US00D789311S

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

(10) **Patent No.: US D789,311 S**
(45) **Date of Patent: ** Jun. 13, 2017**

---

(54) **PATTERN WAFER**

(71) Applicants: **Hitachi Kokusai Electric Inc.**, Tokyo (JP); **Techno Quartz Inc.**, Tokyo (JP)

(72) Inventors: **Hiromi Okada**, Toyama (JP); **Masayuki Yamada**, Toyama (JP); **Satoshi Aizawa**, Toyama (JP); **Shinya Morita**, Toyama (JP); **Masayoshi Minami**, Toyama (JP); **Kazuhisa Osaka**, Tokyo (JP)

(73) Assignees: **HITACHI KOKUSAI ELECTRIC INC.**, Tokyo (JP); **TECHNO QUARTZ INC.**, Tokyo (JP)

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

(21) Appl. No.: **29/569,274**

(22) Filed: **Jun. 24, 2016**

(30) **Foreign Application Priority Data**

Dec. 28, 2015 (JP) 2015-029187

(51) **LOC (10) Cl.** **13-03**

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

(58) **Field of Classification Search**
USPC D13/182; D6/309
CPC C30B 25/02; C30B 25/04; C30B 25/12; C30B 25/18; C30B 25/186; C30B 25/20; H01L 21/2018; H01L 21/2003; H01L 21/02367; H01L 21/0237; H01L 21/02428; H01L 21/0243; H01L 21/02433; H01L 21/02436; H01L 21/31116; H01L 21/32139; H01L 21/31144; H01L 21/0337; H01L 21/31138; H01L 21/02439; H01L 21/3213; H01L 21/32131; H01L 21/32133; H01L 21/32135; H01L 21/823807; H01L 21/84; H01L 21/31055; H01L 21/31053; H01L 21/76819; H01L 21/31111; H01L 33/16; H01L 29/02; H01L 29/04; H01L 29/045; H01L 29/06; H01L 29/0603; H01L 29/66765; H01L 29/66757; H01L 27/1203; H01L 27/1218; H01L 27/1222; H01S 5/3202
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,461,537	A *	8/1969	Lotz	H01L 21/67132	206/710
4,630,093	A *	12/1986	Yamaguchi	H01L 21/02019	148/33
5,182,233	A *	1/1993	Inoue	H01L 21/304	148/DIG. 28

(Continued)

Primary Examiner — Elizabeth J Oswecki
(74) *Attorney, Agent, or Firm* — Fitch, Even, Tabin & Flannery, LLP

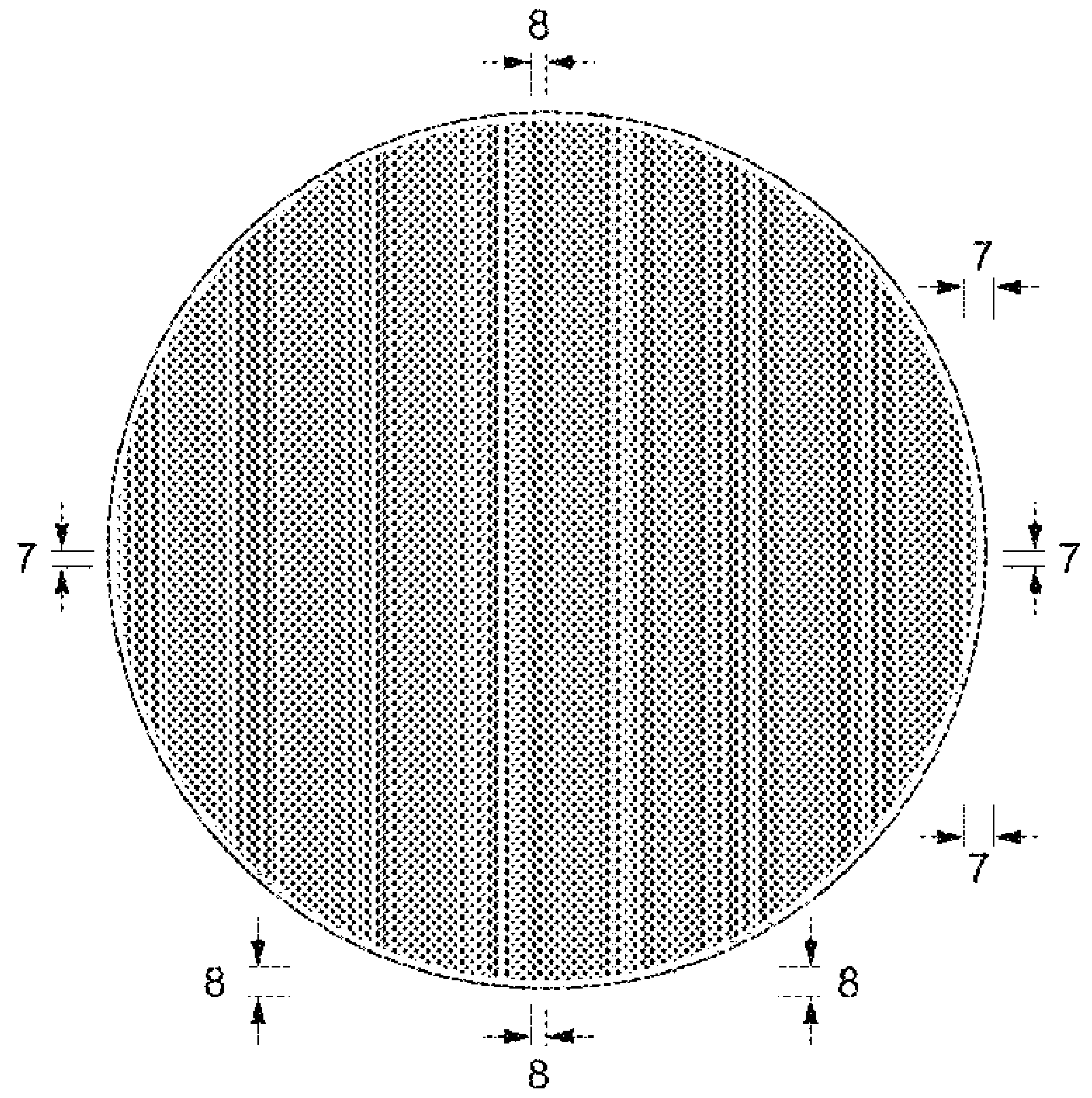
(57) **CLAIM**

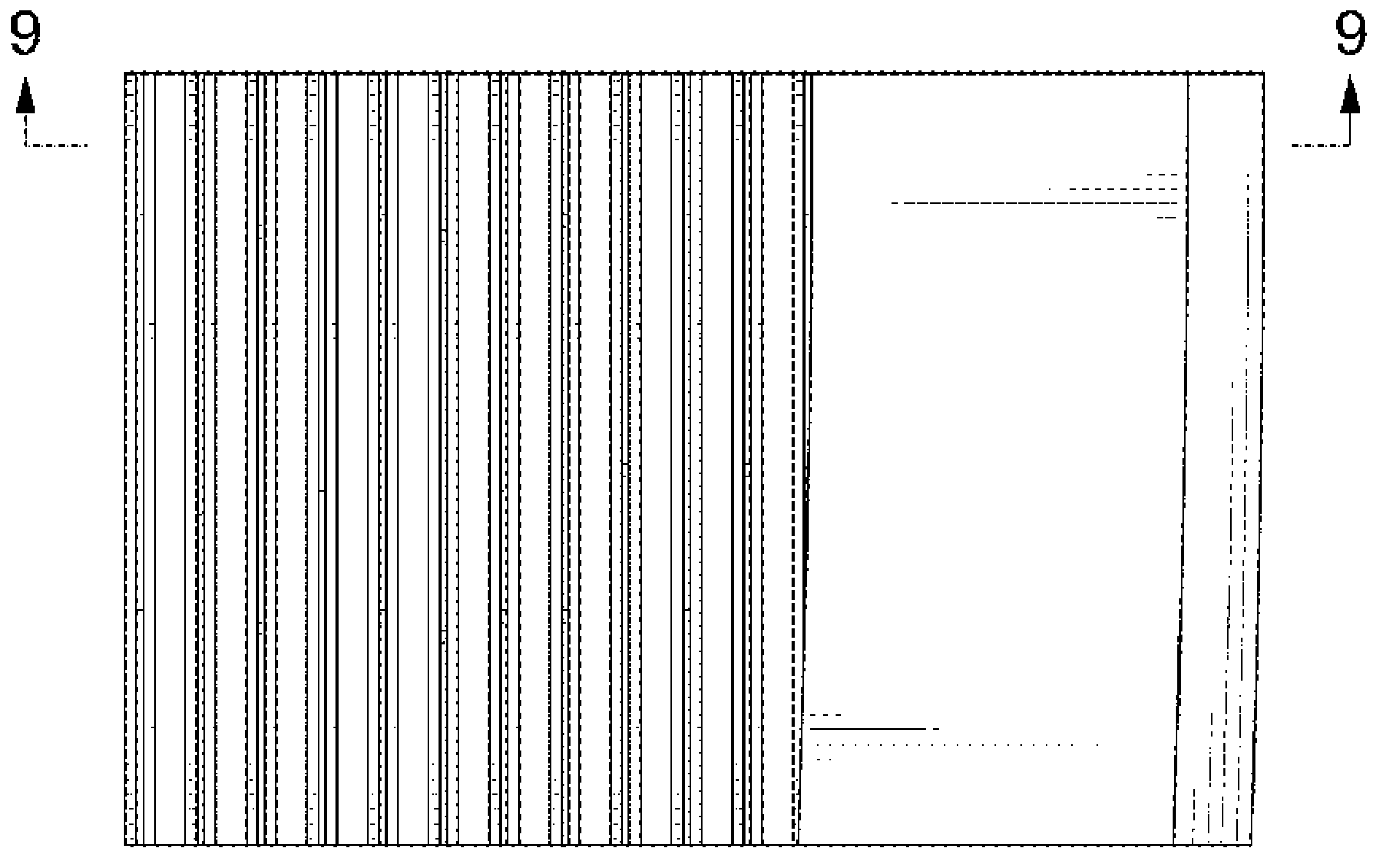
The ornamental design for a pattern wafer, as shown and described.

DESCRIPTION

FIG. **1** is a front elevational view of a pattern wafer, showing our new design;
FIG. **2** is a rear elevational view thereof;
FIG. **3** is a left side elevational view thereof;
FIG. **4** is a right side elevational view thereof;
FIG. **5** is a top plan view thereof;
FIG. **6** is a bottom plan view thereof;
FIG. **7** is an enlarged front portion view taken along line **7-7** in FIG. **1**;
FIG. **8** is an enlarged front portion view taken along line **8-8** in FIG. **1**;
FIG. **9** is a cross sectional view taken along line **9-9** in FIG. **7**; and,
FIG. **10** is a top perspective view of FIG. **8**.

1 Claim, 5 Drawing Sheets





(56) **References Cited**

U.S. PATENT DOCUMENTS

5,314,844	A *	5/1994	Imamura	B28D 5/0005 148/DIG. 28
7,115,984	B2 *	10/2006	Poo	H01L 23/49805 174/257
D552,565	S *	10/2007	Nakamura	D13/182
7,462,094	B2 *	12/2008	Yoshida	B24B 1/00 451/287
D614,593	S *	4/2010	Lee	D13/182
7,705,430	B2 *	4/2010	Sekiya	H01L 21/78 257/619
7,871,928	B2 *	1/2011	Chiang	B82Y 30/00 438/485
D651,991	S *	1/2012	Nishiguchi	D13/182
D651,992	S *	1/2012	Nishiguchi	D13/182
D655,256	S *	3/2012	Nishiguchi	D13/182
8,555,492	B2 *	10/2013	Wang	B26D 3/06 29/846
8,865,580	B2 *	10/2014	Kobayashi	H01L 21/31144 438/585
D716,742	S *	11/2014	Jang	D13/182
8,882,917	B1 *	11/2014	Cheng	C23C 14/54 118/715
D720,313	S *	12/2014	Flynn	D13/182
2002/0121915	A1 *	9/2002	Alonso Montull	H01L 21/67288 324/754.03
2004/0124413	A1 *	7/2004	Arai	H01L 21/67259 257/48
2004/0259332	A1 *	12/2004	Fukuoka	B24B 7/228 438/464
2005/0170616	A1 *	8/2005	Murata	H01L 21/3043 438/463
2007/0082508	A1 *	4/2007	Chiang	C23C 14/54 438/800
2011/0111593	A1 *	5/2011	Kanno	B82Y 10/00 438/689

* cited by examiner

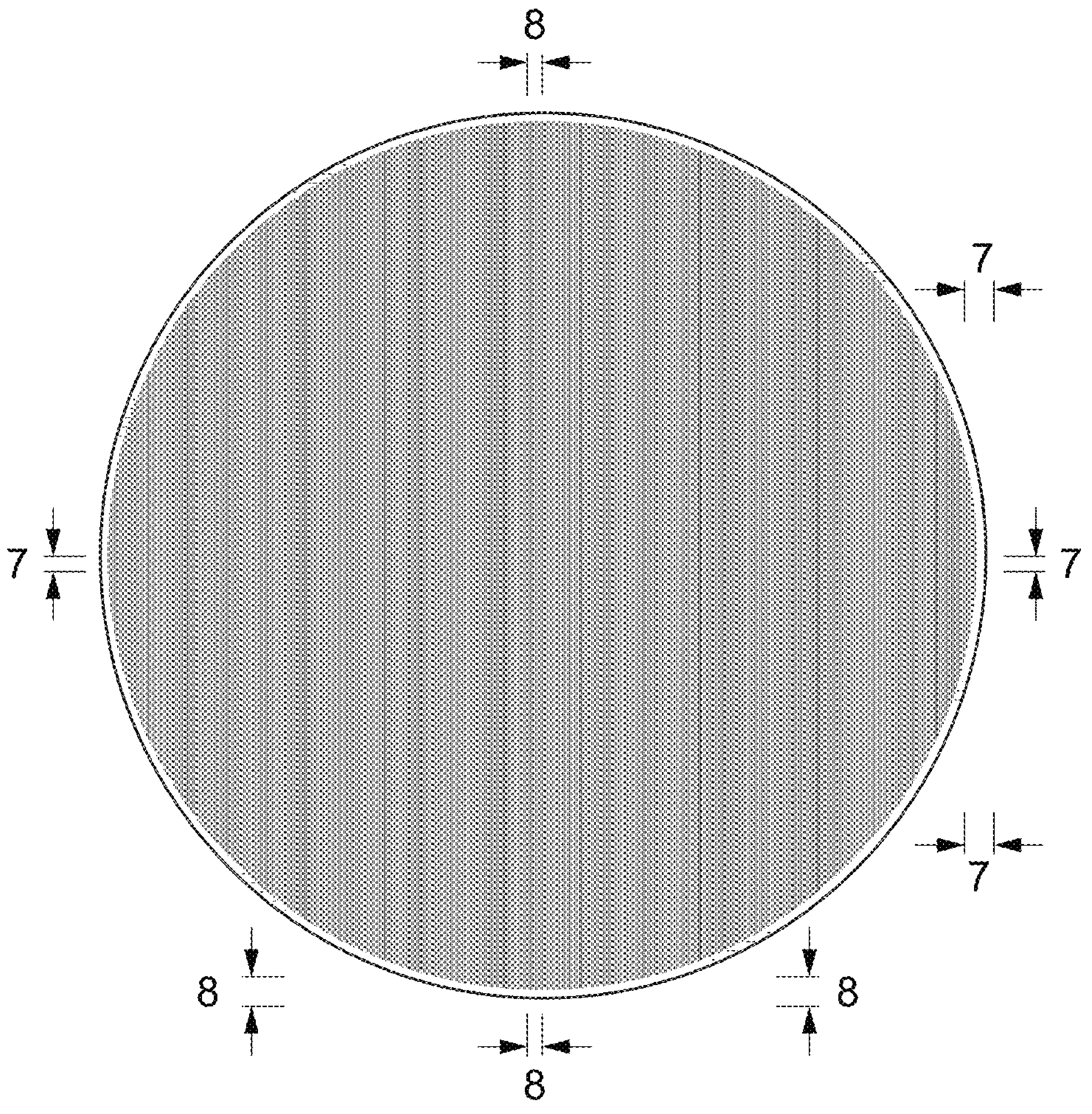


FIG. 1

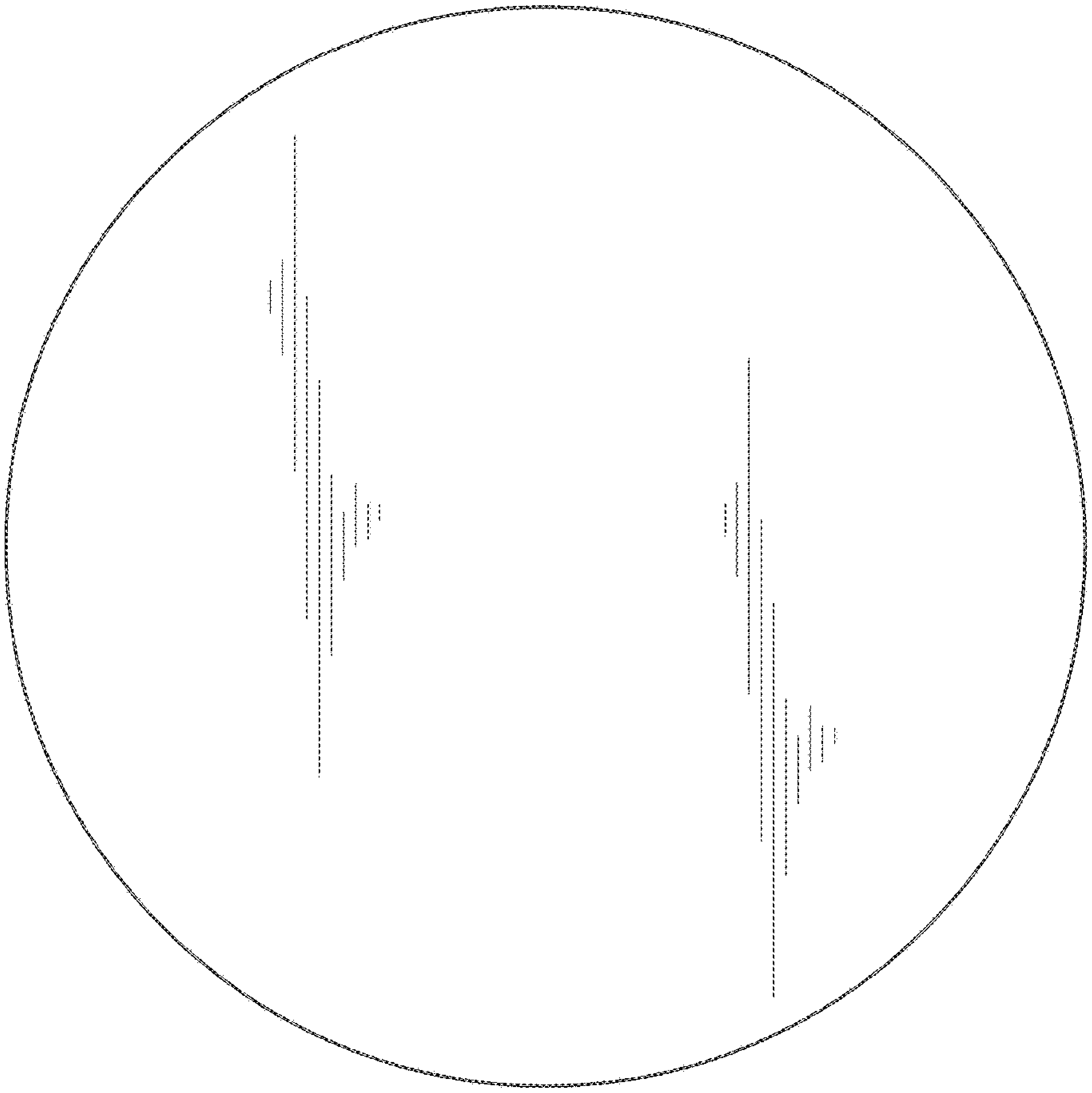


FIG. 2

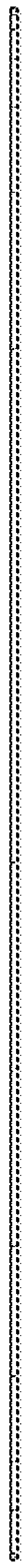


FIG. 3

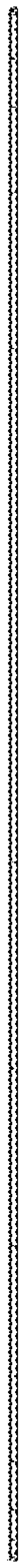


FIG. 4

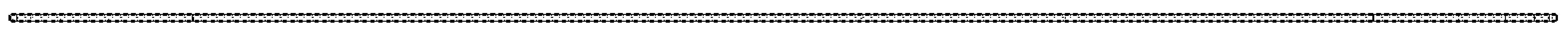


FIG. 5

FIG. 6

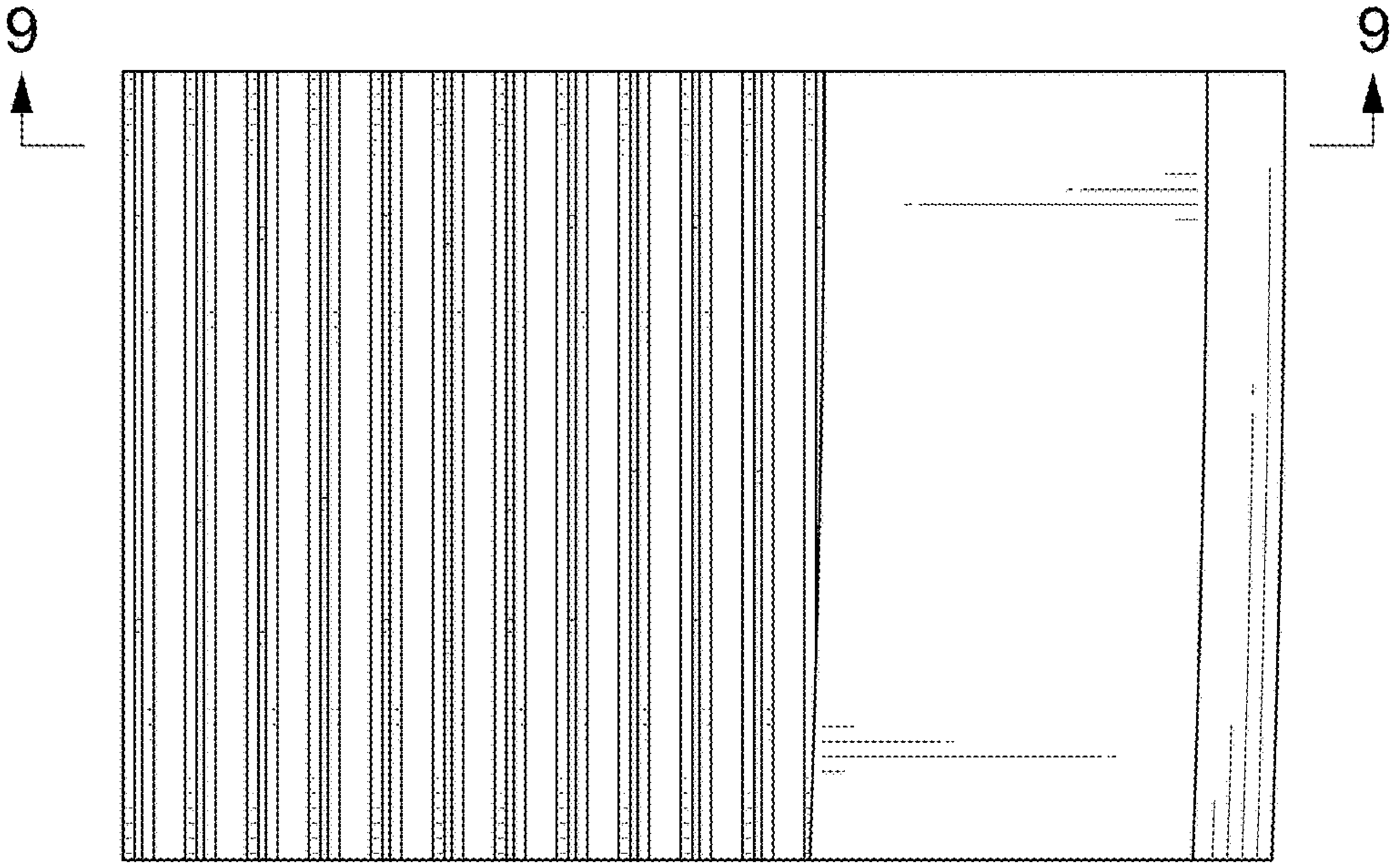


FIG. 7

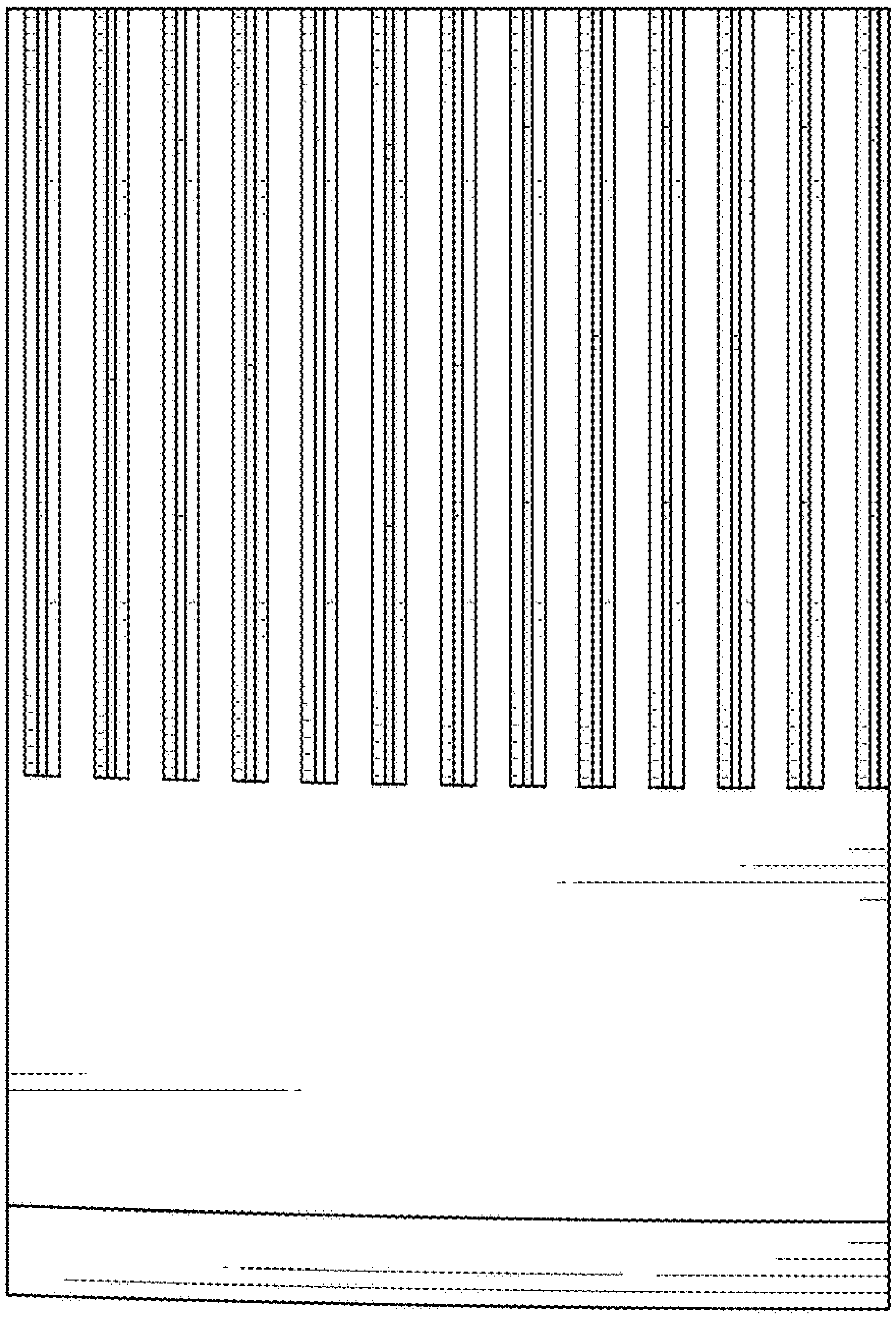


FIG. 8

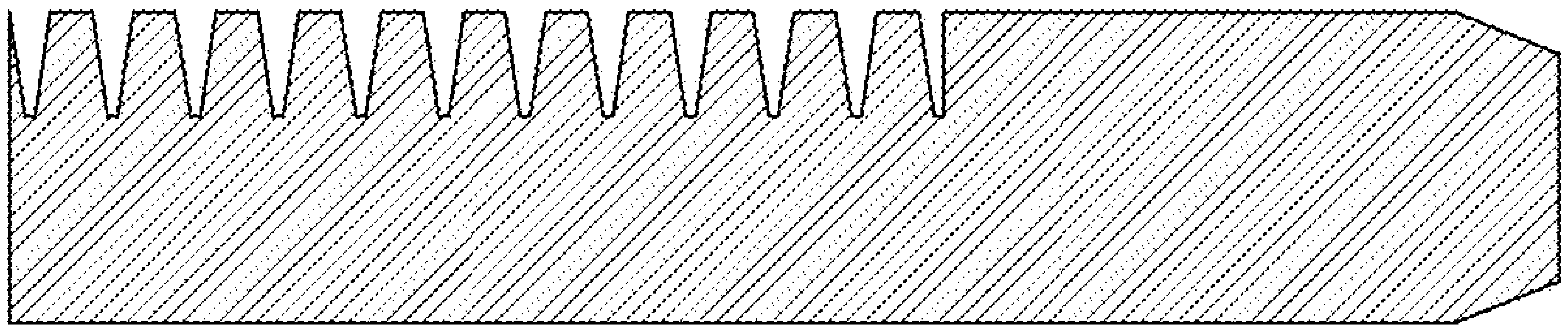


FIG. 9

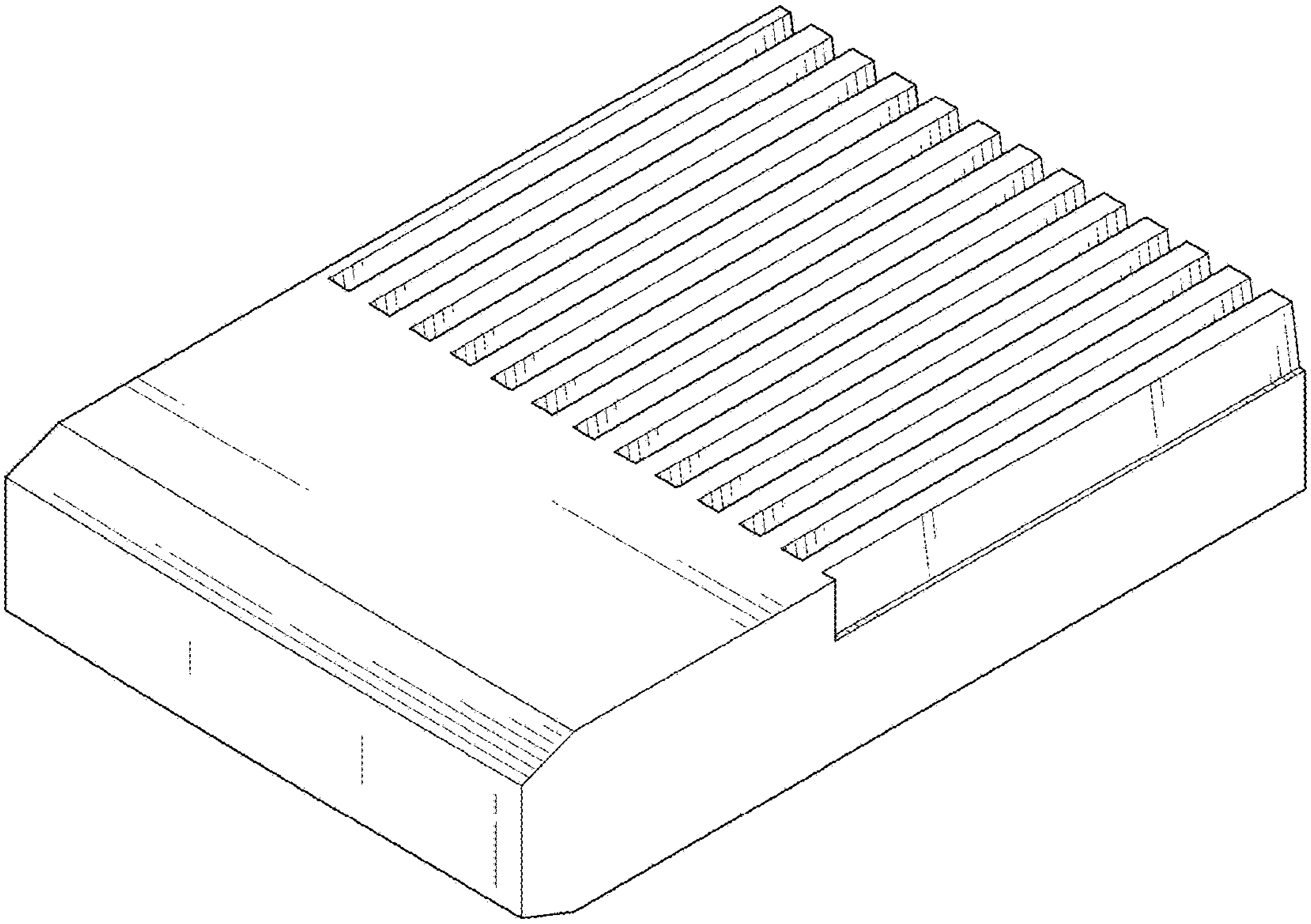


FIG. 10