



US00D977619S

(12) **United States Design Patent** (10) **Patent No.:** **US D977,619 S**
Sawafta et al. (45) **Date of Patent:** **** Feb. 7, 2023**

(54) **THERMAL MANAGEMENT PANEL**

D736,361 S * 8/2015 Cole D23/323
 10,263,301 B2 * 4/2019 Kenney H01M 10/6556
 2003/0173068 A1 * 9/2003 Davies F28D 1/0308
 165/170

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(Continued)

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(57) **CLAIM**

The ornamental design for a thermal management panel, as
shown and described.

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

DESCRIPTION

(21) Appl. No.: **29/686,566**

(22) Filed: **Apr. 5, 2019**

(51) **LOC (14) Cl.** **23-03**

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

USPC **D23/341**

(58) **Field of Classification Search**

USPC D23/314, 322, 323, 341

CPC H05K 7/20827; H05K 7/20836; F28F 3/12

See application file for complete search history.

FIG. 1 is a front perspective view of a thermal management
panel design according to a first embodiment;

FIG. 2 is a rear perspective view thereof;

FIG. 3 is a front view thereof;

FIG. 4 is a rear view thereof, opposite the view of FIG. 3;

FIG. 5 is a side view thereof;

FIG. 6 is a side view thereof, opposite the view of FIG. 5;

FIG. 7 is a top plan view thereof;

FIG. 8 is a bottom plan view thereof, opposite the view of
FIG. 7;

FIG. 9 is a front perspective view of a thermal management
panel design according to a second embodiment;

FIG. 10 is a rear perspective view thereof;

FIG. 11 is a front view thereof;

FIG. 12 is a rear view thereof, opposite the view of FIG. 11;

FIG. 13 is a side view thereof;

FIG. 14 is a side view thereof, opposite the view of FIG. 13;

FIG. 15 is a top plan view thereof; and,

FIG. 16 is a bottom plan view thereof, opposite the view of
FIG. 15.

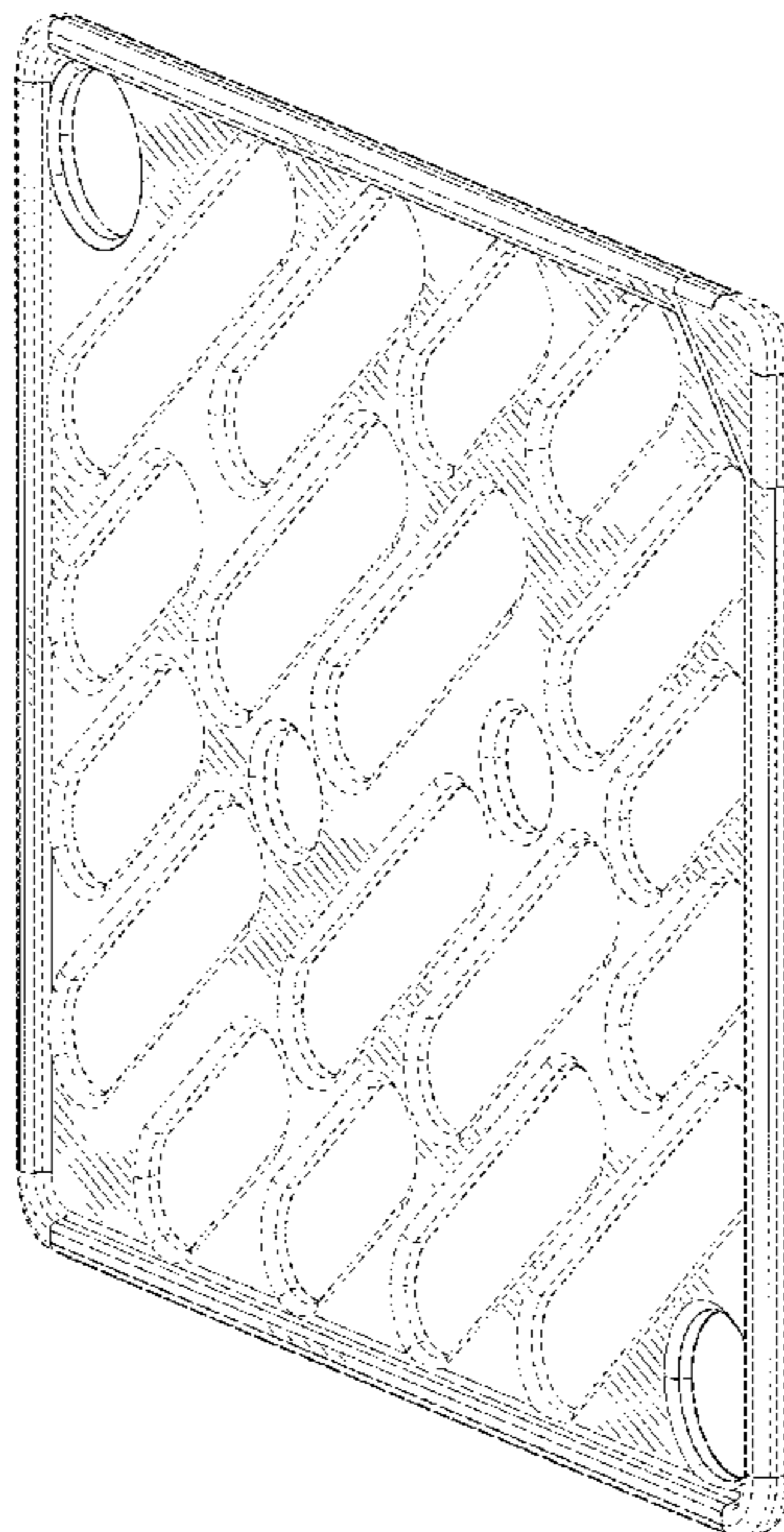
The dashed broken lines are included for the purpose of
illustrating environment of the design only, and form no part
of the claimed design.

(56) **References Cited**

U.S. PATENT DOCUMENTS

468,050	A *	2/1892	Trabold	.....	F28F 3/12 165/170
2,200,426	A *	5/1940	Lehman	.....	F28F 3/12 165/170
3,141,500	A *	7/1964	Raskin	.....	F28F 9/026 165/170
4,432,414	A *	2/1984	Morgan	.....	F28F 3/12 165/170
5,079,619	A *	1/1992	Davidson	.....	H01L 23/473 257/E23.098
D679,788	S *	4/2013	Hoberg	.....	D23/323
D735,842	S *	8/2015	Cole	.....	D23/323

1 Claim, 12 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2005/0051313 A1* 3/2005 Grosser F28F 21/065
165/170
2005/0109497 A1* 5/2005 Cieslik F28D 1/0478
165/171
2008/0060796 A1* 3/2008 Cai F28F 3/12
165/146
2010/0132930 A1* 6/2010 Izenson F28F 3/12
165/173
2012/0125582 A1* 5/2012 Hansen F24S 10/501
165/170
2012/0237805 A1* 9/2012 Abels H01M 10/6567
228/136
2013/0171493 A1* 7/2013 Wayne H01M 10/6557
165/104.19
2013/0244077 A1* 9/2013 Palanchon H01M 10/61
429/120
2017/0324132 A1* 11/2017 Kenney F28F 27/02
2018/0166754 A1* 6/2018 Dudley H01M 10/6567
2019/0366877 A1* 12/2019 Blersch B23K 3/087
2020/0191436 A1* 6/2020 Ono F24H 8/00
2020/0200484 A1* 6/2020 Zhou F28F 3/12
2022/0120518 A1* 4/2022 Vanderwees H05K 7/20254

* cited by examiner

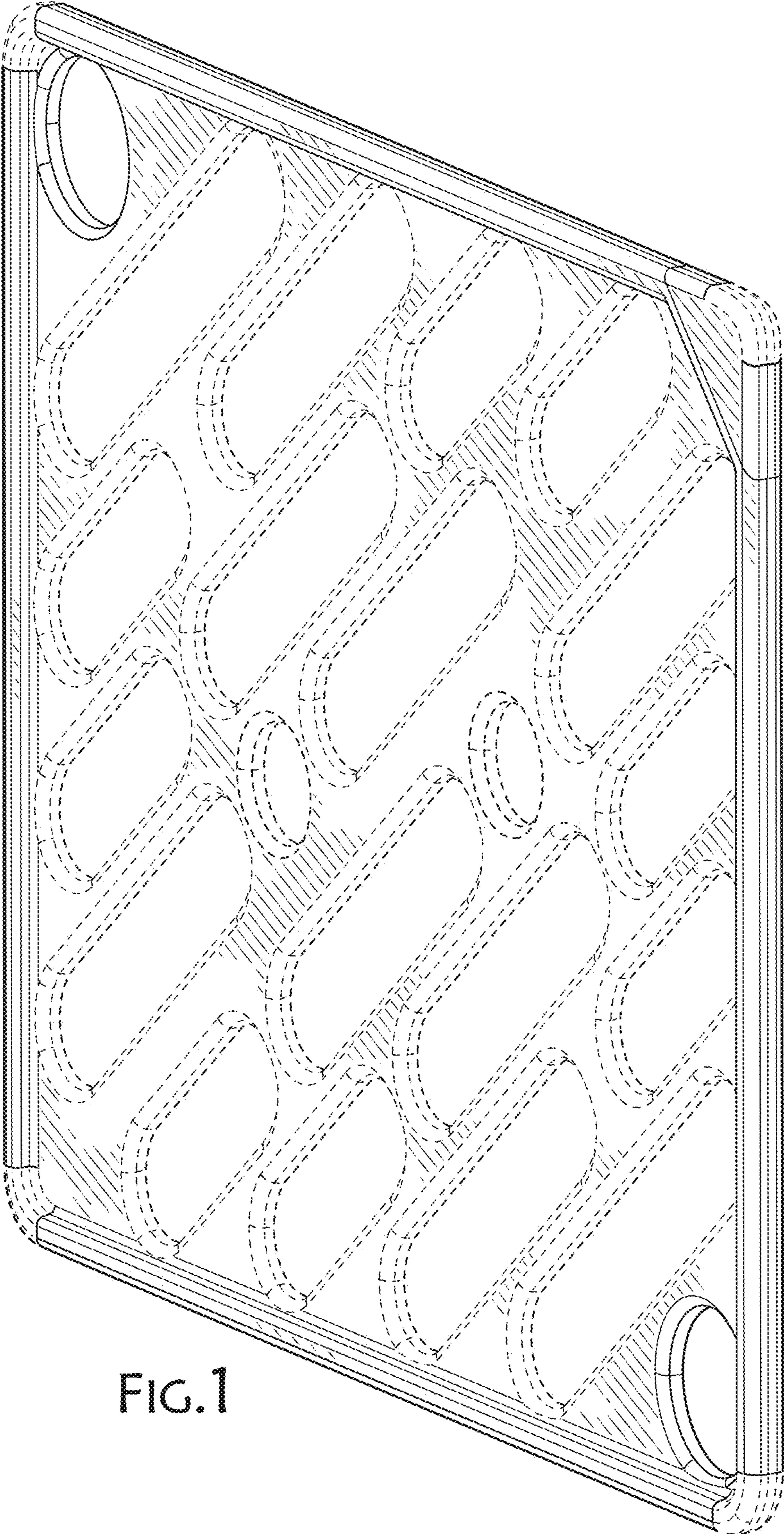


FIG. 1

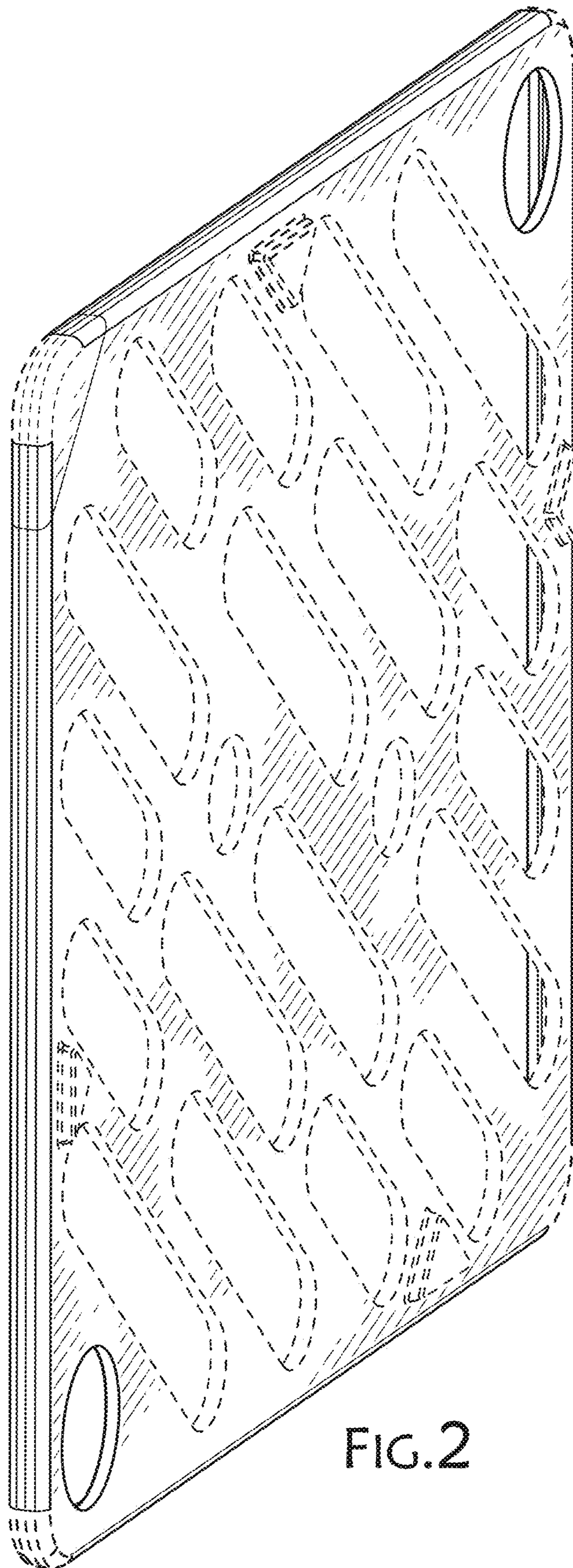


FIG. 2

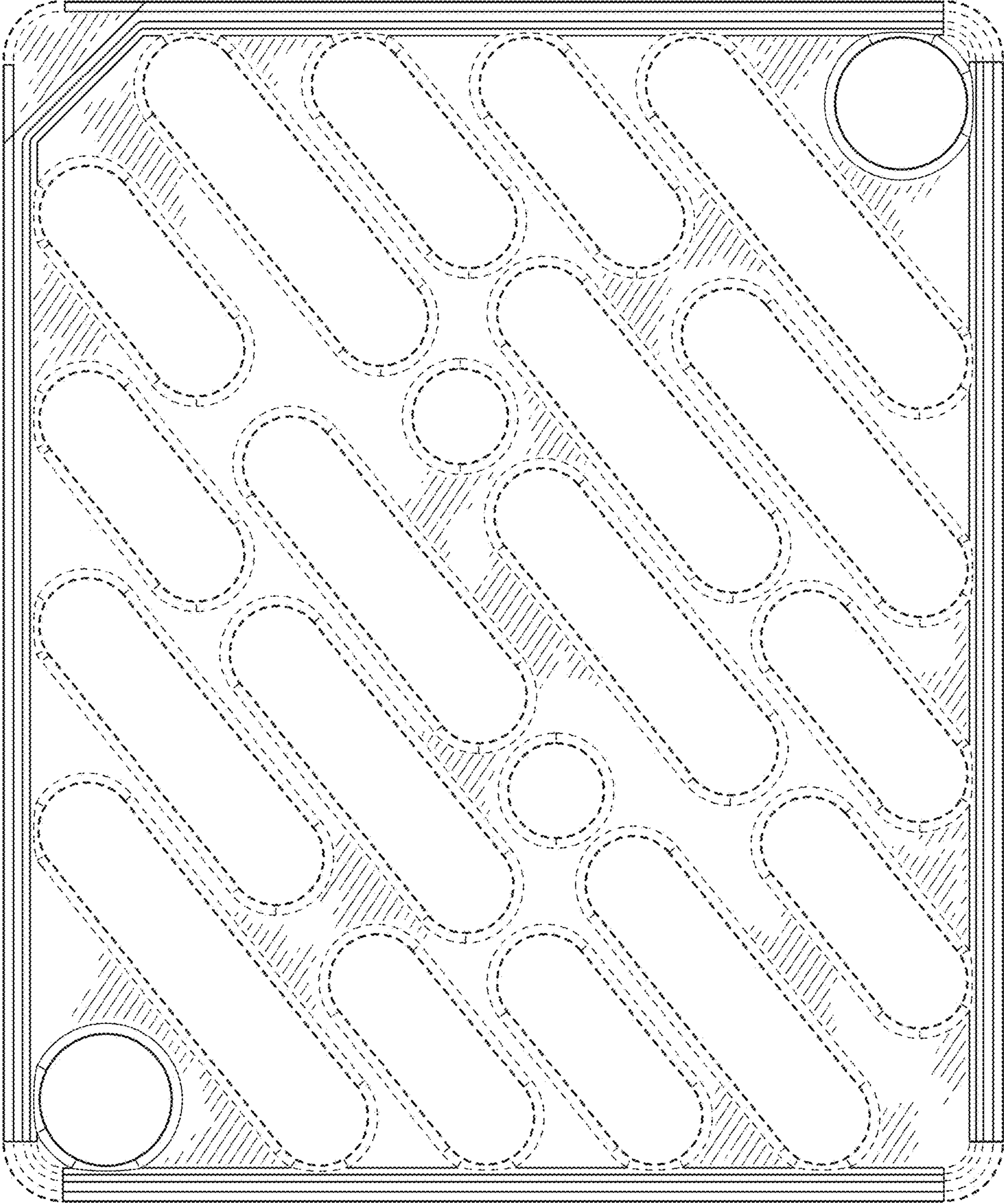


FIG. 3

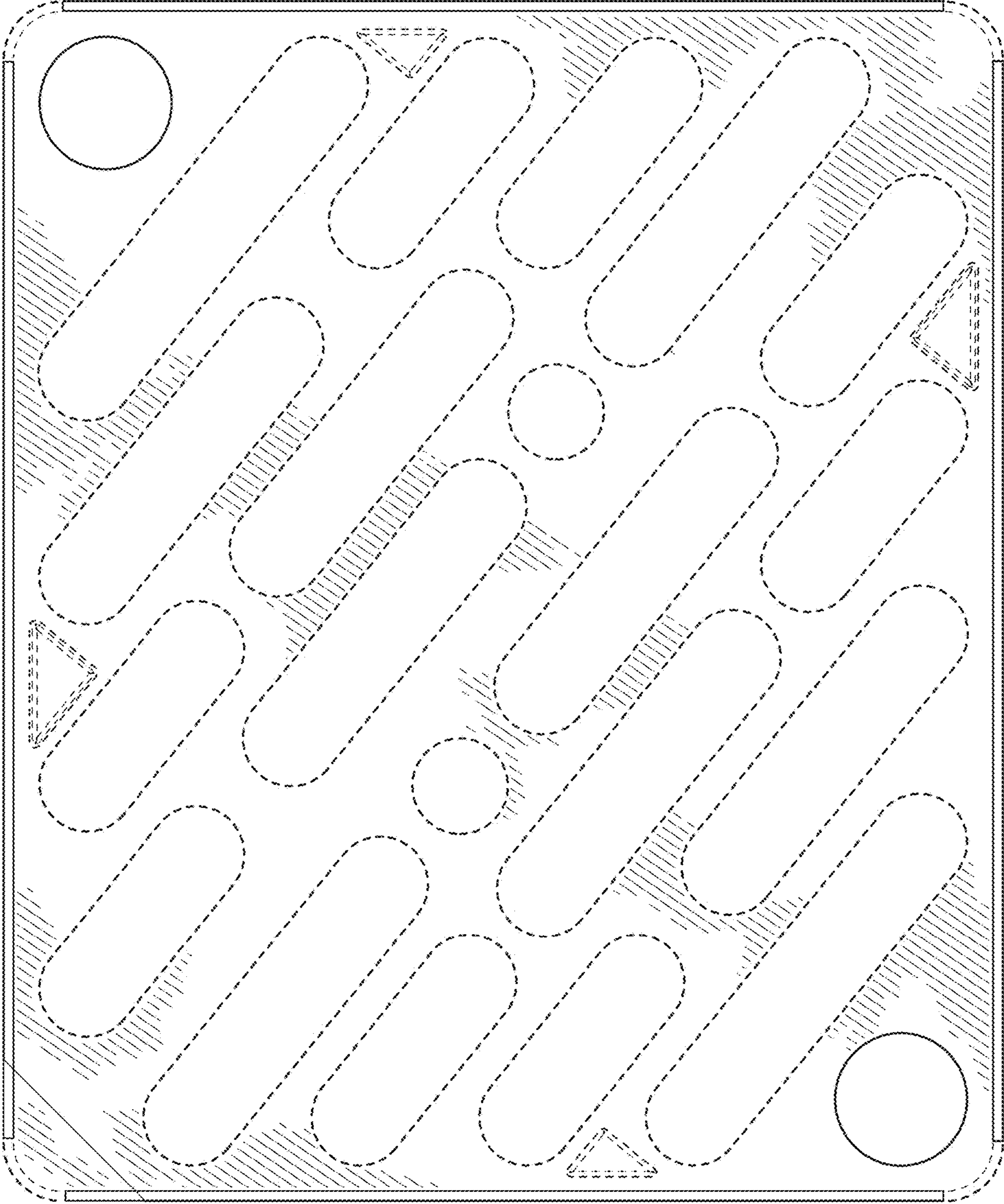


FIG.4

FIG.5

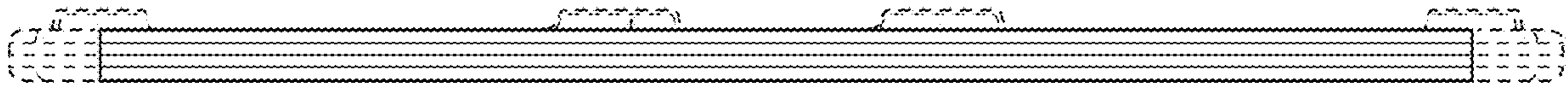
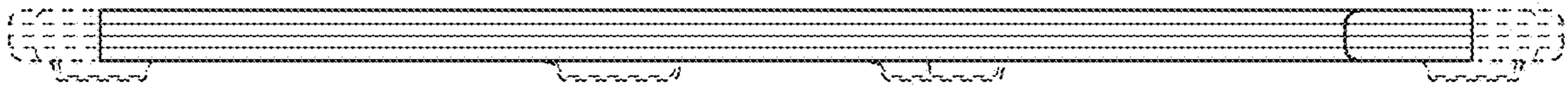


FIG.6



FIG. 7

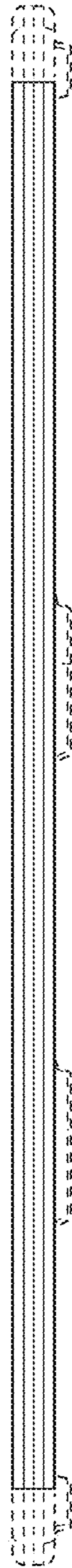


FIG. 8

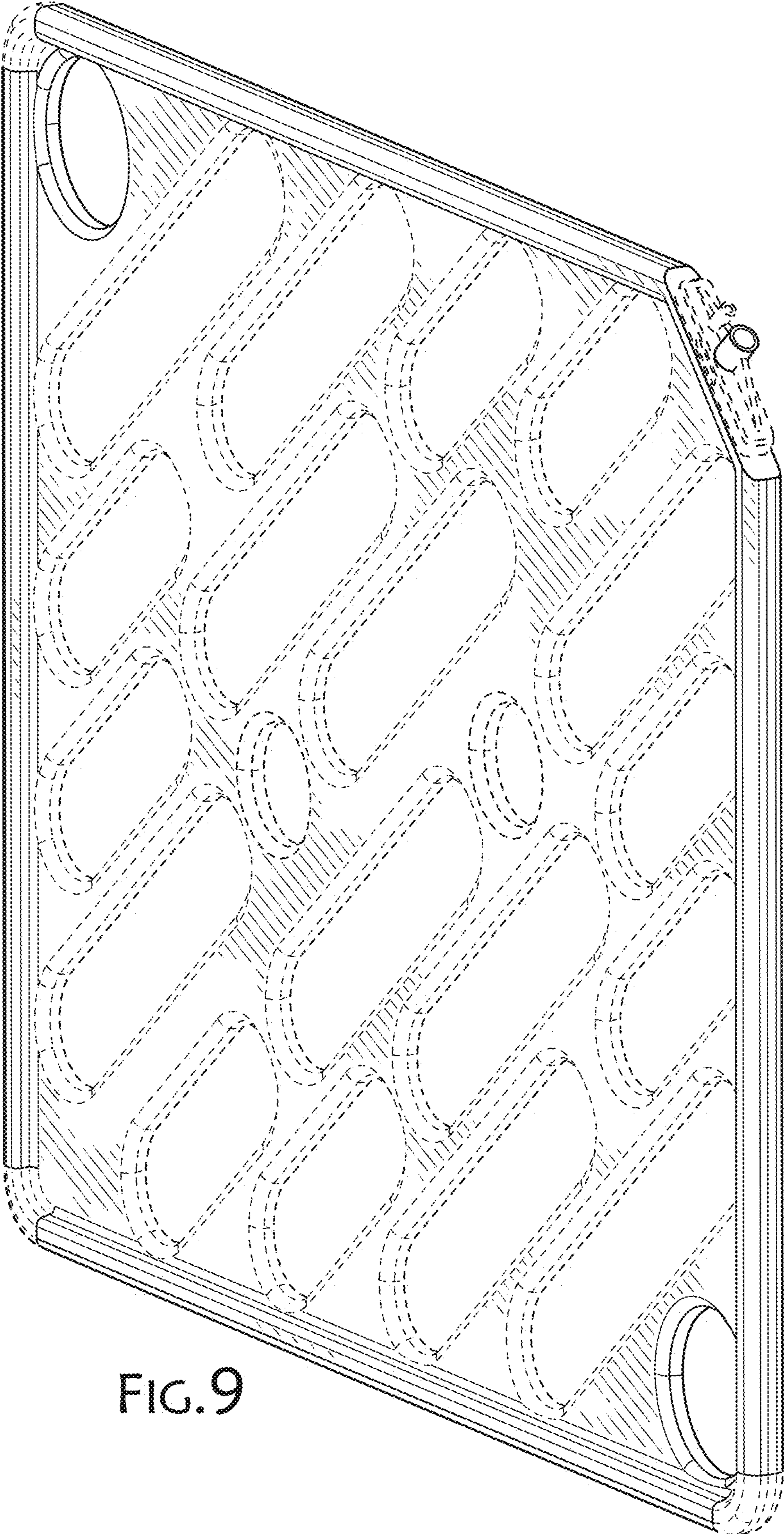


FIG. 9

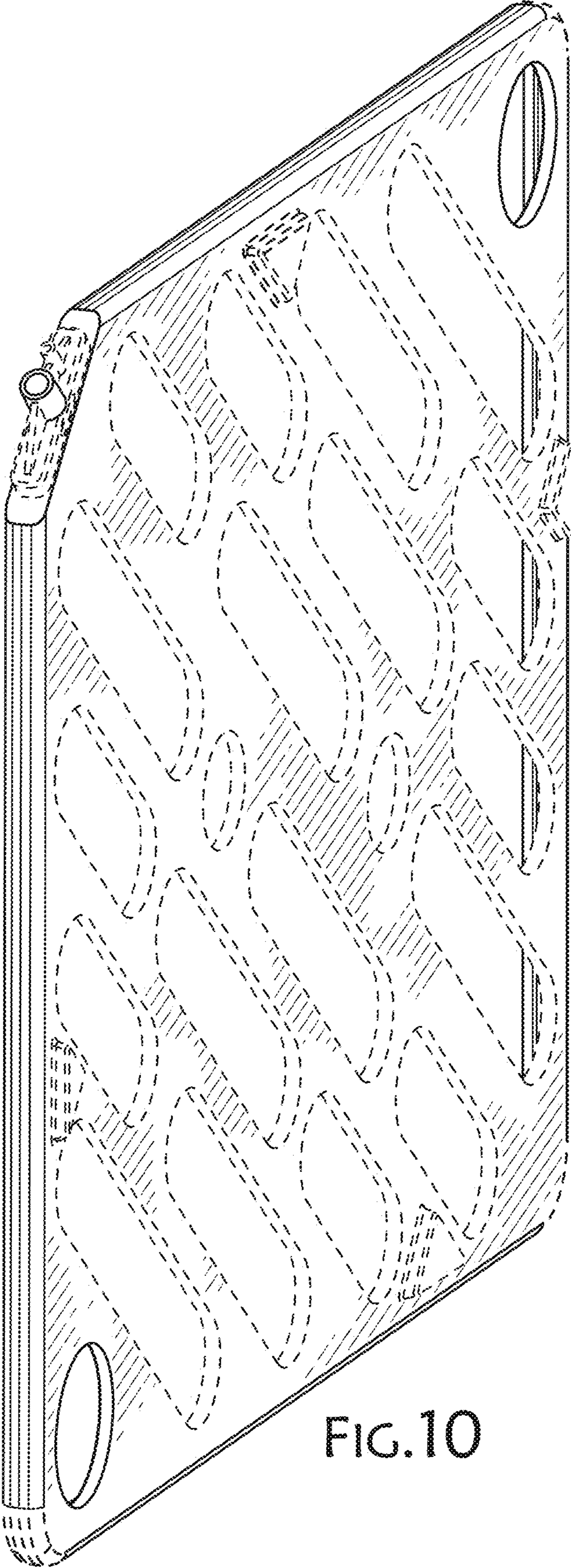


FIG.10

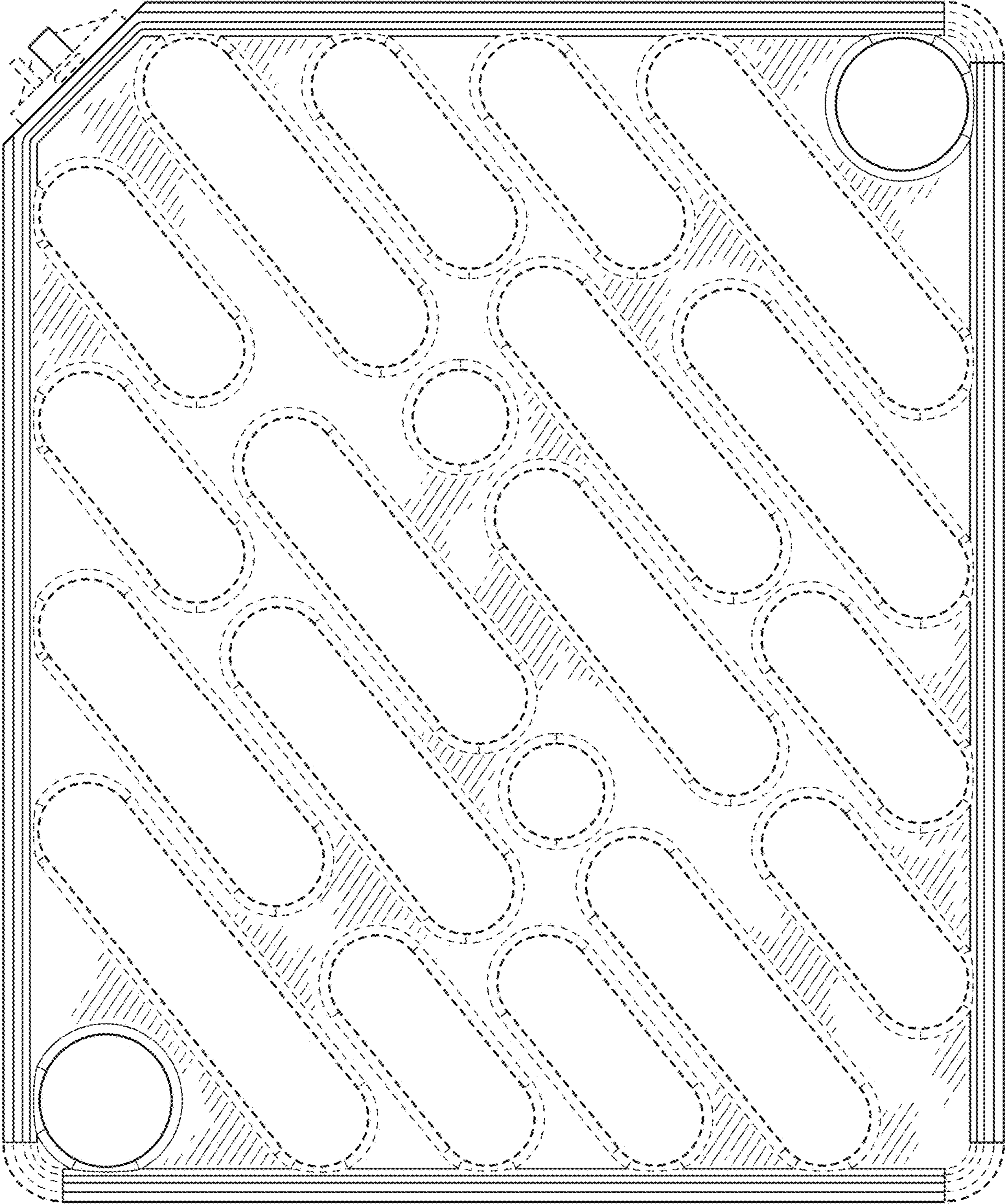


FIG.11

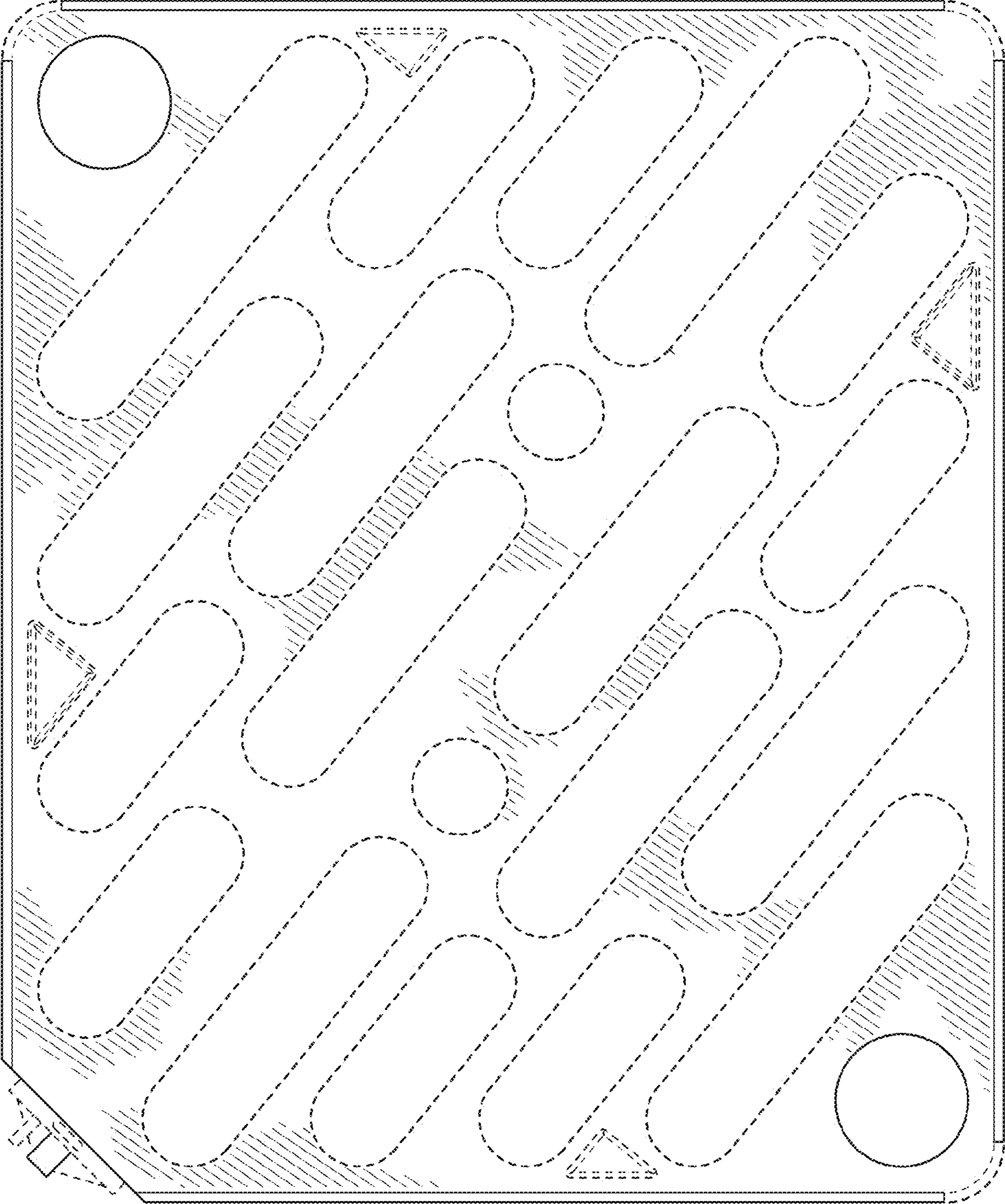


FIG.12

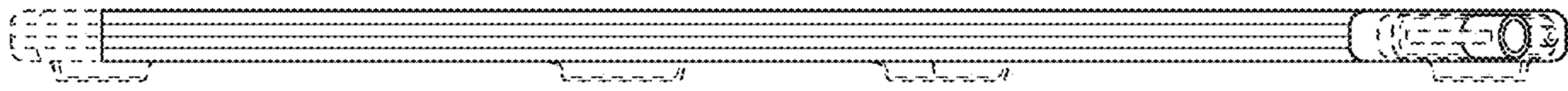


FIG.13

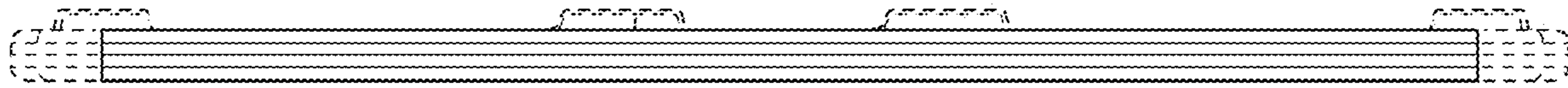


FIG.14



FIG. 15



FIG. 16