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

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(54) **ELASTIC MEMBRANE FOR SEMICONDUCTOR WAFER POLISHING APPARATUS**

(75) Inventors: **Keisuke Namiki**, Ohta-ku (JP); **Hozumi Yasuda**, Ohta-ku (JP); **Osamu Nabeya**, Ohta-ku (JP); **Makoto Fukushima**, Ohta-ku (JP); **Shingo Togashi**, Ohta-ku (JP); **Satoru Yamaki**, Ohta-ku (JP); **Katsuhide Watanabe**, Ohta-ku (JP)

(73) Assignee: **Ebara Corporation**, Tokyo (JP)

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(52) **U.S. Cl.** ..... **D13/182**

(58) **Field of Classification Search** ..... D13/182;  
257/E21.304; 451/66, 288, 289

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

645,938	A	3/1900	Brown	
5,964,653	A	10/1999	Perlov et al.	
6,056,632	A	5/2000	Mitchel et al.	
6,110,026	A	8/2000	Arai	
6,159,079	A	12/2000	Zuniga et al.	
6,183,354	B1	2/2001	Zuniga et al.	
6,659,850	B2 *	12/2003	Korovin et al.	451/286
D488,135	S *	4/2004	Hatter	D13/182
6,722,965	B2	4/2004	Zuniga et al.	
6,739,958	B2 *	5/2004	Chao et al.	451/288
6,852,019	B2	2/2005	Togawa et al.	
6,890,402	B2	5/2005	Gunji et al.	
7,033,260	B2	4/2006	Togawa et al.	
7,083,507	B2	8/2006	Togawa et al.	

7,108,592	B2 *	9/2006	Fukaya et al.	451/285
7,255,771	B2	8/2007	Chen et al.	
7,311,585	B2	12/2007	Togawa et al.	
7,357,699	B2	4/2008	Togawa et al.	
D587,222	S *	2/2009	Sasaki et al.	D13/182
7,491,117	B2	2/2009	Togawa et al.	
7,632,173	B2	12/2009	Togawa et al.	
7,635,292	B2	12/2009	Togawa et al.	
D616,390	S *	5/2010	Sato	D13/182
2001/0001755	A1 *	5/2001	Sandhu et al.	451/5
2001/0029158	A1 *	10/2001	Sasaki et al.	451/66

(Continued)

**FOREIGN PATENT DOCUMENTS**

EP 20050814728 12/2005

(Continued)

*Primary Examiner*—Selina Sikder

(74) *Attorney, Agent, or Firm*—Sughrue Mion, PLLC

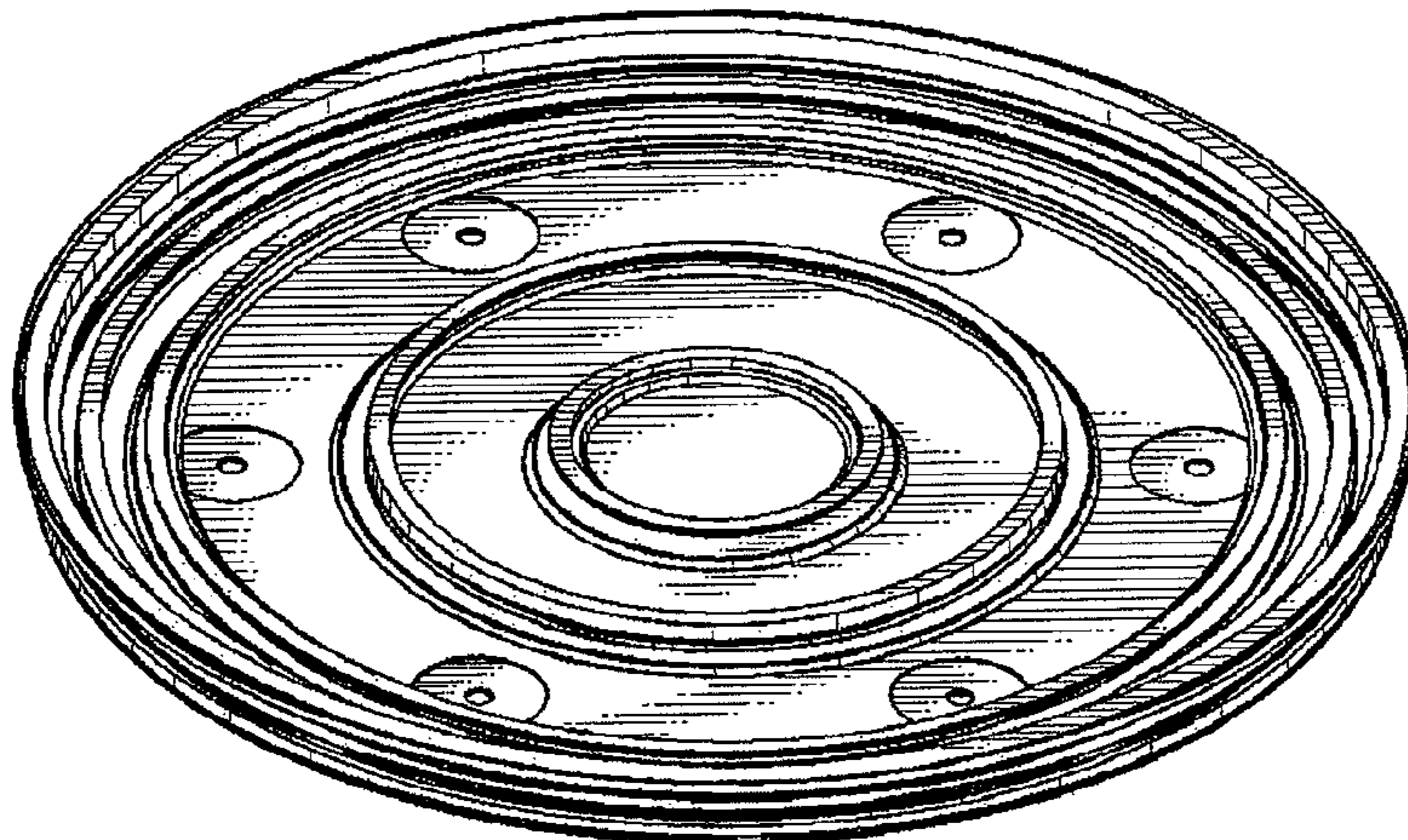
(57) **CLAIM**

The ornamental design for an elastic membrane for semiconductor wafer polishing apparatus, as shown and described.

**DESCRIPTION**

FIG. 1 is a bottom view of an elastic membrane for semiconductor wafer polishing apparatus showing our new design;  
 FIG. 2 is a top view thereof;  
 FIG. 3 is a front view thereof;  
 FIG. 4 is a rear view thereof;  
 FIG. 5 is a right side view thereof;  
 FIG. 6 is a left side view thereof;  
 FIG. 7 is a perspective view, observed from below thereof;  
 FIG. 8 is a perspective view, observed from above thereof;  
 FIG. 9 is a cross-section view taken along the line 9—9 of FIG. 1 thereof; and,  
 FIG. 10 is an enlarged view of part 10 of FIG. 9 thereof.

**1 Claim, 7 Drawing Sheets**



# US D633,452 S

Page 2

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## U.S. PATENT DOCUMENTS

2002/0086624	A1	7/2002	Zuniga et al.	
2003/0171076	A1	9/2003	Moloney et al.	
2008/0070479	A1	3/2008	Nabeya et al.	
2008/0119121	A1 *	5/2008	Togawa et al. ....	451/288
2008/0299880	A1 *	12/2008	Gunji et al. ....	451/385
2009/0068934	A1 *	3/2009	Hong et al. ....	451/288
2009/0068935	A1 *	3/2009	Torii et al. ....	451/331
2009/0111362	A1 *	4/2009	Nabeya et al. ....	451/64
2009/0191797	A1 *	7/2009	Nabeya et al. ....	451/54
2009/0233532	A1	9/2009	Togawa et al.	
2010/0056028	A1	3/2010	Togawa et al.	

## FOREIGN PATENT DOCUMENTS

JP	2000-167762	A	6/2000
JP	2000-301452	A	10/2000
JP	2002-075936	A	3/2002
JP	2002-527894	A	8/2002
JP	2004-297029	A	10/2004
JP	2004-363505	A	12/2004
JP	2006-159392	A	6/2006
JP	2006-255851	A	9/2006
JP	3937368	B	4/2007
KR	30-0526799	A	4/2009
KR	30-0526801	A	4/2009
WO	2006/062232	A1	6/2006

\* cited by examiner

FIG.1

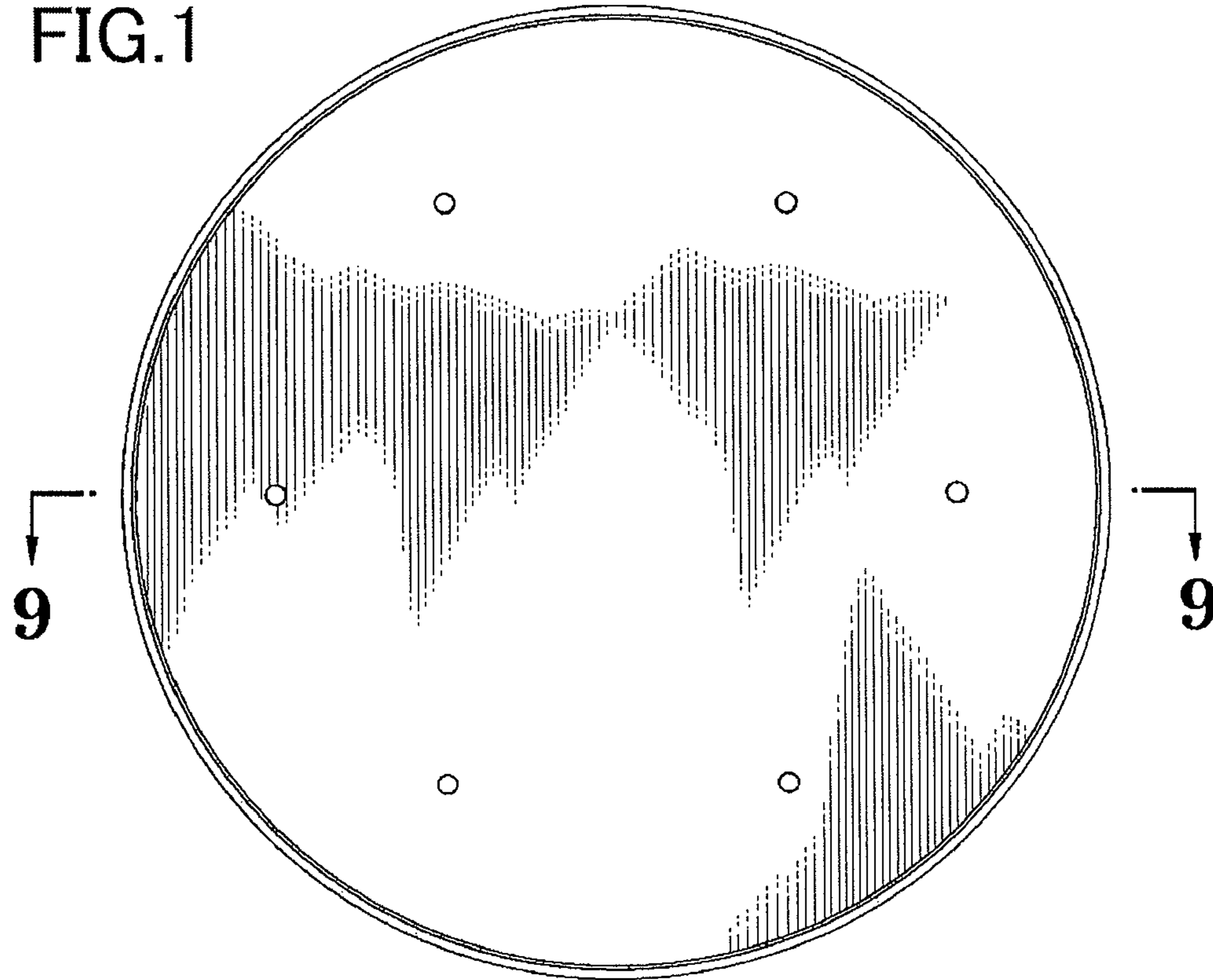


FIG.2

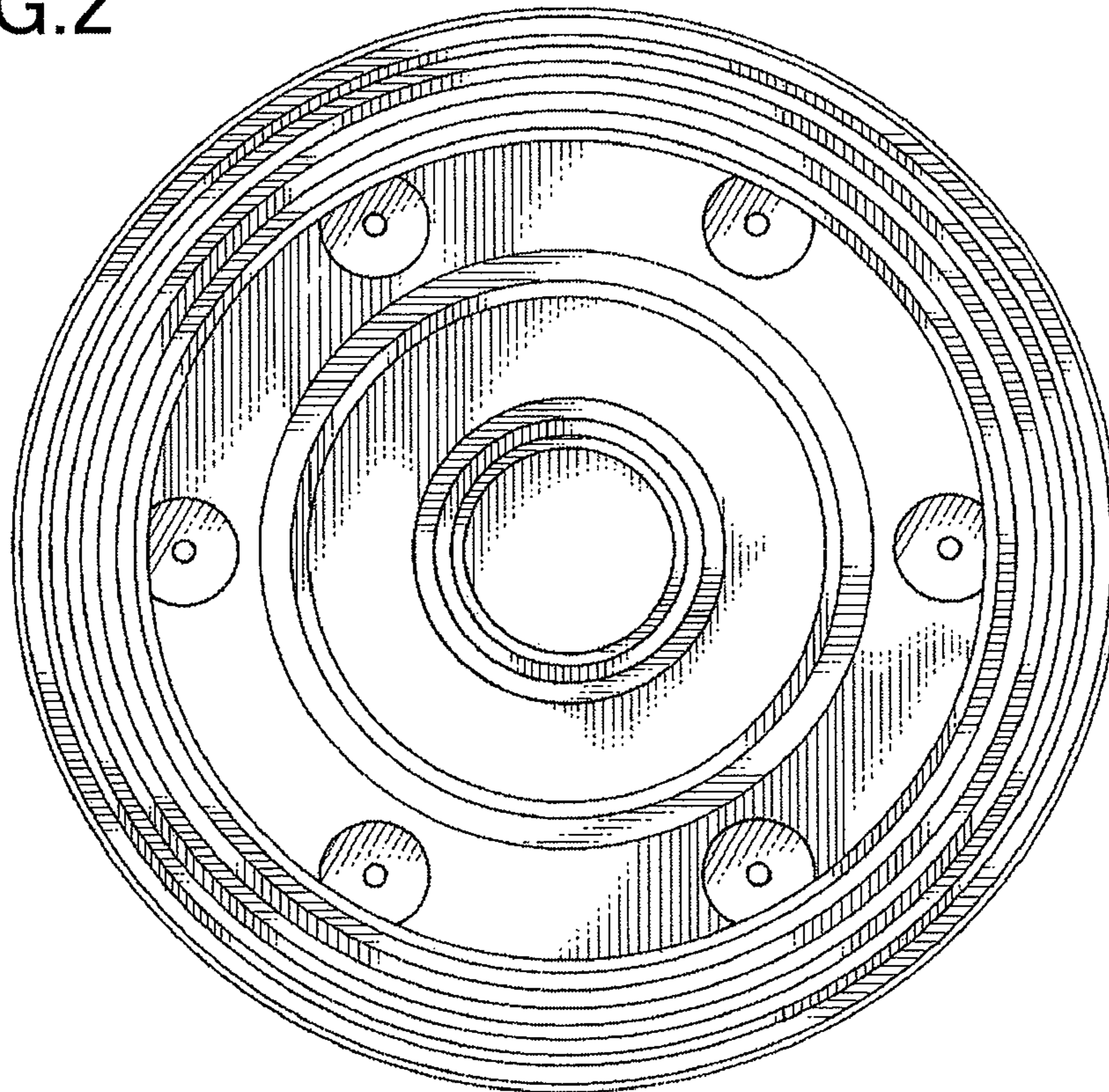


FIG.3

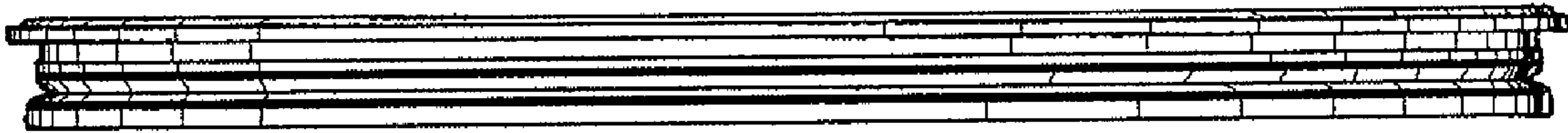


FIG.4

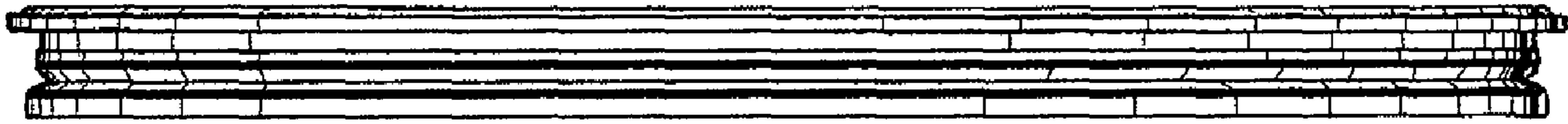


FIG. 5

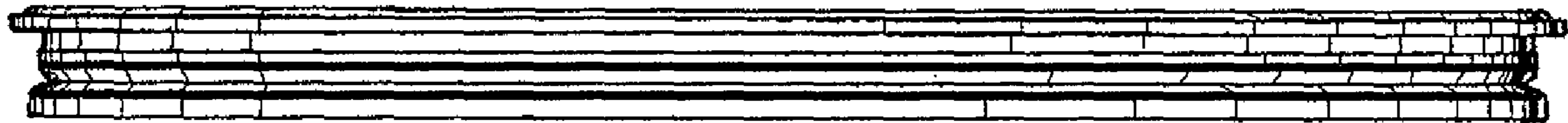


FIG. 6

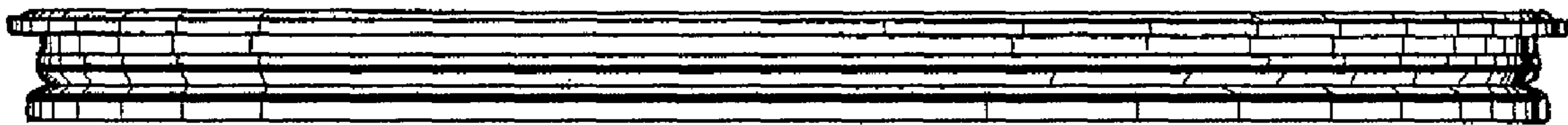


FIG.7

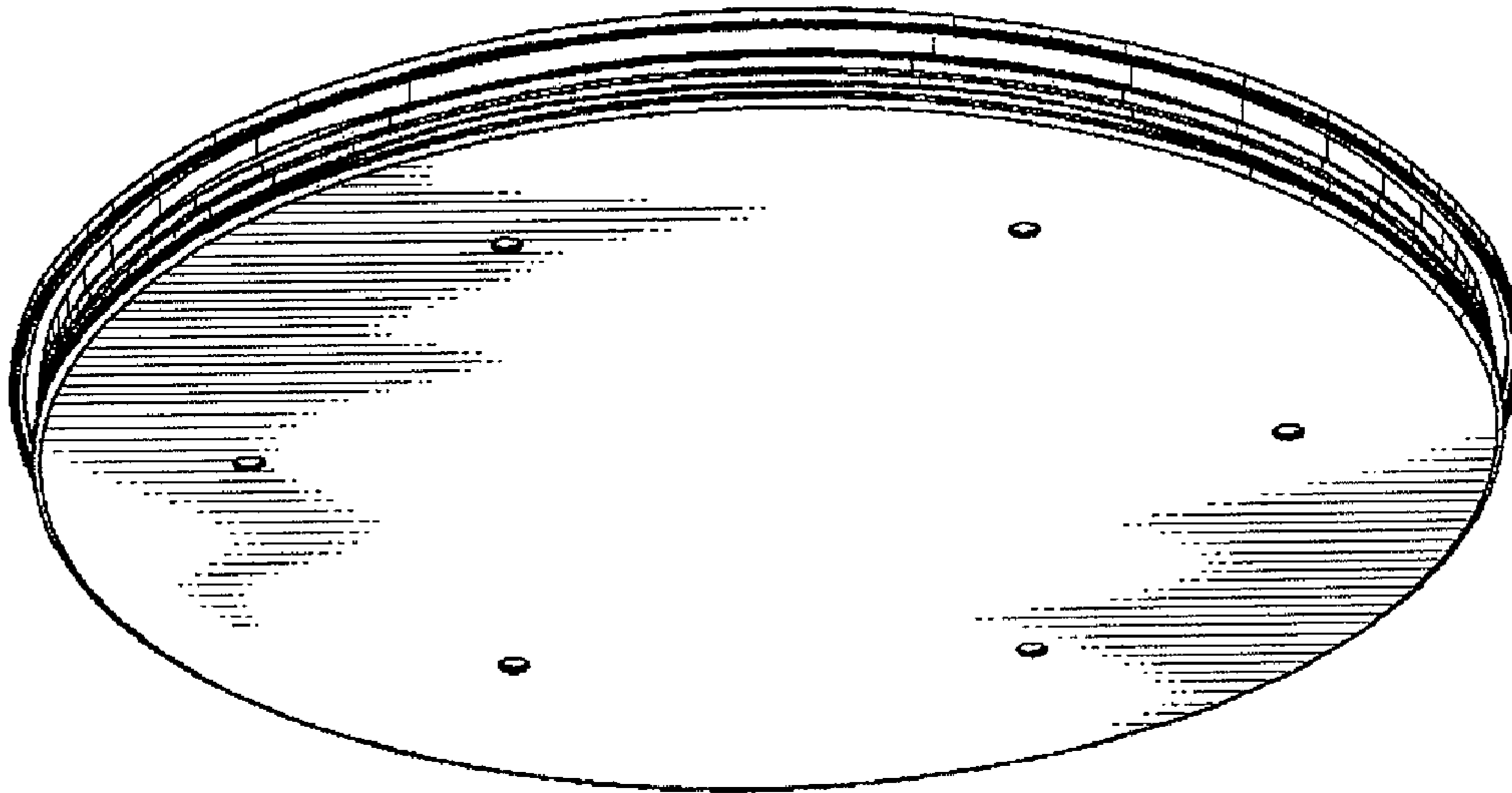


FIG.8

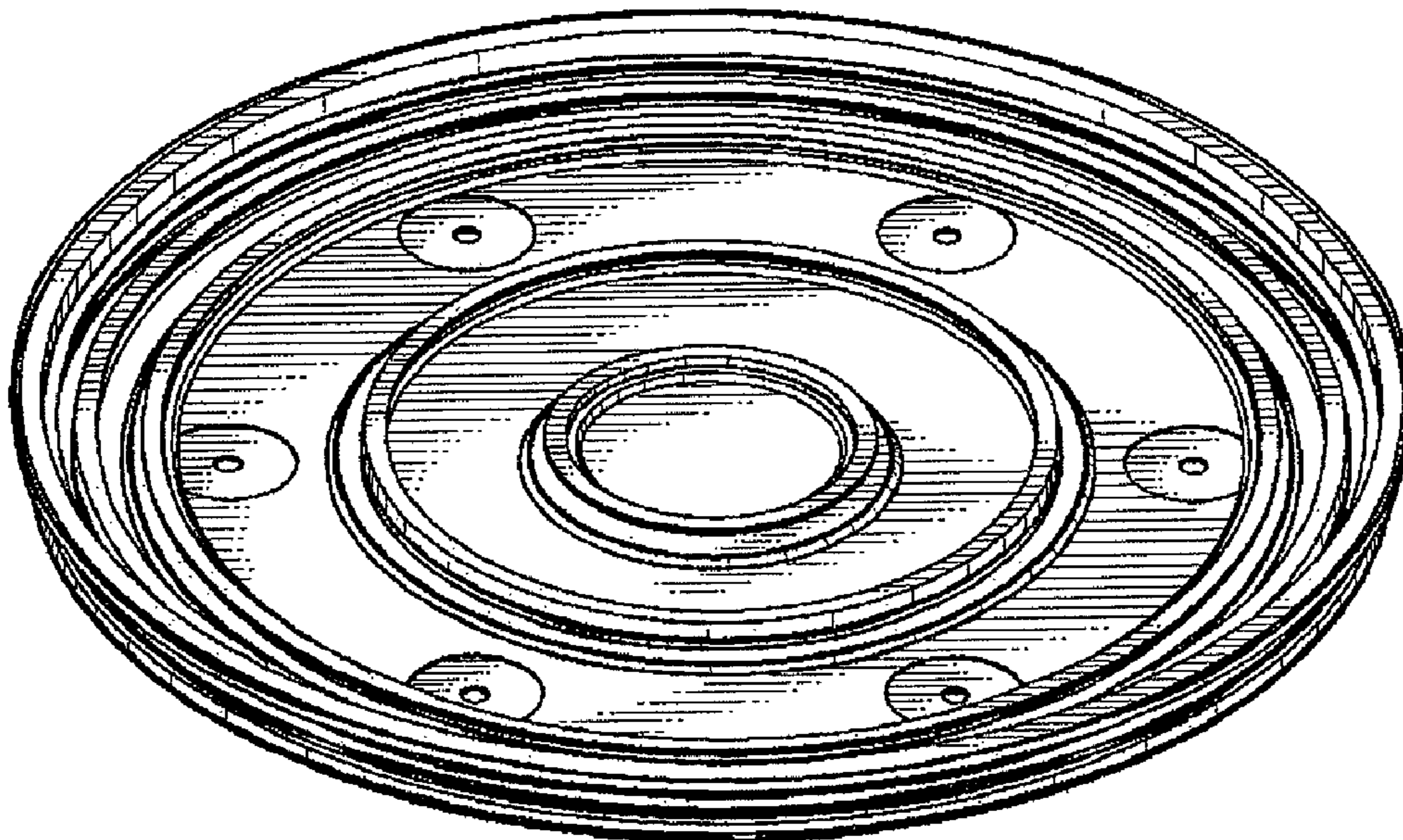




FIG 9

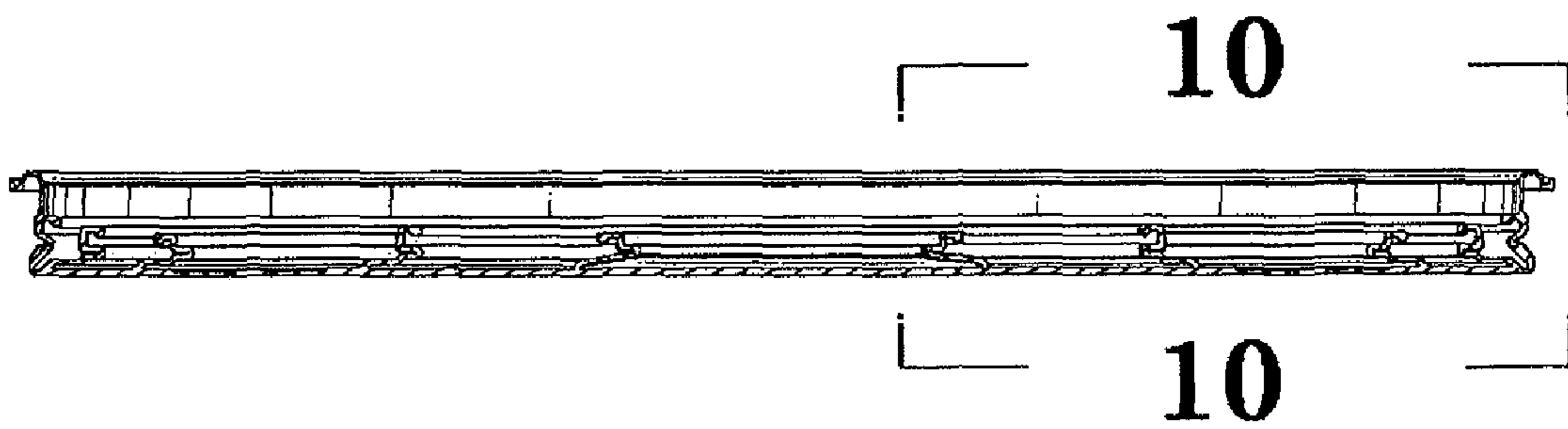


FIG. 10

