



US00D829179S

(12) **United States Design Patent** (10) **Patent No.:** **US D829,179 S**
Whitefield et al. (45) **Date of Patent:** **** Sep. 25, 2018**

(54) **VERTEBRAE BEND RESTRICTOR**

(74) *Attorney, Agent, or Firm* — Basil M. Angelo; Angelo Mikeska PLLC

(71) Applicant: **Whitefield Plastics Corporation**,
Houston, TX (US)

(57) **CLAIM**

The ornamental design for a vertebrae bend restrictor, as shown and described.

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DESCRIPTION

(73) Assignee: **Whitefield Plastics Corporation**,
Houston, Texas

FIG. 1 shows a front elevation view of a first component of a vertebrae bend restrictor showing our new design, shown separately for clarity of disclosure;

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

FIG. 2 shows a rear elevation view thereof;

(21) Appl. No.: **29/591,990**

FIG. 3 shows a left-side elevation view thereof;

(22) Filed: **Jan. 25, 2017**

FIG. 4 shows a right-side elevation view thereof;

(51) **LOC (11) Cl.** **13-03**

FIG. 5 shows a top plan view thereof;

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

FIG. 6 shows a bottom plan view thereof;

USPC **D13/151**

FIG. 7 shows a top front facing isometric view thereof;

(58) **Field of Classification Search**

USPC D13/151, 155, 156, 120, 121, 133, 154,
D13/149, 150; D8/394, 396, 367, 372,
D8/382; D21/797; D23/259, 260, 262

FIG. 8 shows a bottom rear facing isometric view thereof;
FIG. 9 shows a front elevation view of a second component of a vertebrae bend restrictor, shown separately for clarity of disclosure;

(Continued)

FIG. 10 shows a rear elevation view thereof;

(56) **References Cited**

U.S. PATENT DOCUMENTS

149,842 A * 4/1874 Deeds F16L 7/00
138/113
2,552,077 A * 5/1951 Williams F16L 33/222
285/249

FIG. 11 shows a left-side elevation view thereof;

FIG. 12 shows a right-side elevation view thereof;

FIG. 13 shows a top plan view thereof;

FIG. 14 shows a bottom plan view thereof;

FIG. 15 shows a top front facing isometric view thereof;

FIG. 16 shows a bottom rear facing isometric view thereof;

FIG. 17 shows a front elevation view of a third component of a vertebrae bend restrictor, shown separately for clarity of disclosure;

FIG. 18 shows a rear elevation view thereof;

FIG. 19 shows a left-side elevation view thereof;

FIG. 20 shows a right-side elevation view thereof;

FIG. 21 shows a top plan view thereof;

FIG. 22 shows a bottom plan view thereof;

FIG. 23 shows a bottom front facing isometric view thereof;

FIG. 24 shows a top rear facing isometric view thereof;

FIG. 25 shows a front elevation view of a fourth component of a vertebrae bend restrictor, shown separately for clarity of disclosure;

FIG. 26 shows a rear elevation view thereof;

(Continued)

OTHER PUBLICATIONS

Lankhorst Mouldings, Lankhorst Boltless Bend Restrictor brochure.

(Continued)

Primary Examiner — Jennifer Rivard

Assistant Examiner — Alison M Ofstun

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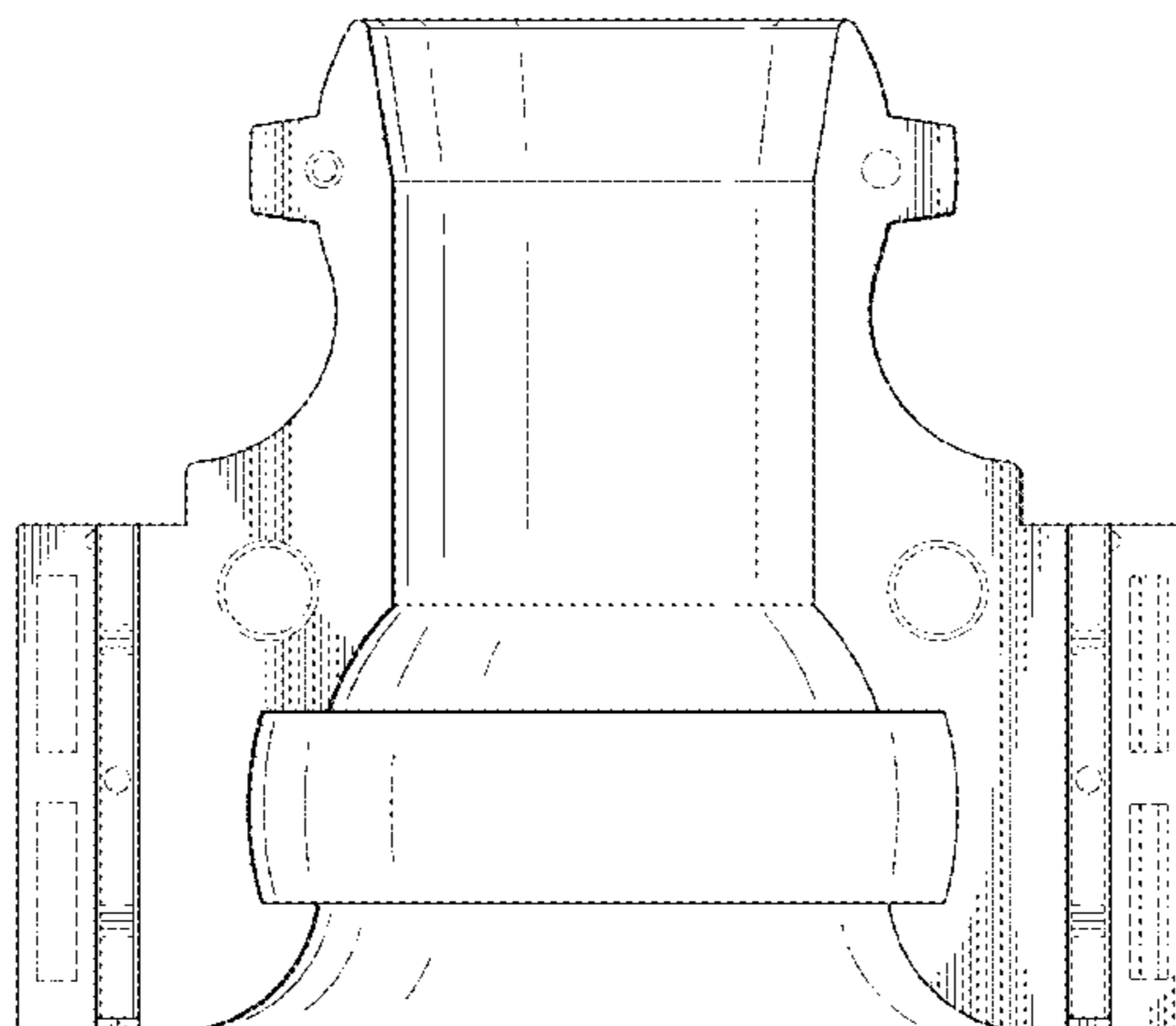


FIG. 27 shows a left-side elevation view thereof;
 FIG. 28 shows a right-side elevation view thereof;
 FIG. 29 shows a top plan view thereof;
 FIG. 30 shows a bottom plan view thereof;
 FIG. 31 shows a bottom front facing isometric view thereof;
 FIG. 32 shows a top rear facing isometric view thereof;
 FIG. 33 shows a top isometric view of the first and second components of a vertebrae bend restrictor, shown in an unassembled position of use;
 FIG. 34 shows a top isometric view of the first, second, and third components of a vertebrae bend restrictor, shown in a position of use;
 FIG. 35 shows a top isometric view of the first, second, third, and fourth components of a vertebrae bend restrictor, shown in a position of use;
 FIG. 36 shows a front elevation view of a vertebrae bend restrictor, shown in an assembled position;
 FIG. 37 shows a rear elevation view thereof;
 FIG. 38 shows a left-side elevation view thereof;
 FIG. 39 shows a right-side elevation view thereof;
 FIG. 40 shows a top plan view thereof;
 FIG. 41 shows a bottom plan view thereof;
 FIG. 42 shows a top front facing isometric view thereof;
 FIG. 43 shows a bottom rear facing isometric view thereof;
 and,
 FIG. 44 shows a perspective view thereof in an environment of use with a plurality of exemplary vertebrae bend restrictors.
 The broken lines are shown for the purpose of illustrating environmental subject matter of a plurality of vertebrae bend restrictors and portions of the article, none of which form part of the claimed design.

1 Claim, 35 Drawing Sheets

(58) **Field of Classification Search**
 CPC .. H01R 13/52; H01R 13/523; H01R 13/5205;
 H01R 13/521; H01R 35/00; H02G 7/125;
 H02G 11/003; H02G 9/12; Y10T

29/49826; F16L 3/13; F16L 3/26; F16L
 57/02; F16L 11/18; D06F 55/00; F16B
 45/00

See application file for complete search history.

(56)

References Cited

U.S. PATENT DOCUMENTS

D244,027	S *	4/1977	Mooney	D13/156
4,647,255	A *	3/1987	Pow	B21D 9/03 405/168.1
5,197,767	A *	3/1993	Kimura	F16G 13/10 138/120
D361,313	S *	8/1995	Sai	D13/146
6,035,997	A	3/2000	Heninger et al.	
7,293,940	B1 *	11/2007	Perreau-Saussine	E21B 17/1057 405/168.1
D591,245	S *	4/2009	Iijima	D13/156
D686,573	S *	7/2013	Wu	D13/130
8,607,826	B2	12/2013	Krohn et al.	
9,810,349	B2 *	11/2017	Lee	F16L 9/22
2005/0082824	A1 *	4/2005	Luetngen	H01R 35/00 285/146.1
2007/0158092	A1 *	7/2007	Ogawa	B60J 5/06 174/19
2008/0087435	A1 *	4/2008	Reddy	E21B 17/017 166/343
2010/0228295	A1	9/2010	Whitefield	
2012/0304447	A1	12/2012	Smith et al.	
2014/0377010	A1	12/2014	Belkom	
2017/0334156	A1 *	11/2017	Jha	B29D 23/001

OTHER PUBLICATIONS

International Search Report of the International Searching Authority (USPTO) for international application PCT/US2017/014951 dated Aug. 24, 2017.

Written Opinion of the International Searching Authority (USPTO) for international application PCT/US2017/014951 dated Aug. 24, 2017.

* cited by examiner

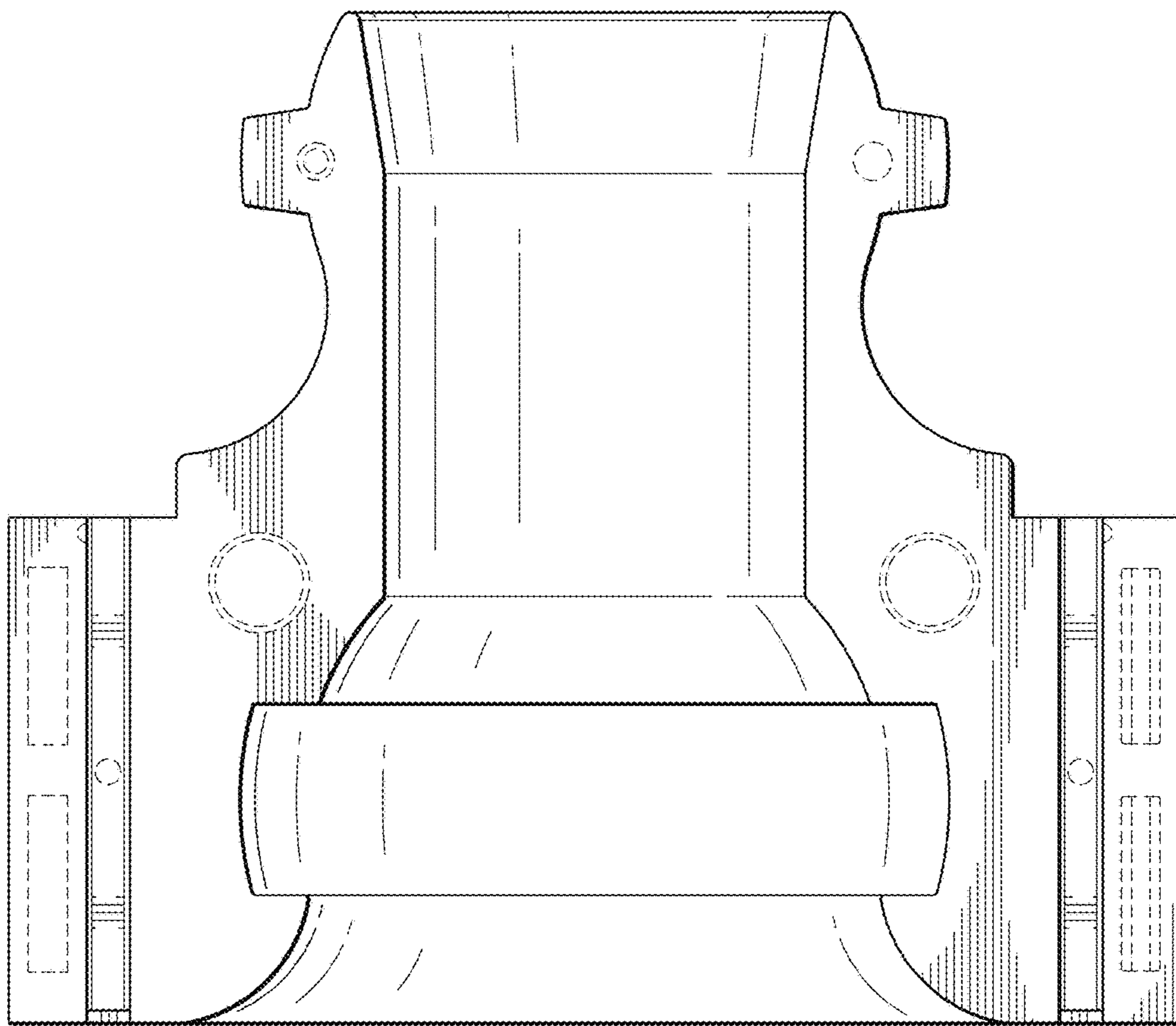


FIG. 1

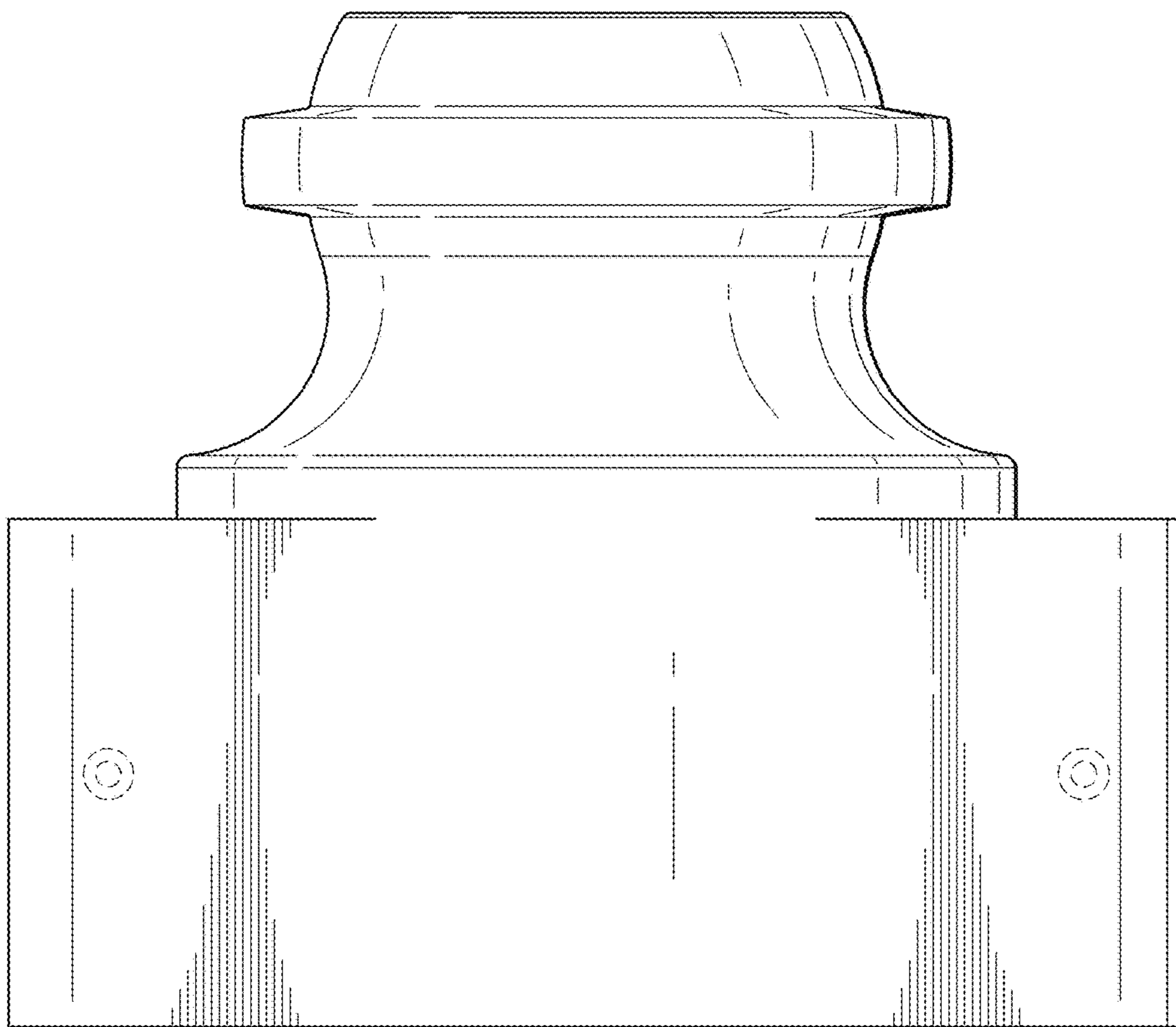


FIG. 2

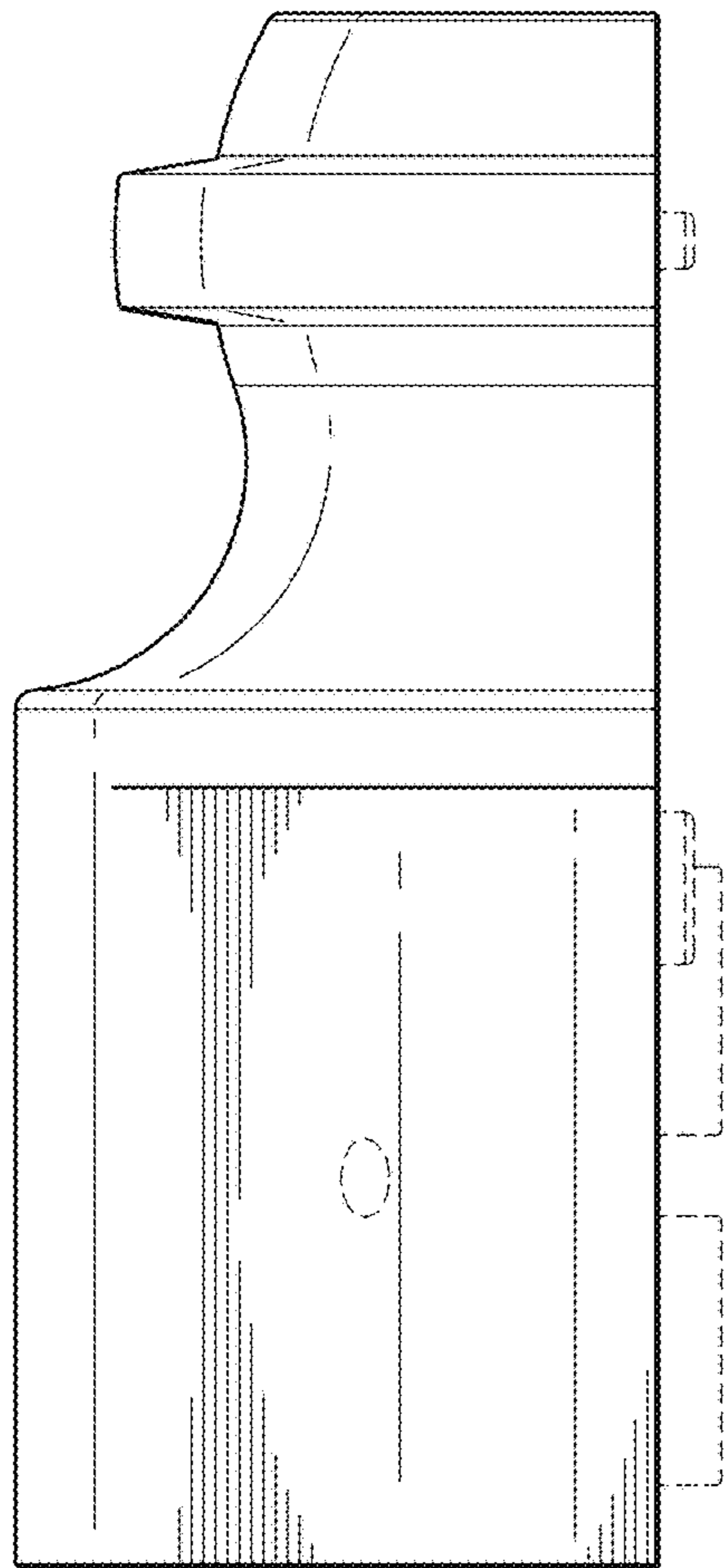


FIG. 3

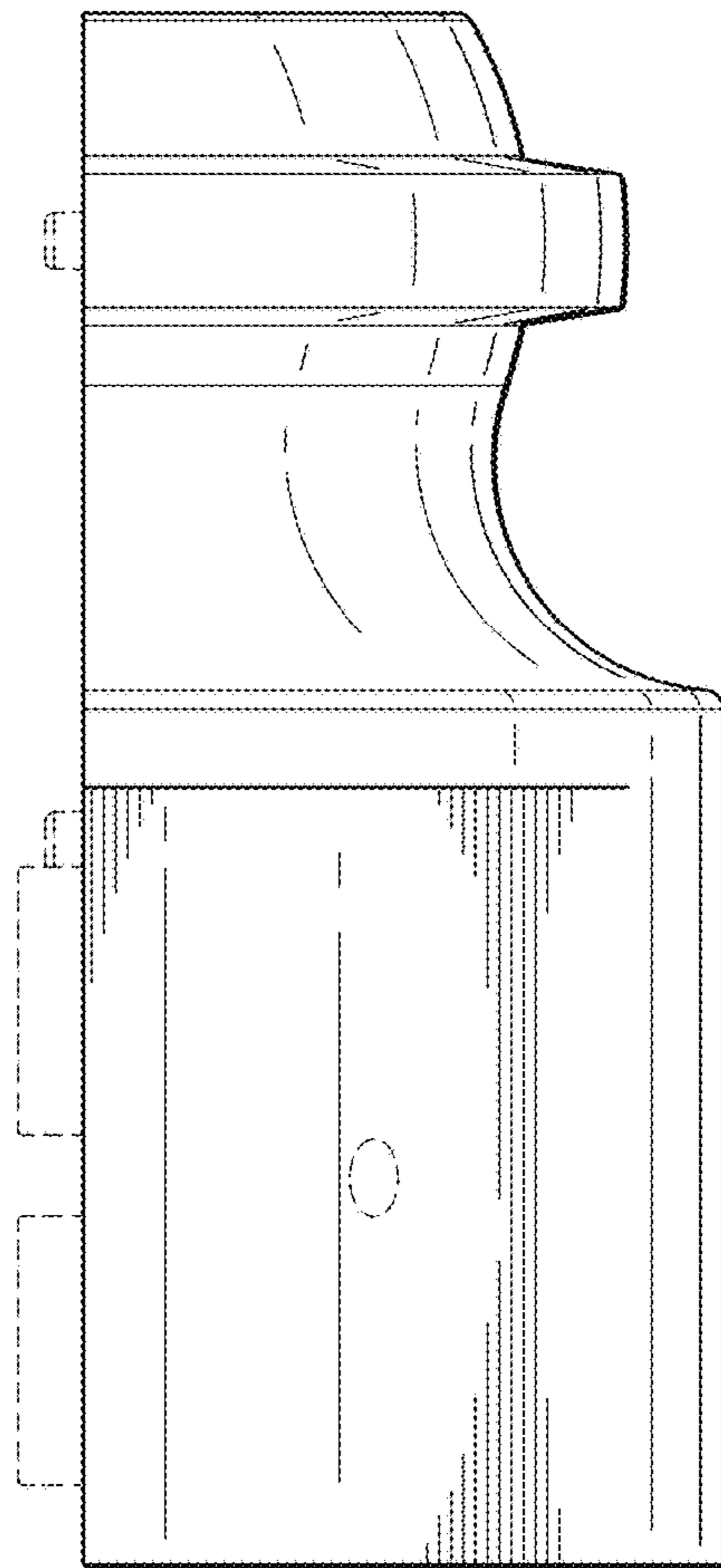


FIG. 4

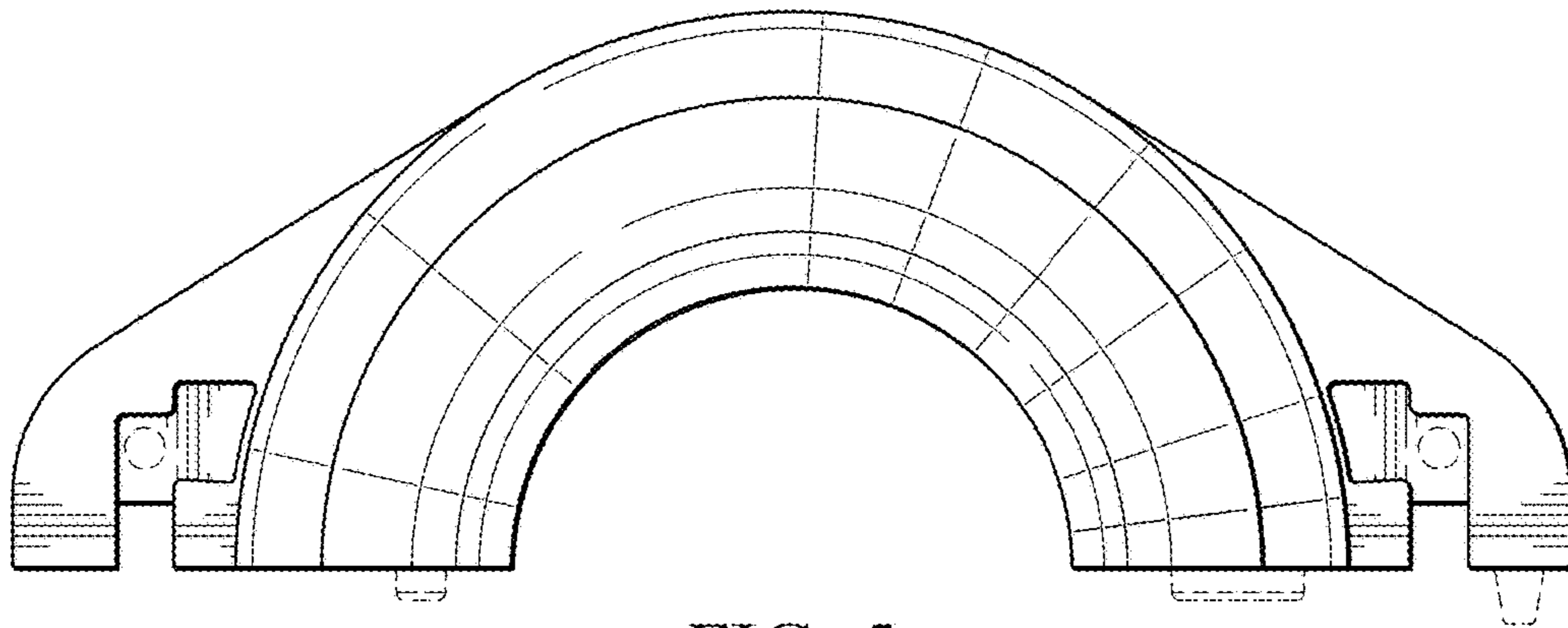


FIG. 5

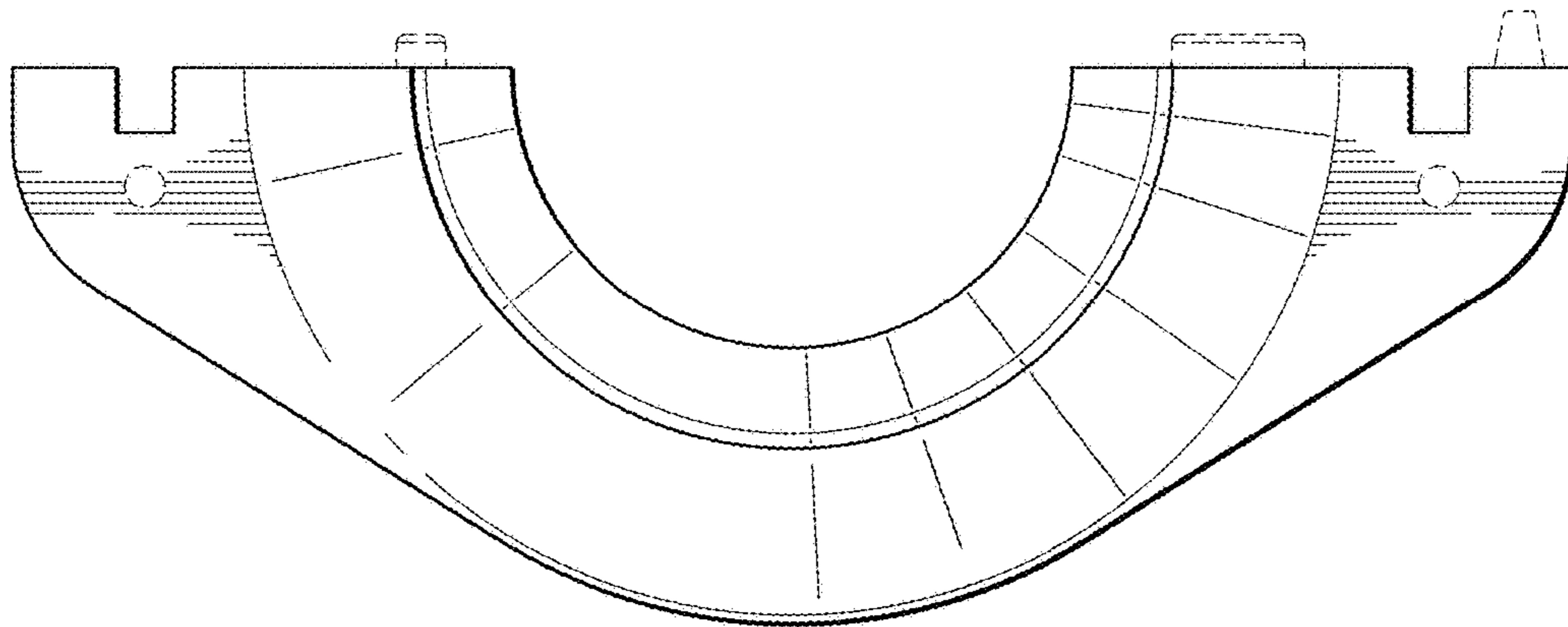


FIG. 6

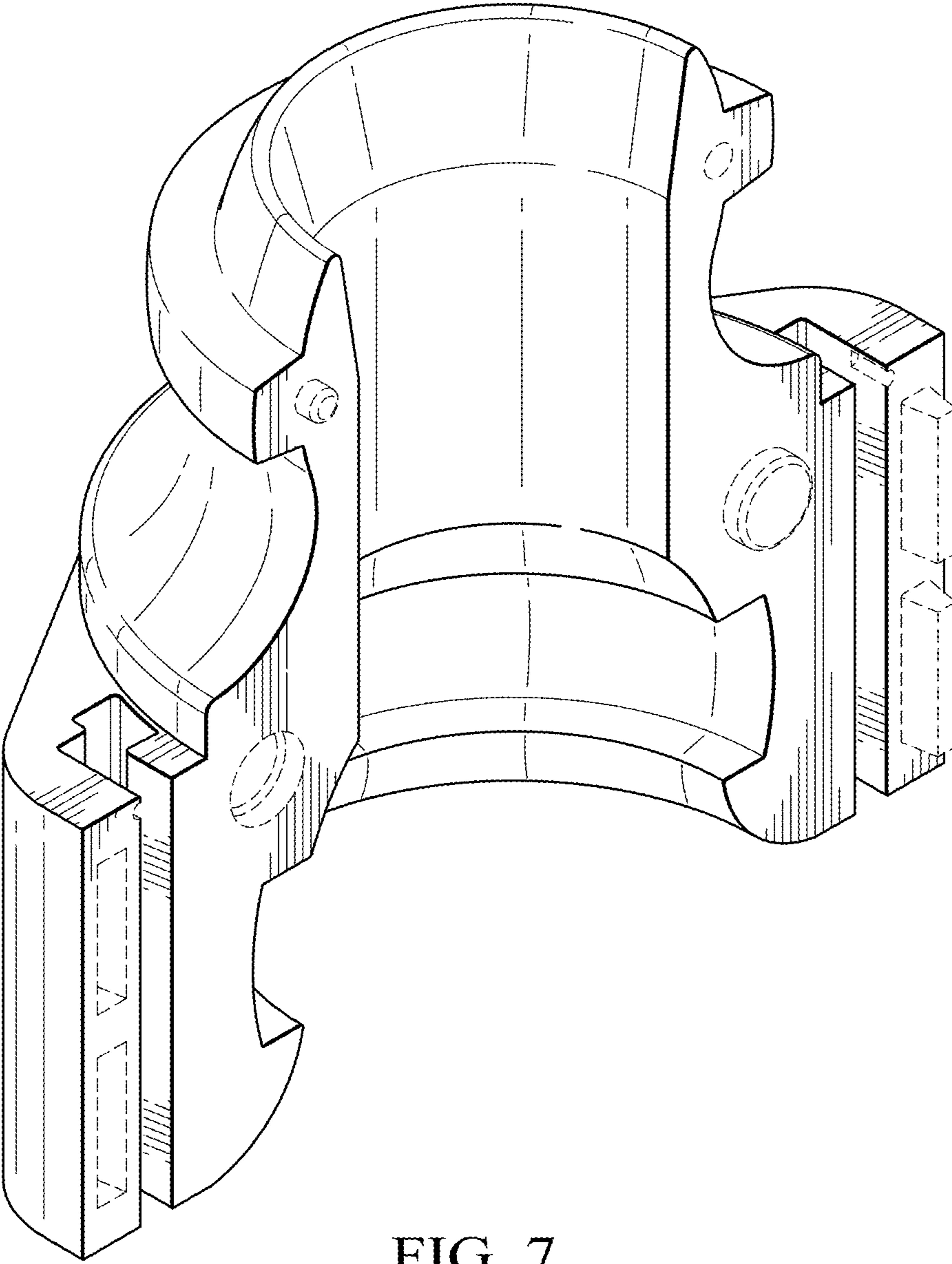


FIG. 7

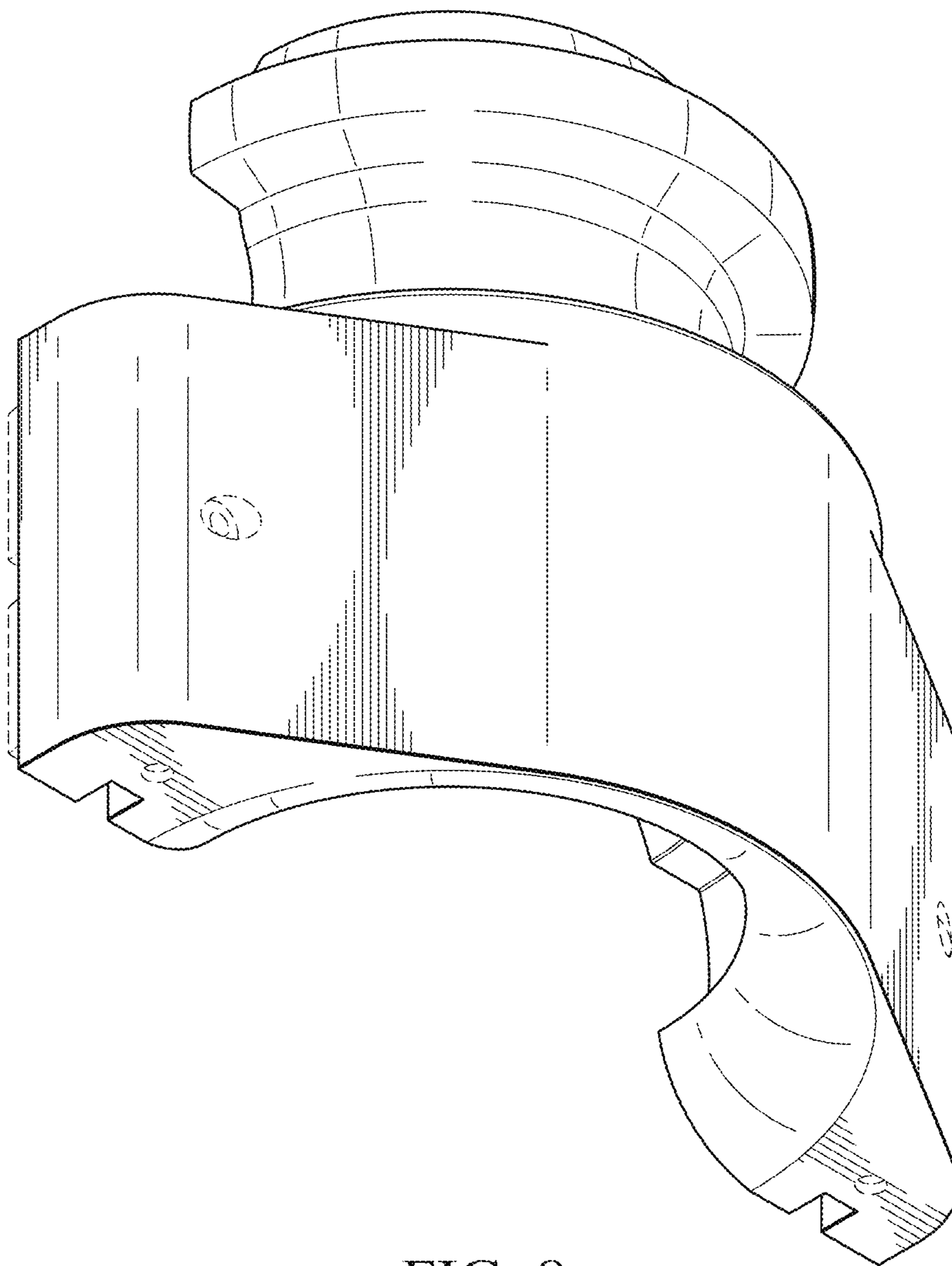


FIG. 8

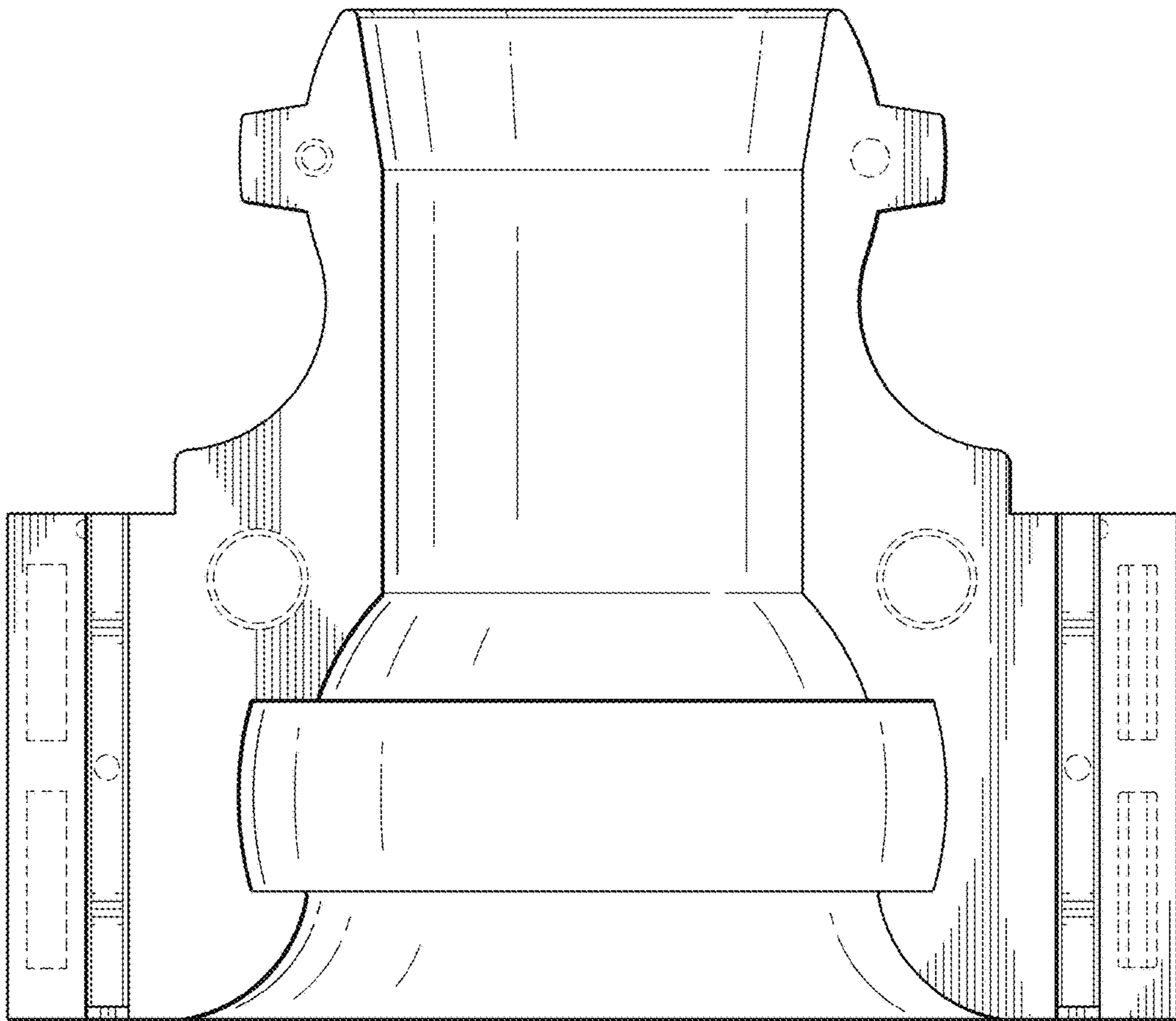


FIG. 9

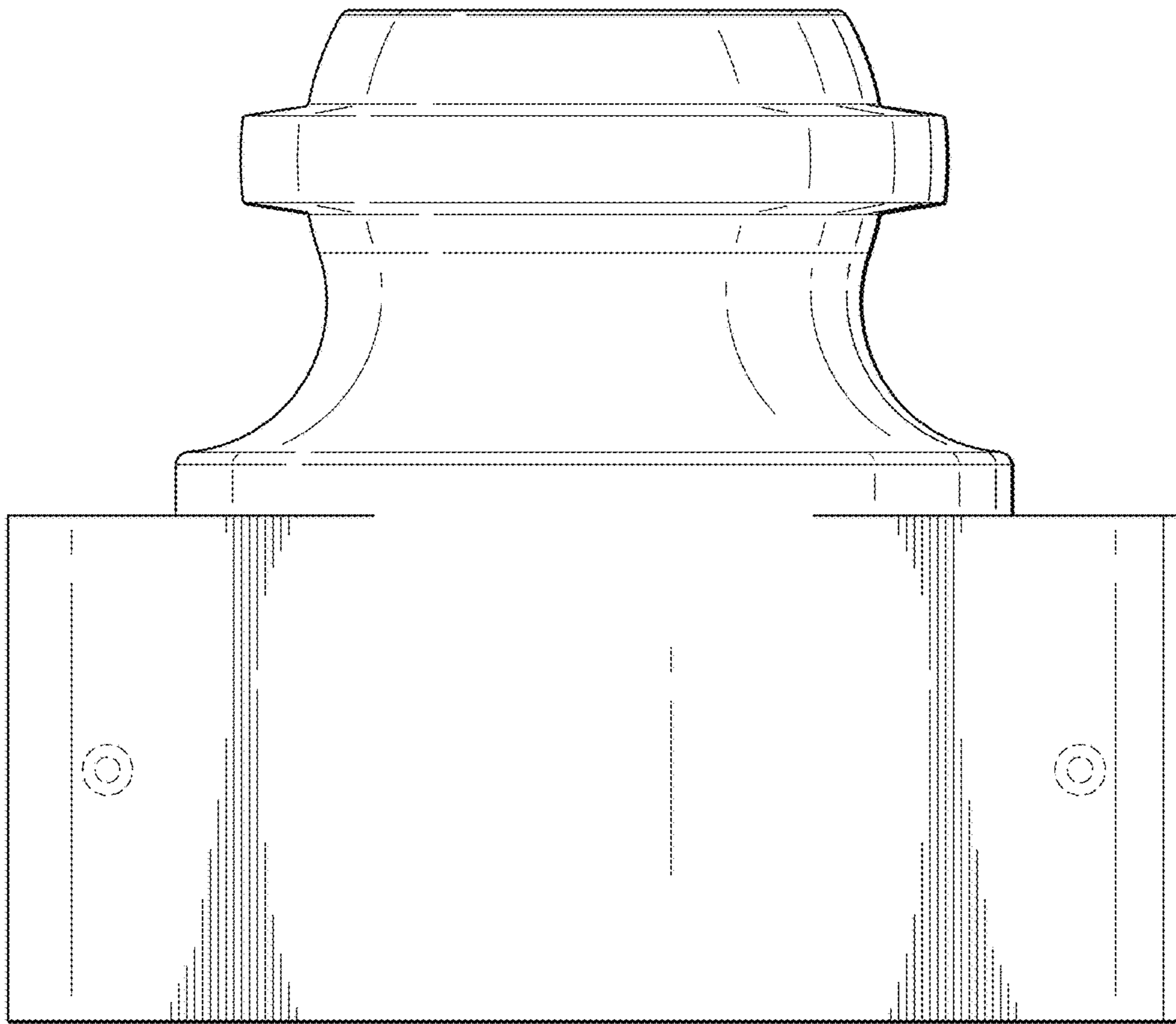


FIG. 10

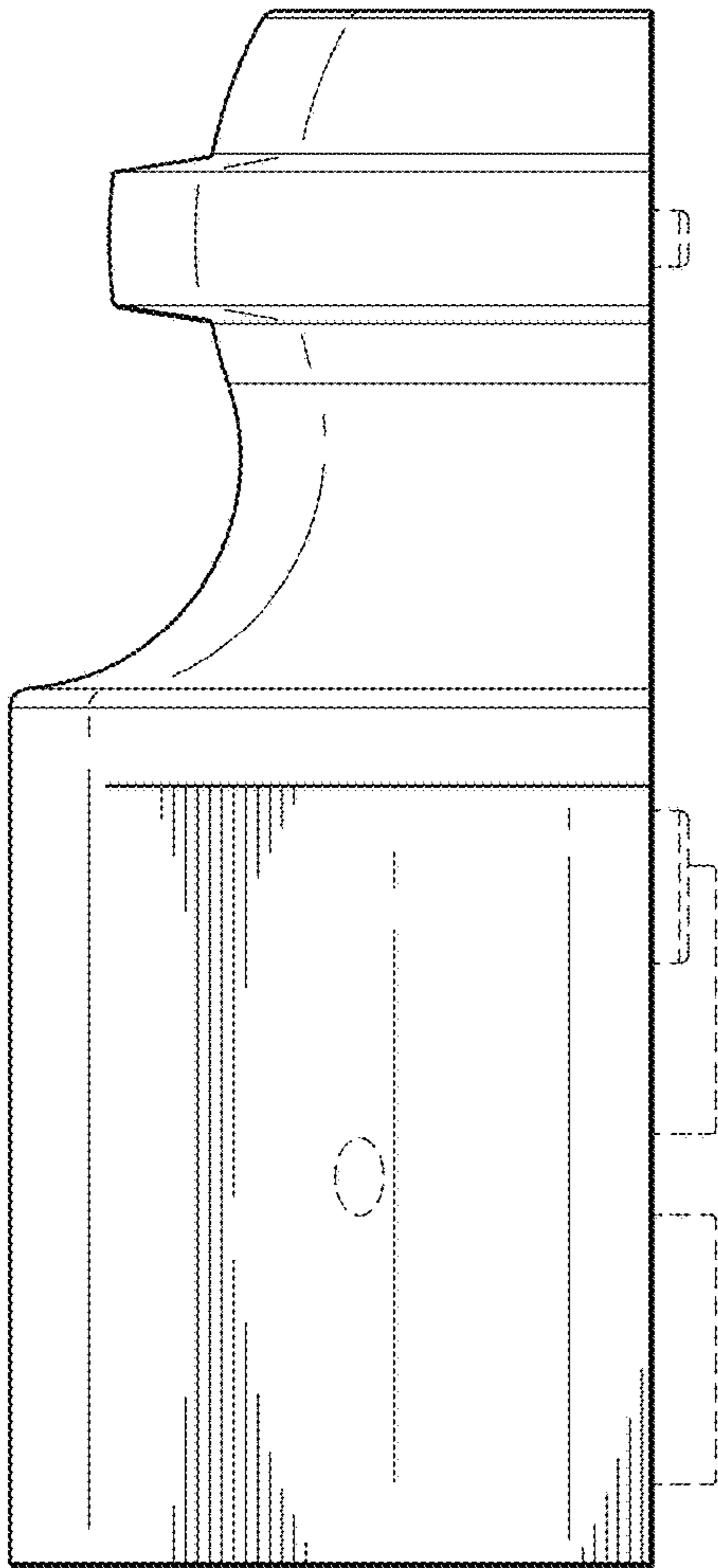


FIG. 11

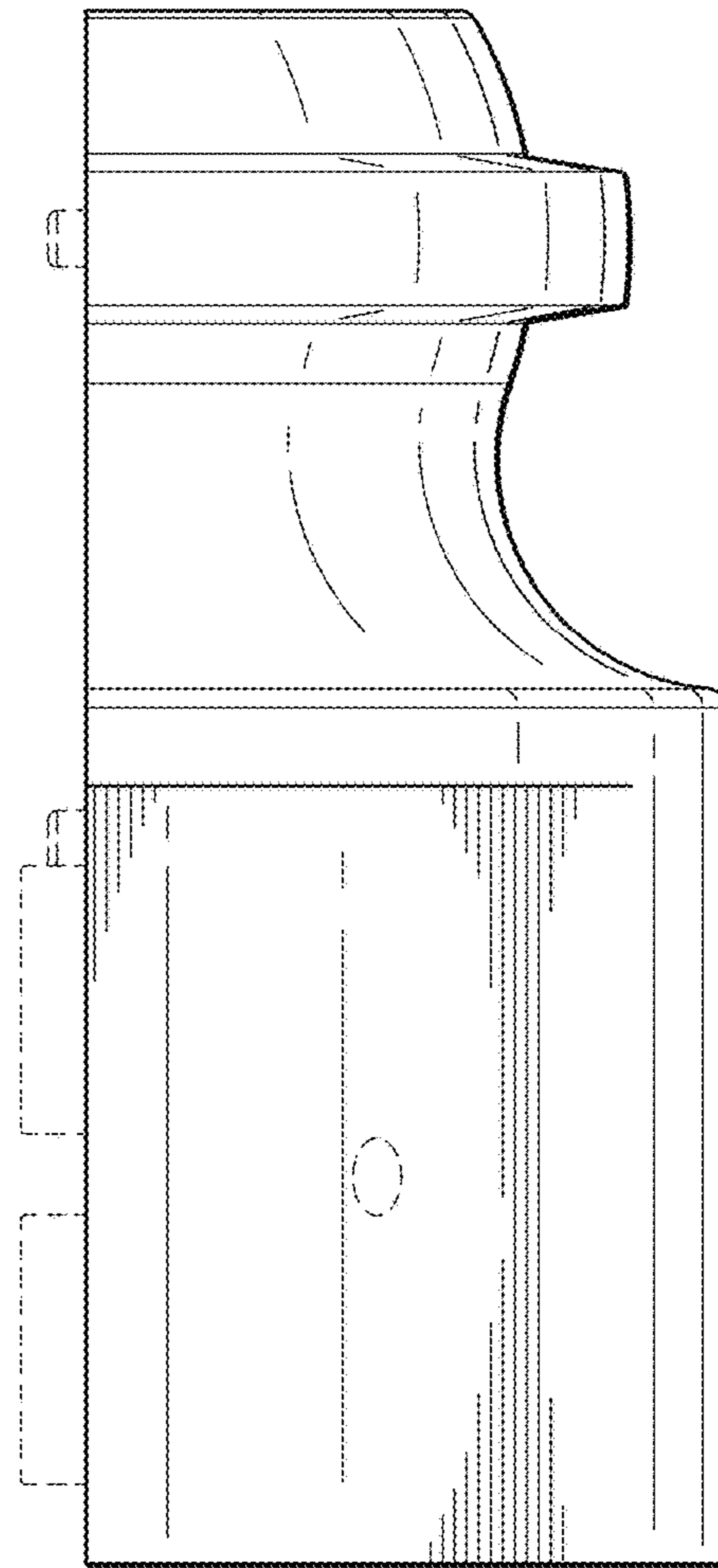


FIG. 12

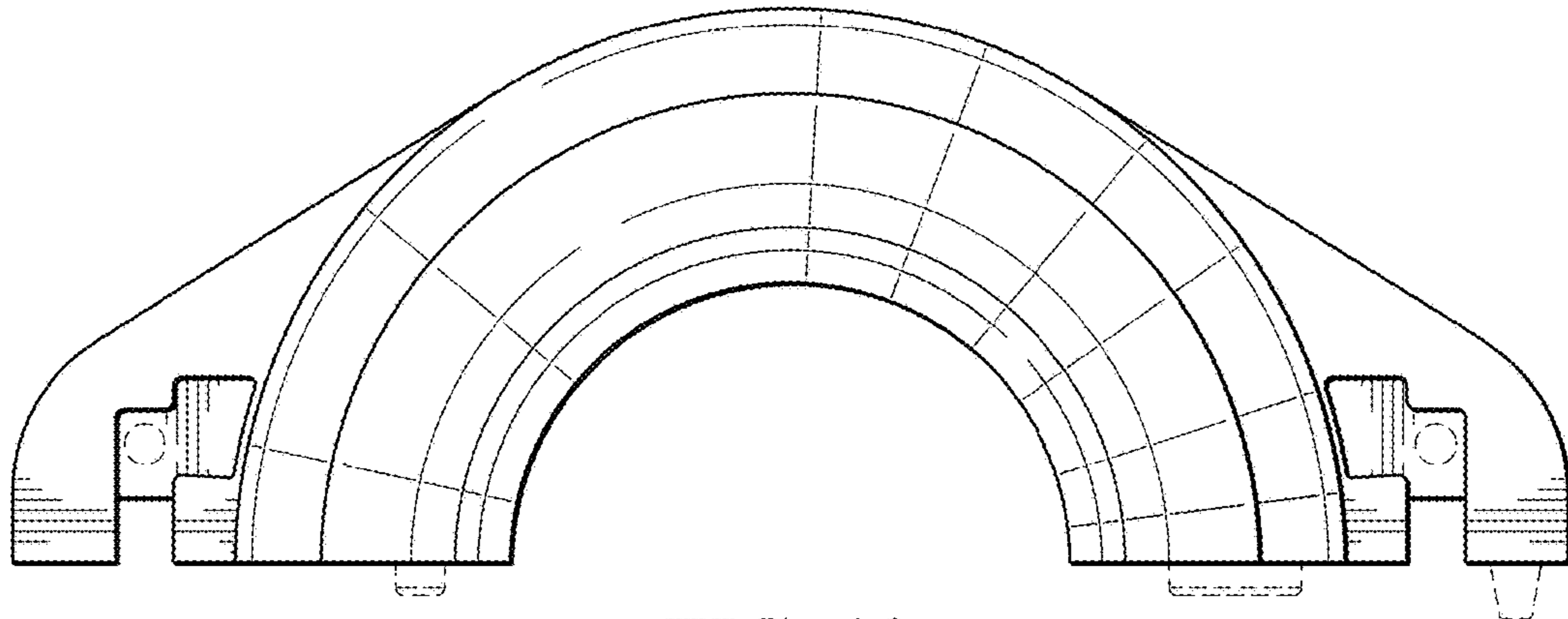


FIG. 13

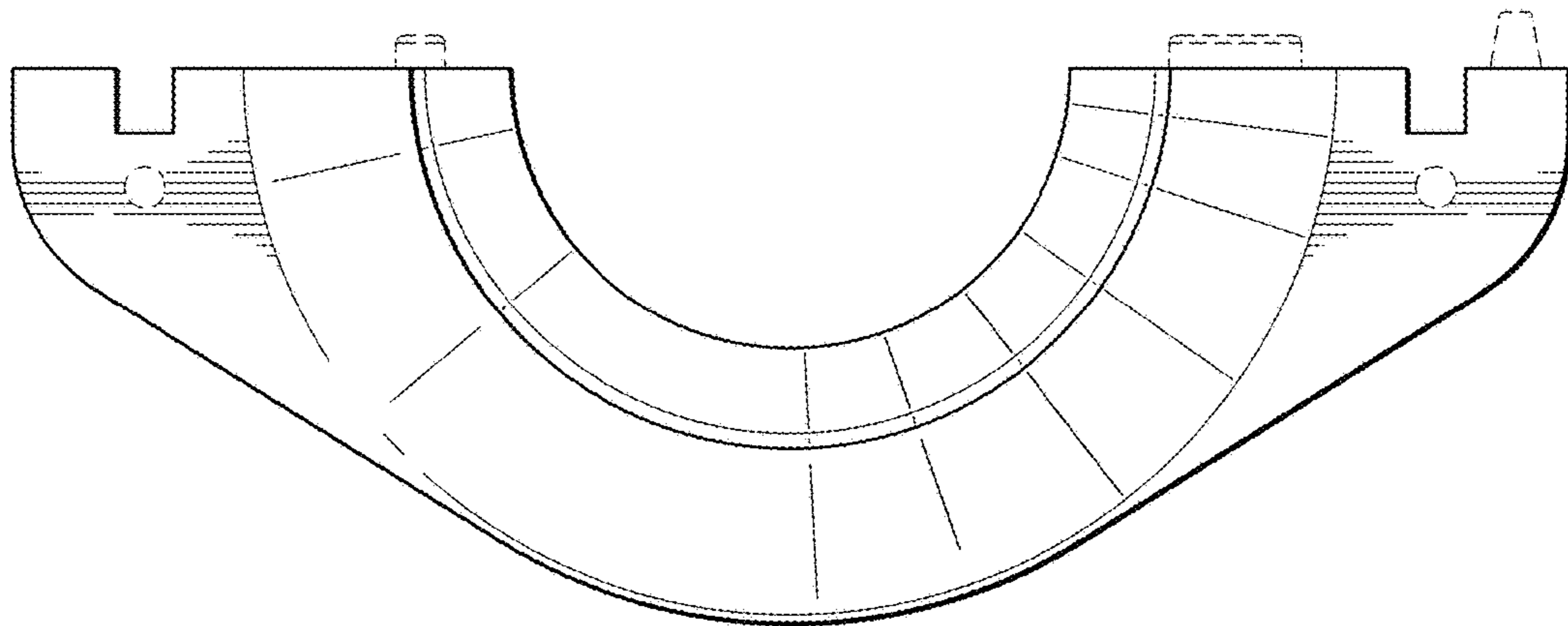


FIG. 14

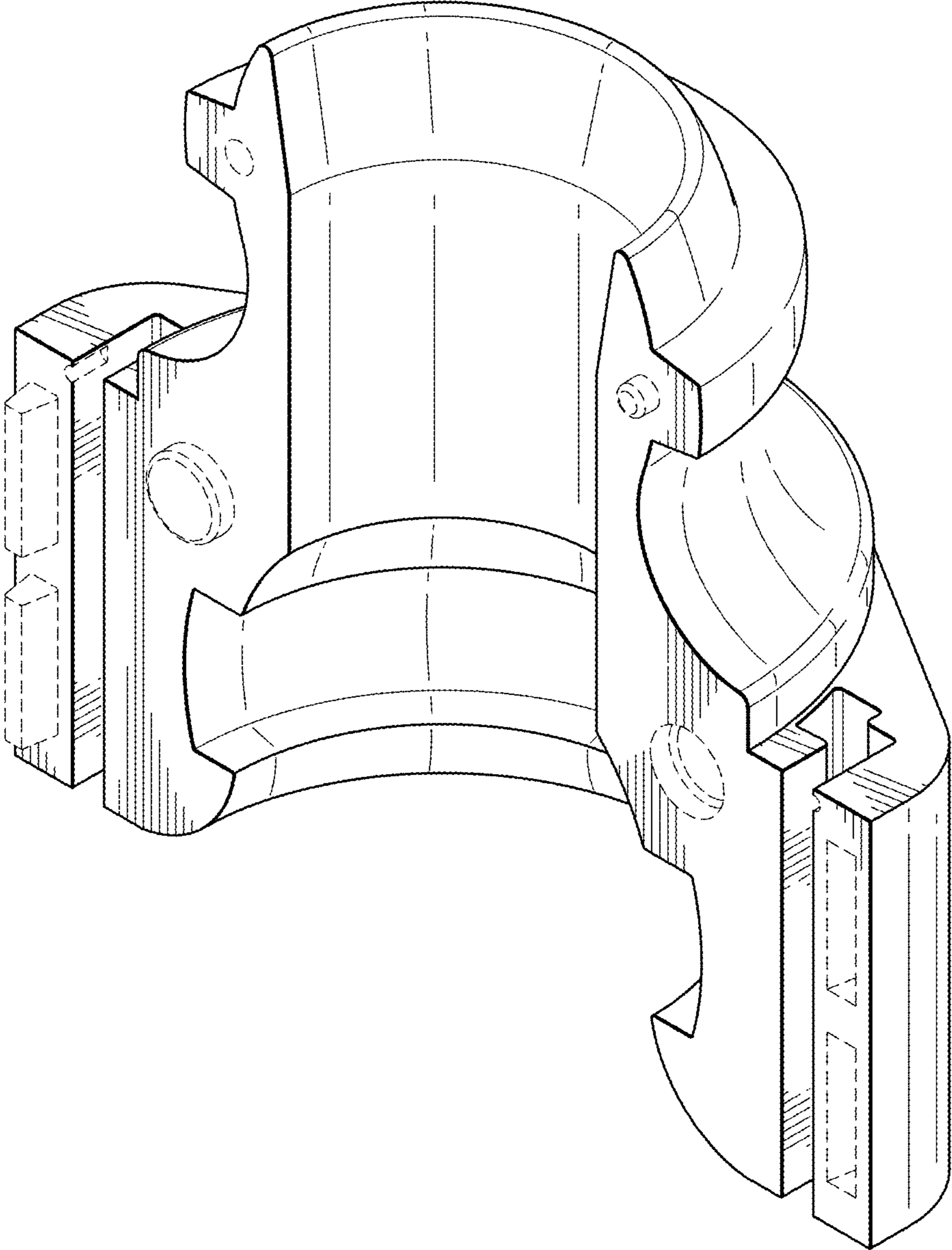


FIG. 15

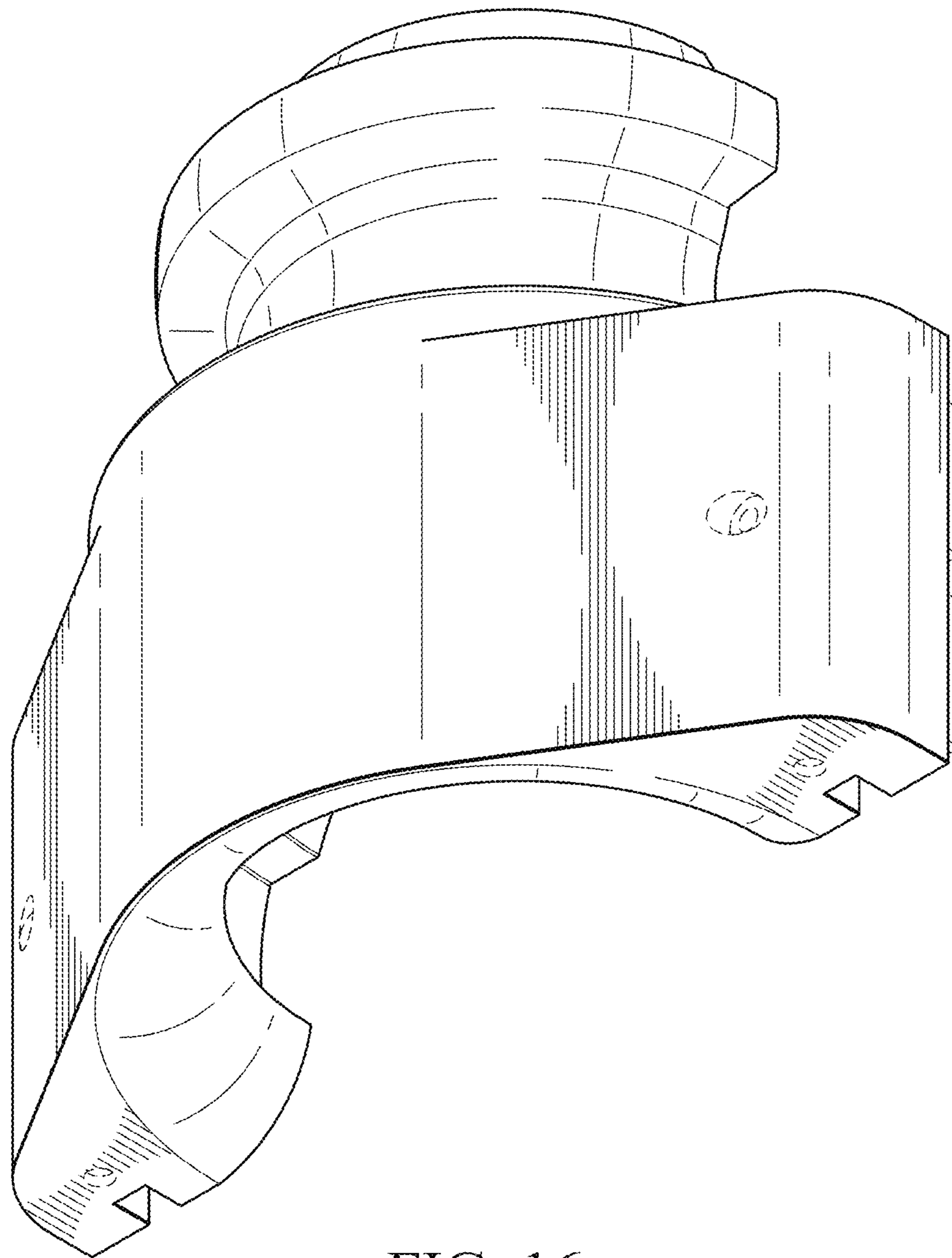


FIG. 16

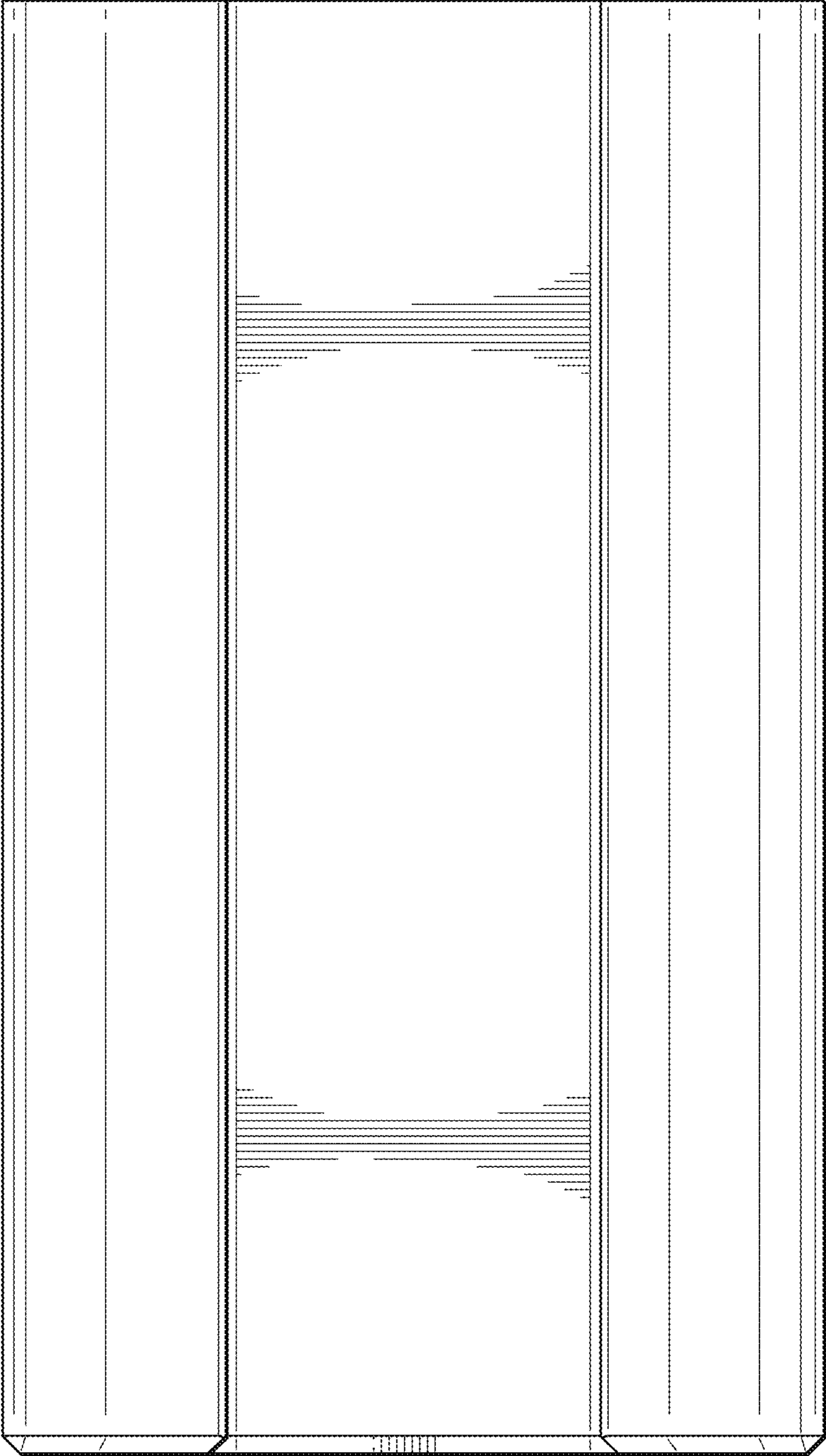


FIG. 17

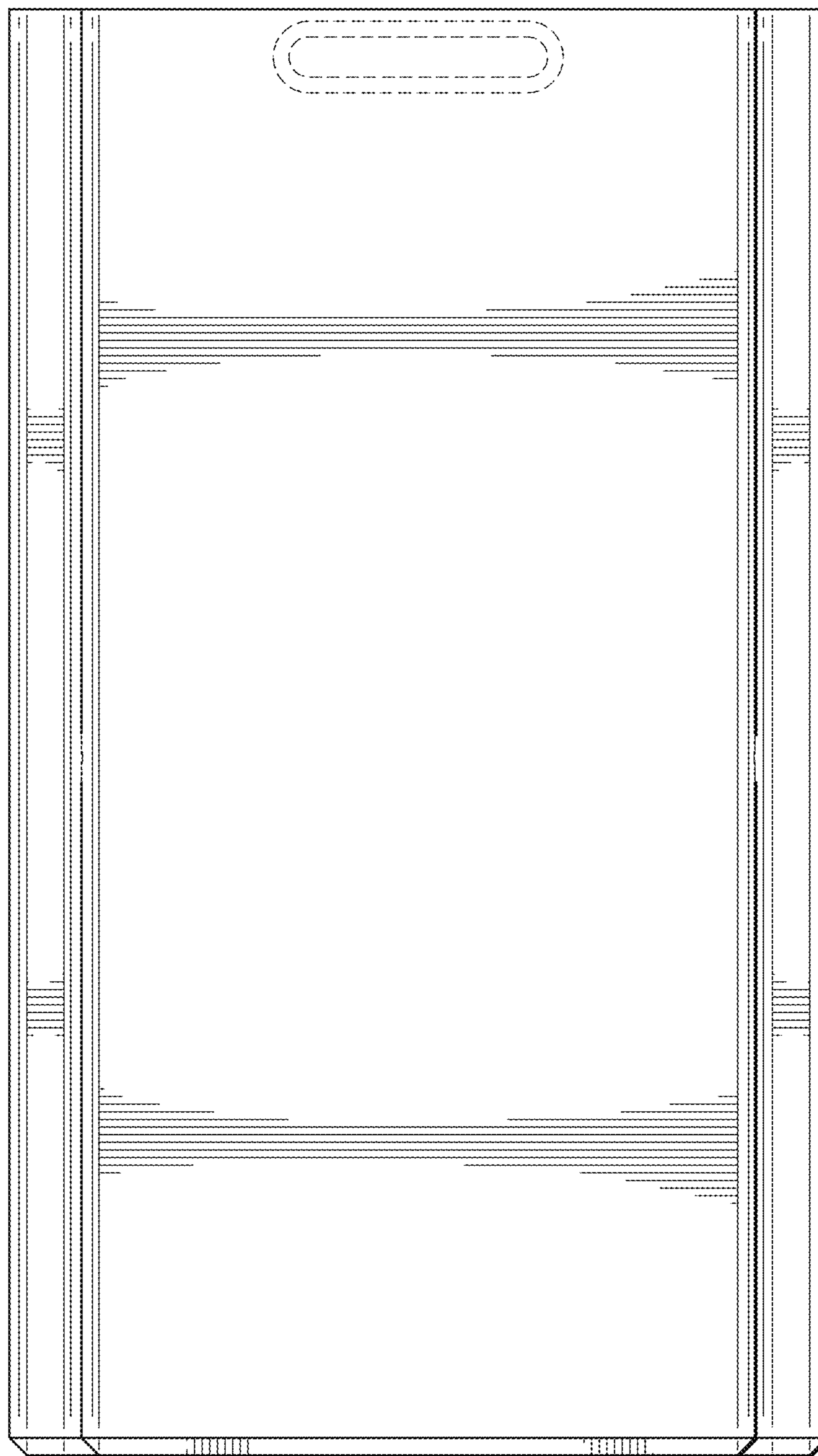


FIG. 18

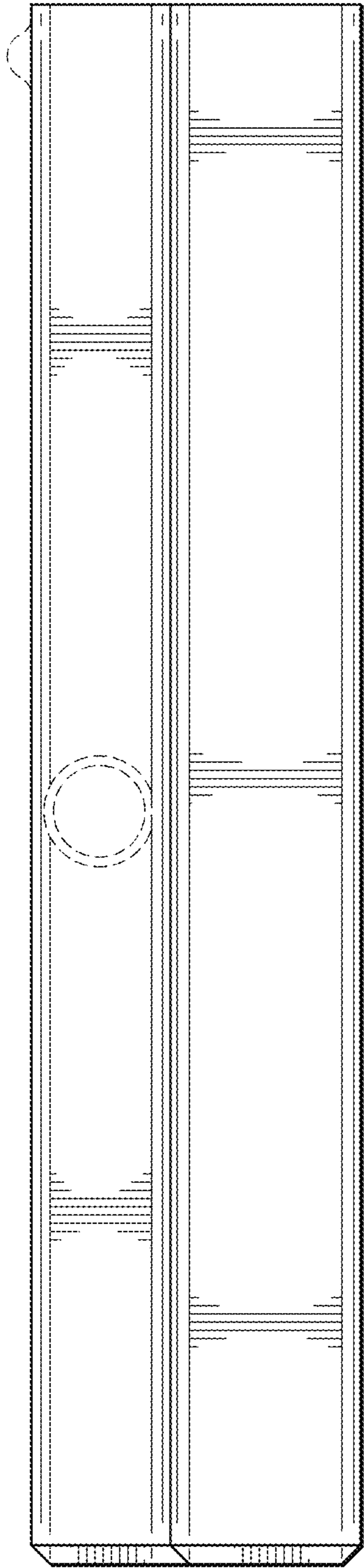


FIG. 19

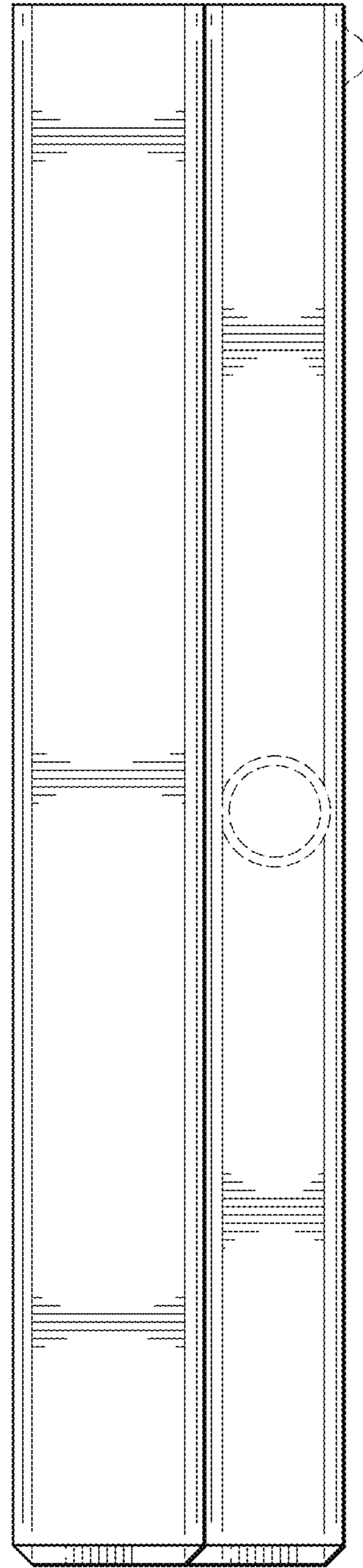


FIG. 20

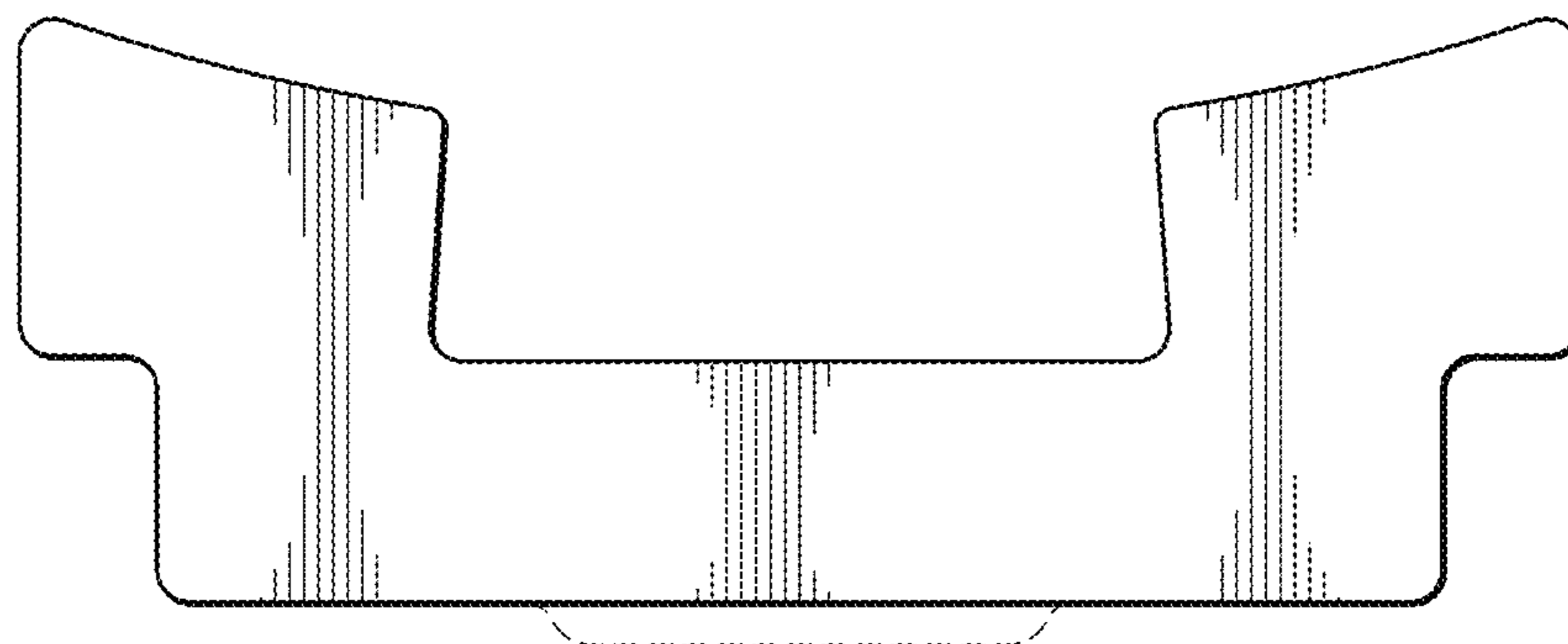


FIG. 21

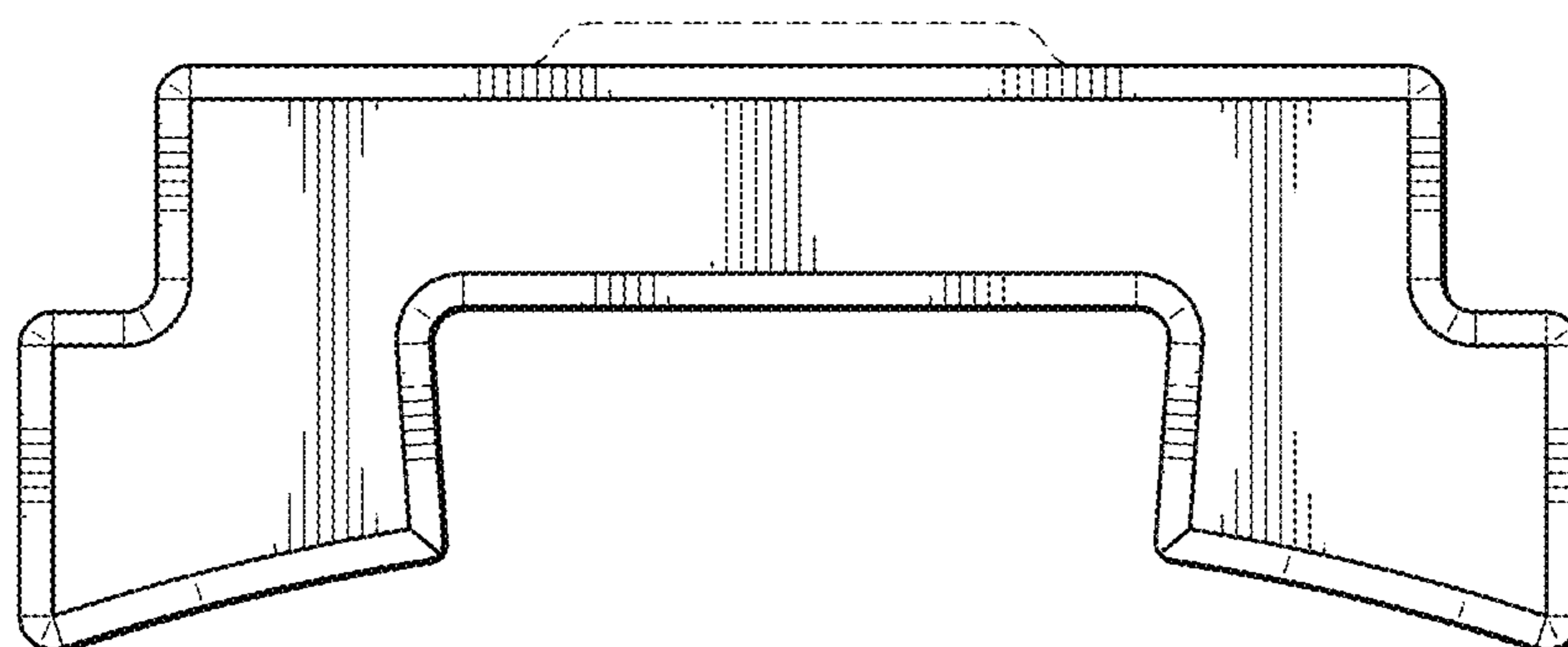


FIG. 22

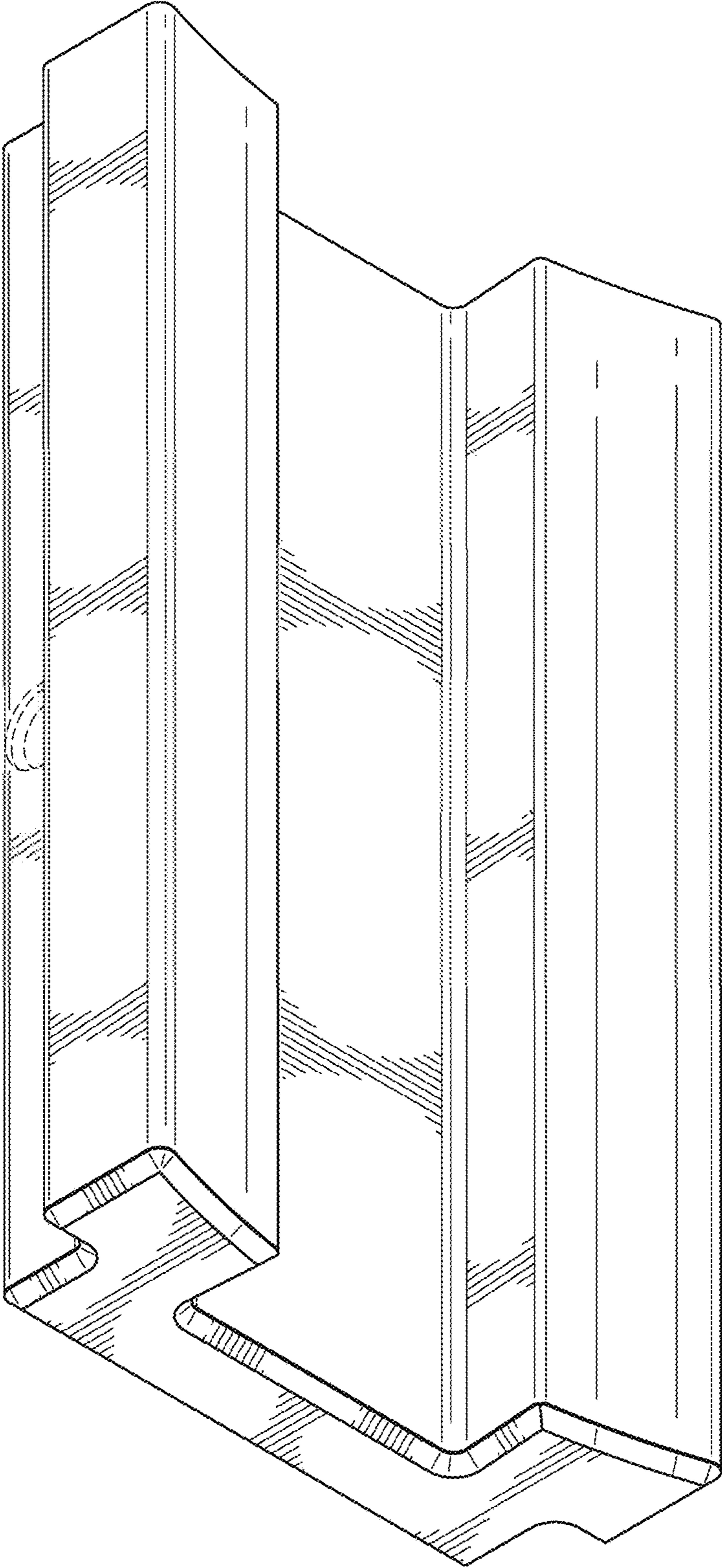


FIG. 23

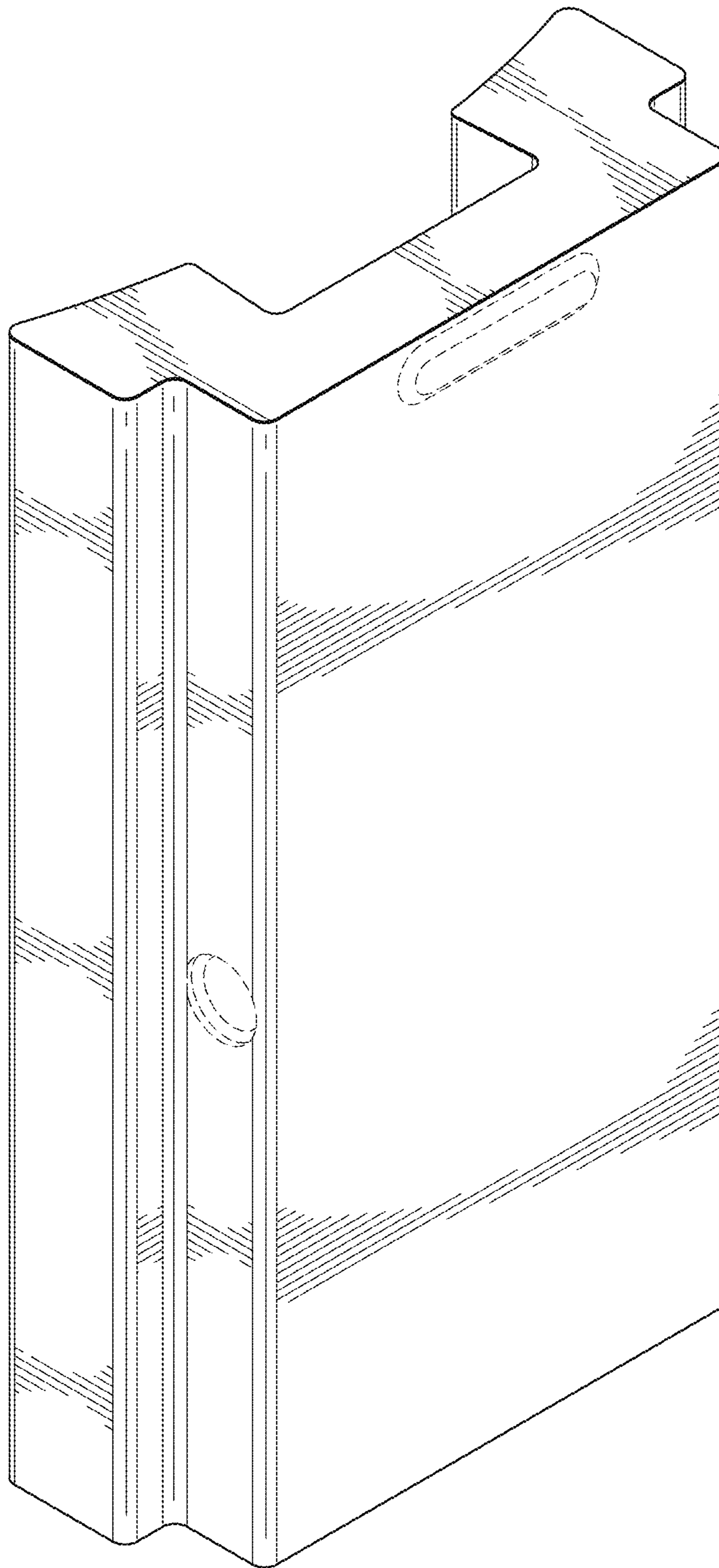


FIG. 24

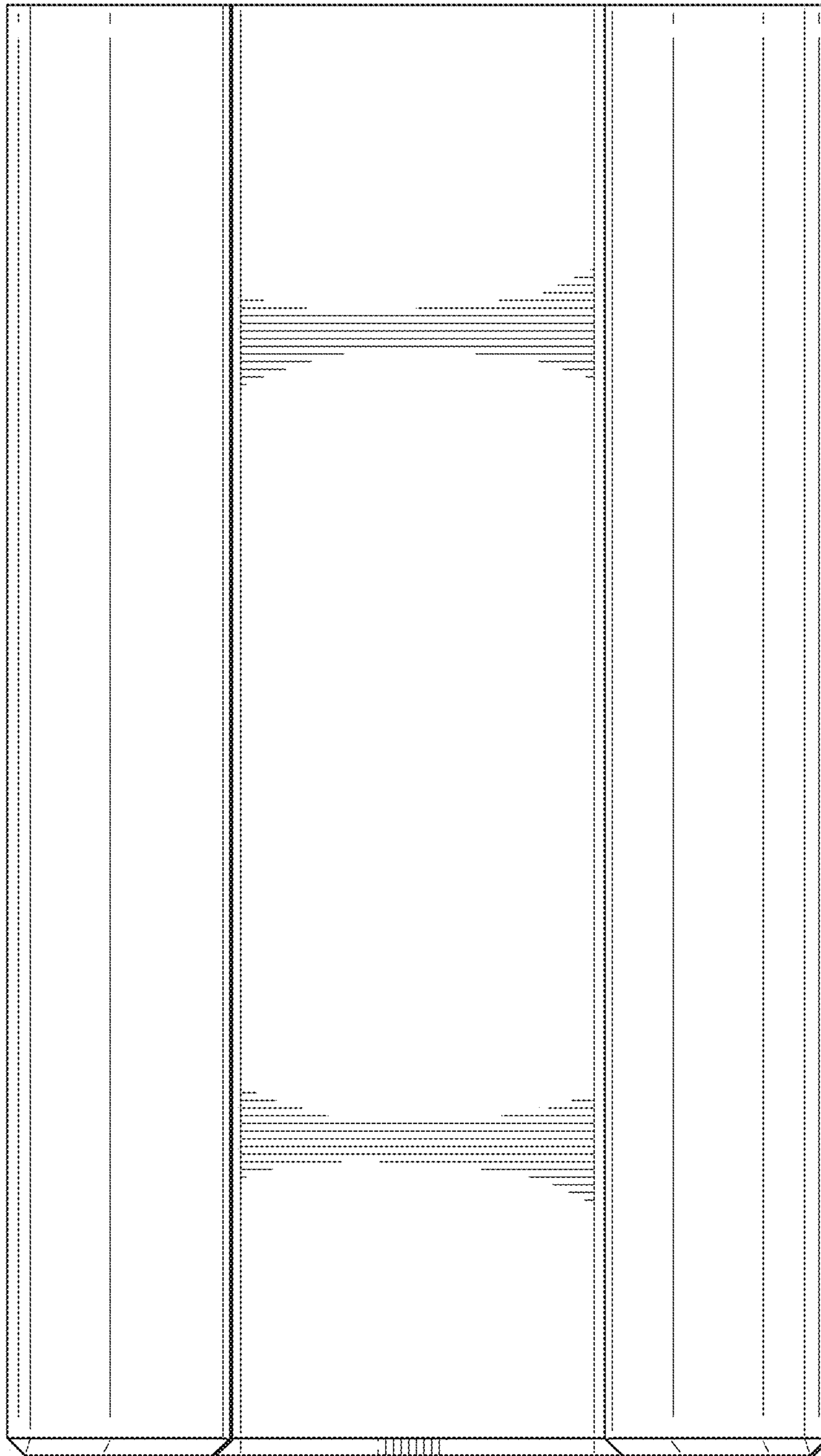


FIG. 25

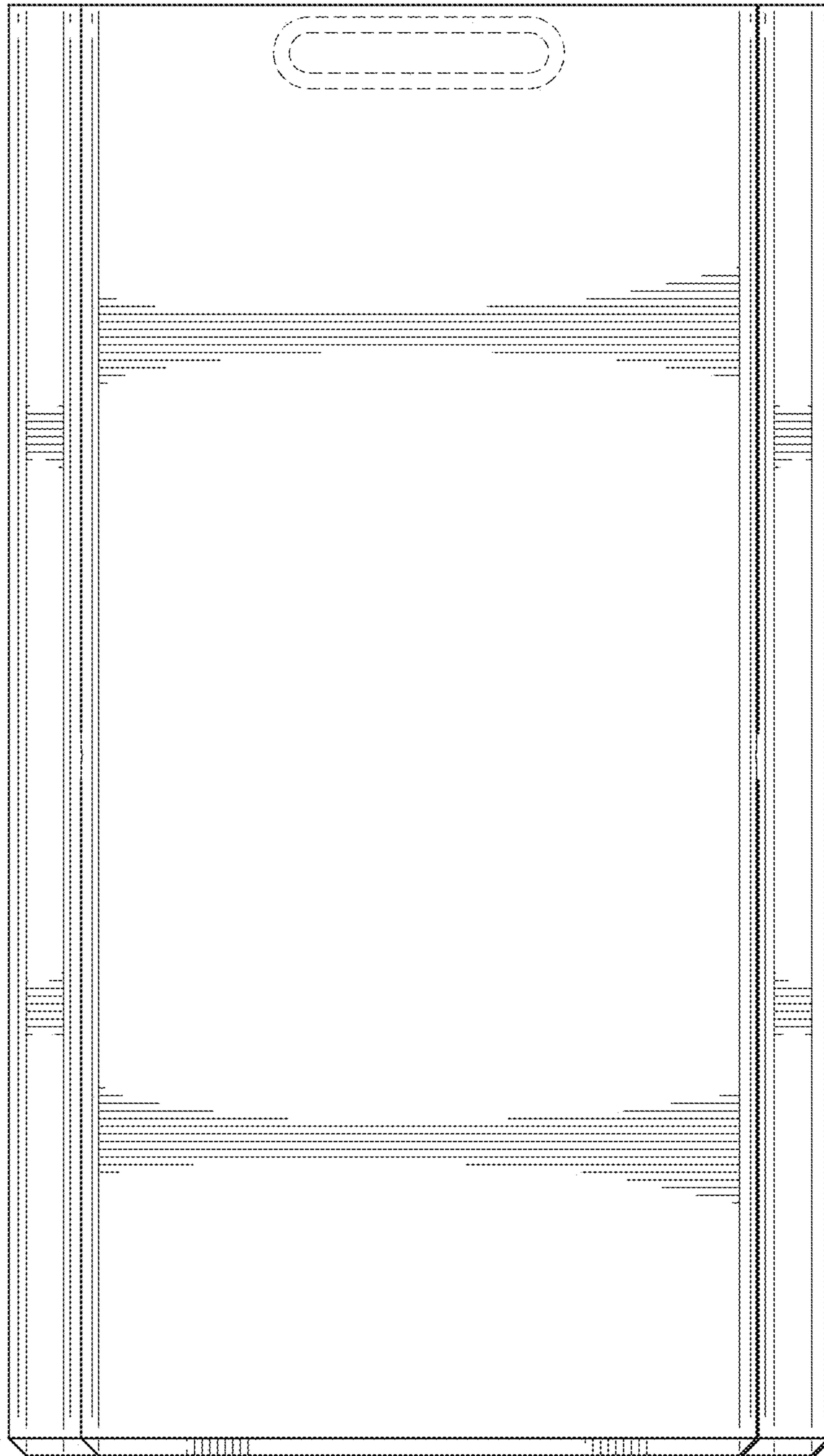


FIG. 26

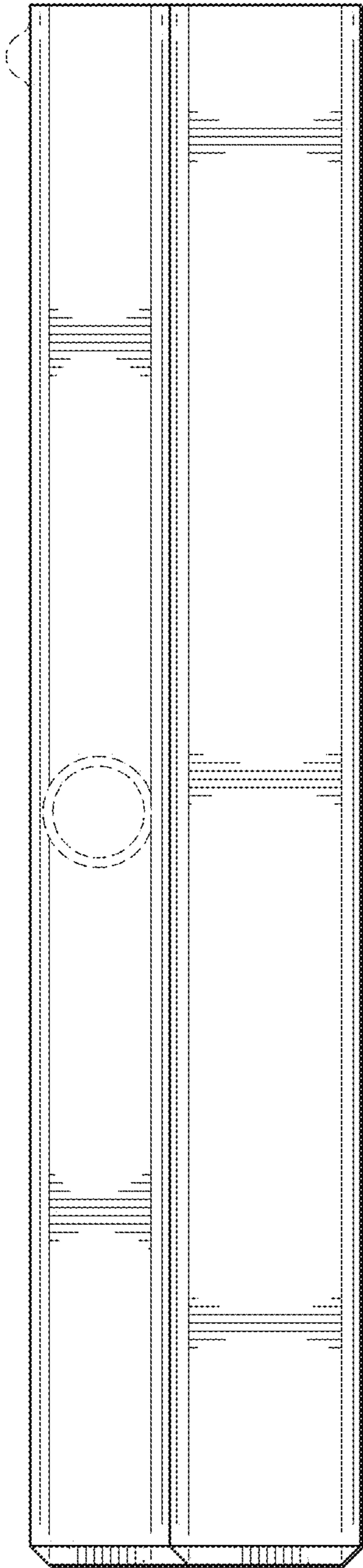


FIG. 27

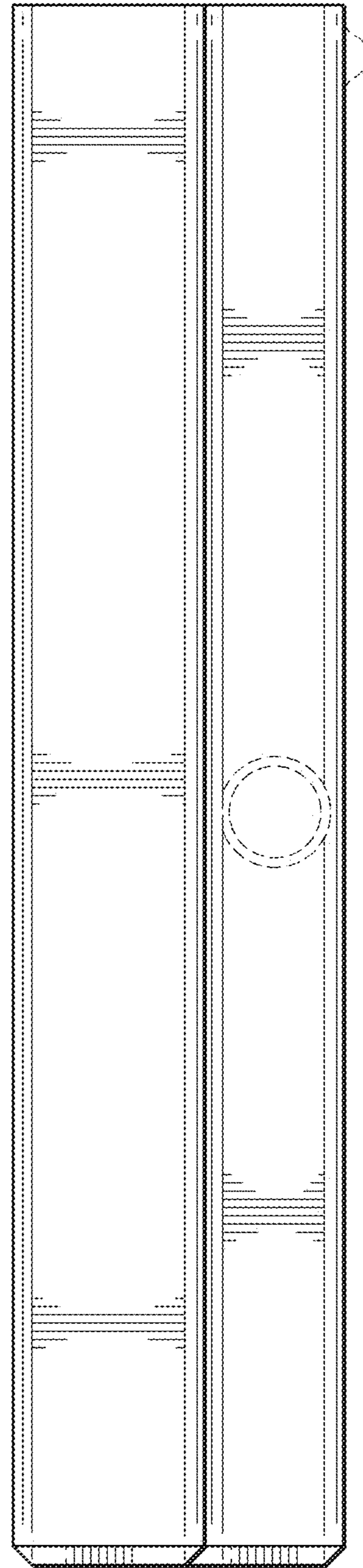


FIG. 28

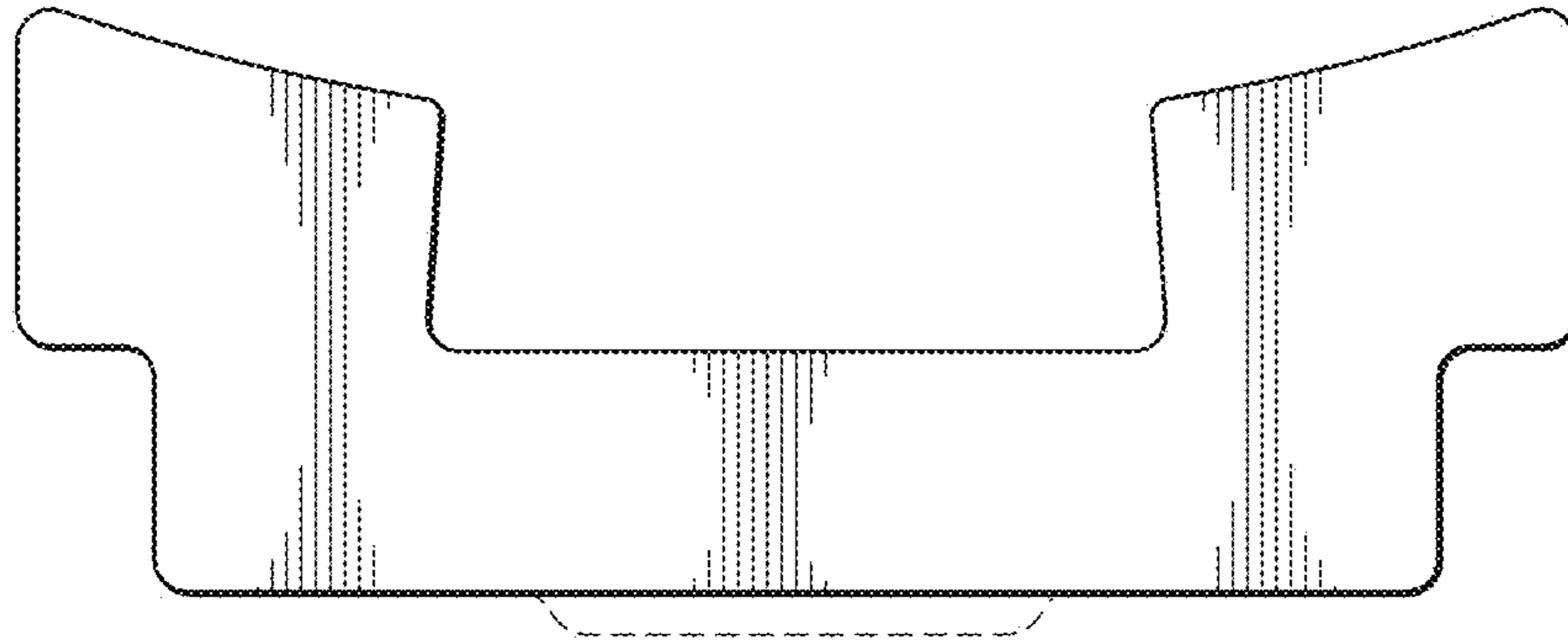


FIG. 29

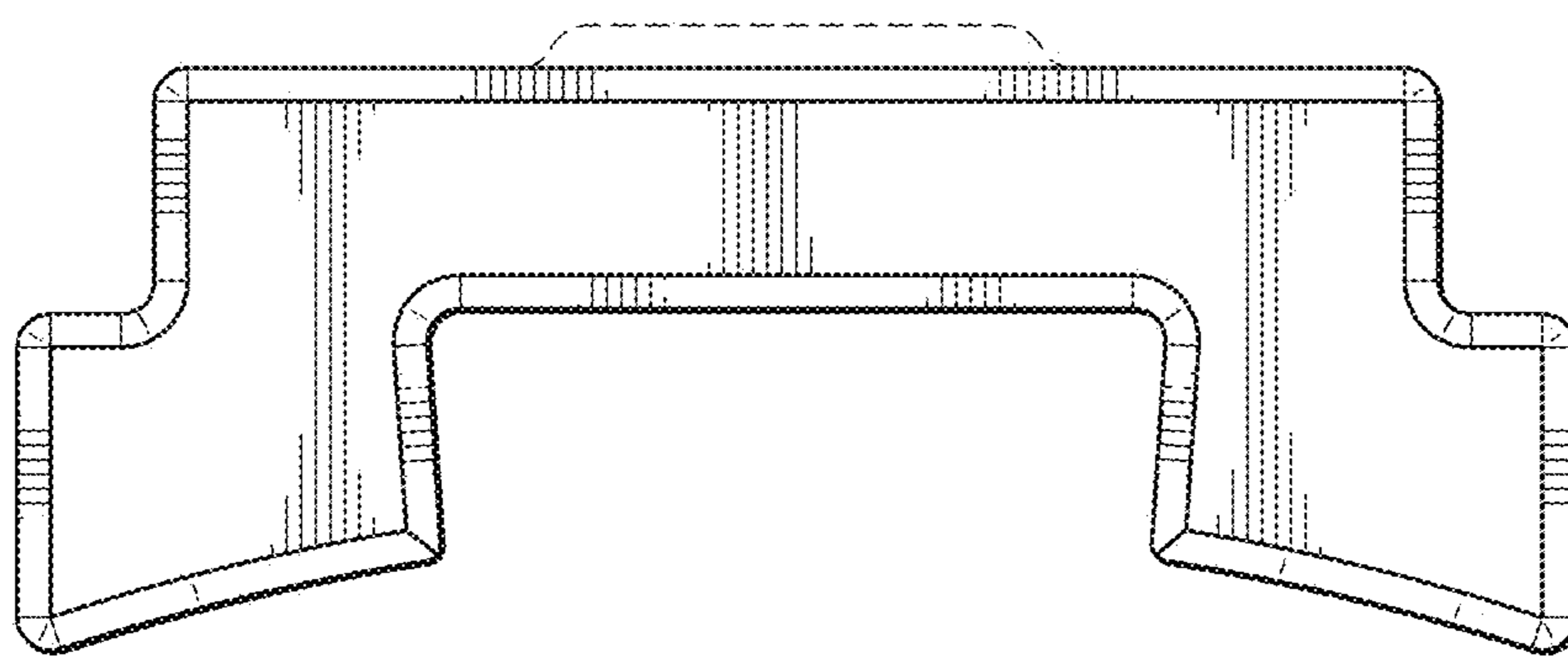


FIG. 30

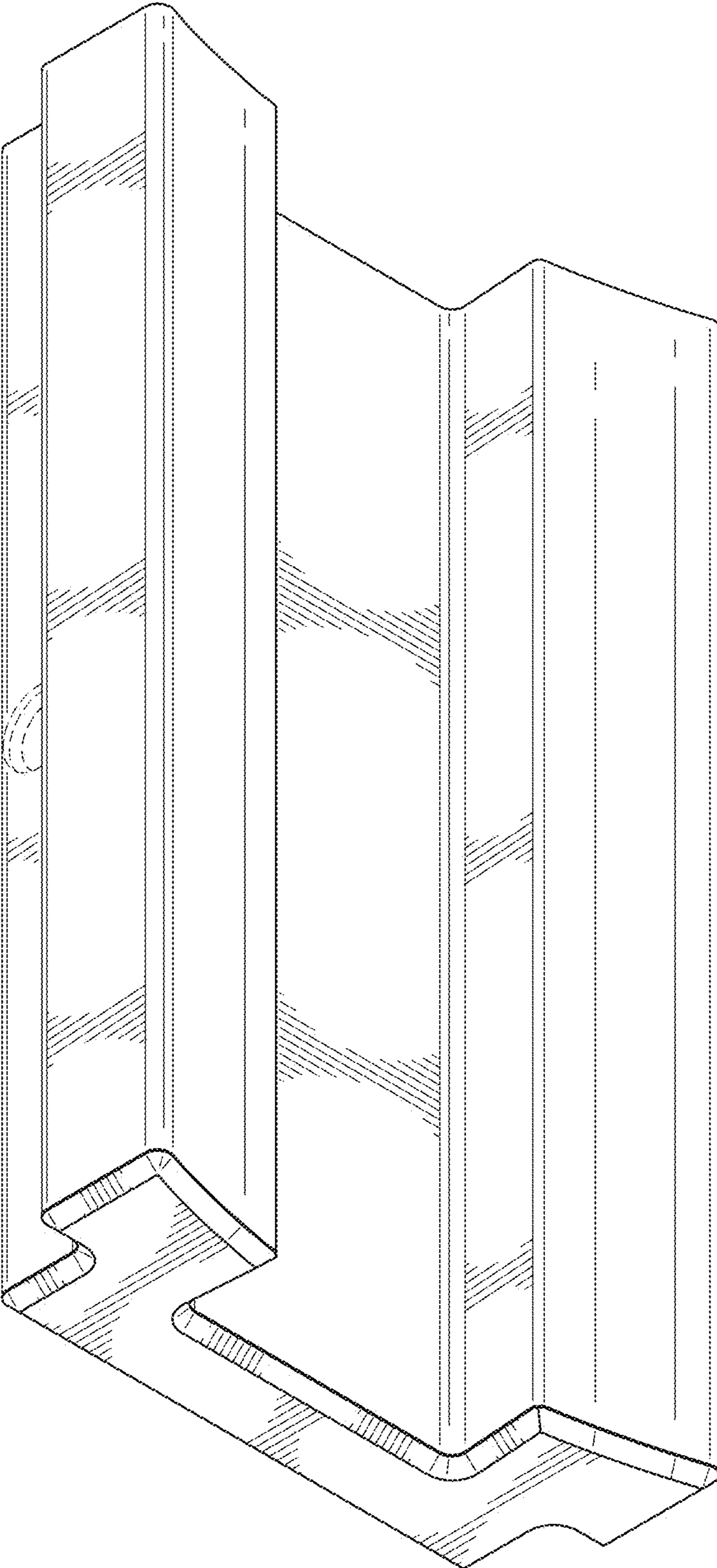


FIG. 31

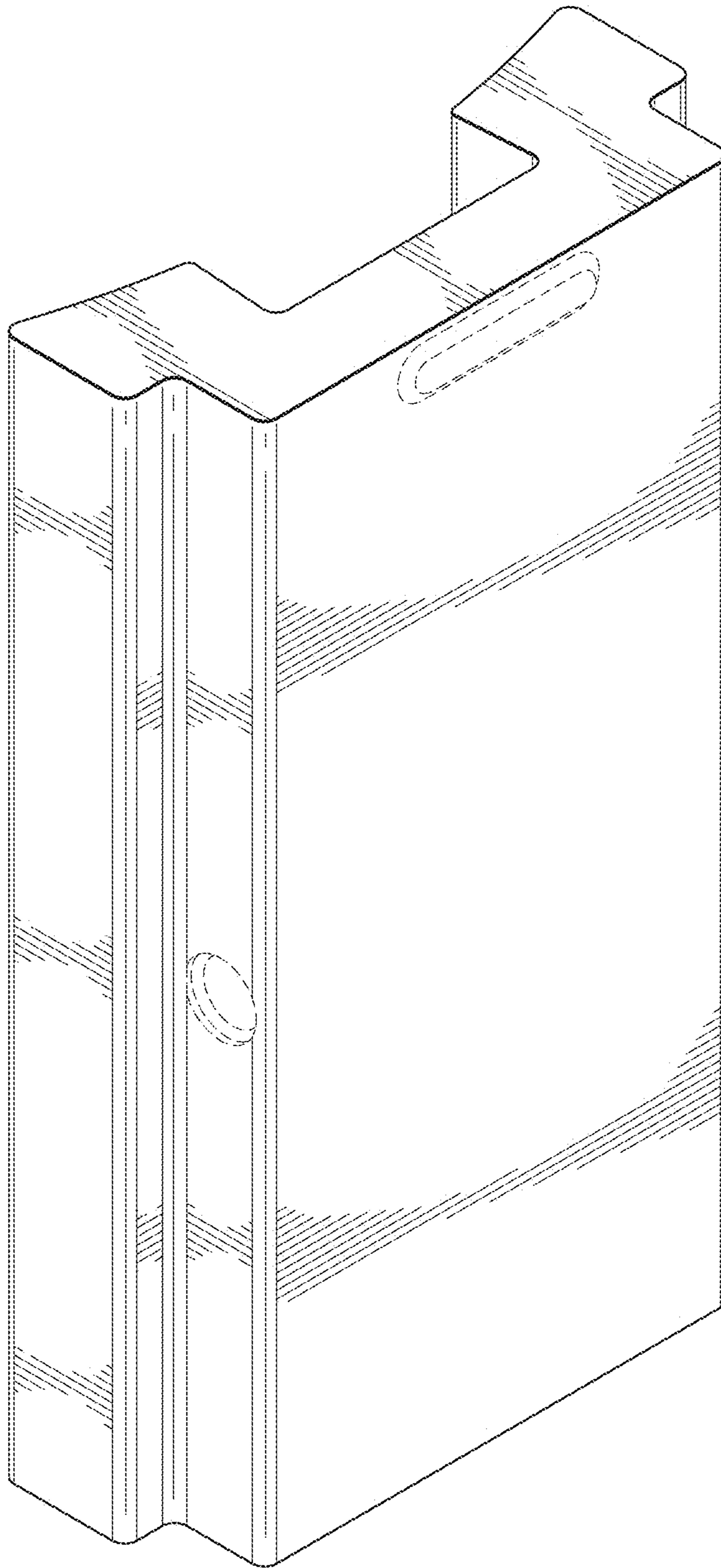
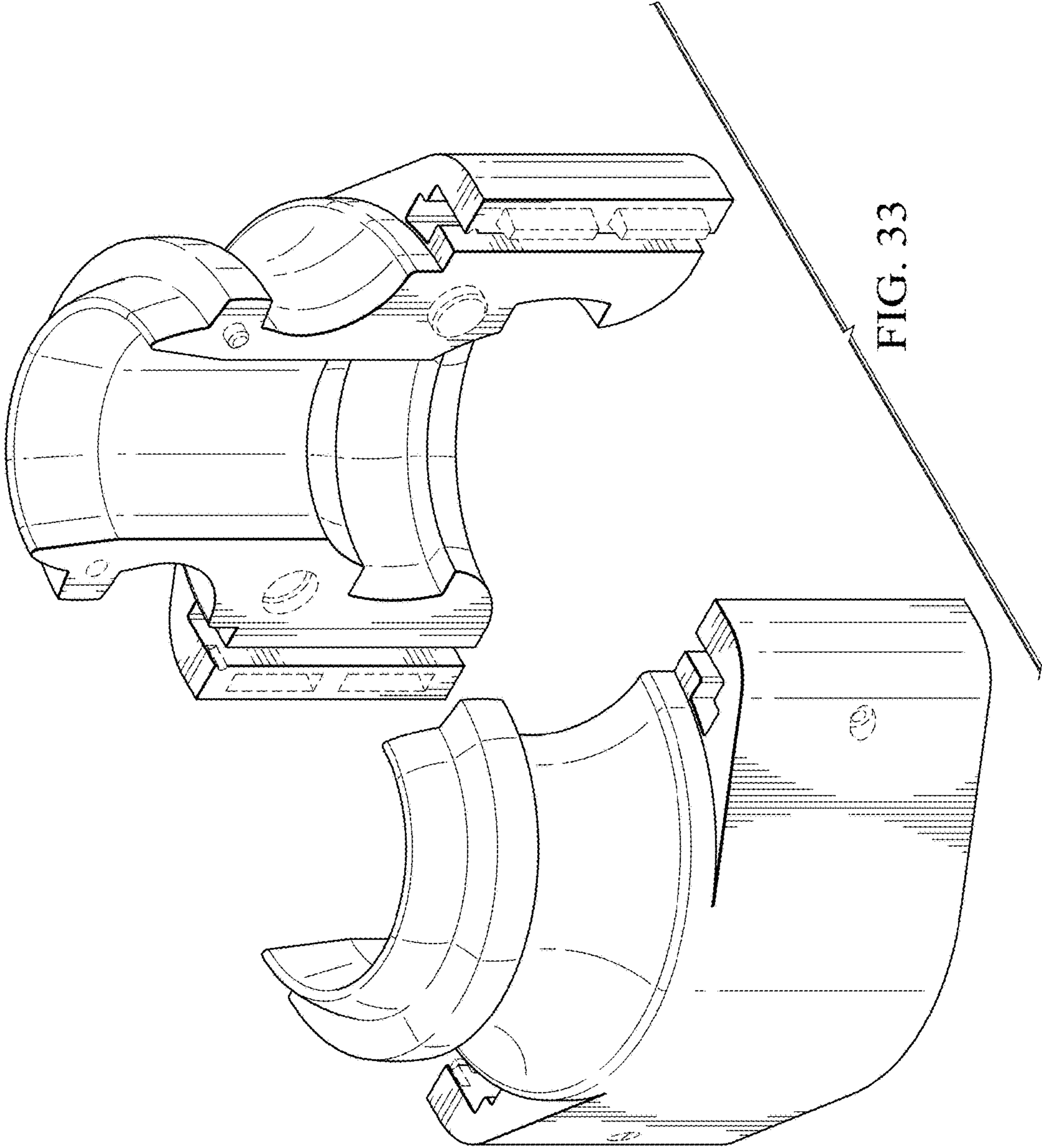


FIG. 32



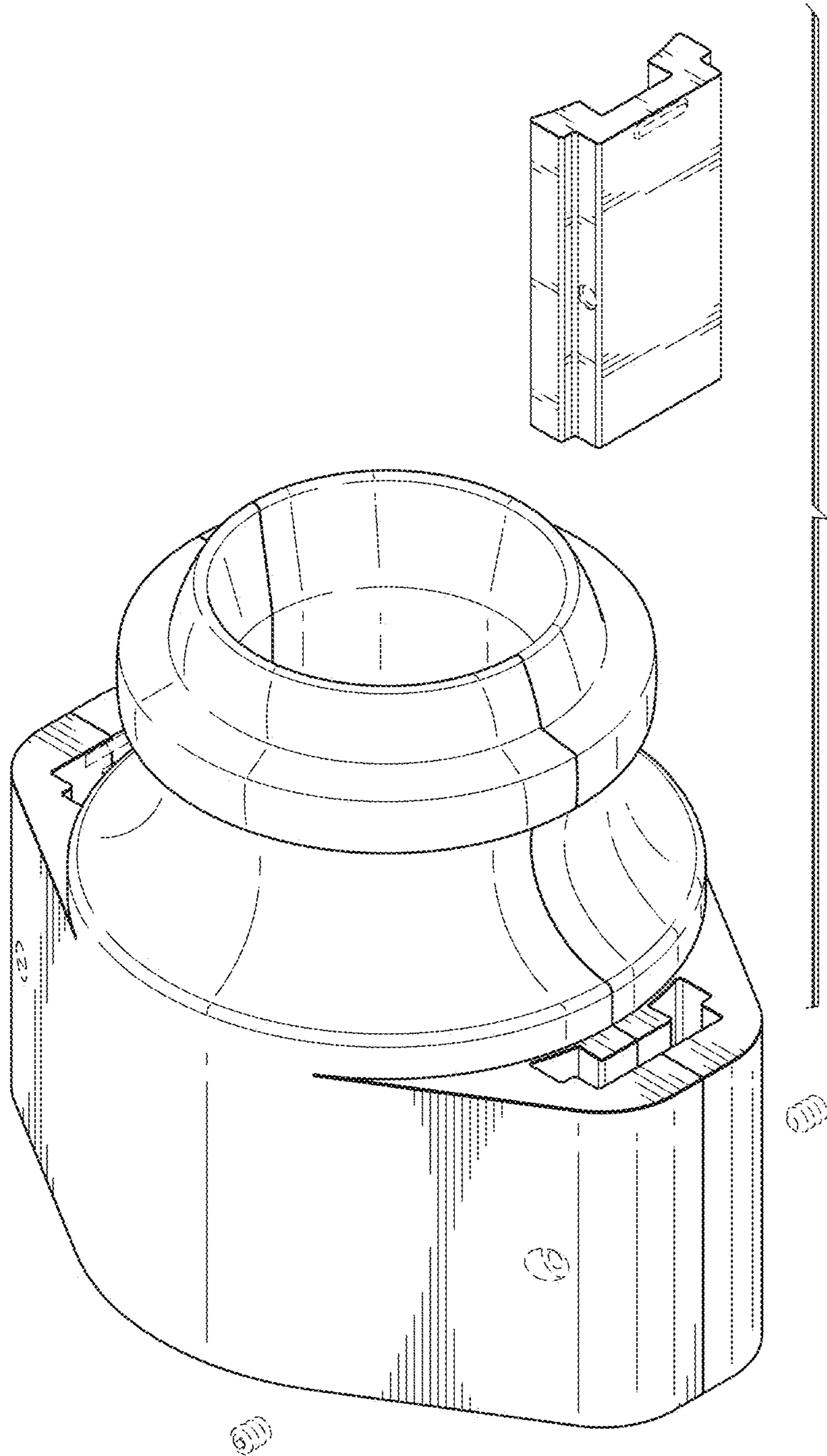


FIG. 34

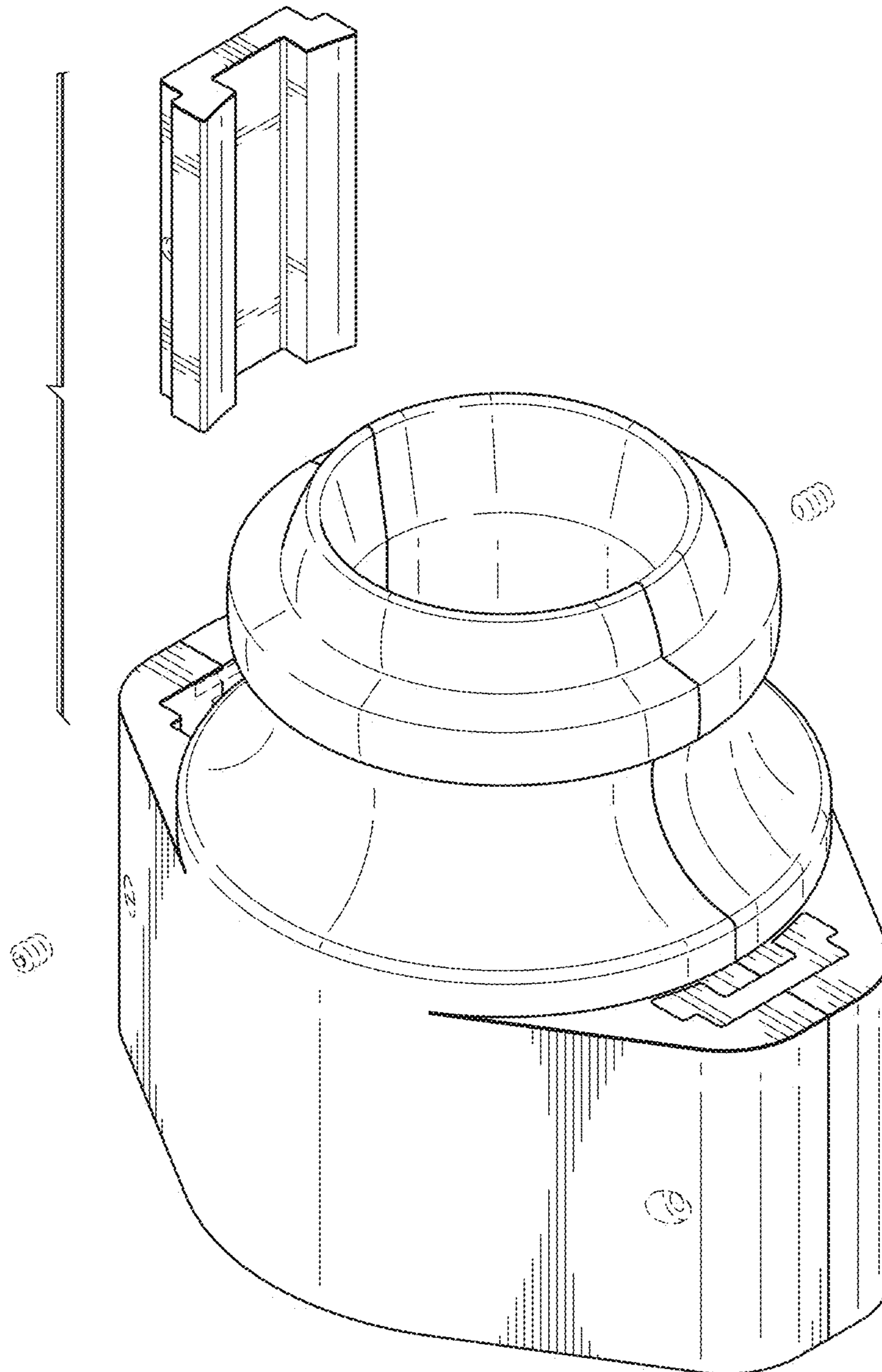


FIG. 35

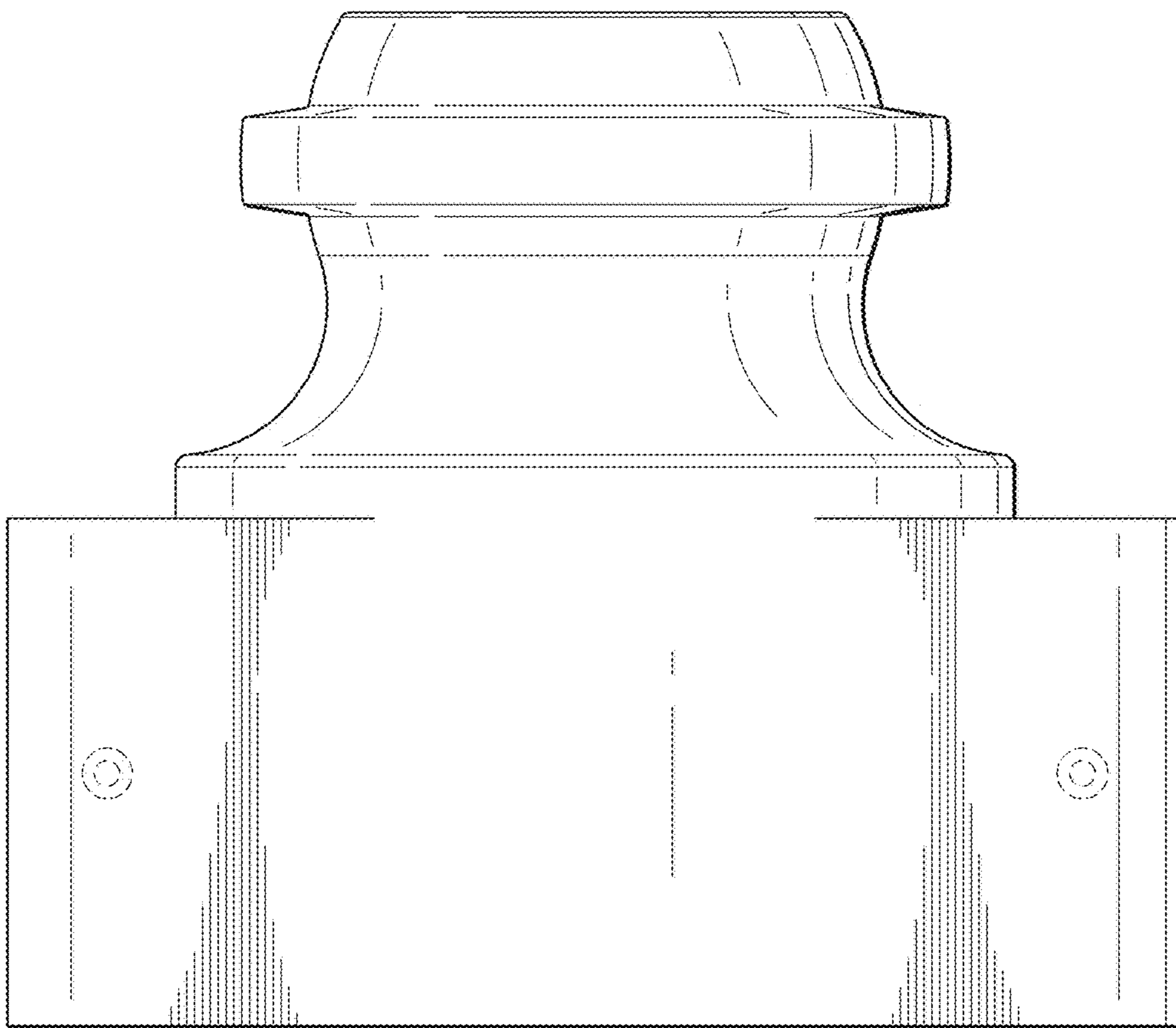


FIG. 36

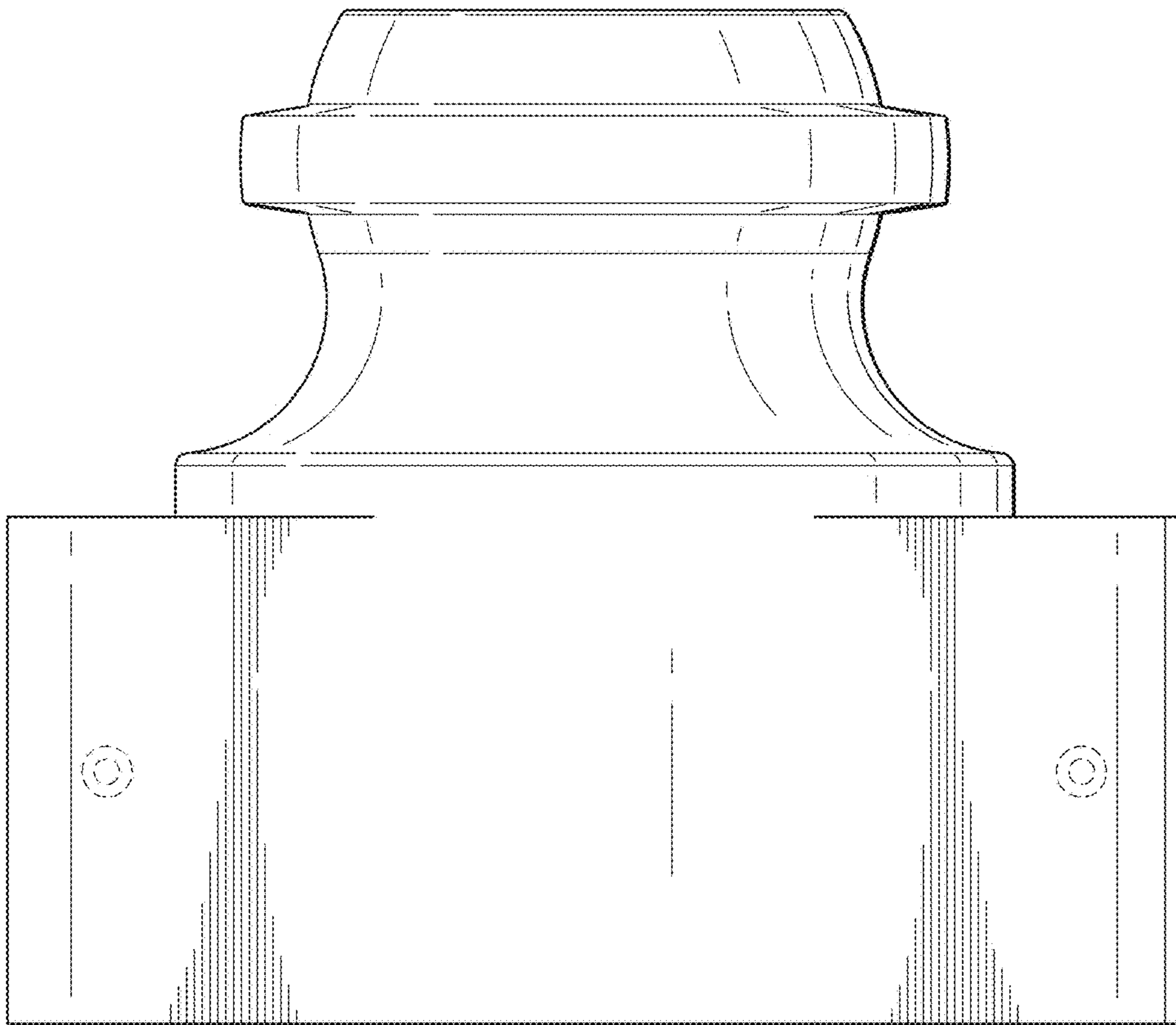


FIG. 37

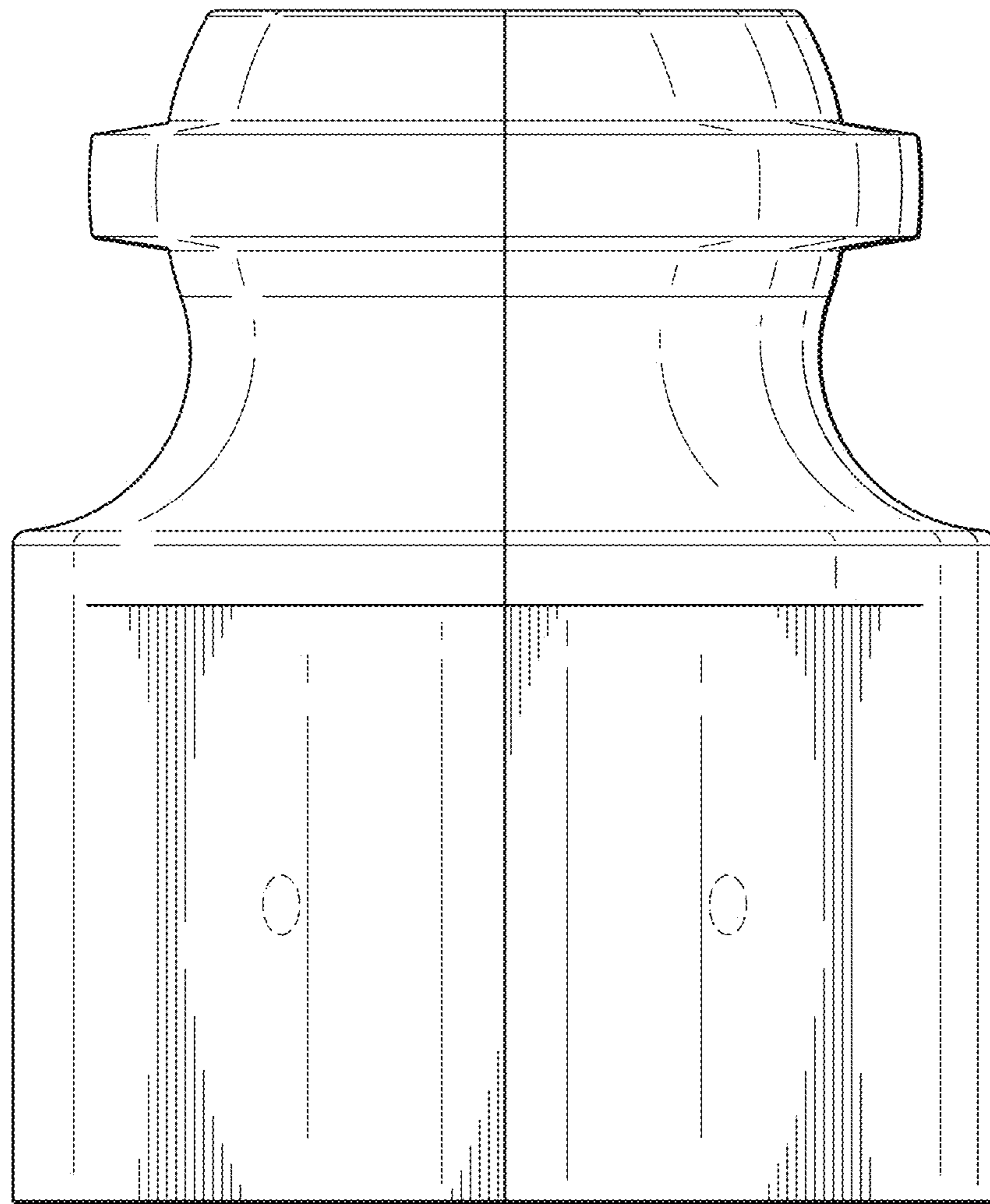


FIG. 38

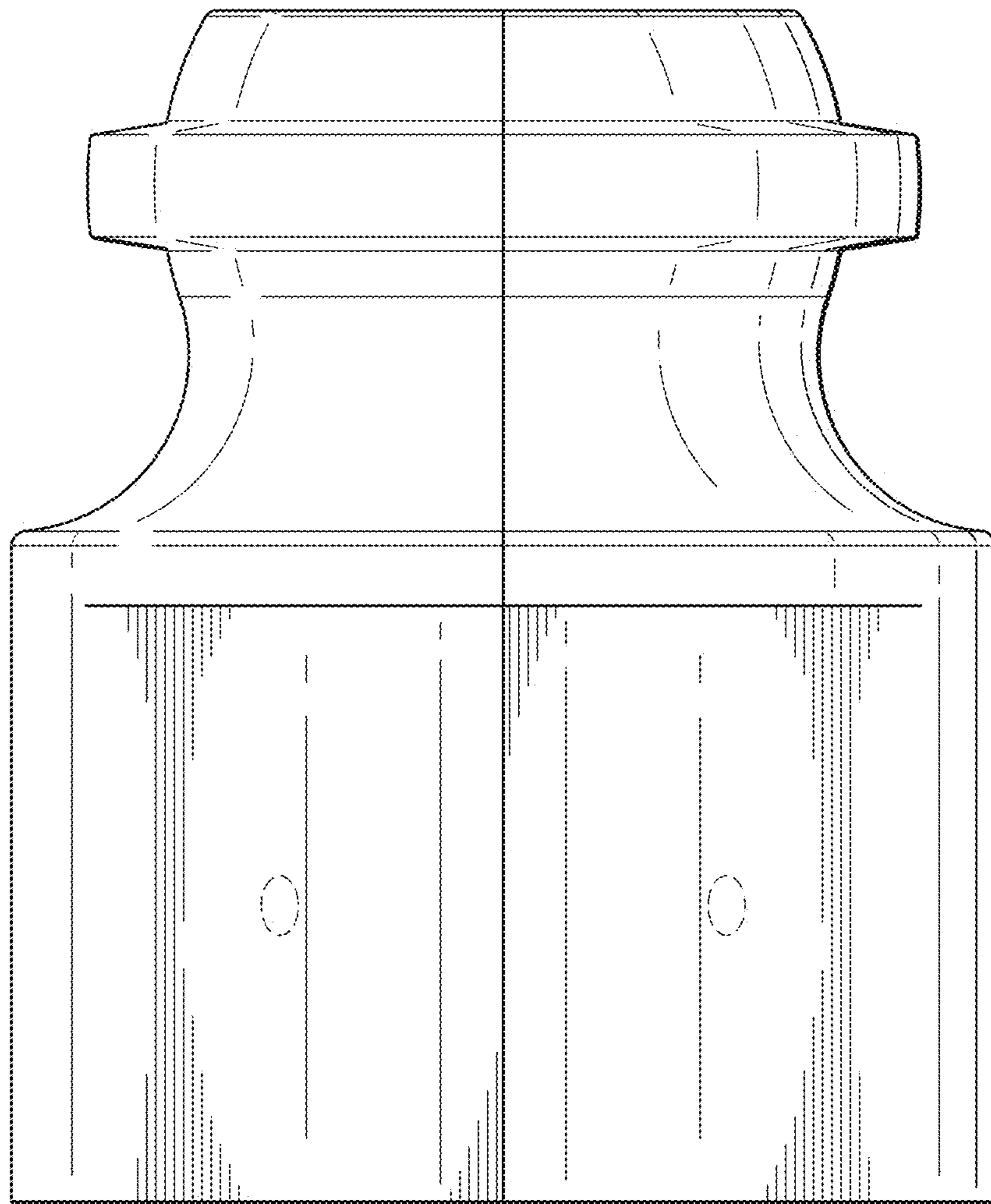


FIG. 39

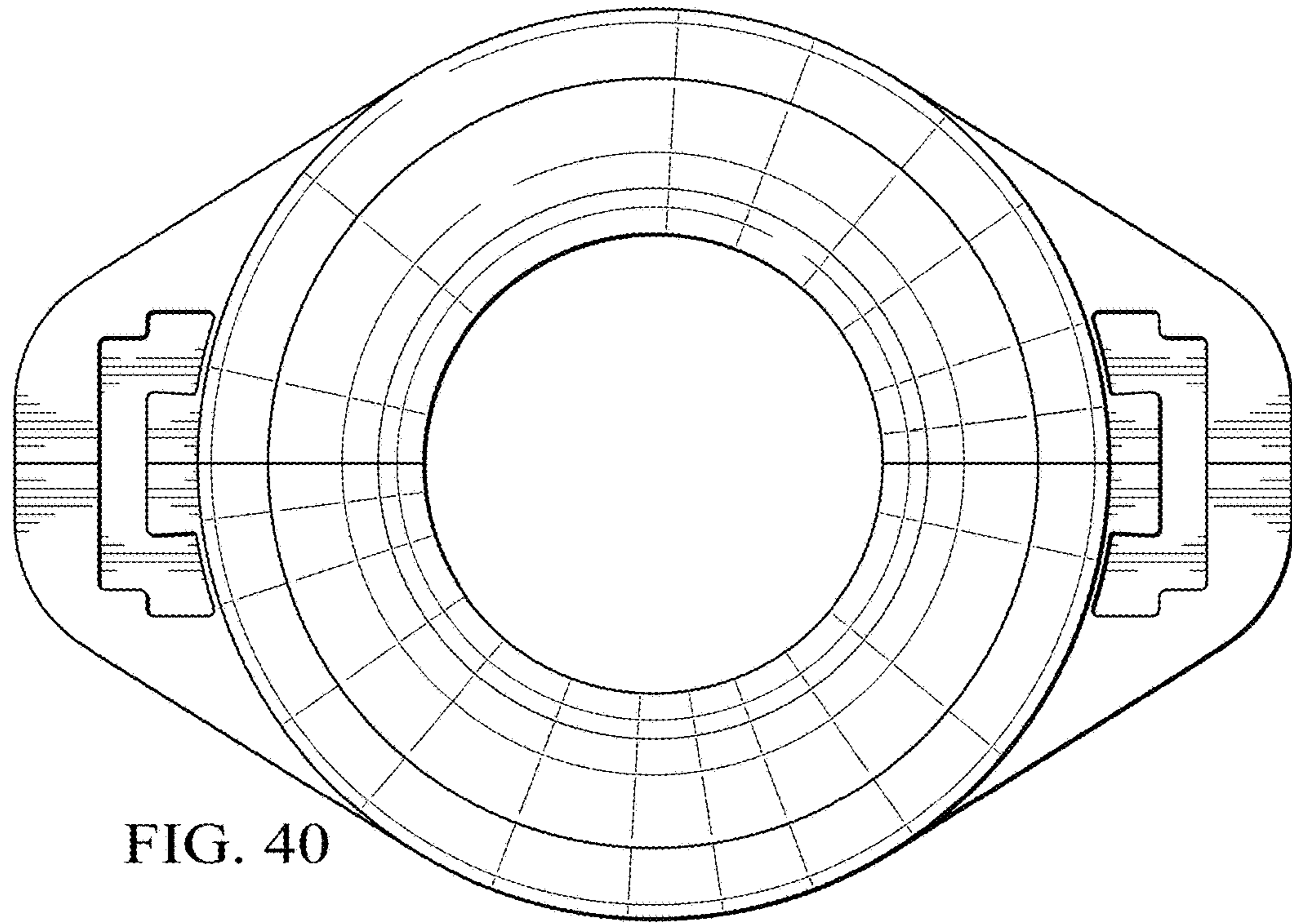


FIG. 40

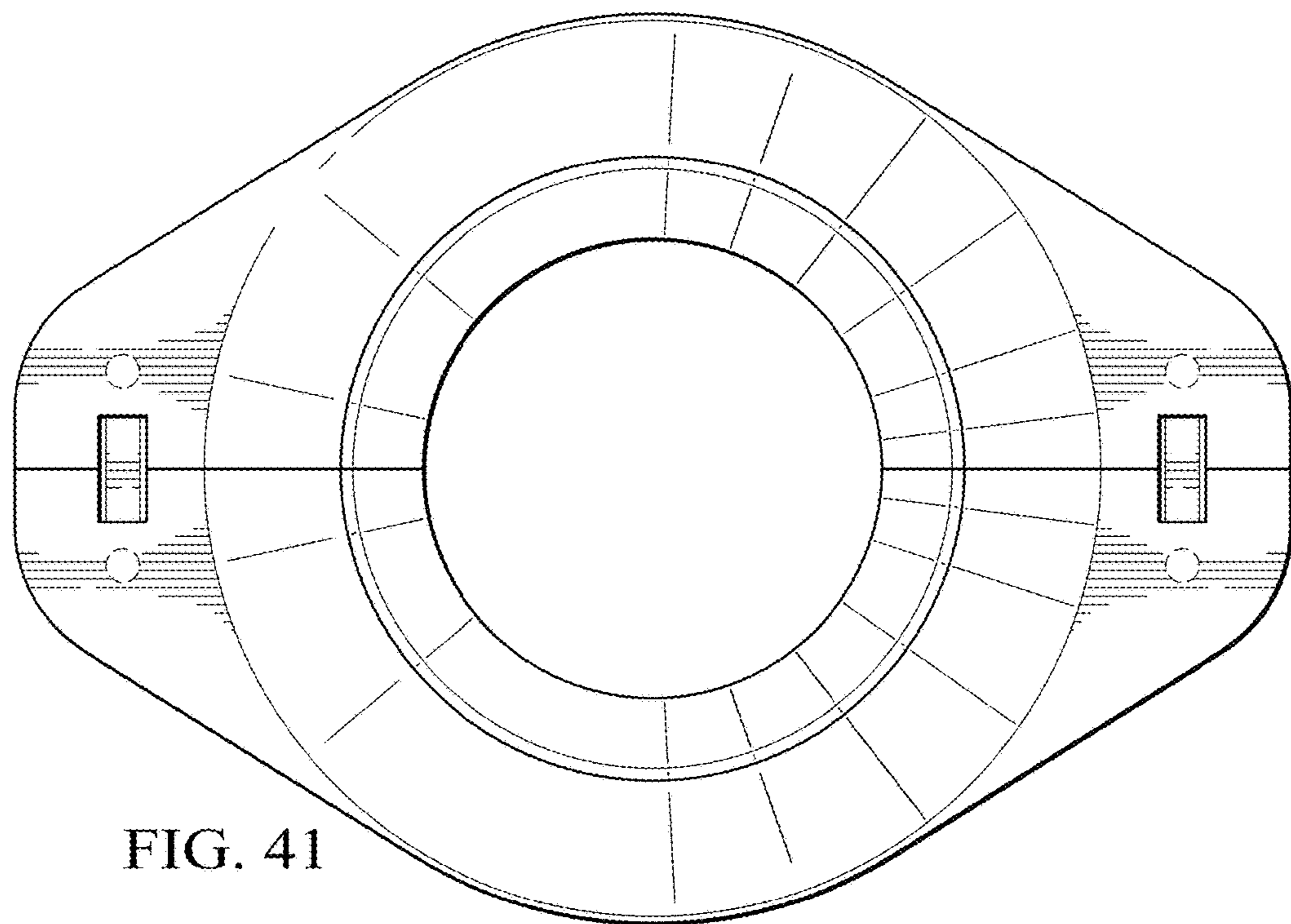


FIG. 41

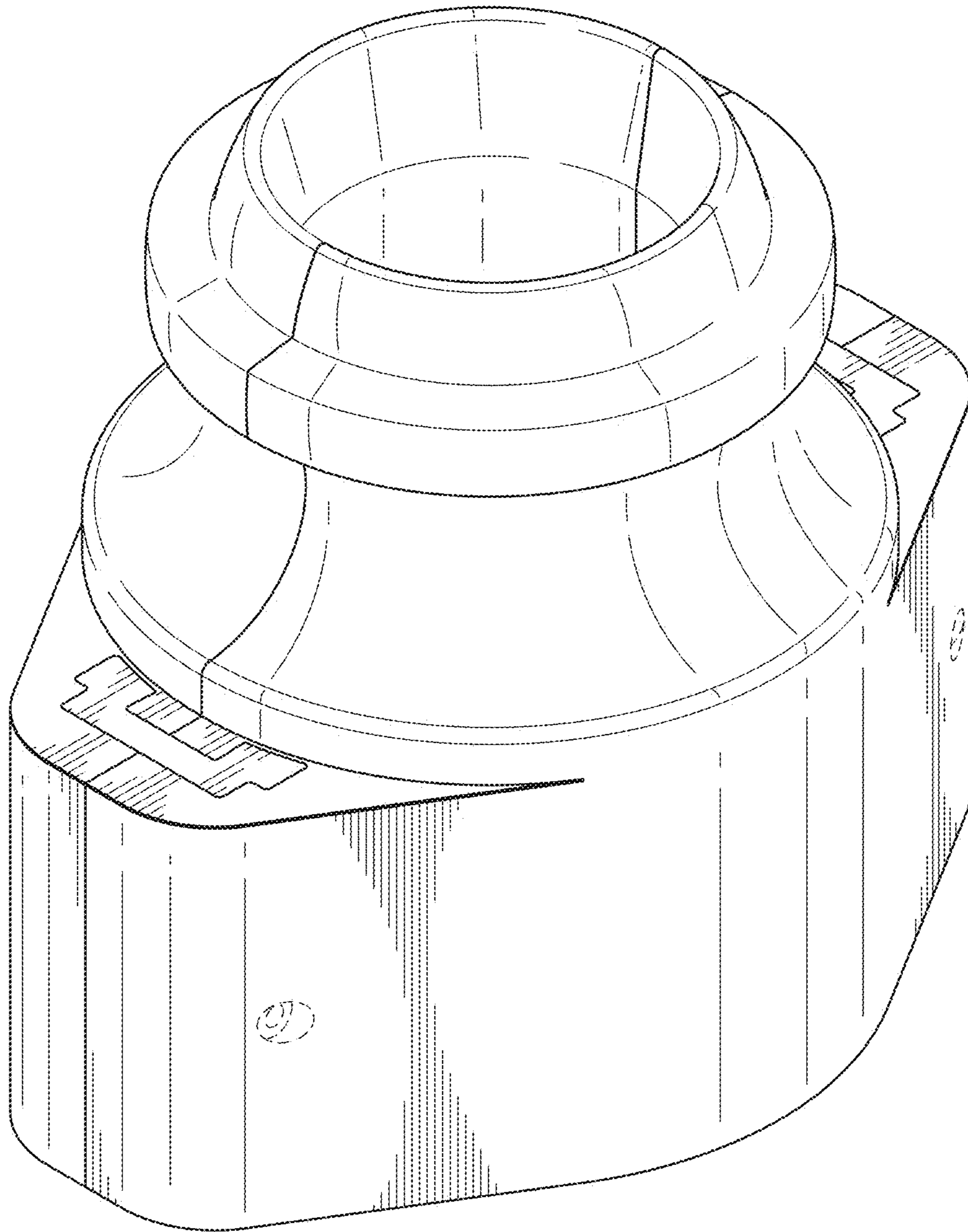


FIG. 42

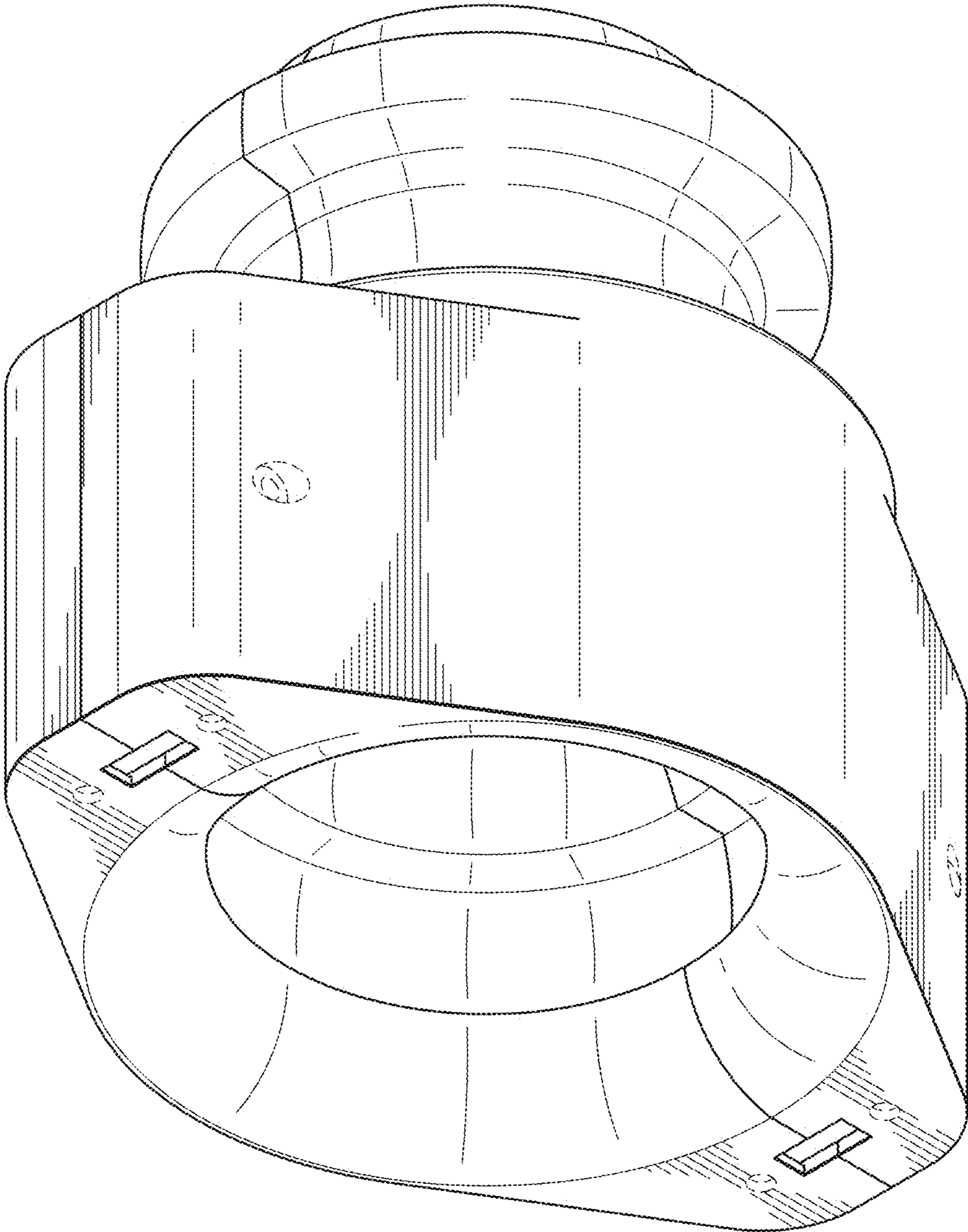


FIG. 43

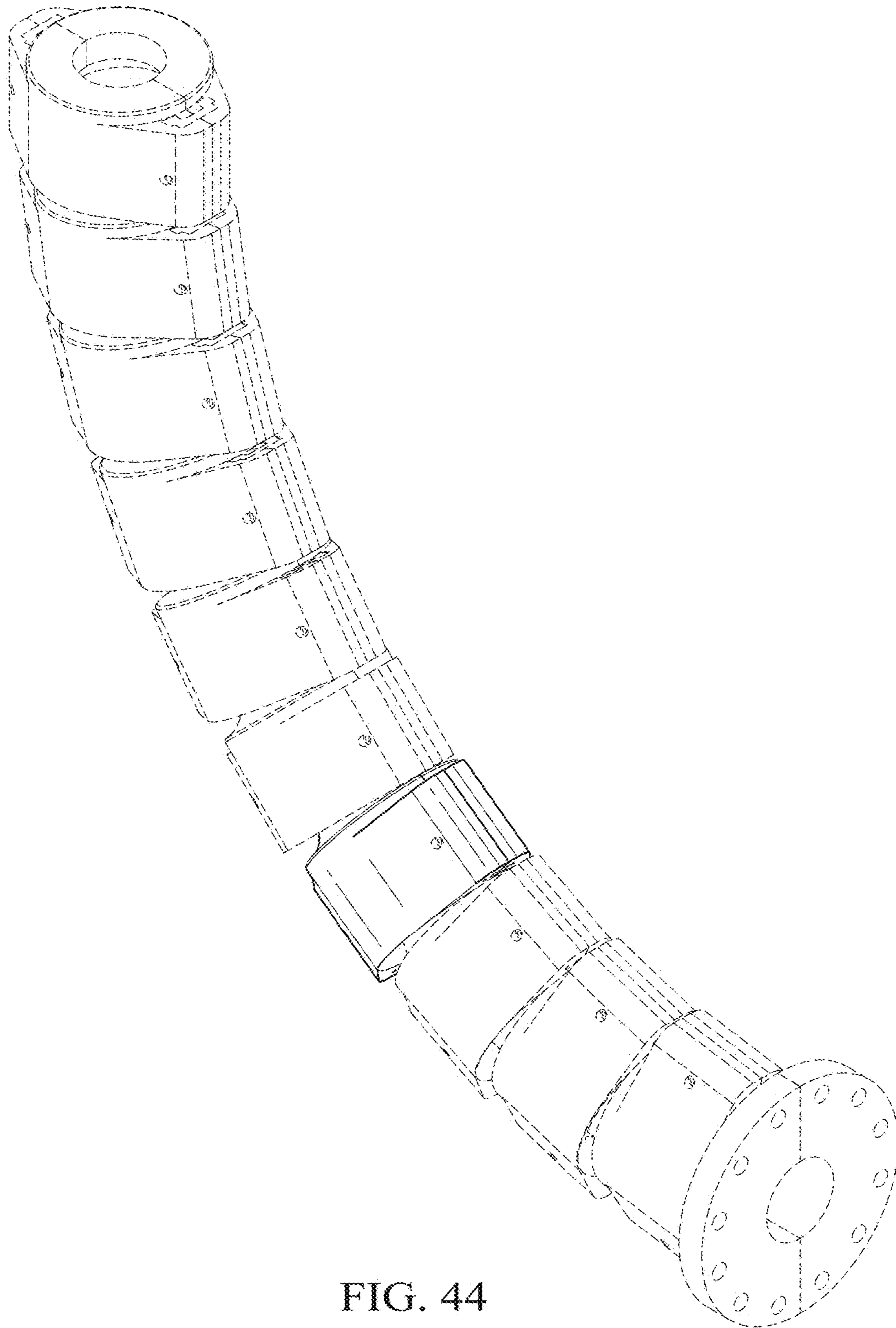


FIG. 44