



US00D858466S

(12) **United States Design Patent** (10) **Patent No.:** **US D858,466 S**
Vance (45) **Date of Patent:** **** Sep. 3, 2019**

(54) **HEAT EXCHANGER FIN**

(71) Applicant: **Coil Master Corporation**, Moscow, TN (US)
(72) Inventor: **Robert Vance**, Piperton, TN (US)
(73) Assignee: **COIL MASTER CORPORATION**, Moscow, TN (US)

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

(21) Appl. No.: **29/615,412**

(22) Filed: **Aug. 29, 2017**

(51) **LOC (12) Cl.** **13-03**

(52) **U.S. Cl.**
USPC **D13/179**

(58) **Field of Classification Search**
USPC D13/179, 182; D15/199; D26/138, 141, D26/152, 142; D14/435, 436
CPC ... H01L 23/473; H01L 23/4735; H01L 23/46; H01L 23/467; H01L 23/4006; H01L 23/427; H01L 23/3672; F28D 15/00; F28D 15/02; F28D 15/0275; F28D 3/02; G06F 1/20; G06F 2200/201; F28F 1/025; F28F 1/325

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,705,105	A *	11/1987	Cur	.....	F28F 1/325
					165/151
5,318,113	A *	6/1994	Potier	.....	F28D 1/05366
					165/173
5,722,485	A *	3/1998	Love	.....	F28F 1/325
					165/151
D478,055	S *	8/2003	Jing	.....	D13/179
2006/0156750	A1 *	7/2006	Lowenstein	.....	F24F 3/1417
					62/271
2008/0041087	A1 *	2/2008	Muller	.....	F28C 1/14
					62/305

(Continued)

OTHER PUBLICATIONS

Science Direct, "3D numerical investigation of flow and heat transfer characteristics in smooth wavy fin-and-elliptical tube heat exchangers using new type vortex generators", published Aug. 14, 2014. Pages reduced to relevant images. (<https://www.sciencedirect.com/science/article/pii/S0360544214007142>) (Year: 2014).*

(Continued)

Primary Examiner — Jennifer Rivard

Assistant Examiner — April Rivas

(74) *Attorney, Agent, or Firm* — Levenfeld Pearlstein, LLC

(57) **CLAIM**

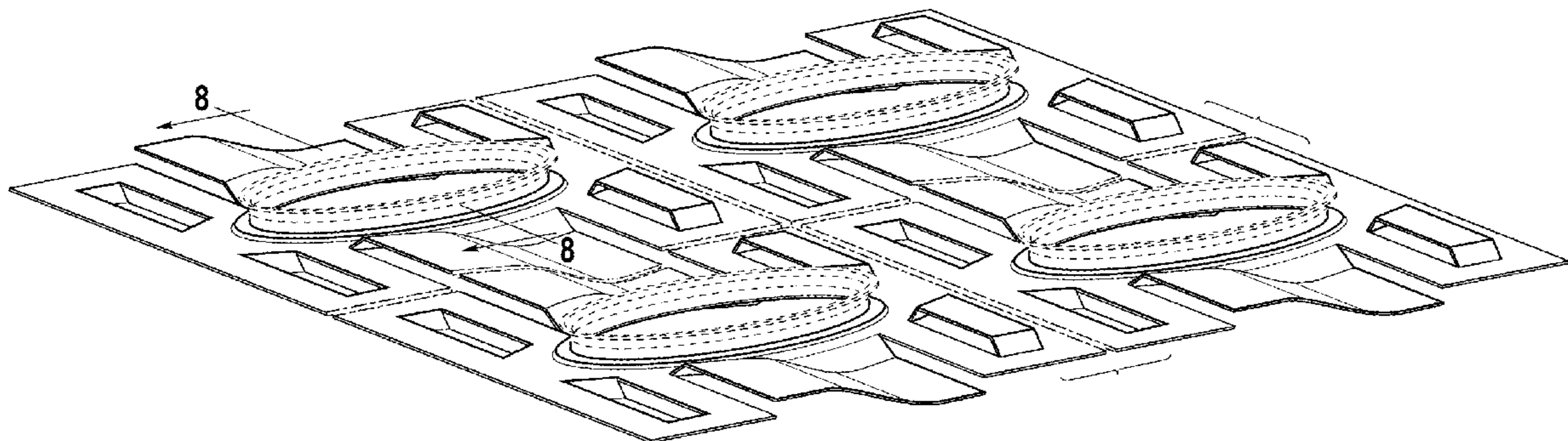
The ornamental design for a heat exchanger fin, as shown and described.

DESCRIPTION

FIG. 1 is a front, perspective view of a heat exchanger fin embodying the principles of my new design;
FIG. 2 is a front view thereof;
FIG. 3 is a rear view thereof;
FIG. 4 is a side view thereof as seen from the right-hand side of FIG. 2;
FIG. 5 is a side view thereof as seen from the left-hand side of FIG. 2;
FIG. 6 is a top view thereof;
FIG. 7 is a bottom view thereof; and,
FIG. 8 is a cross-sectional view taken along line 8--8 of FIG. 1.

The broken lines illustrate portions of the heat exchanger fin and form no part of the claimed design. The heat exchanger fin is shown with a symbolic break in its length and its width. The appearance of any portion of the article between the break lines forms no part of the claimed design.

1 Claim, 6 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2009/0084129 A1* 4/2009 Kim F25B 39/00
62/502
2016/0082555 A1* 3/2016 Nishimura F28F 1/325
62/498
2016/0245594 A1* 8/2016 Berthelot F28F 1/20
2017/0276440 A1* 9/2017 Kenworthy F28D 7/1607
2018/0306533 A1* 10/2018 Alahyari F25B 39/00

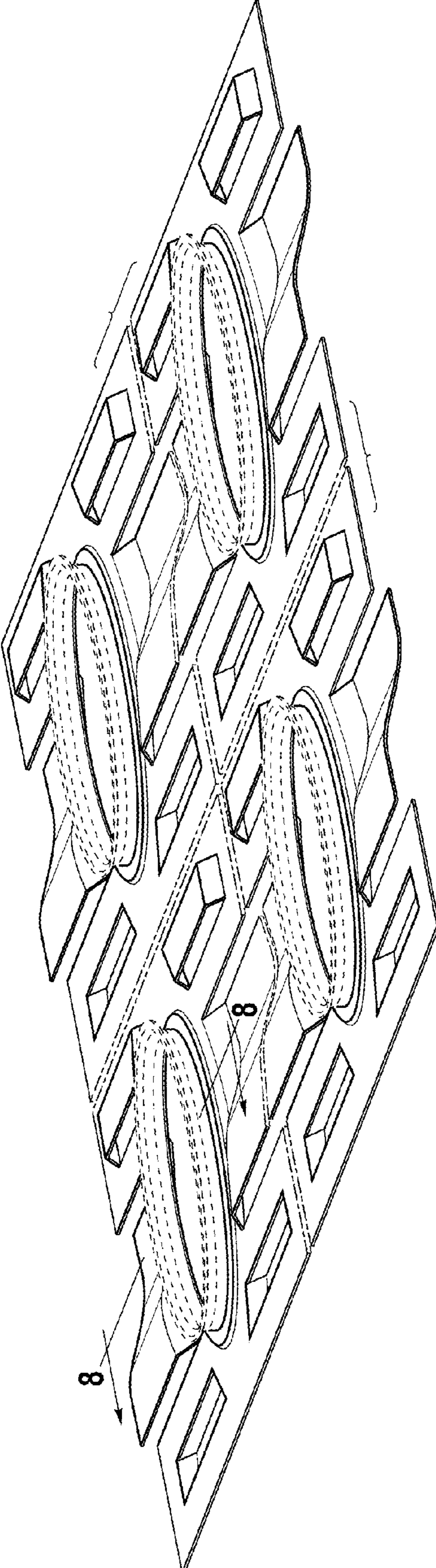
OTHER PUBLICATIONS

Facebook, "Coilmaster Cooperation photos", Photo uploaded Sep. 5, 2017. (<https://www.facebook.com/214459965283150/photos/a.895269370535536/1592723600790106/?type=3&theater>) (Year: 2017).*

Coils Australia, "Fin Material", Accessed Jan. 30, 2019. (<http://coilsaust.com.au/heat-exchange-features/fin-material/>) (Year: 2019).*

* cited by examiner

Fig. 1



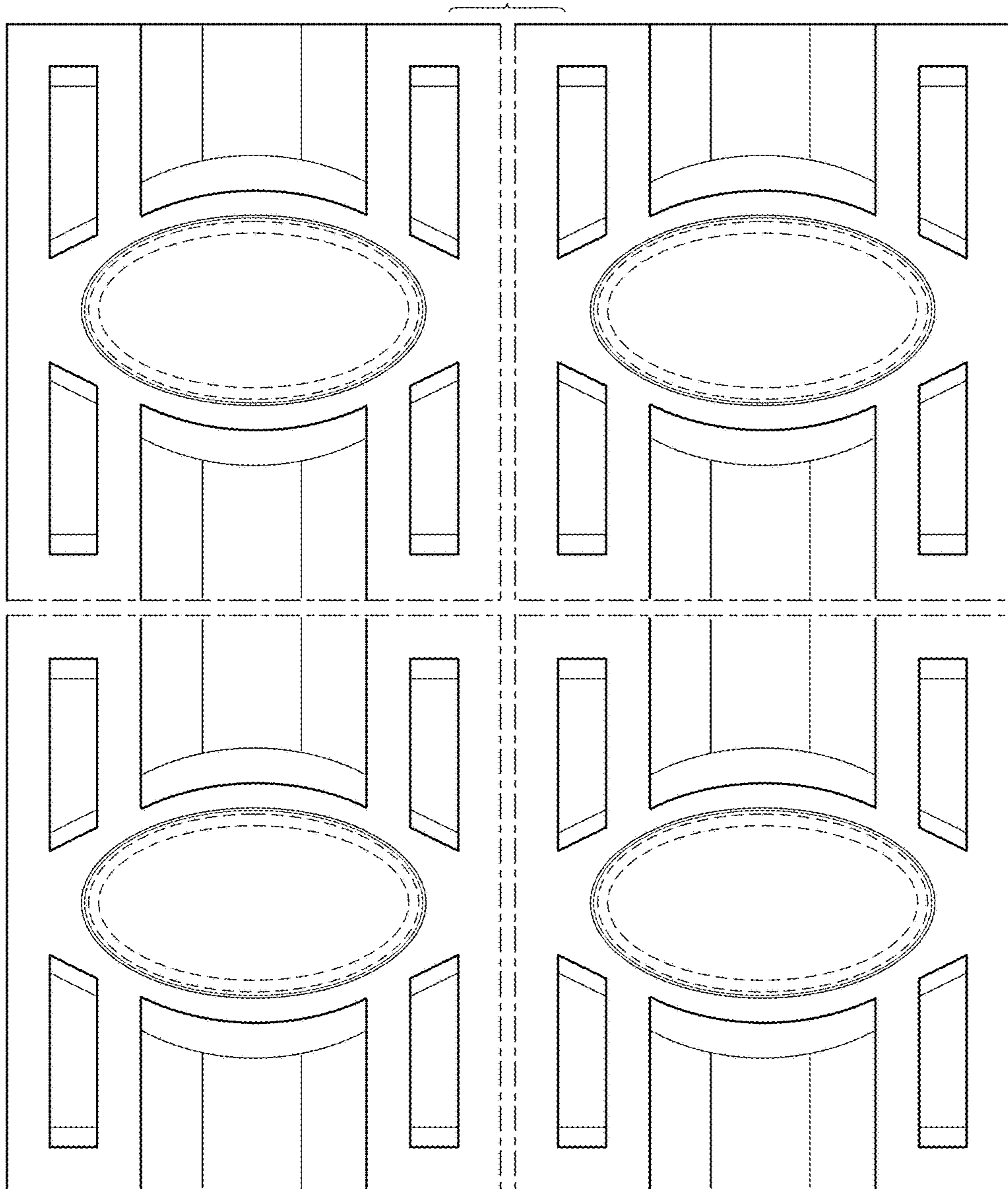


Fig. 2

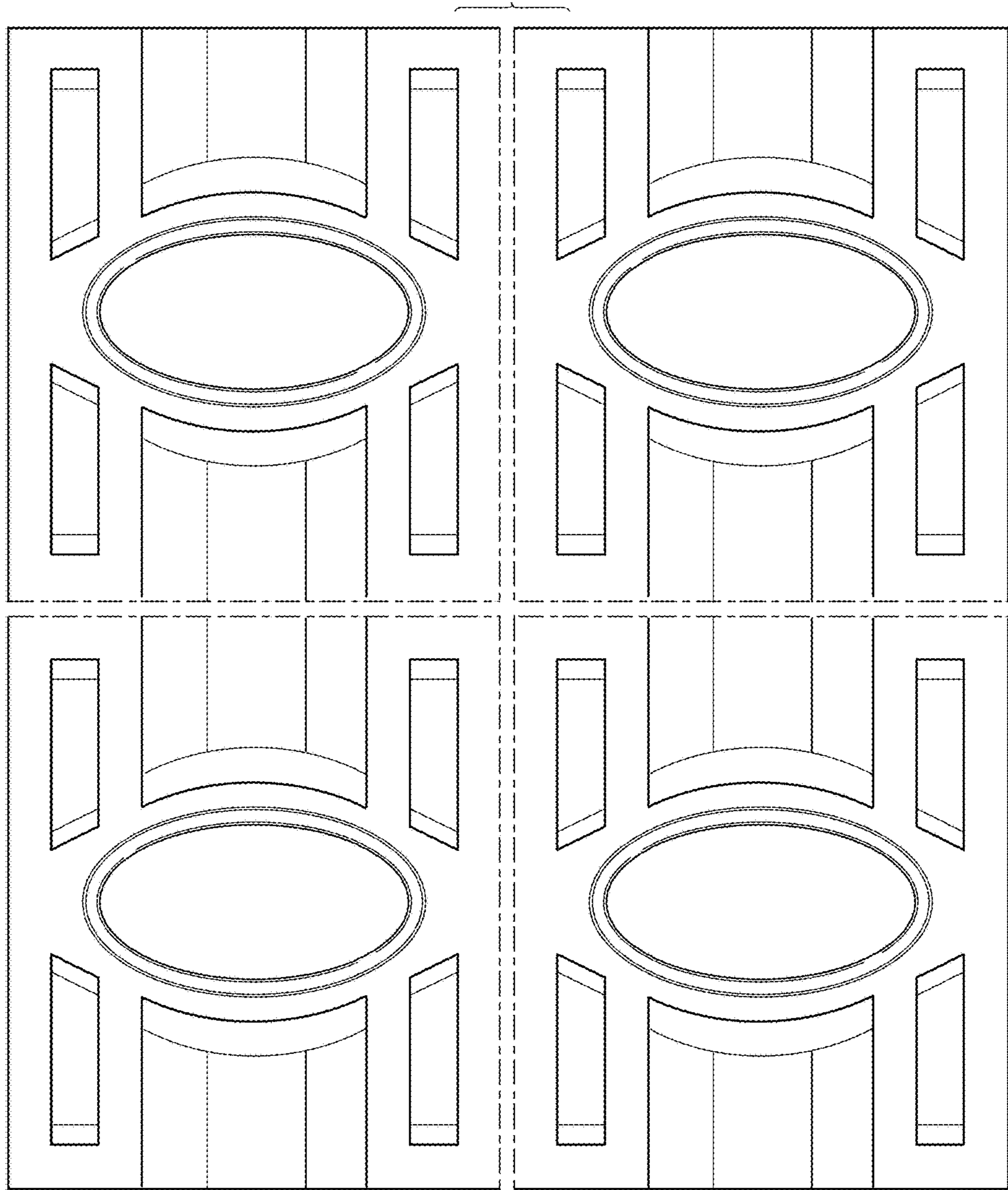


Fig. 3

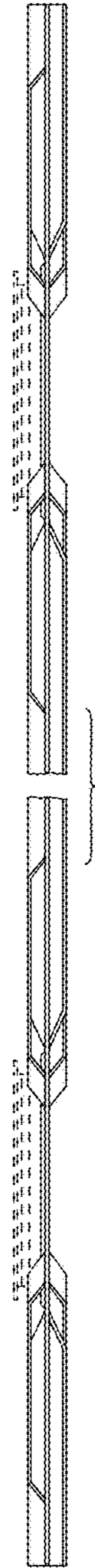


Fig. 4

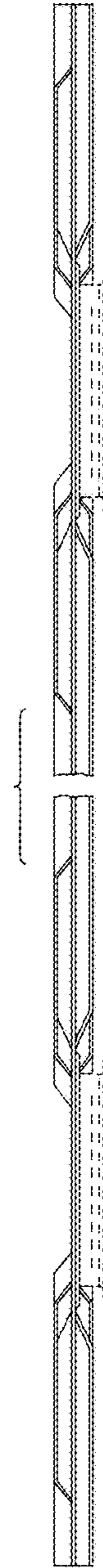


Fig. 5

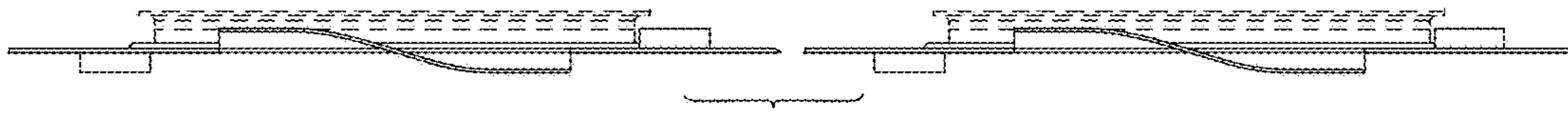


Fig. 6



Fig. 7

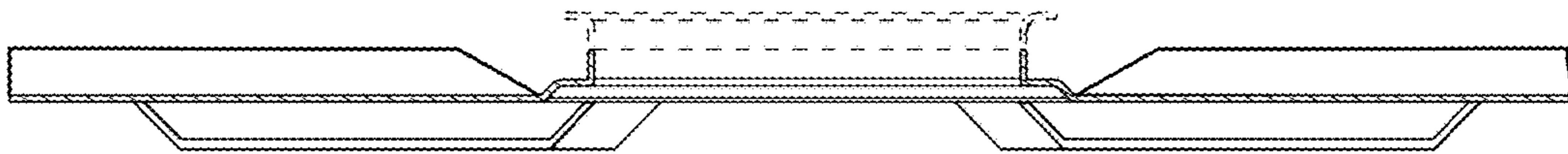


Fig. 8