



US00D880679S

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

(10) **Patent No.:** **US D880,679 S**  
(45) **Date of Patent:** **\*\* Apr. 7, 2020**

- (54) **COOLING PIPE RETURN ELBOW IN A STEEL MAKING FURNACE**
- (71) Applicant: **AMERIFAB, INC.**, Indianapolis, IN (US)
- (72) Inventor: **Richard J. Manasek**, Carmel, IN (US)
- (73) Assignee: **AMERIFAB, INC.**, Indianapolis, IN (US)
- (\*\*) Term: **15 Years**
- (21) Appl. No.: **29/628,614**
- (22) Filed: **Dec. 6, 2017**
- (51) **LOC (12) Cl.** ..... **23-03**
- (52) **U.S. Cl.**  
USPC ..... **D23/386**
- (58) **Field of Classification Search**  
USPC ..... D23/386, 393, 268, 263  
CPC ..... F16L 43/00  
See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

|           |     |         |           |                           |
|-----------|-----|---------|-----------|---------------------------|
| 489,827   | A * | 1/1893  | Newlin    | 122/87                    |
| 1,988,217 | A * | 1/1935  | Sayles    | C23C 10/60                |
| 2,066,775 | A * | 1/1937  | Fritsch   | 138/145<br>F16L 43/001    |
| 2,385,202 | A * | 9/1945  | Haas, Jr. | 285/179<br>F16L 43/001    |
| 2,409,023 | A * | 10/1946 | Dies      | 138/161<br>B21C 37/283    |
| 2,552,768 | A * | 5/1951  | Brophy    | 29/890.147<br>F16L 19/028 |
| 2,852,034 | A * | 9/1958  | Shames    | 285/334.5<br>F16L 55/07   |
| 2,966,372 | A * | 12/1960 | Phillips  | 137/217<br>F16L 43/008    |
|           |     |         |           | 285/39                    |

(Continued)

**FOREIGN PATENT DOCUMENTS**

WO 03/002769 A1 1/2003

**OTHER PUBLICATIONS**

Korean Intellectual Property Office (KIPO); International Search Report and Written Opinion of PCT/US2017/061027; dated Feb. 21, 2018; 18 pages.

*Primary Examiner* — Kevin K Rudzinski

(74) *Attorney, Agent, or Firm* — Taft Stettinius & Hollister LLP; Stephen F. Rost

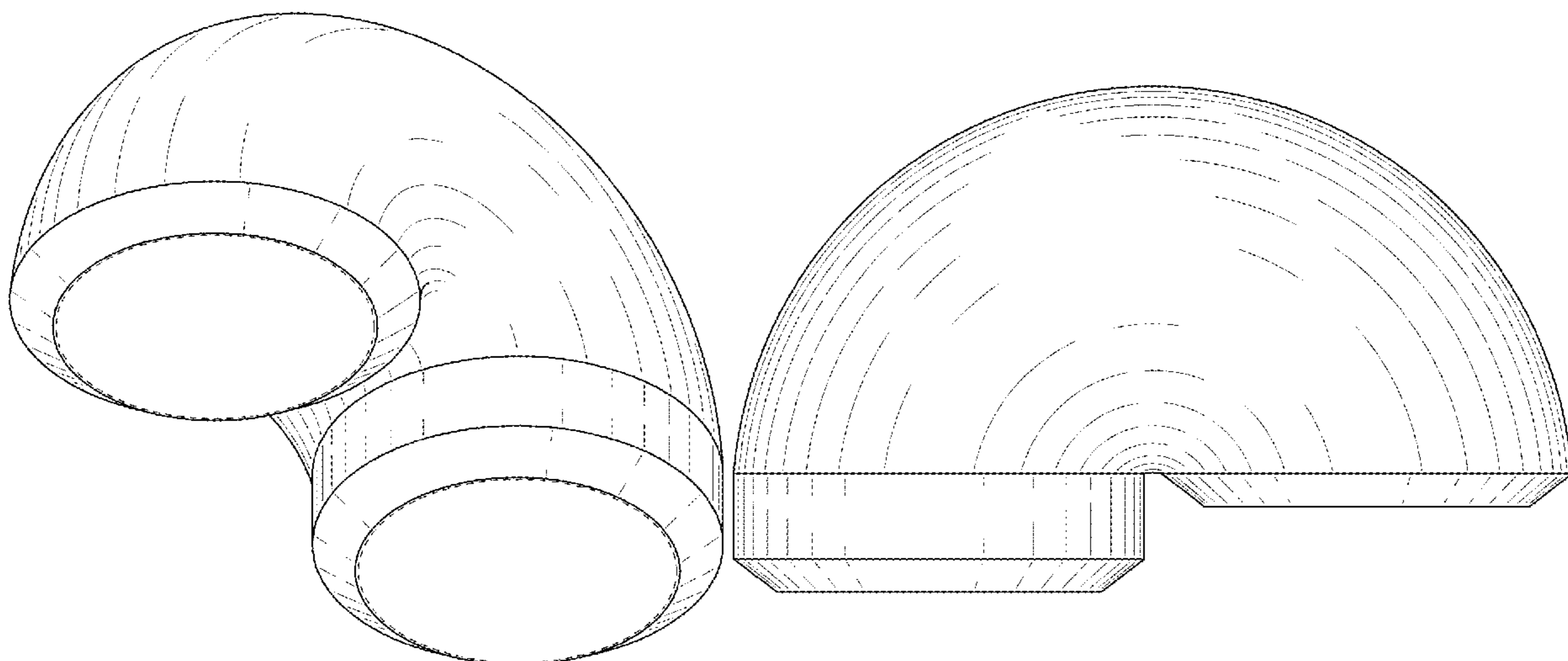
(57) **CLAIM**

The ornamental design for a cooling pipe return elbow in a steel making furnace, as shown and described.

**DESCRIPTION**

FIG. 1 is a perspective view of a first embodiment of a cooling pipe return elbow in a steel making furnace according to the present design;  
 FIG. 2 is a second perspective view thereof;  
 FIG. 3 is a front view thereof;  
 FIG. 4 is a left side view thereof;  
 FIG. 5 is a right side view thereof;  
 FIG. 6 is a top view thereof;  
 FIG. 7 is a bottom view thereof;  
 FIG. 8 is a perspective view of a second embodiment of a cooling pipe return elbow in a steel making furnace;  
 FIG. 9 is a second perspective view of the second embodiment;  
 FIG. 10 is a front view thereof;  
 FIG. 11 is a left side view thereof;  
 FIG. 12 is a right side view thereof;  
 FIG. 13 is a top view thereof; and,  
 FIG. 14 is a bottom view thereof.  
 The broken lines shown represent environment of the article and form no part of the claimed design.

**1 Claim, 6 Drawing Sheets**



(56)

References Cited

U.S. PATENT DOCUMENTS

|           |     |         |                   |       |              |              |      |         |                |       |             |
|-----------|-----|---------|-------------------|-------|--------------|--------------|------|---------|----------------|-------|-------------|
| 3,495,385 | A * | 2/1970  | Glass             | ..... | F01N 3/037   | 5,638,557    | A *  | 6/1997  | Iida           | ..... | B01D 21/00  |
|           |     |         |                   |       | 96/306       |              |      |         |                |       | 137/247.41  |
| 3,719,209 | A * | 3/1973  | Rush              | ..... | B29C 49/4278 | D386,569     | S *  | 11/1997 | Trueb          | ..... | D23/268     |
|           |     |         |                   |       | 138/177      | 5,740,196    | A    | 4/1998  | Johnson et al. |       |             |
| D229,410  | S * | 11/1973 | Luckenbill et al. | ..... | D23/263      | D426,932     | S *  | 6/2000  | Gregory        | ..... | D23/263     |
| 3,840,321 | A * | 10/1974 | Moench            | ..... | F23D 11/44   | 6,125,891    | A *  | 10/2000 | Witmer         | ..... | C04B 35/565 |
|           |     |         |                   |       | 431/11       |              |      |         |                |       | 138/106     |
| 3,860,978 | A * | 1/1975  | Wirth             | ..... | E03C 1/284   | D496,989     | S *  | 10/2004 | Riese          | ..... | D23/263     |
|           |     |         |                   |       | 4/679        | D531,285     | S *  | 10/2006 | Williams       | ..... | D23/268     |
| D234,463  | S * | 3/1975  | Ahirot            | ..... | D23/263      | D659,809     | S *  | 5/2012  | Smith          | ..... | D23/268     |
| 3,877,518 | A * | 4/1975  | Dreksler          | ..... | B21D 39/04   | D728,752     | S *  | 5/2015  | Browning       | ..... | D23/263     |
|           |     |         |                   |       | 165/150      | D739,509     | S *  | 9/2015  | Bazemore       | ..... | D23/263     |
| 3,908,208 | A * | 9/1975  | McIlroy           | ..... | E03C 1/284   | D783,786     | S *  | 4/2017  | Madireddi      | ..... | D23/263     |
|           |     |         |                   |       | 4/679        | 2003/0163869 | A1 * | 9/2003  | Bosch          | ..... | E03C 1/284  |
| D240,929  | S * | 8/1976  | McIlroy           | ..... | D23/268      |              |      |         |                |       | 4/679       |
| 4,453,500 | A   | 6/1984  | Kuhlmann et al.   |       |              | 2006/0230843 | A1 * | 10/2006 | Penlerick      | ..... | G01F 1/10   |
| 5,241,979 | A   | 9/1993  | Chang             |       |              |              |      |         |                |       | 73/861.74   |
| D346,646  | S * | 5/1994  | Doyle             | ..... | D23/268      | 2008/0296006 | A1   | 12/2008 | Manasek        |       |             |
|           |     |         |                   |       |              | 2008/0298908 | A1 * | 12/2008 | Esser          | ..... | B65G 53/523 |
|           |     |         |                   |       |              |              |      |         |                |       | 406/191     |
|           |     |         |                   |       |              | 2018/0128546 | A1 * | 5/2018  | Manasek        | ..... | F27D 1/12   |

\* cited by examiner

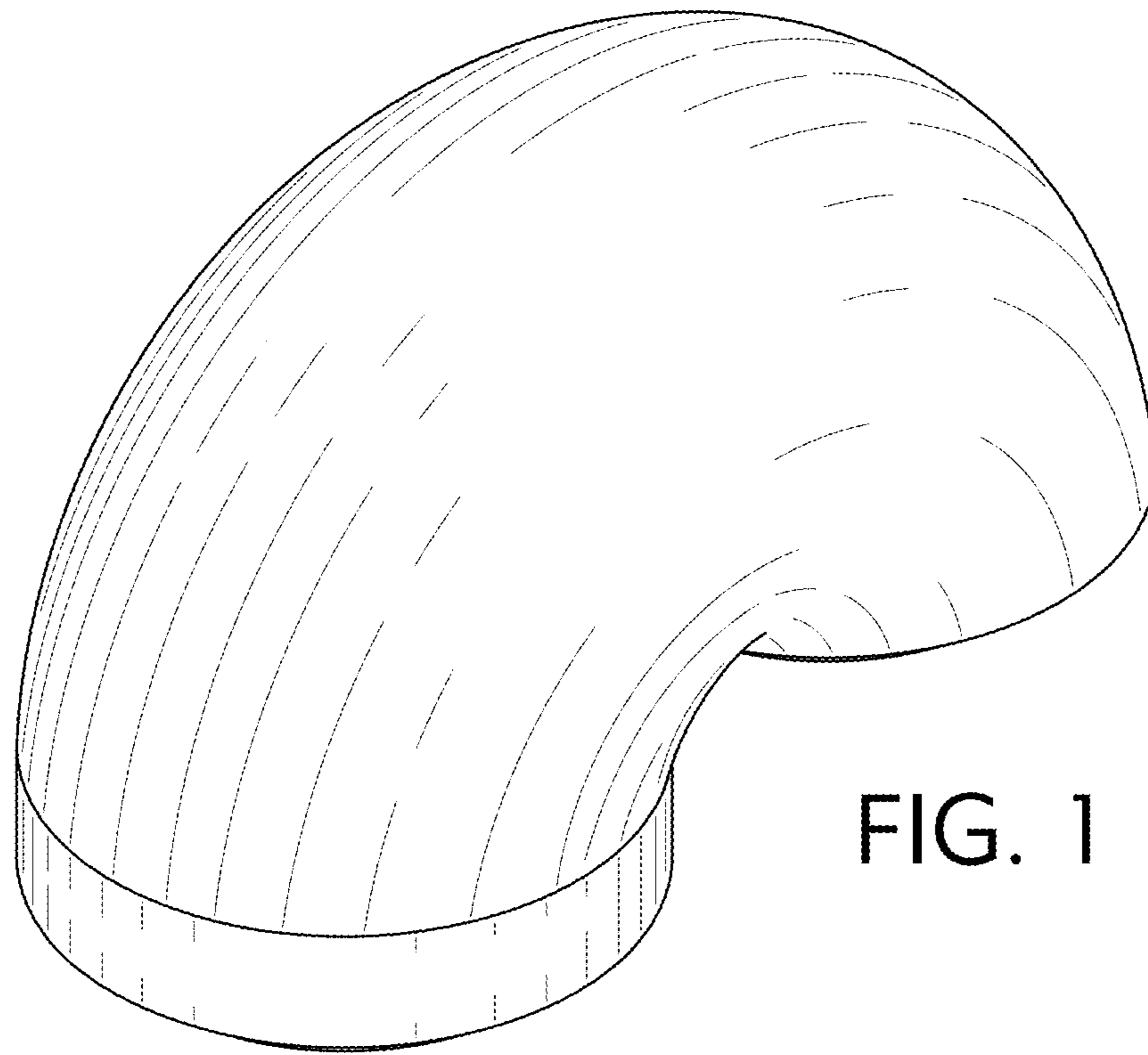


FIG. 1

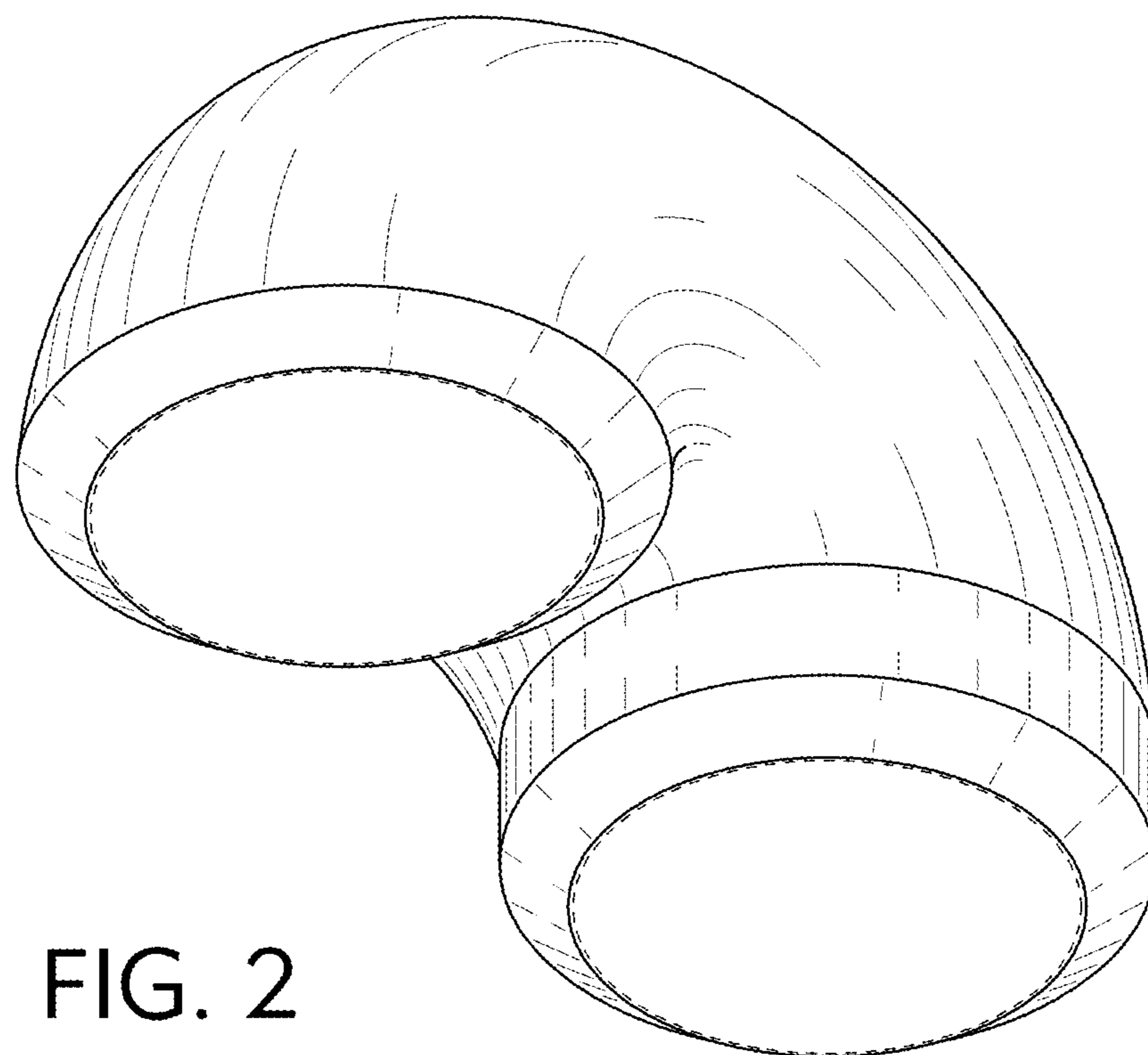


FIG. 2

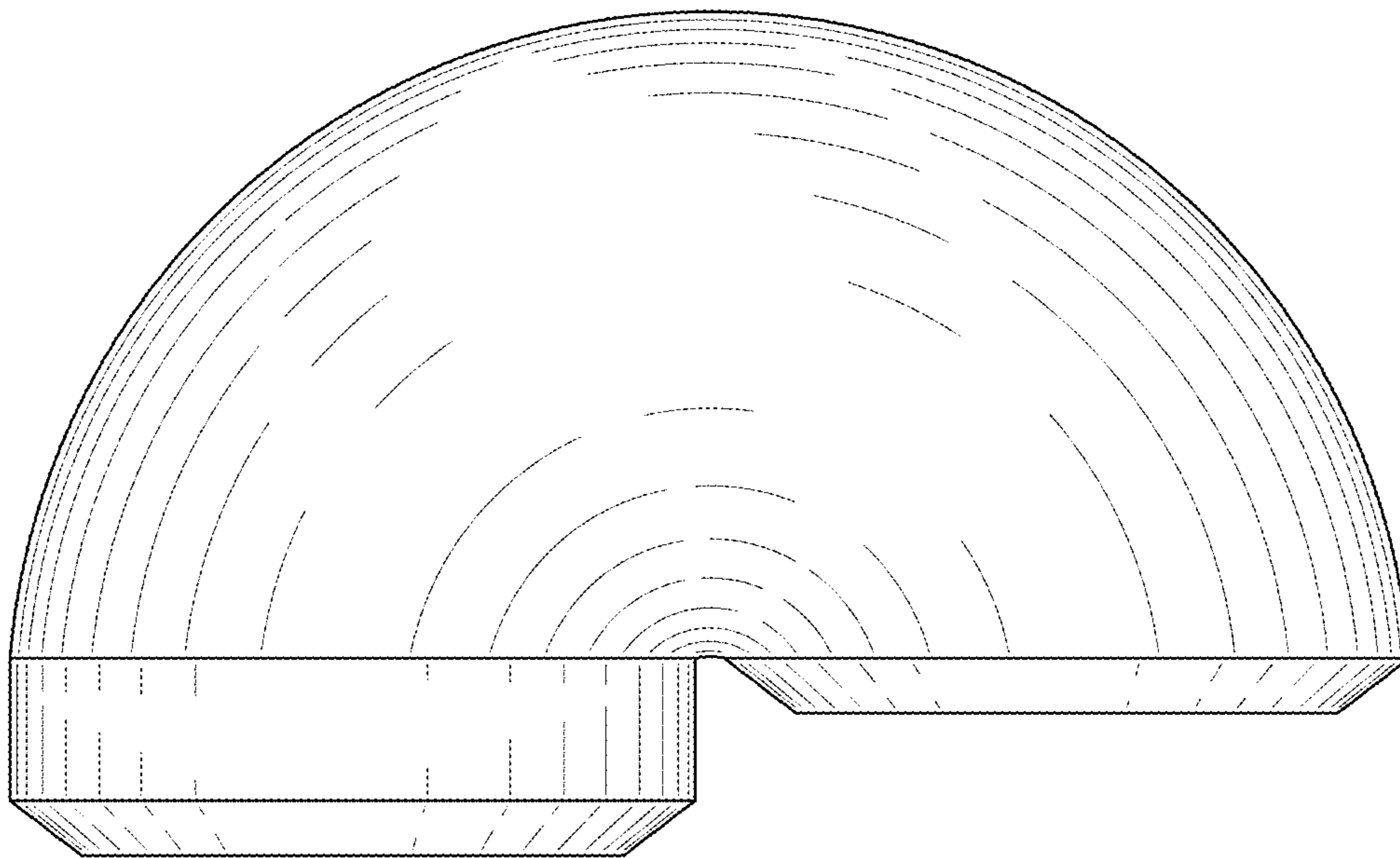


FIG. 3

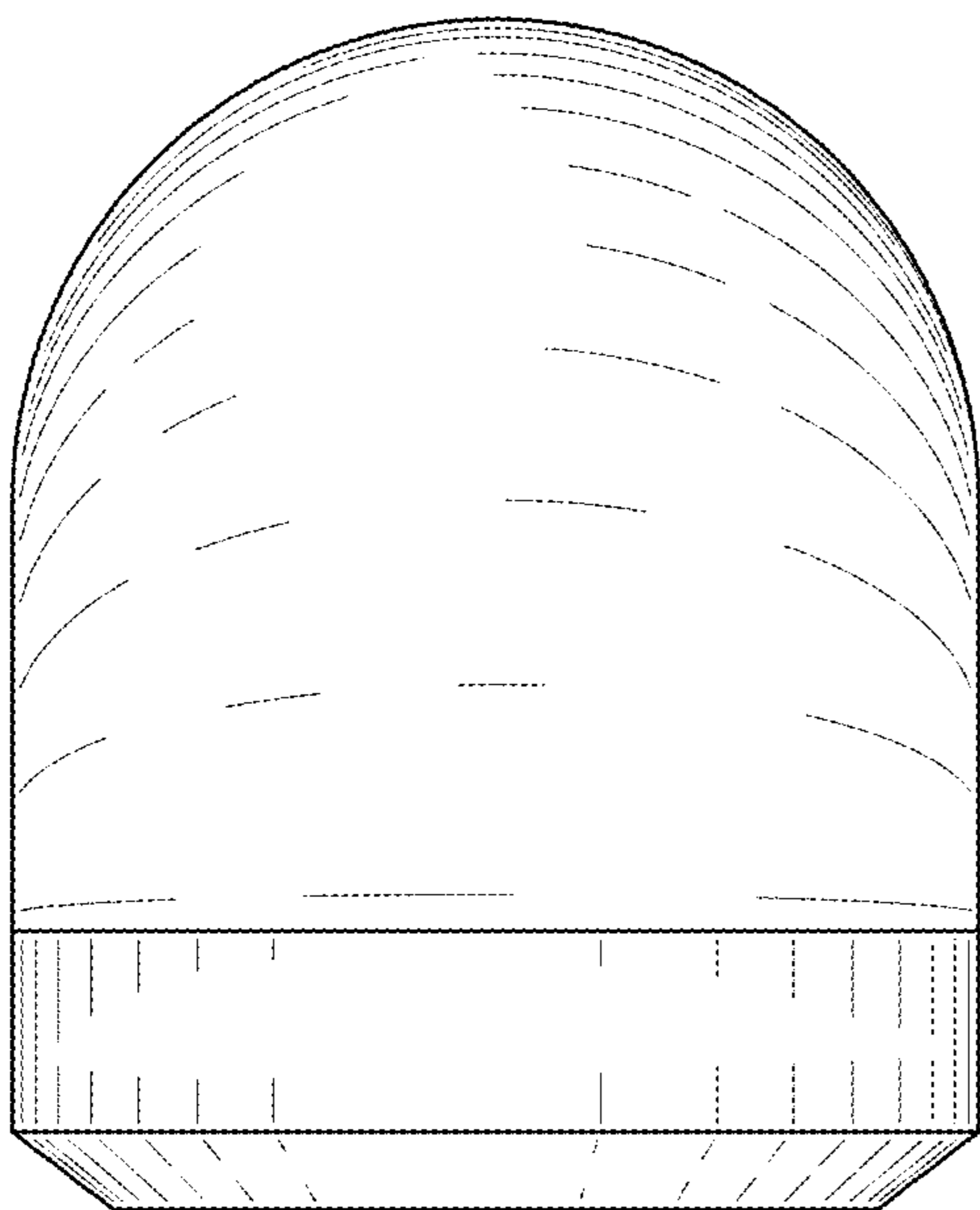


FIG. 4

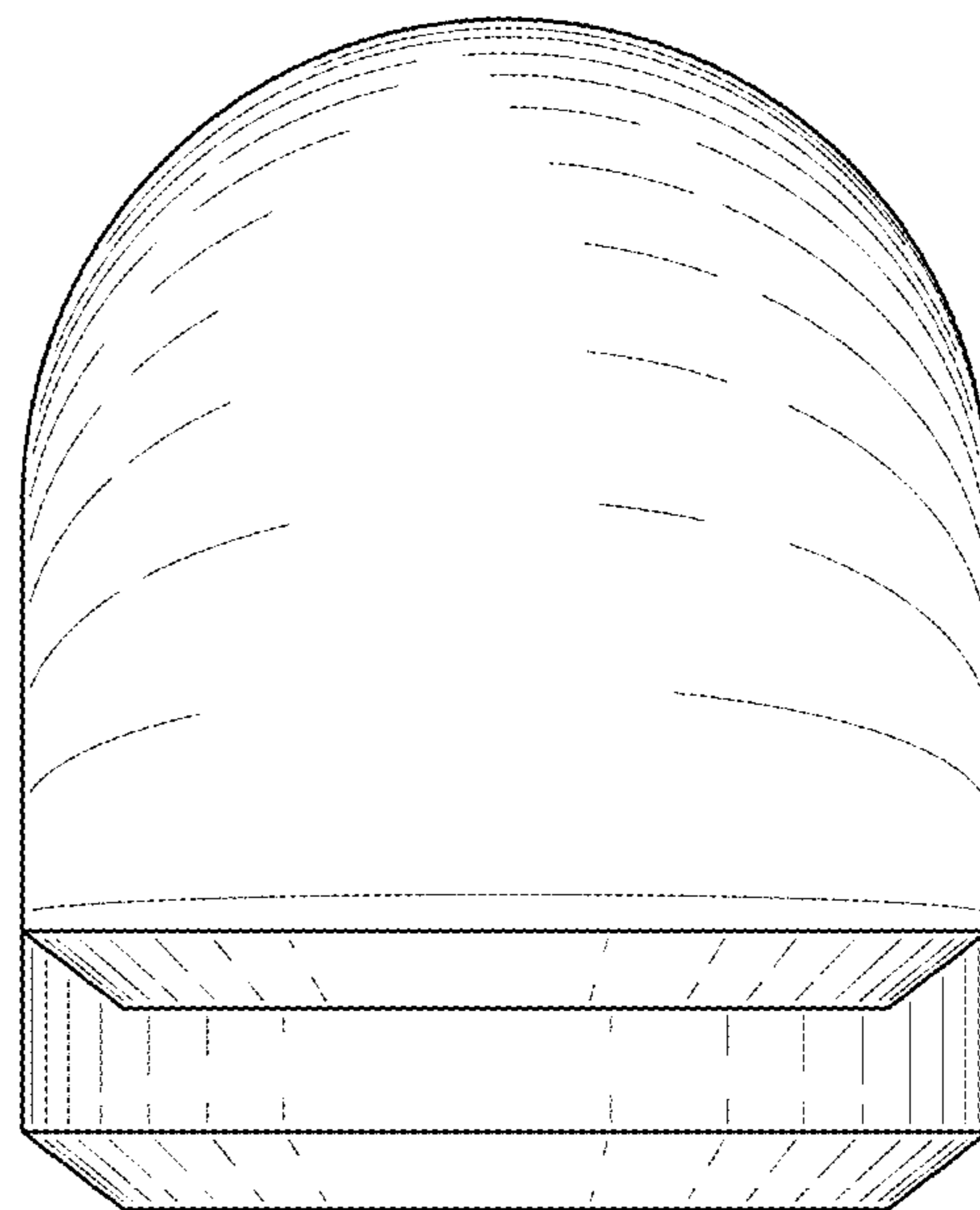


FIG. 5

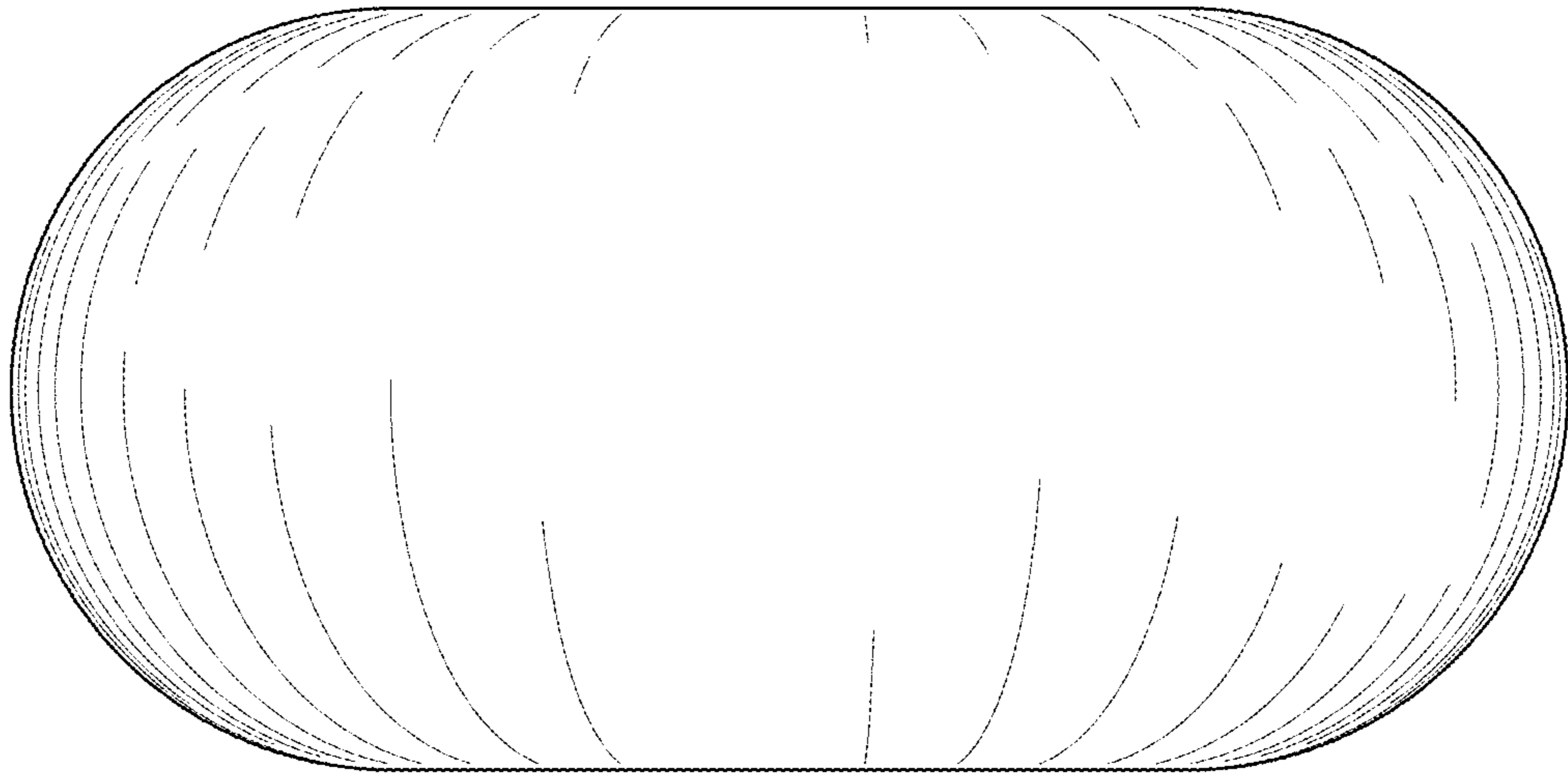


FIG. 6

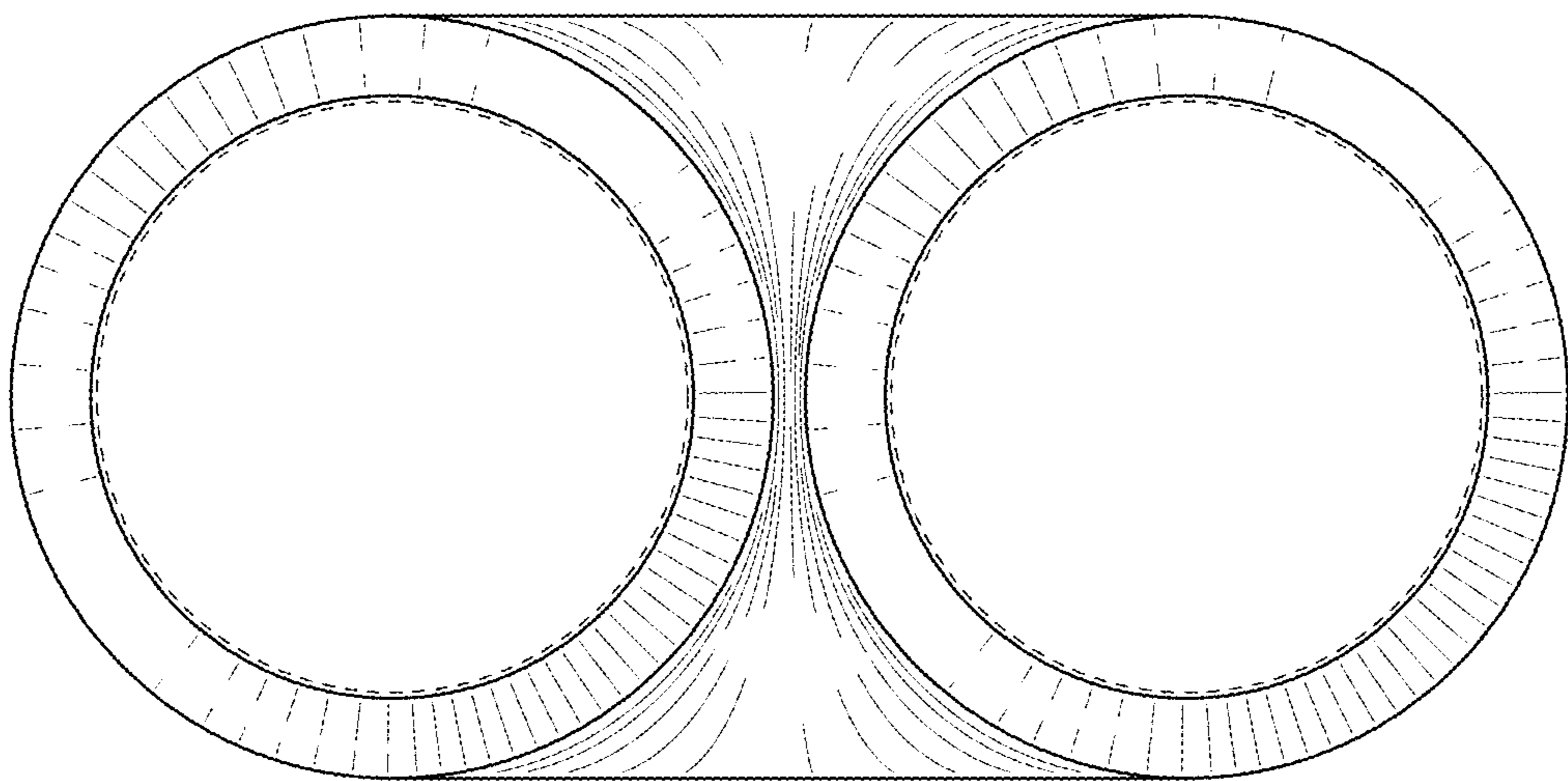


FIG. 7

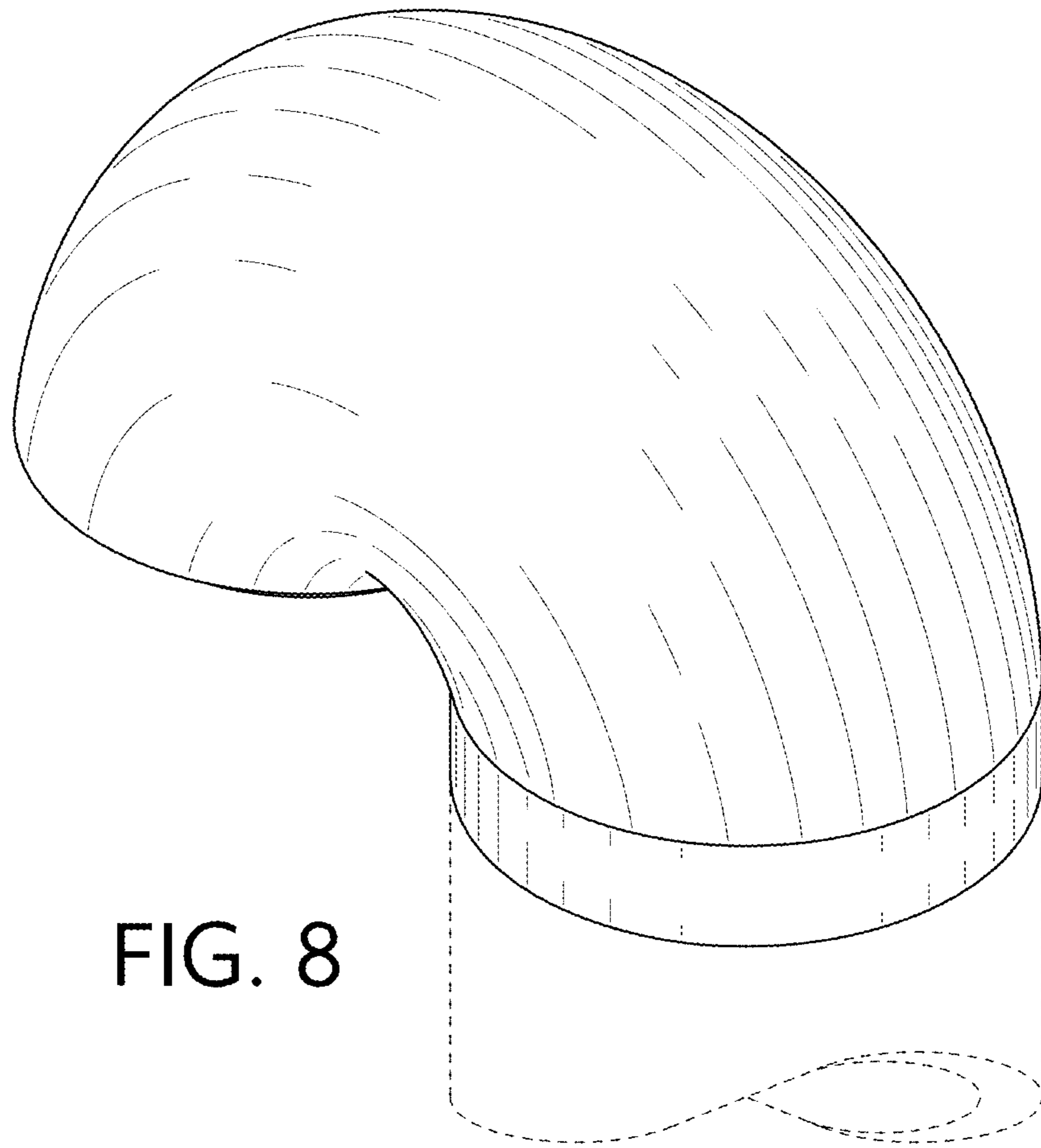


FIG. 8

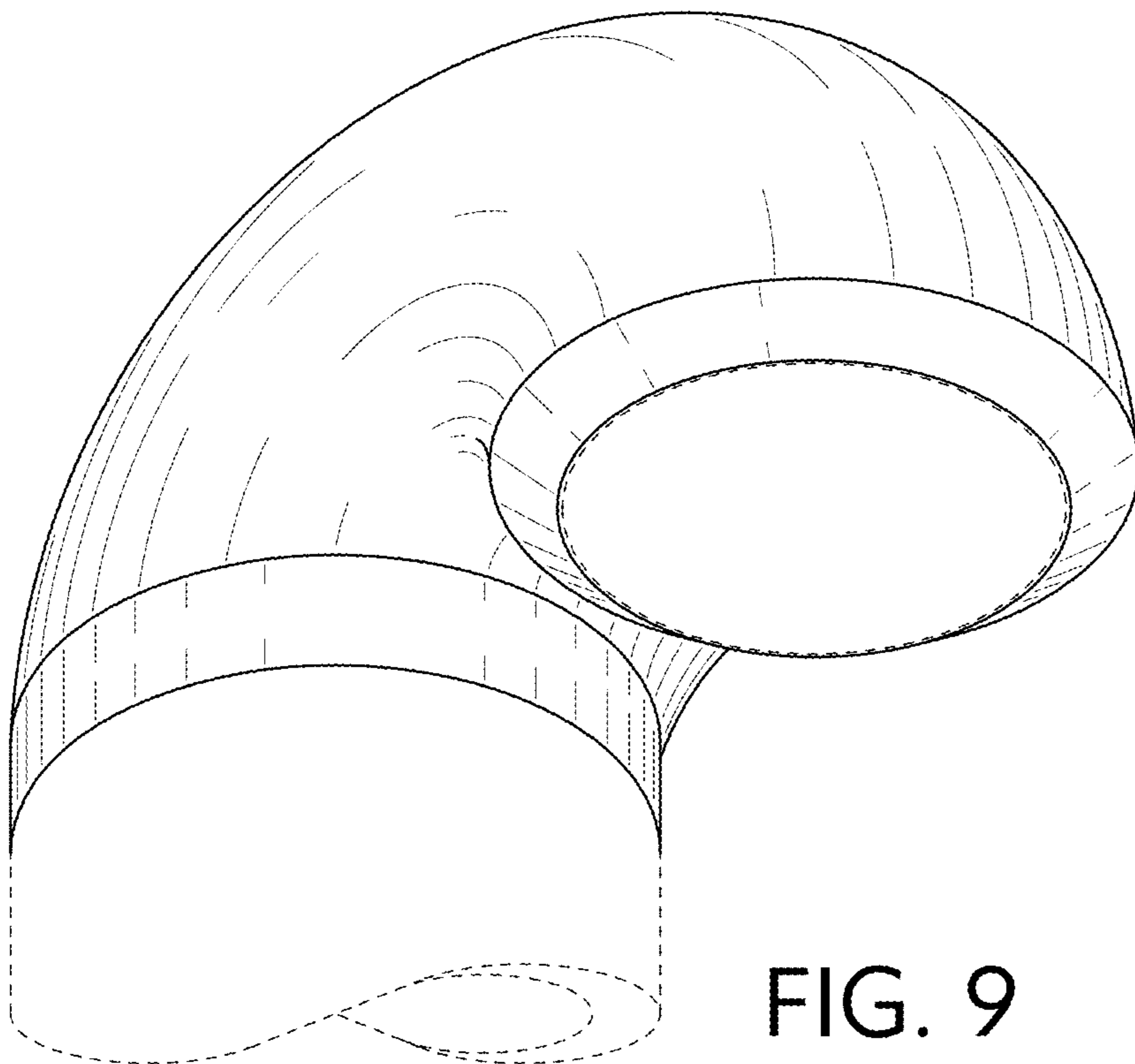


FIG. 9

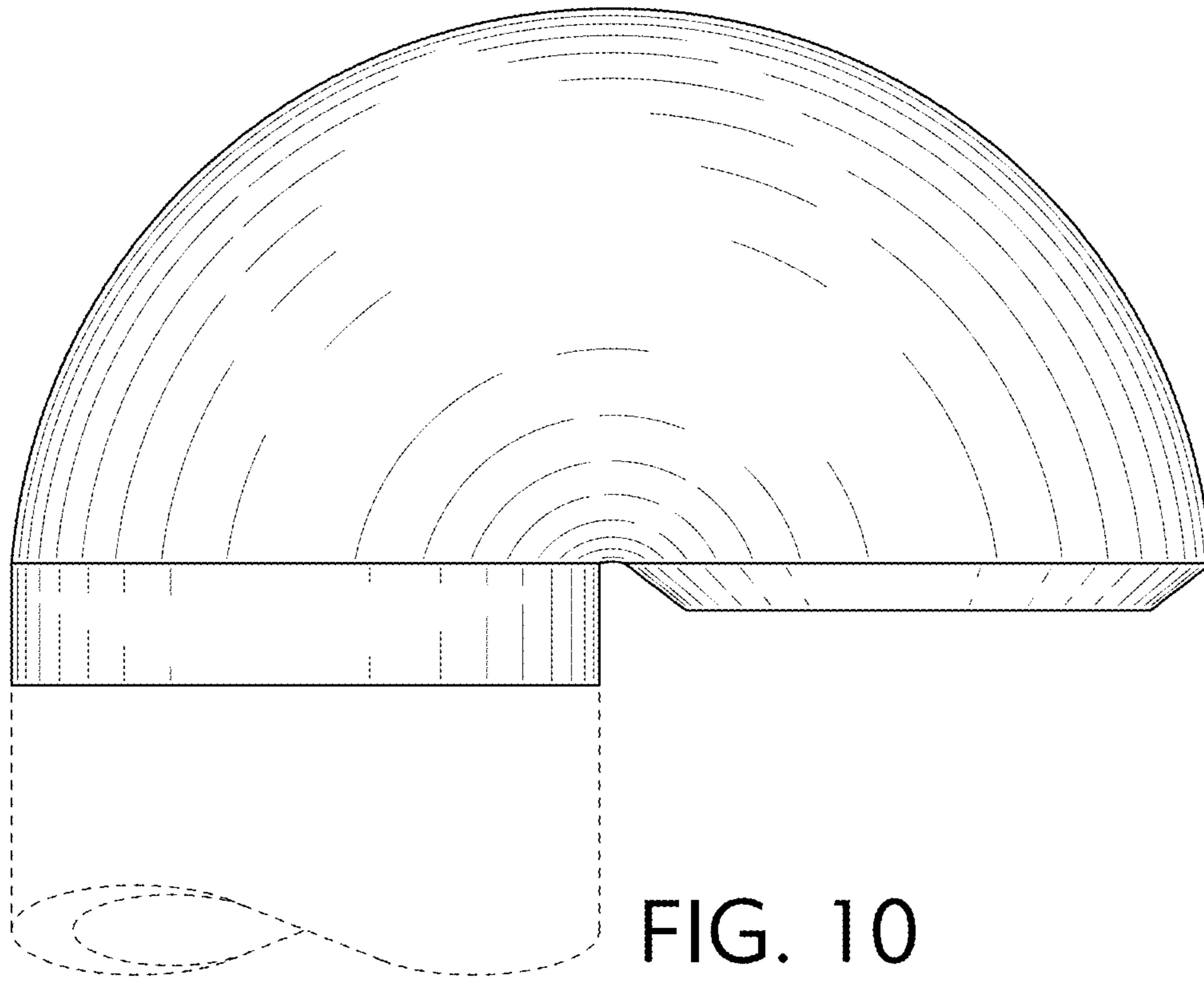


FIG. 10

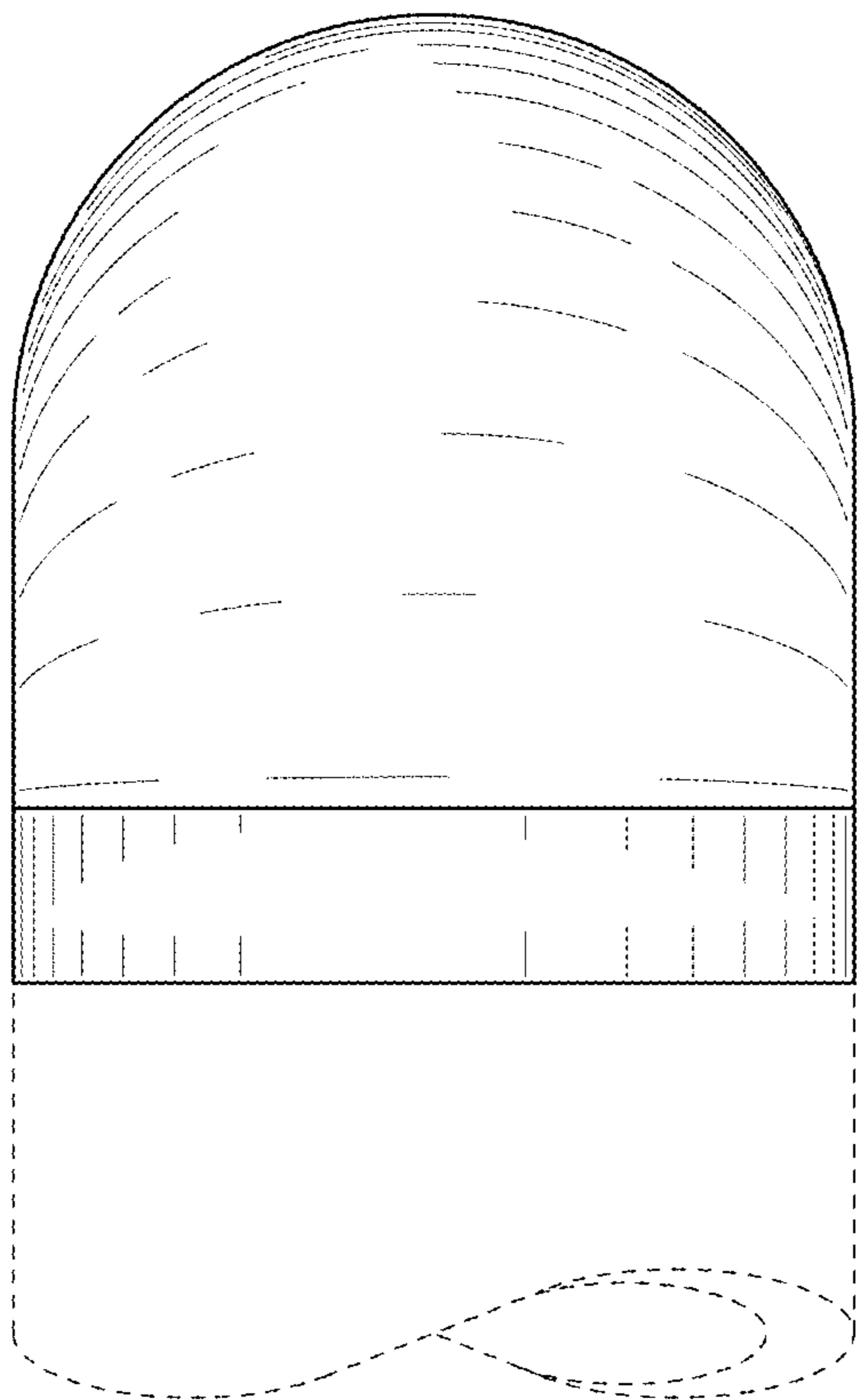


FIG. 11

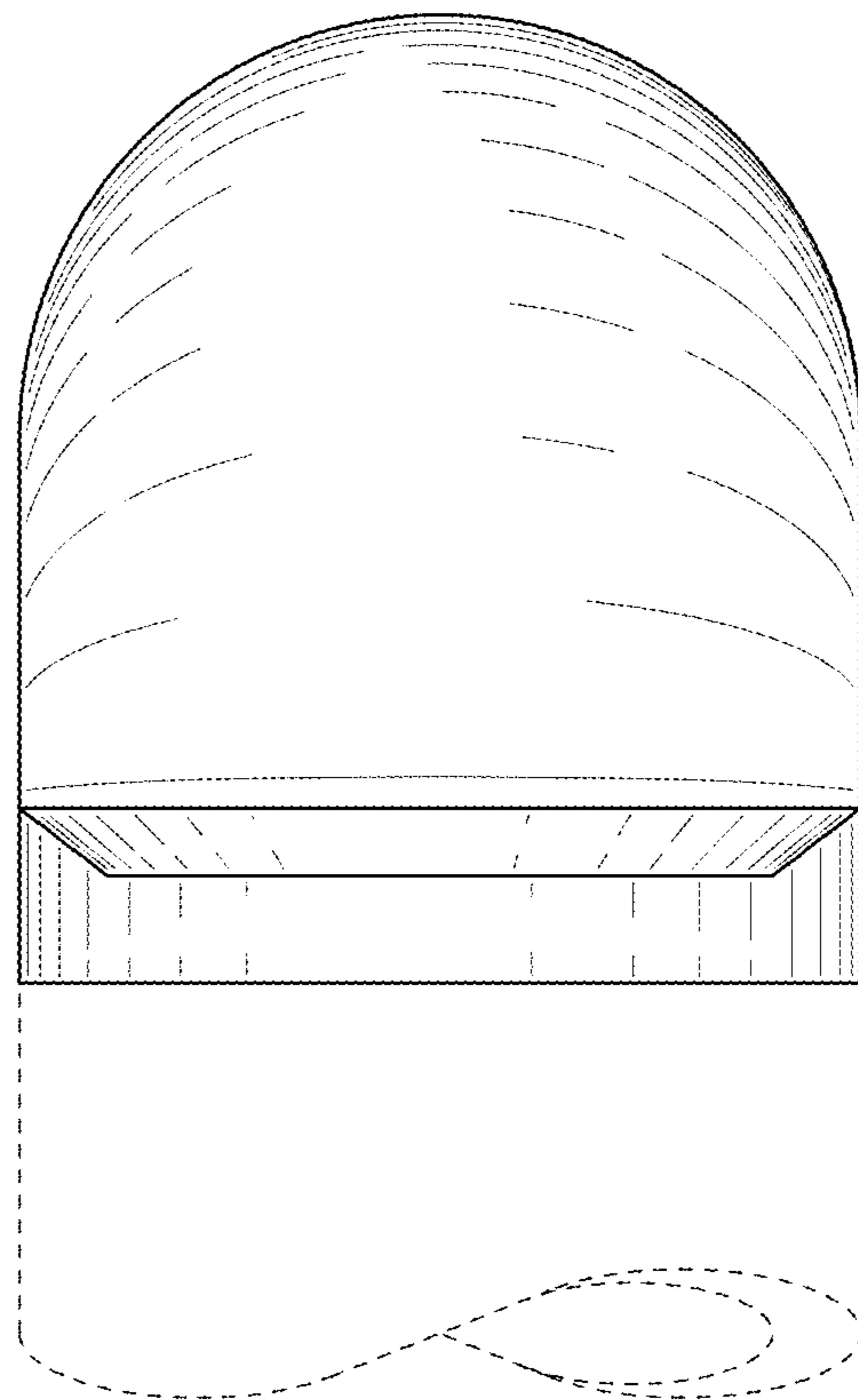


FIG. 12

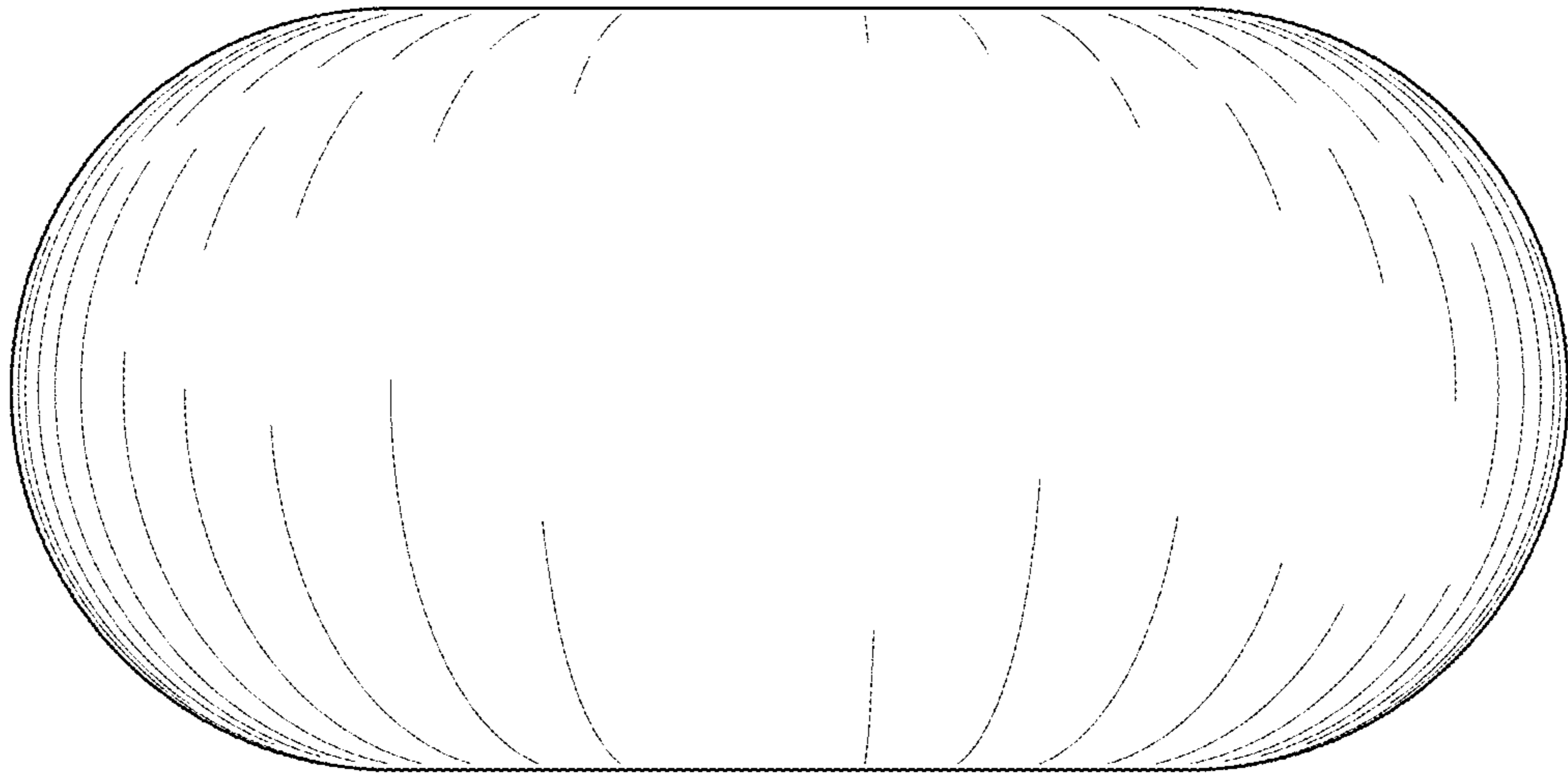


FIG. 13

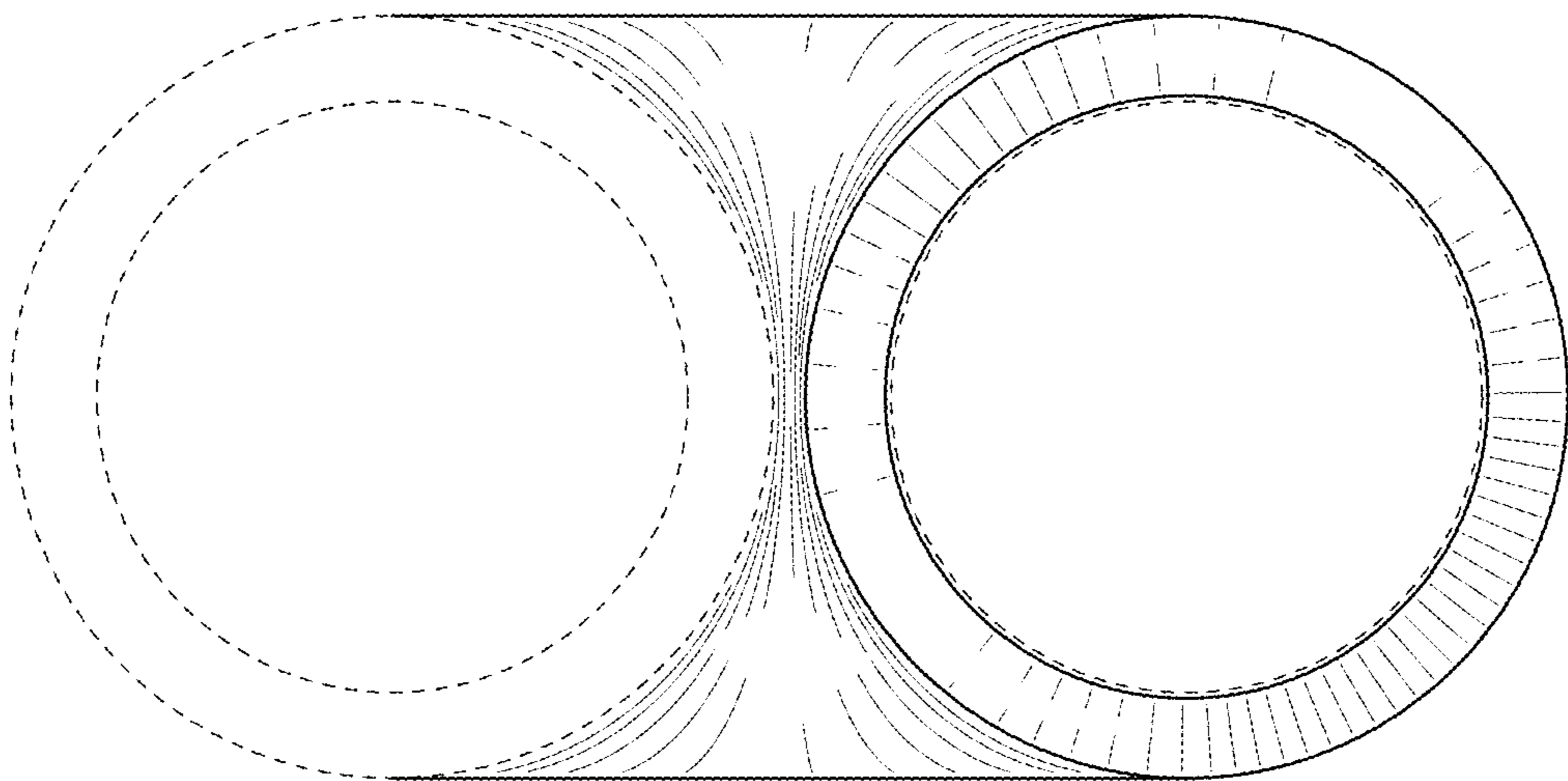


FIG. 14