Android devices,” Trimble Catalyst DA1 antenna pictured therein, online, post date Jul. 6, 2017, URL: <https://www.gpsworld.com/trimble-catalyst-brings-high-accuracy-positioning-to-android-devices/>, retrieved Jun. 19, 2018.*

(Continued)

Primary Examiner — Jeffrey D Asch
Assistant Examiner — Rebekah A Caruso

(74) *Attorney, Agent, or Firm* — Kilpatrick Townsend & Stockton LLP

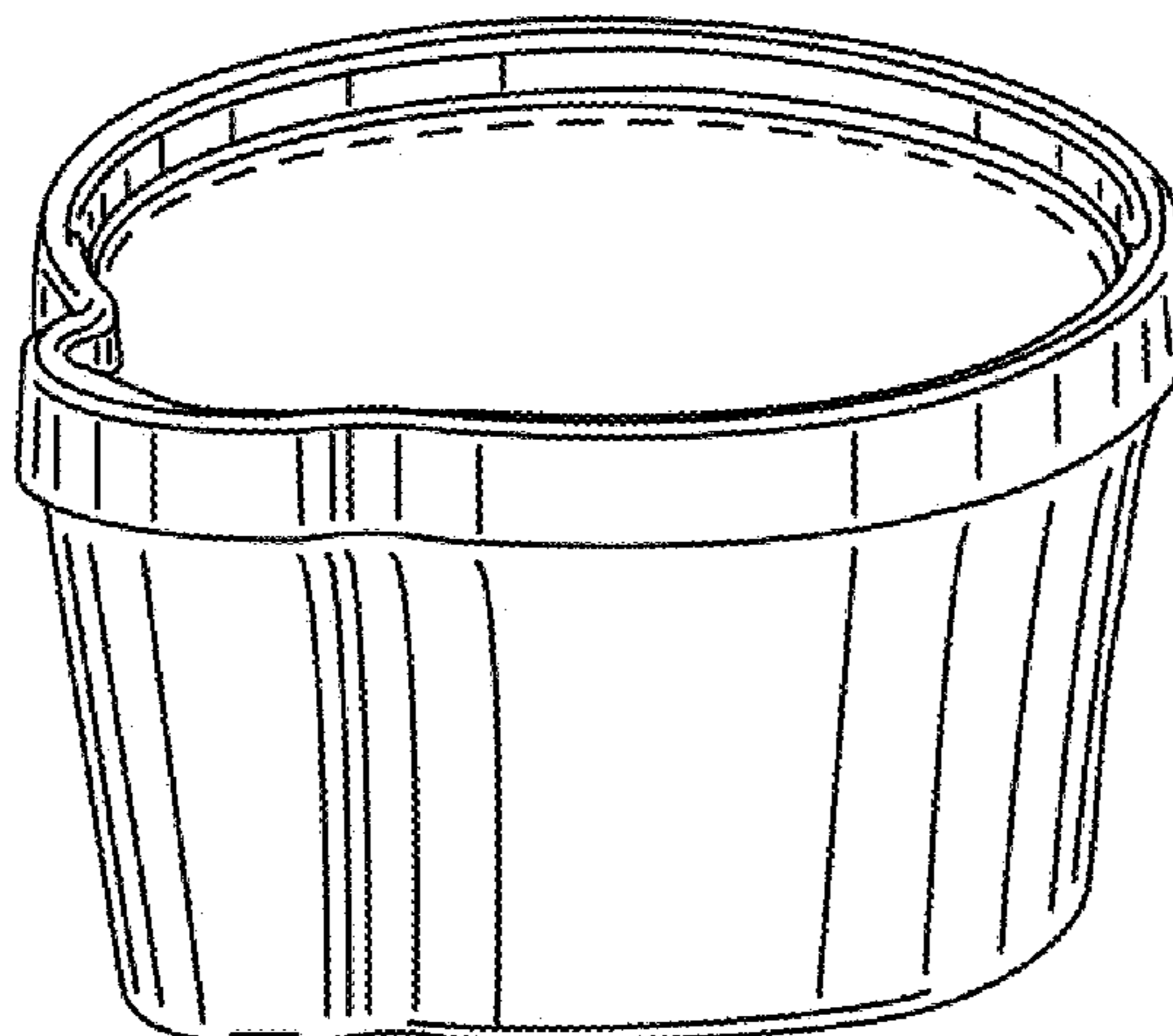
(57) **CLAIM**

We claim the ornamental design for a navigation satellite system antenna mount, as shown and described.

DESCRIPTION

FIG. 1 is a top front left perspective view of a navigation satellite system antenna mount showing our new design; FIG. 2 is a front elevational view of our navigation satellite system antenna mount, the rear elevation view of our antenna mount is a mirror image thereof; FIG. 3 is a right elevational view of our navigation satellite system antenna mount; FIG. 4 is a left elevational view of our navigation satellite system antenna mount; FIG. 5 is a top plan view of our navigation satellite system antenna mount; and, FIG. 6 is a bottom plan view of our navigation satellite system antenna mount. The dashed broken lines define the bounds of the claimed design and form no part thereof.

1 Claim, 1 Drawing Sheet



Related U.S. Application Data

division of application No. 29/527,030, filed on May 14, 2015, now Pat. No. Des. 791,109.

(58) **Field of Classification Search**

USPC D14/240, 242, 299, 314, 343, 356, 358, D14/496, 509; D13/107, 108; D12/42, D12/43; D7/303, 316; D9/523, 776
 CPC H01Q 1/007; H01Q 1/084; H01Q 1/12; H01Q 1/22; H01Q 1/38; H01Q 1/42; H01Q 7/00; H01Q 9/40; H01Q 9/285; H01Q 9/065; H01Q 9/44; H01Q 9/265; H01Q 19/10; H01Q 19/106; H01Q 19/12; H01Q 19/13; H01Q 19/15; H01Q 19/30; H01Q 21/28; H01Q 21/06; H01Q 21/062; H01Q 21/293; H01Q 23/00; H01Q 1/32; H01Q 1/3275; G05D 1/02; G05D 1/0234

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D237,770	S	*	11/1975	Daenen	.....	D7/316
D327,690	S		7/1992	Ogawa		
D361,569	S		8/1995	Jervis		
D362,470	S		9/1995	Smith		
D363,935	S		11/1995	McGreevy		
5,471,217	A		11/1995	Hatch et al.		
5,477,228	A		12/1995	Tiwari et al.		
5,621,416	A		4/1997	Lennen		
D379,992	S		6/1997	Aldama		
5,740,048	A		4/1998	Abel et al.		
D401,288	S		11/1998	Dunipace		
D401,592	S		11/1998	Nishimura		
D402,991	S	*	12/1998	Mosser	.....	D14/230
5,899,957	A		5/1999	Loomis		
5,913,170	A		6/1999	Wortham		
D421,439	S		3/2000	Giuntoli		
D426,827	S		6/2000	Tsai Wang		
D442,168	S		5/2001	Warner		
D444,144	S		6/2001	Warner et al.		
6,249,245	B1		6/2001	Watters et al.		
6,324,473	B1		11/2001	Eschenbach		
6,408,178	B1		6/2002	Wickstrom et al.		
6,429,808	B1		8/2002	King et al.		
D467,242	S		12/2002	Warner		
6,510,387	B2		1/2003	Fuchs et al.		
D471,539	S		3/2003	Warner		
6,565,144	B1		5/2003	Crean		
6,590,525	B2		7/2003	Yule et al.		
D484,494	S		12/2003	Feil et al.		
D493,447	S	*	7/2004	Noro	.....	D14/230
6,853,909	B2		2/2005	Scherzinger		
7,151,489	B2		12/2006	Pande et al.		
D543,540	S		5/2007	Westerling		
D557,260	S		12/2007	Westerling		
7,480,511	B2		1/2009	O'Meagher		
D589,946	S	*	4/2009	Yamamoto	.....	D14/230
D592,011	S	*	5/2009	Fujimoto	.....	D7/316
7,541,974	B2		6/2009	Scherzinger		
7,570,204	B1		8/2009	McGraw et al.		
D613,275	S		4/2010	Omori		
D631,873	S		2/2011	Jin		
7,908,106	B2		3/2011	Cho et al.		
7,961,141	B2		6/2011	Dai et al.		
8,078,192	B2		12/2011	Wirola et al.		
8,134,497	B2		3/2012	Janky et al.		
8,136,545	B2		3/2012	Jablonski		
D676,270	S	*	2/2013	Heiberg	.....	D7/316
8,447,519	B2		5/2013	Basnayake et al.		
D695,725	S		12/2013	Taeger		
D698,765	S		2/2014	Bremaud		
8,699,409	B2		4/2014	Aryan et al.		
8,719,188	B2		5/2014	Kuhn et al.		

D718,389	S		11/2014	Pillot		
D729,214	S		5/2015	Beaudoin		
9,037,527	B2		5/2015	Kuhn et al.		
D744,986	S		12/2015	Huerta		
D746,798	S		1/2016	Grundy		
D750,602	S		3/2016	Yang		
D772,850	S		11/2016	Safstrom		
D773,443	S		12/2016	Sano		
D775,612	S		1/2017	Sano		
D791,109	S		7/2017	Wallace et al.		
D801,316	S		10/2017	Weber et al.		
D807,863	S		1/2018	Ploetz et al.		
D817,158	S	*	5/2018	Scimone	.....	D8/367
D823,840	S	*	7/2018	Gilbert	.....	D14/238
D825,539	S	*	8/2018	Lu	.....	D14/240
D829,696	S		10/2018	Wallace et al.		
2001/0017599	A1		8/2001	Yule et al.		
2002/0072854	A1		6/2002	Fuchs et al.		
2003/0114984	A1		6/2003	Scherzinger		
2005/0064878	A1		3/2005	O'Meagher et al.		
2005/0104774	A1		5/2005	Pande et al.		
2006/0146136	A1		7/2006	Cho et al.		
2007/0139262	A1		6/2007	Scherzinger		
2008/0319664	A1		12/2008	Kremin et al.		
2009/0024325	A1		1/2009	Scherzinger		
2009/0083430	A1		3/2009	Edge et al.		
2009/0093959	A1		4/2009	Scherzinger et al.		
2009/0189804	A1		7/2009	Ashjaee et al.		
2009/0262016	A1		10/2009	Wirola et al.		
2010/0057359	A1		3/2010	Caballero et al.		
2010/0079333	A1		4/2010	Janky et al.		
2010/0141510	A1		6/2010	Dai et al.		
2010/0260150	A1		10/2010	Aryan et al.		
2011/0018761	A1		1/2011	Walley et al.		
2011/0163914	A1		7/2011	Seymour et al.		
2011/0187590	A1		8/2011	Leandro		
2011/0195687	A1		8/2011	Das et al.		
2011/0285587	A1		11/2011	Vollath et al.		
2012/0116676	A1		5/2012	Basnayake et al.		
2013/0027246	A1		1/2013	Hadeef et al.		
2014/0081571	A1		3/2014	Briggs et al.		
2014/0184442	A1		7/2014	Large et al.		
2014/0187193	A1		7/2014	Rudow et al.		
2014/0240170	A1		8/2014	Rudow et al.		
2014/0253375	A1		9/2014	Rudow et al.		
2014/0292569	A1		10/2014	Wallace et al.		
2014/0292570	A1		10/2014	Wallace et al.		
2014/0375493	A1		12/2014	Weisenburger et al.		
2014/0378170	A1		12/2014	Rudow et al.		
2014/0378171	A1		12/2014	Rudow et al.		
2015/0009067	A1		1/2015	Rudow et al.		
2015/0043012	A1		2/2015	Rudow et al.		
2015/0045058	A1		2/2015	Rudow et al.		
2015/0045059	A1		2/2015	Rudow et al.		
2015/0050907	A1		2/2015	Rudow et al.		
2015/0057028	A1		2/2015	Rudow et al.		
2015/0289097	A1		10/2015	Rudow et al.		

FOREIGN PATENT DOCUMENTS

EP	2 722 647	A1	4/2014
KR	101241171	B1	3/2013
WO	2005/045458		5/2005
WO	2009/074654	A1	6/2009
WO	2011/120141	A1	10/2011

OTHER PUBLICATIONS

"Trimble Zephyr Geodetic Antenna," retrieved Jul. 27, 2016, retrieved from <http://www.trimble.com/gnss-inertial/zephyr-geodetic-antennas.aspx?dtID=overview>, 1 page.
 "UNAVCO Resources: GNSS Station Monumentation," posted Feb. 24, 2010, retrieved Jul. 27, 2016, retrieved from <http://kb.unavco.org/kb/article.php?id=104>, 7 pages.
 International Search Report of the International Searching Authority for PCT Application No. PCT/US2015/052370 dated Jan. 8, 2016, 6 pages.

(56)

References Cited

OTHER PUBLICATIONS

International Written Opinion of the International Searching Authority for PCT Application No. PCT/US2015/052370 dated Jan. 8, 2016, 7 pages.

International Search Report of the International Searching Authority for PCT Application No. PCT/US2015/035328 dated Oct. 15, 2015, pp. 1-13.

International Search Report of the International Searching Authority for PCT Application No. PCT/US2015/035346 Oct. 13, 2015, pp. 1-12.

Afzal, M. et al., "Design Methodology for a Dual Frequency Configurable GPS Receiver", Proceedings of the 23rd International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS 2010), Sep. 24, 2010, pp. 2892-2900.

Guixens, D. et al., "System Aspects and Practical Results for Precise Car Navigation with Modern Civil Signals Using a Software Receiver", Proceedings of the 21st International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS 2008), Sep. 19, 2008, pp. 2280-2292.

Haak, U. et al. "A Multi-Purpose Software GNSS Receiver for Automotive Applications", Proceedings of the 23rd International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS 2010), Sep. 24, 2010, pp. 1869-1874.

Ruegamer, et al., "A Flexible and Portable Multiband GNSS Front-end System", Proceedings of the 25th International Technical Meeting of the Satellite Division of the Institute of Navigation (ION GNSS 2012), Sep. 21, 2012, pp. 2378-2389.

"Comparison of Photogrammetry Software", https://en.wikipedia.org/wiki/Comparison_of_photogrammetry_software, Jul. 8, 2015, 4 pages.

"Photogrammetry", <https://en.wikipedia.org/wiki/Photogrammetry>, Jun. 25, 2015, 5 pages.

"Pi Pelican Imaging: Life in 30", <http://www.pelicanimaging.com>, 2015, 3 pages.

Church, J., "Close Range Photogrammetry vs. 3D Scanning for Archaeological Documentation", <http://ncptt.nps.gov/blog/close-range-photogrammetry-vs-3d-scanning-for-archaeological-documentation/>, Nov. 6, 2012, 10 pages.

Grussenmeyer, P. et al., "A comparison of photogrammetry software packages for the documentation of buildings", http://halshs.archives-ouvertes.fr/docs/00/28/12/54/PDF/grussenmeyer_alkhalii_FIG2000.PDF, May 21, 2008, 9 pages.

Hatch, R. R. "The Synergism of GPS Code and Carrier Measurements", Proceedings of the Third International Geodetic Symposium on Satellite Doppler Positioning, 1982, 1213-1232.

Landau, H. et al., "Virtual Reference Stations versus Broadcast Solutions in Network RTK—Advantages and Limitations", GNSS 2003, Graz, Austria, Apr. 2003, 15 pages.

Thipparthi, S., "Improving Positional Accuracy Using Carrier Smoothing Techniques in Inexpensive GPS Receivers", MSEE Thesis, New Mexico State University, Las Cruces, NM, Feb. 2004, 101 Pages. Design U.S. Appl. No. 29/527,030 Non-Final Office Action dated Aug. 12, 2016, 9 pages.

Design U.S. Appl. No. 29/527,030 Final Office Action dated Dec. 30, 2016, 6 pages.

Design U.S. Appl. No. 29/527,030 Notice of Allowance dated Mar. 29, 2017, 6 pages.

Design U.S. Appl. No. 29/604,907 Notice of Allowance dated May 25, 2018, 7 pages.

* cited by examiner

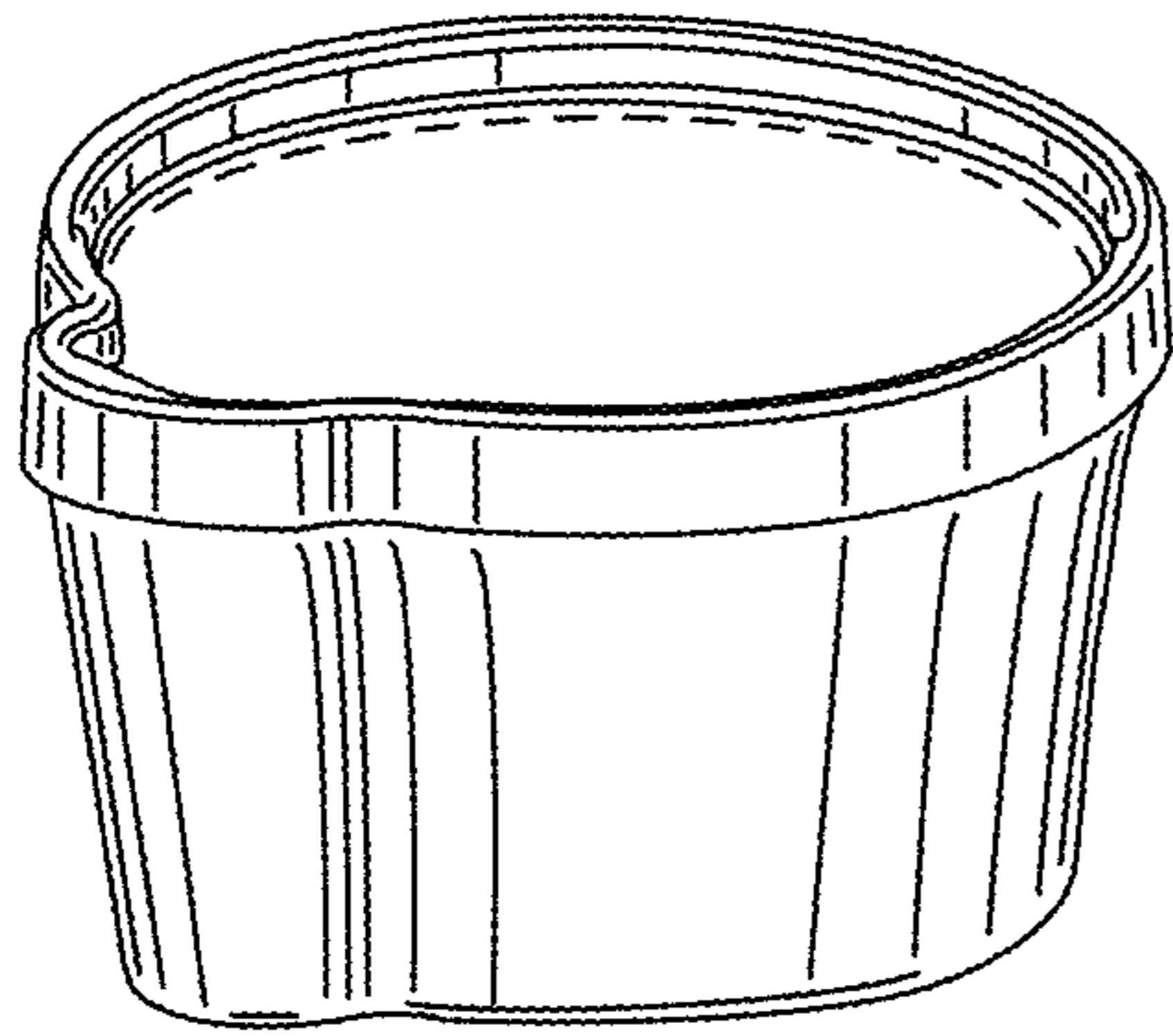


FIG. 1

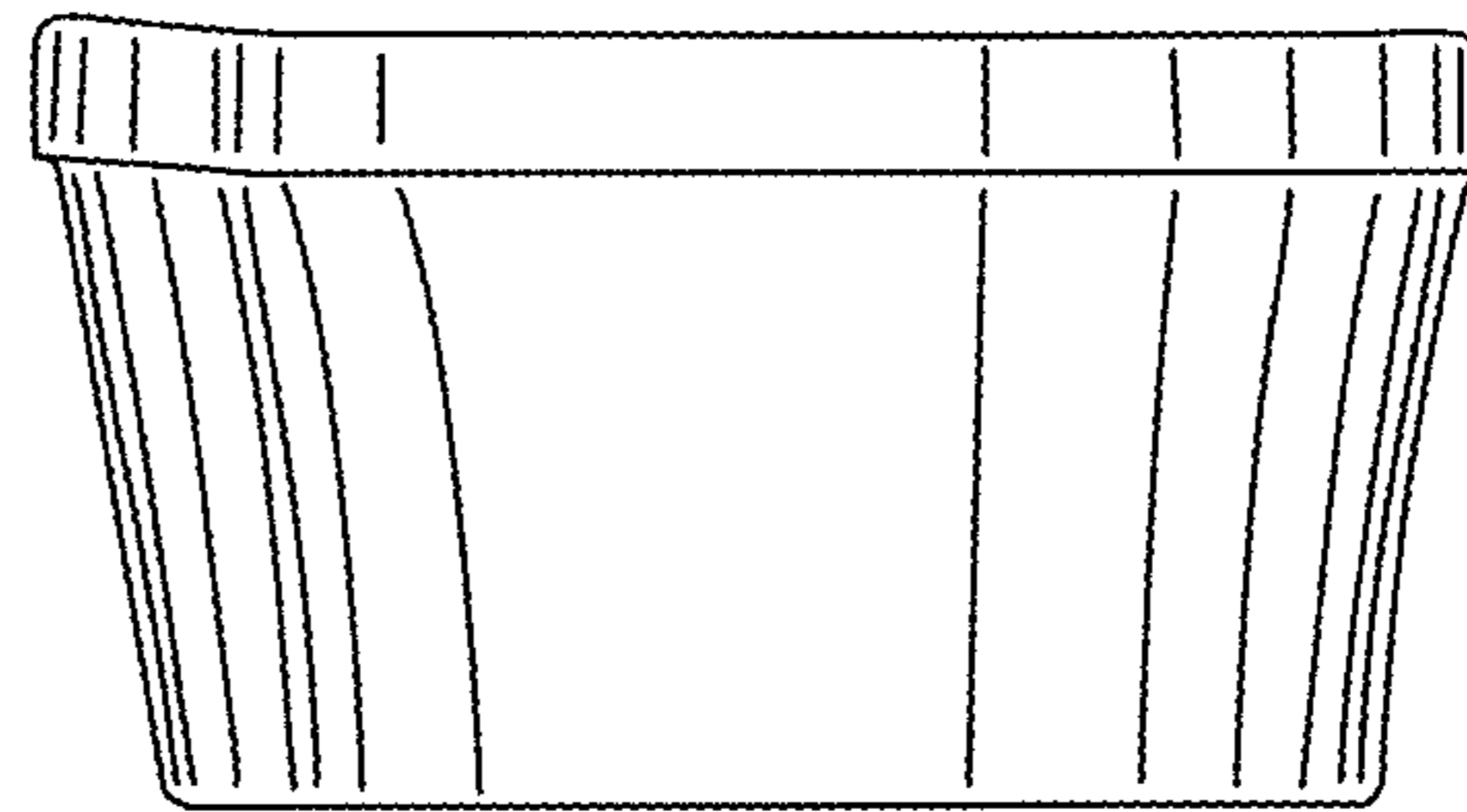


FIG. 2

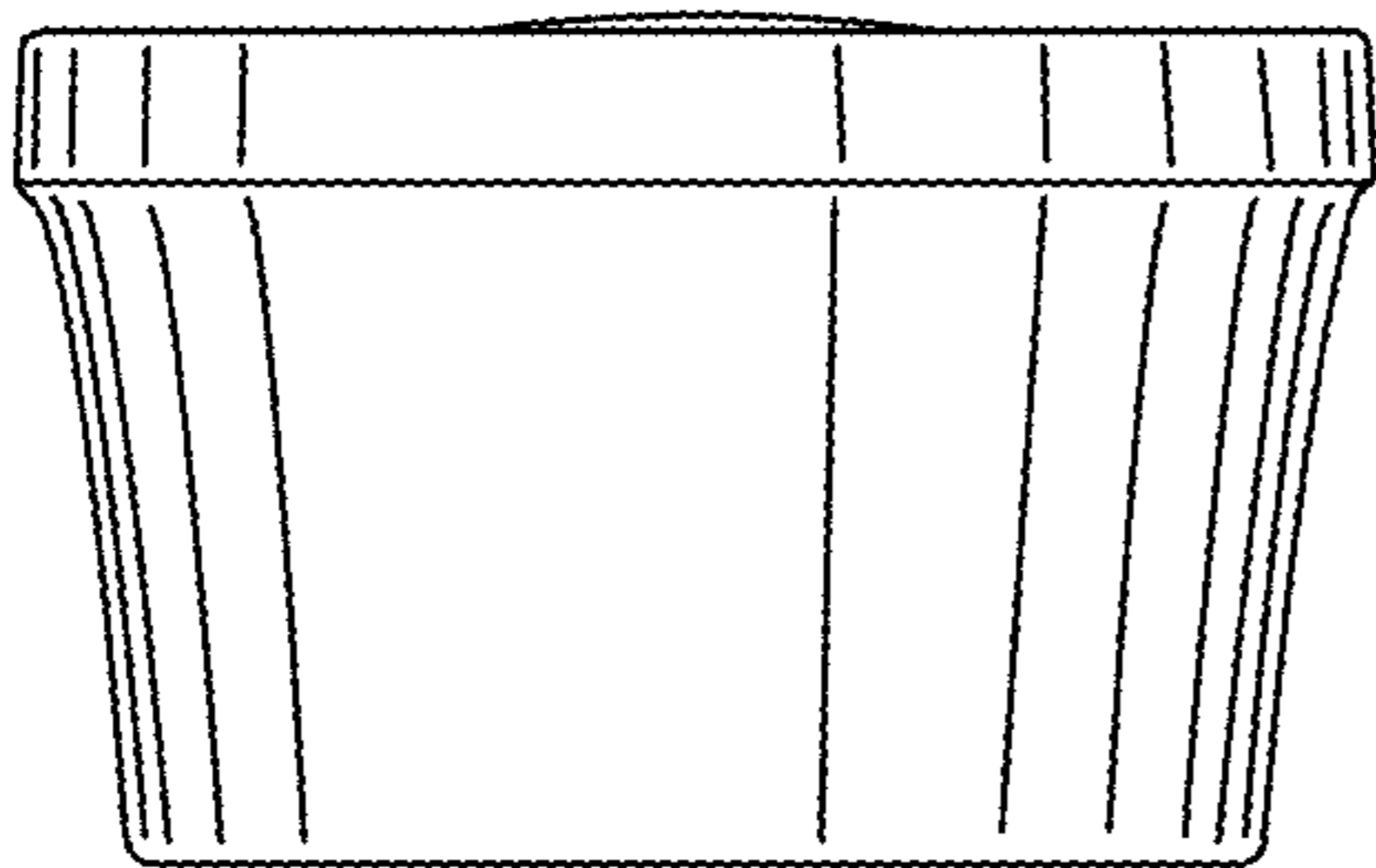


FIG. 3

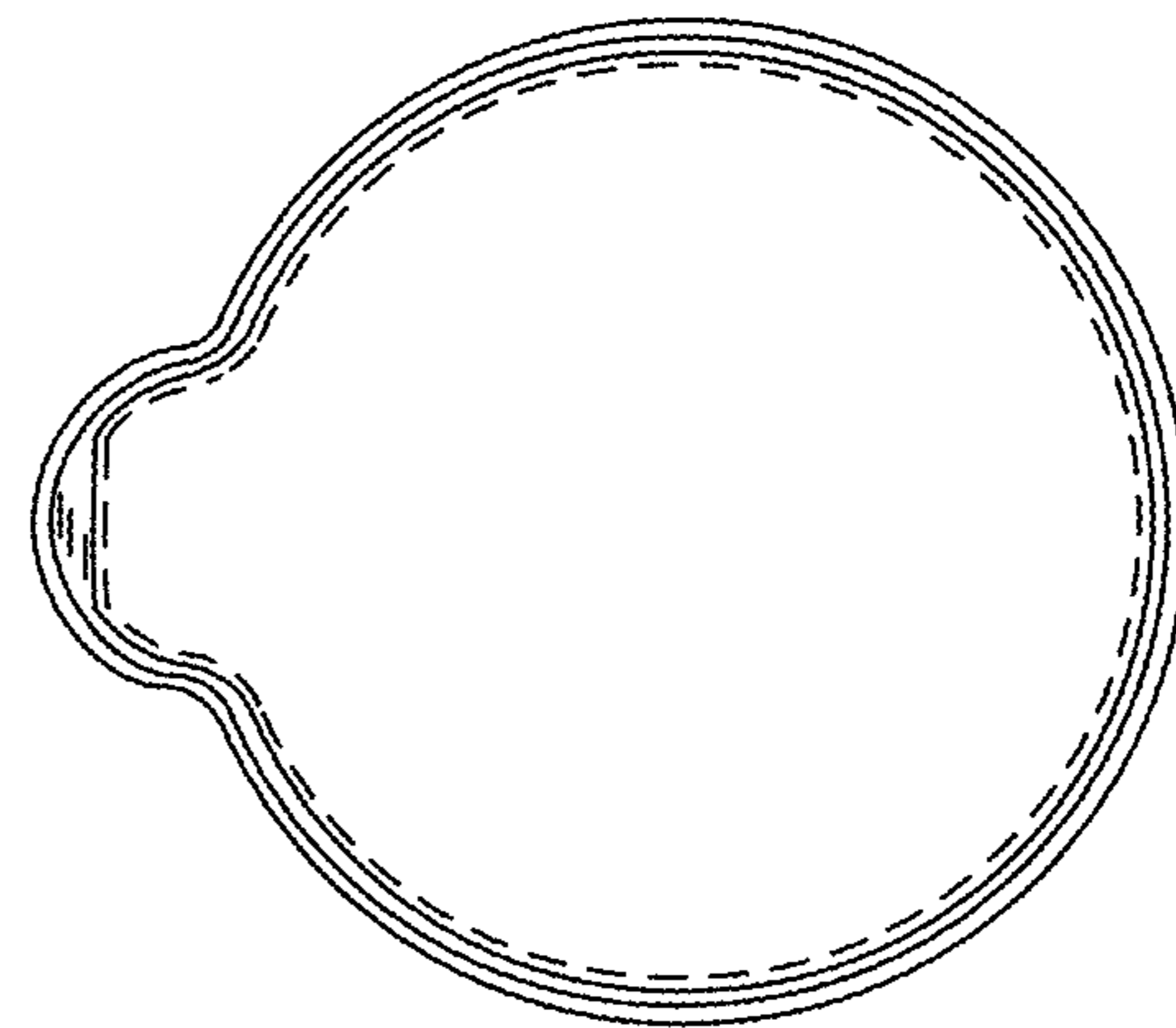


FIG. 5

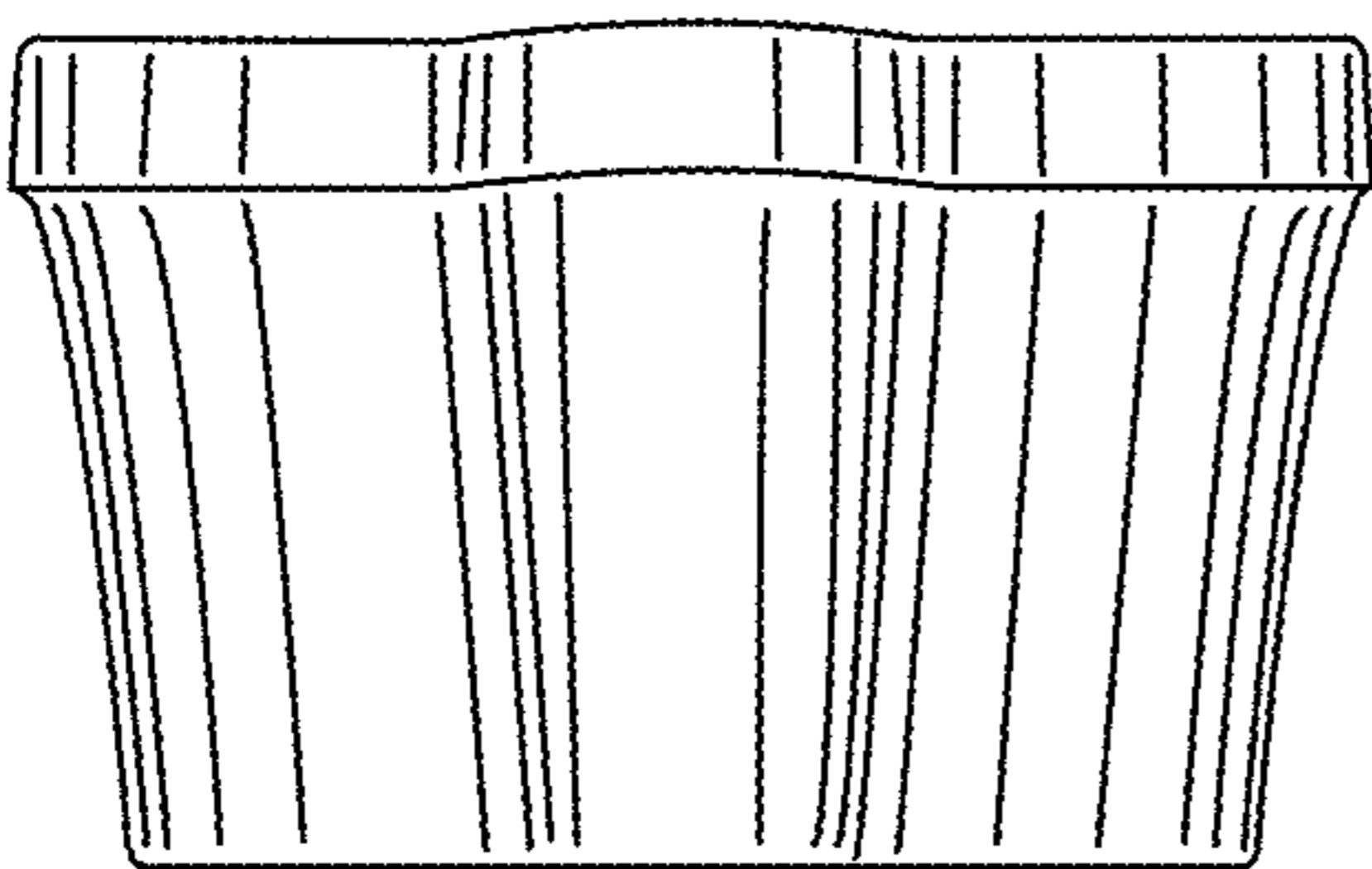


FIG. 4

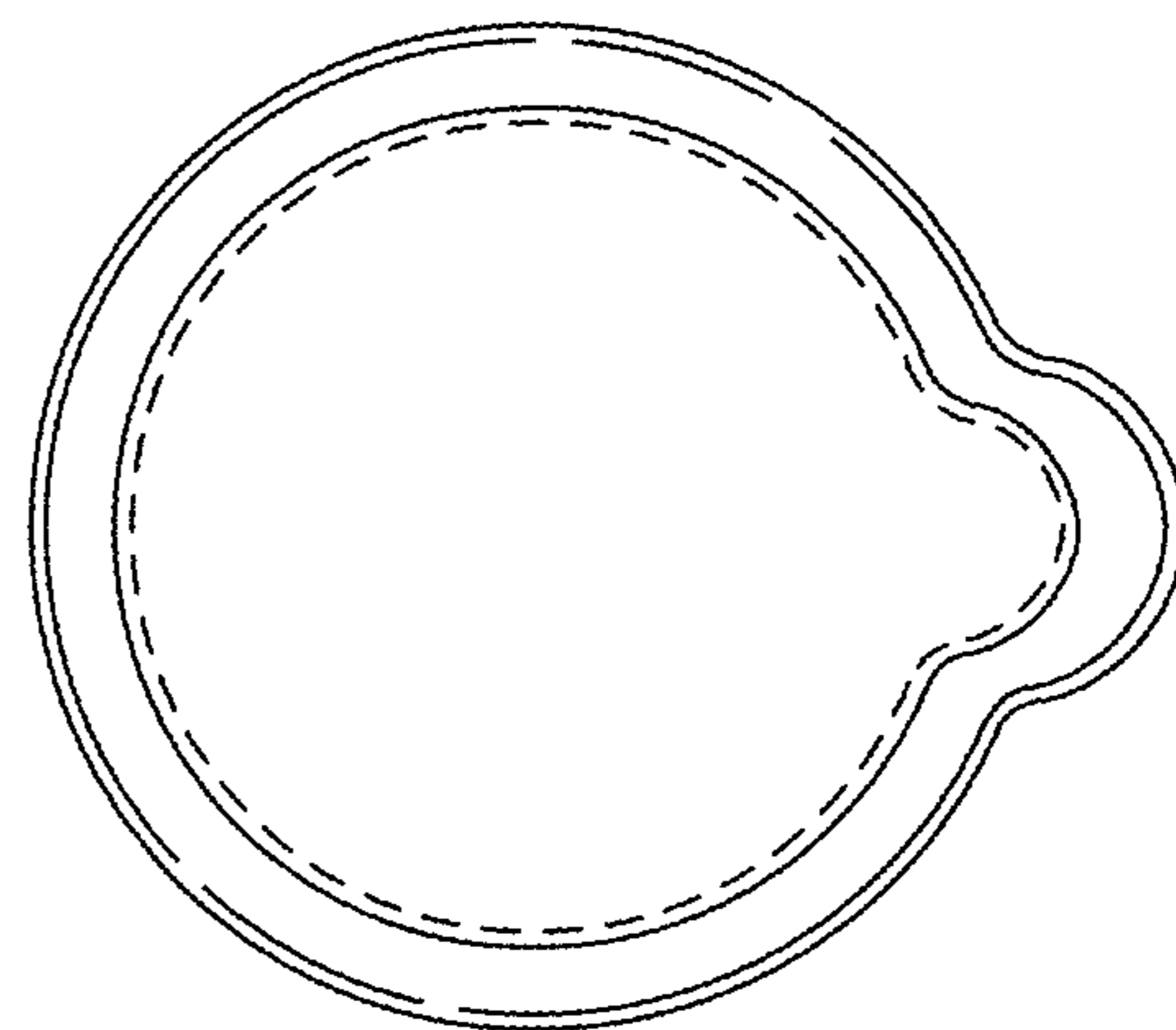


FIG. 6