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(12) **United States Design Patent** (10) **Patent No.:** **US D566,824 S**
Umetsu et al. (45) **Date of Patent:** **** Apr. 15, 2008**

(54) **PLATE FIN FOR A HEAT EXCHANGER**

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(30) **Foreign Application Priority Data**

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(51) **LOC (8) Cl.** **15-07**

(52) **U.S. Cl.** **D23/386**

(58) **Field of Classification Search** D23/386,
D23/388, 387, 392, 393, 397, 400, 401, 314,
D23/323, 499, 330; 165/150-152, 182, DIG. 501;
62/290

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,977,918 A * 4/1961 Kritzer 165/150
3,397,741 A * 8/1968 Gunter 165/152
4,434,844 A * 3/1984 Sakitani et al. 165/151
4,723,599 A * 2/1988 Hanson 165/151
D317,500 S * 6/1991 Ueda D23/386
D330,760 S * 11/1992 Yoshida et al. D23/386
D331,624 S * 12/1992 Yoshida et al. D23/386

(Continued)

FOREIGN PATENT DOCUMENTS

JP 620454 3/1984
JP D1139869 4/2002

OTHER PUBLICATIONS

U.S. Appl. No. 29/265,980, filed Sep. 13, 2006, Umetsu, et al.

U.S. Appl. No. 11/557,235, filed Nov. 7, 2006, Umetsu, et al.

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(57) **CLAIM**

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

DESCRIPTION

FIG. 1 is a perspective view of a first embodiment of a first
plate fin for a heat exchanger;

FIG. 2 is a front view thereof;

FIG. 3 is a rear view thereof;

FIG. 4 is a right side view thereof;

FIG. 5 is a left side view thereof;

FIG. 6 is a top plan view thereof;

FIG. 7 is a bottom view thereof;

FIG. 8 is a sectional view taken along line 8—8 in FIG. 2;

FIG. 9 is an enlarged view taken along lines 9—9 and 9—9
in FIG. 8;

FIG. 10 is a perspective view of a second embodiment of a
plate fin for a heat exchanger;

FIG. 11 is a front view thereof;

FIG. 12 is a rear view thereof;

FIG. 13 is a right side view thereof;

FIG. 14 is a left side view thereof;

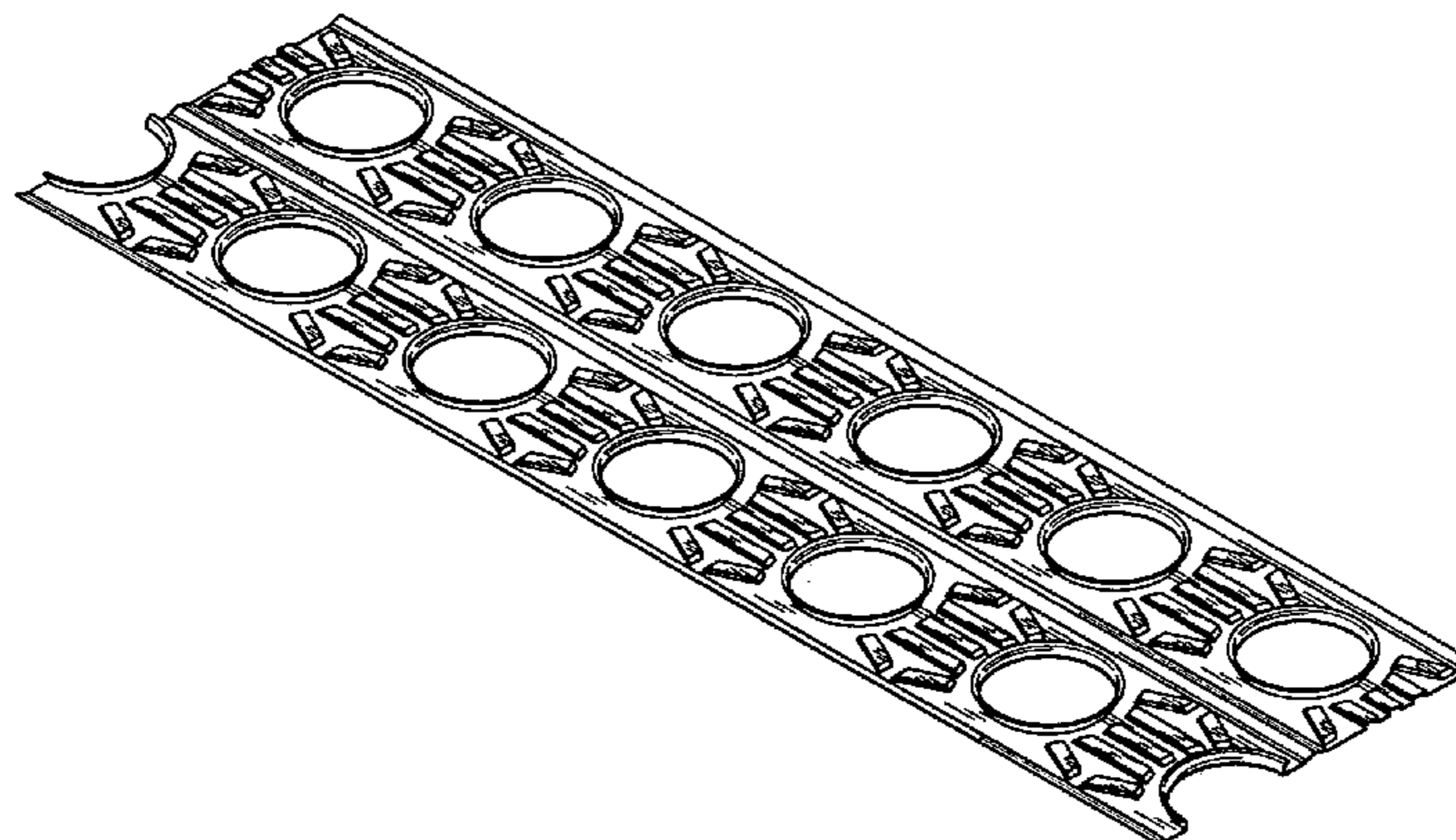
FIG. 15 is a top plan view thereof;

FIG. 16 is a bottom view thereof;

FIG. 17 is a sectional view taken along line 17—17 in FIG.
11; and,

FIG. 18 is an enlarged view taken along lines 18—18 and
18—18 in FIG. 17.

1 Claim, 10 Drawing Sheets



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U.S. PATENT DOCUMENTS			
5,752,567	A *	5/1998	Obosu 165/151
6,227,289	B1 *	5/2001	Yokoyama et al. 165/151
6,698,508	B2 *	3/2004	Jin et al. 165/152
7,021,370	B2 *	4/2006	Papapanu et al. 165/151
2003/0000686	A1 *	1/2003	Kester 165/151
2003/0150601	A1 *	8/2003	Park et al. 165/151
2005/0274503	A1 *	12/2005	Gong et al. 165/151
2007/0163764	A1 *	7/2007	Kaga et al. 165/151
2007/0163767	A1 *	7/2007	Mitchell et al. 165/182

* cited by examiner

Fig.1

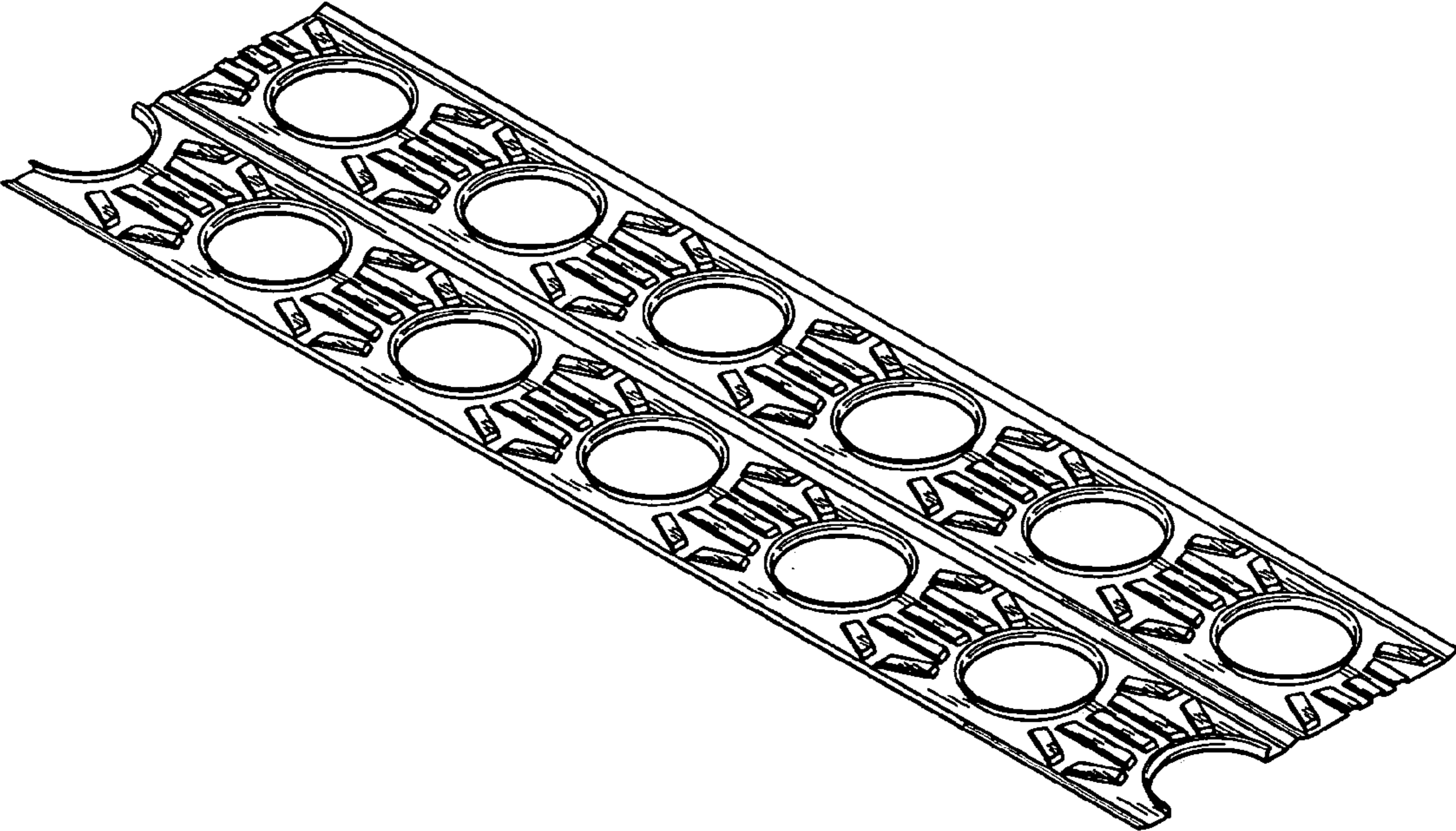


Fig.2

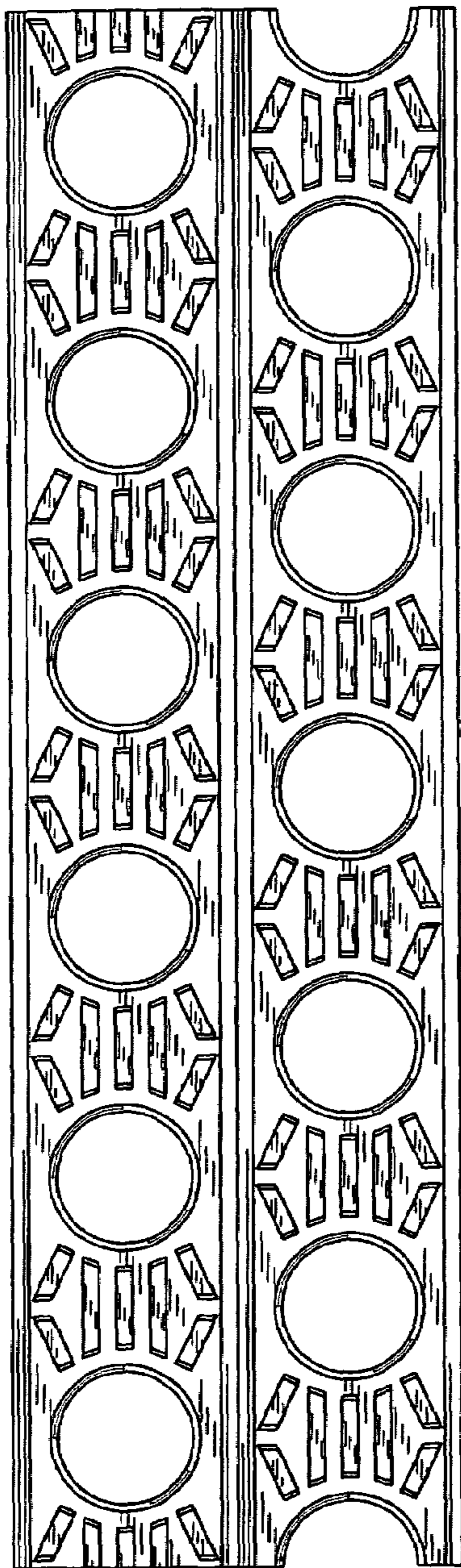
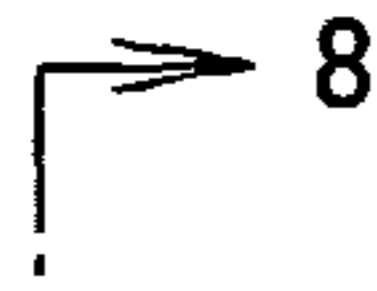


Fig.3

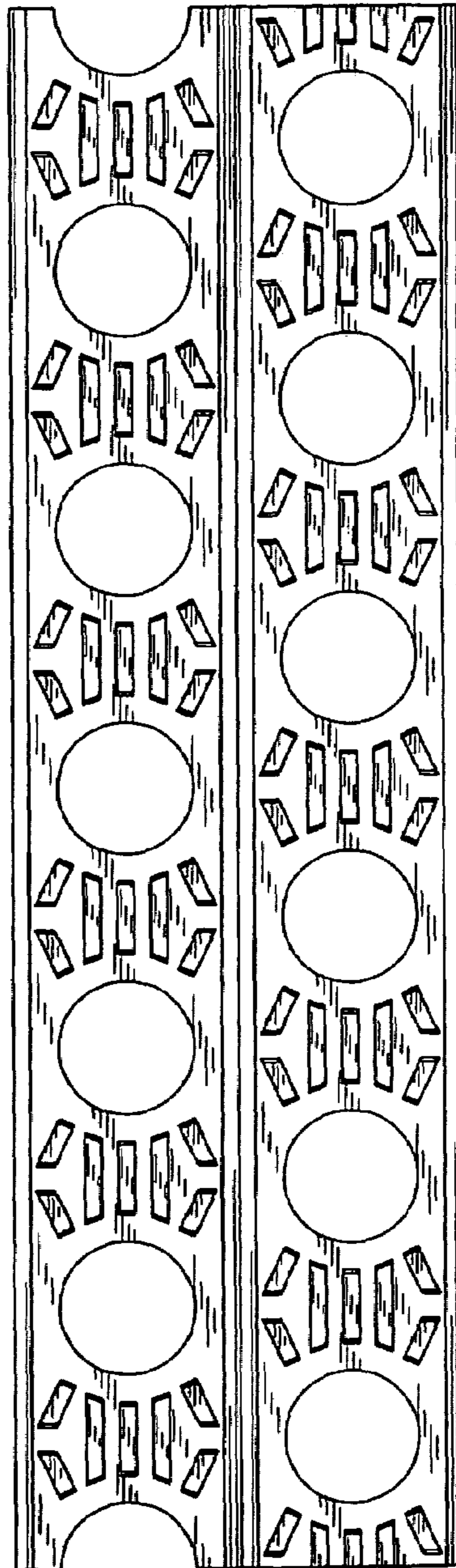


Fig.4



Fig.5



Fig.6



Fig.7



Fig.8

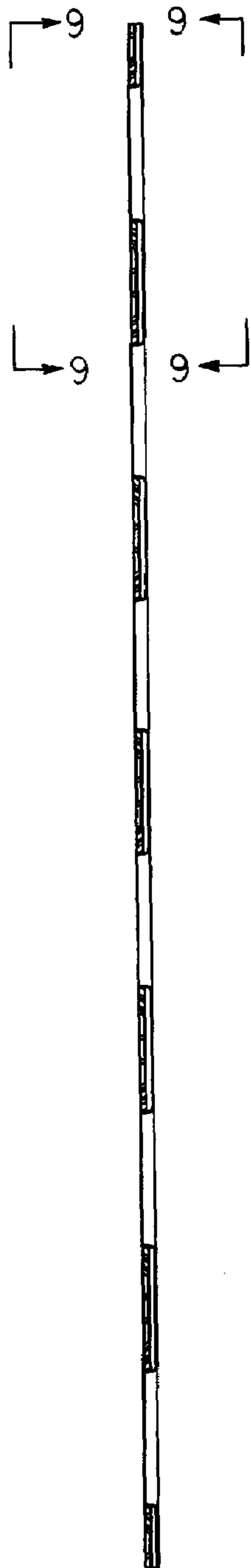


Fig.9

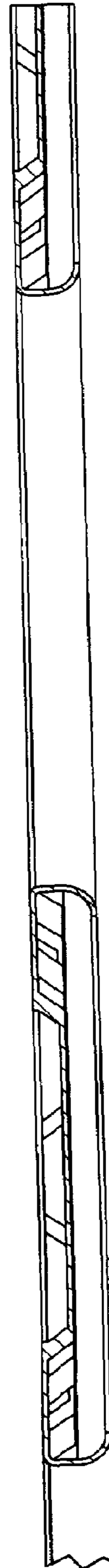


Fig.10

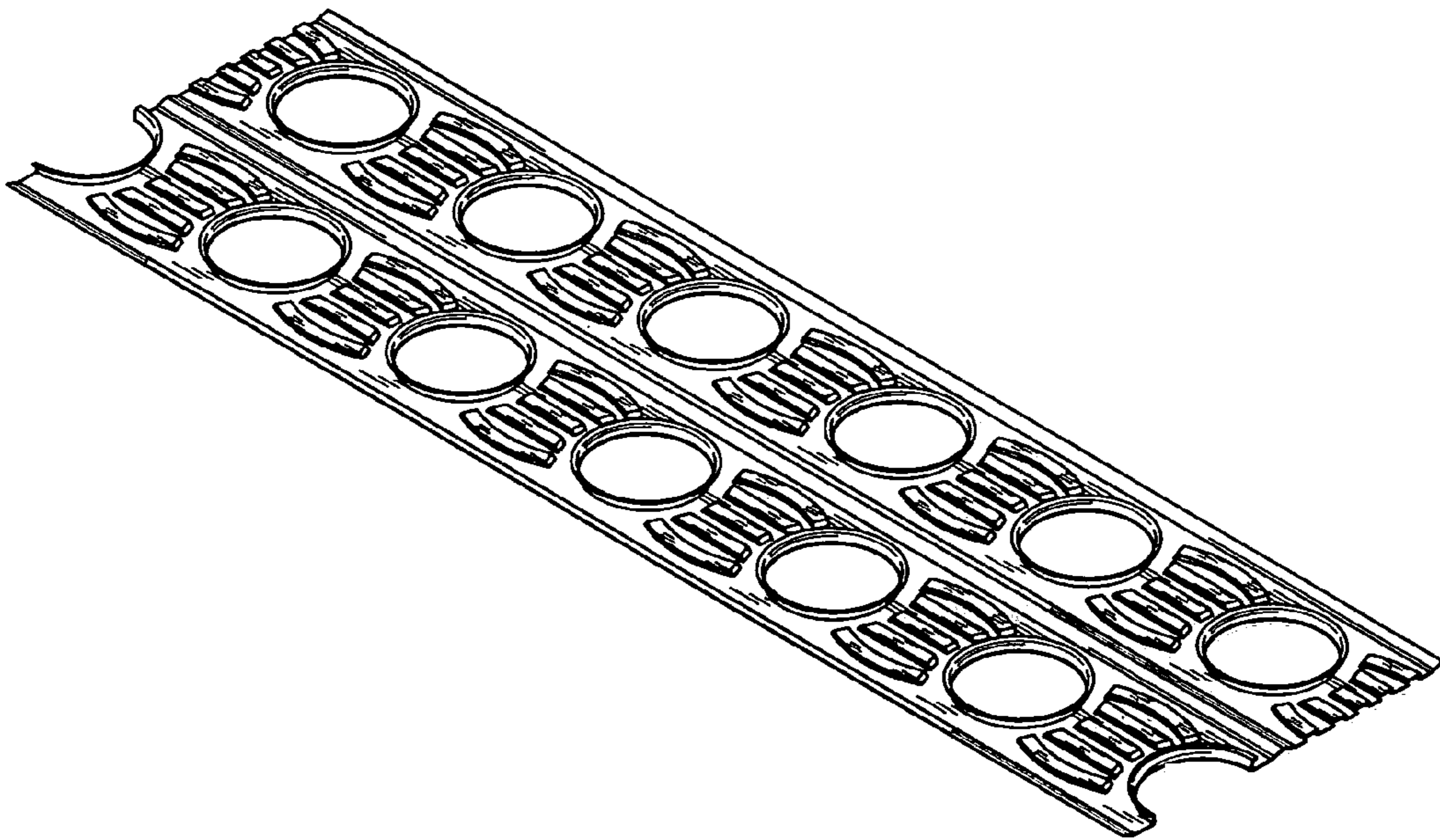


Fig.11

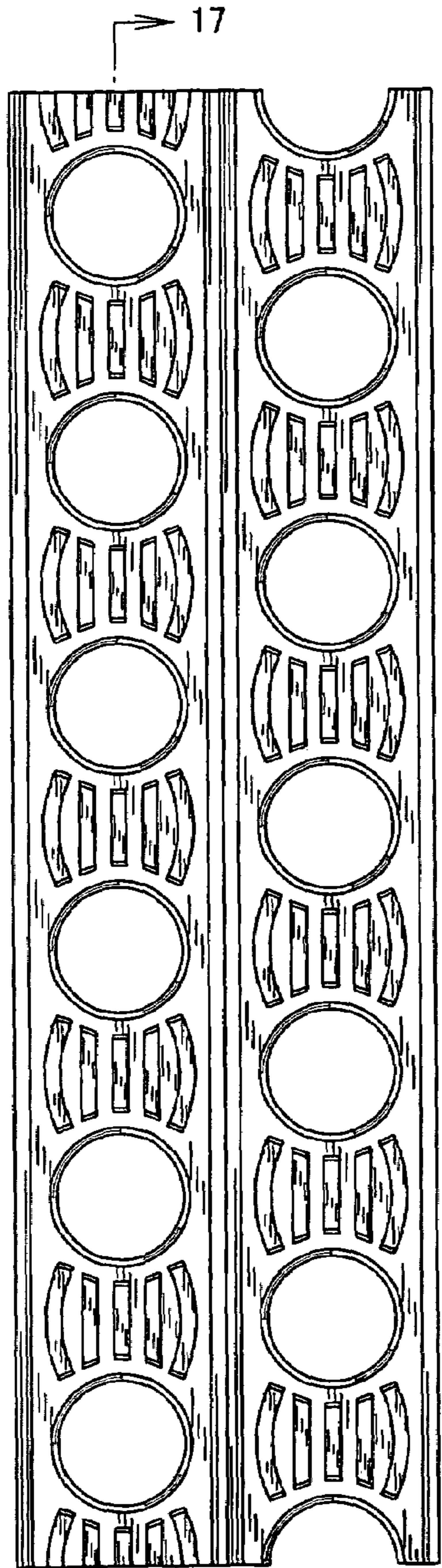


Fig.12

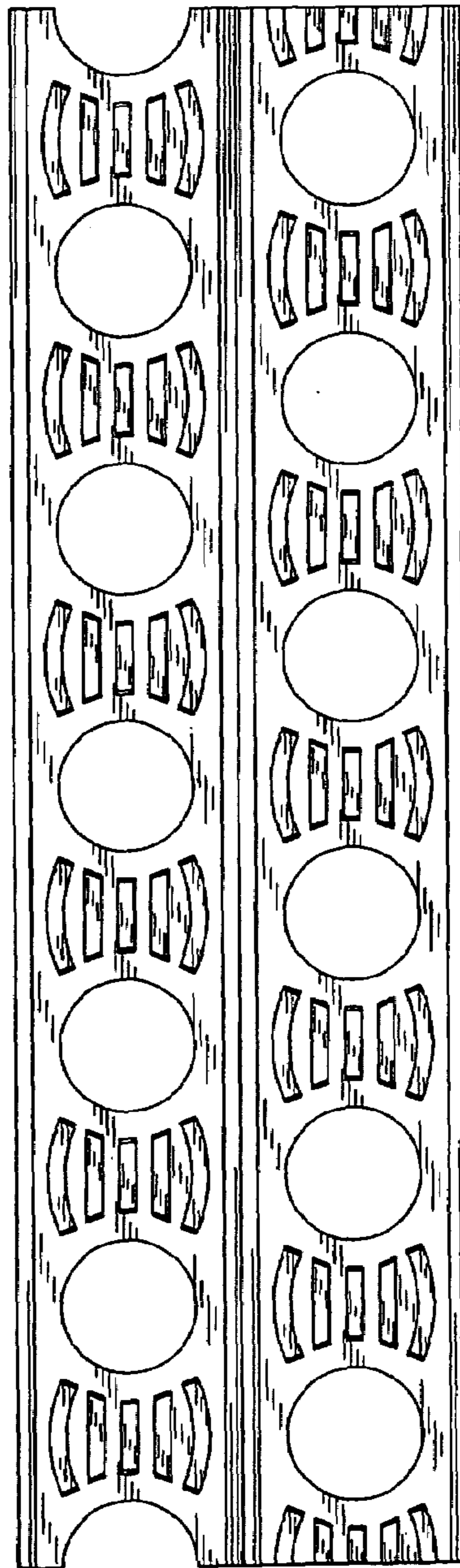


Fig.13



Fig.14



Fig.15



Fig.16



Fig.17

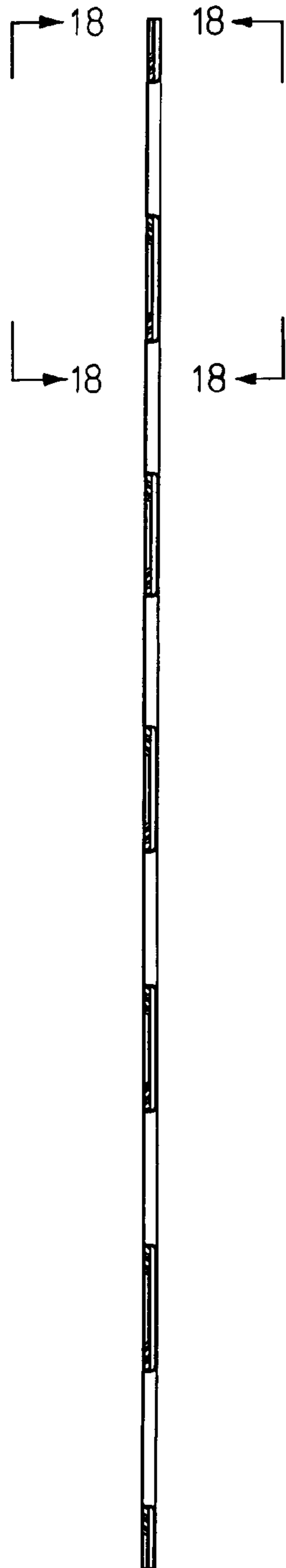


Fig.18

