



US00D551634S

(12) **United States Design Patent**
Sugawara

(10) **Patent No.:** **US D551,634 S**

(45) **Date of Patent:** **** Sep. 25, 2007**

(54) **WAFER-BOAT FOR HEAT-PROCESSING OF SEMICONDUCTOR WAFERS**

2003/0024888 A1* 2/2003 Payne et al. 211/41.18
2005/0145584 A1* 7/2005 Buckley et al. 211/41.18

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* cited by examiner

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Primary Examiner—Selina Sikder

(**) Term: **14 Years**

(74) *Attorney, Agent, or Firm*—Smith, Gambrell & Russell, LLP

(21) Appl. No.: **29/236,991**

(57) **CLAIM**

(22) Filed: **Aug. 25, 2005**

The ornamental design for a wafer-boat for heat-processing of semiconductor wafers, as shown and described.

(30) **Foreign Application Priority Data**

DESCRIPTION

Feb. 28, 2005 (JP) 2005-5771

(51) **LOC (8) Cl.** **13-03**

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

(58) **Field of Classification Search** D13/182;
118/715; 206/454, 711; 211/41.18; 414/935;
432/253

See application file for complete search history.

FIG. 1 is a perspective view of the wafer-boat for heat-processing of semiconductor wafers;

FIG. 2 is a front view thereof;

FIG. 3 is a back view thereof;

FIG. 4 is a top view thereof;

FIG. 5 is a bottom view thereof;

FIG. 6 is a left side view thereof. A right side view thereof is a mirror image thereto;

FIG. 7 is a reference drawing showing sectional views thereof;

FIG. 8 is a sectional view taken along line 8—8 in FIG. 7;

FIG. 9 is a sectional view taken along line 9—9 in FIG. 7;

FIG. 10 is a sectional view taken along line 10—10 in FIG. 7; and,

FIG. 11 is an enlarged sectional view taken along line 11—11 in FIG. 7.

(56) **References Cited**

U.S. PATENT DOCUMENTS

| | | | | | |
|--------------|------|---------|-----------------|-------|-----------|
| 5,219,079 | A * | 6/1993 | Nakamura | ..... | 211/41.18 |
| D361,752 | S * | 8/1995 | Yamaga | ..... | D13/182 |
| D404,371 | S * | 1/1999 | Shimazu | ..... | D13/182 |
| D409,158 | S * | 5/1999 | Shimazu | ..... | D13/182 |
| D411,176 | S * | 6/1999 | Shimazu | ..... | D13/182 |
| 6,065,615 | A * | 5/2000 | Uchiyama et al. | ..... | 211/41.18 |
| D429,224 | S * | 8/2000 | Ishii | ..... | D13/182 |
| 6,488,497 | B1 * | 12/2002 | Buckley et al. | ..... | 432/258 |
| 6,796,439 | B2 * | 9/2004 | Araki | ..... | 211/41.18 |
| 2002/0092815 | A1 * | 7/2002 | Kim et al. | ..... | 211/41.18 |
| 2003/0010730 | A1 * | 1/2003 | Buckley | ..... | 211/41.18 |

1 Claim, 10 Drawing Sheets

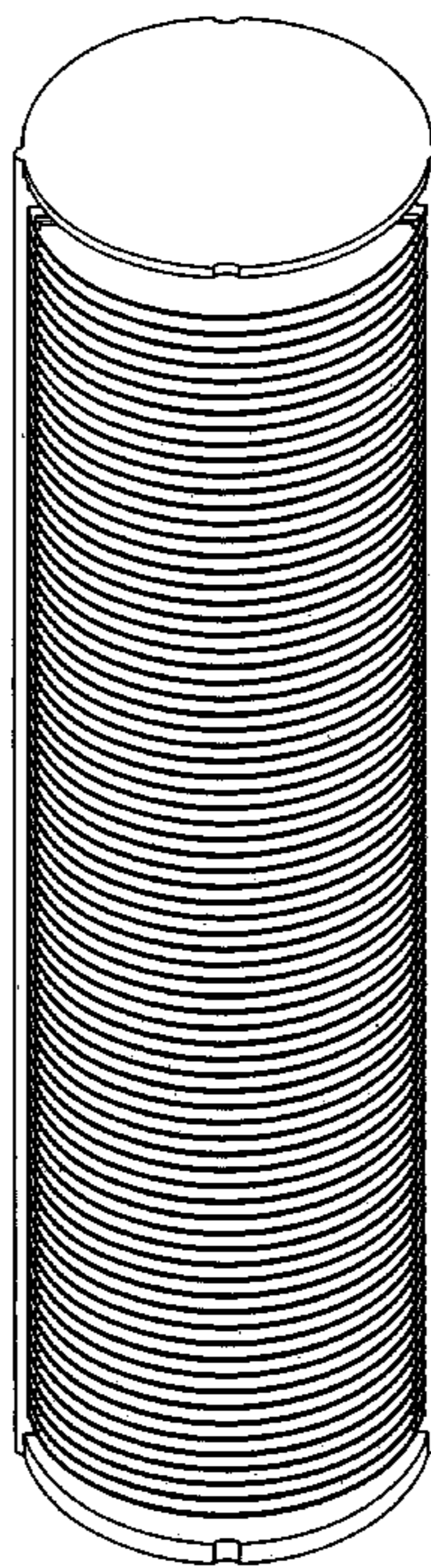


FIG. 1

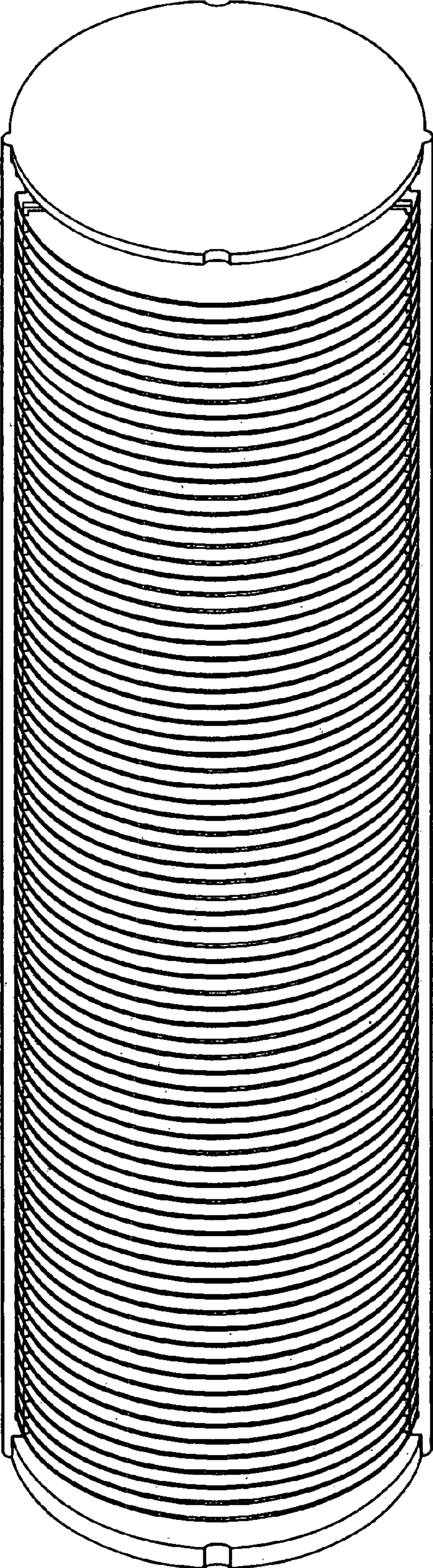


FIG. 2

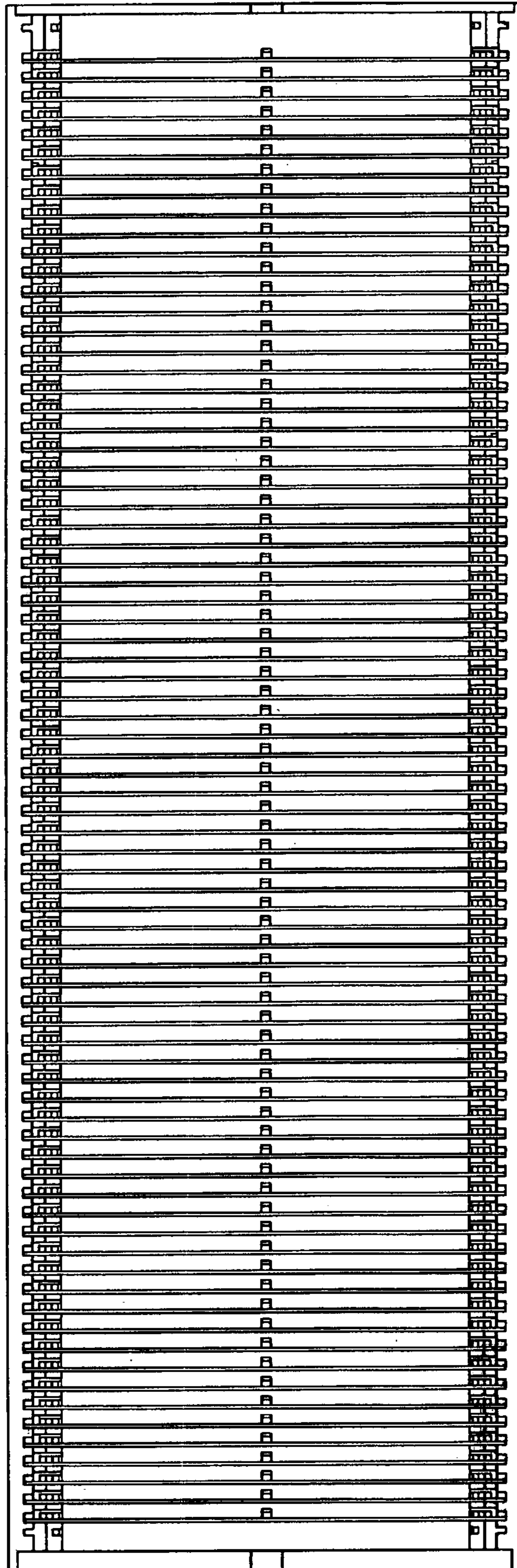


FIG. 3

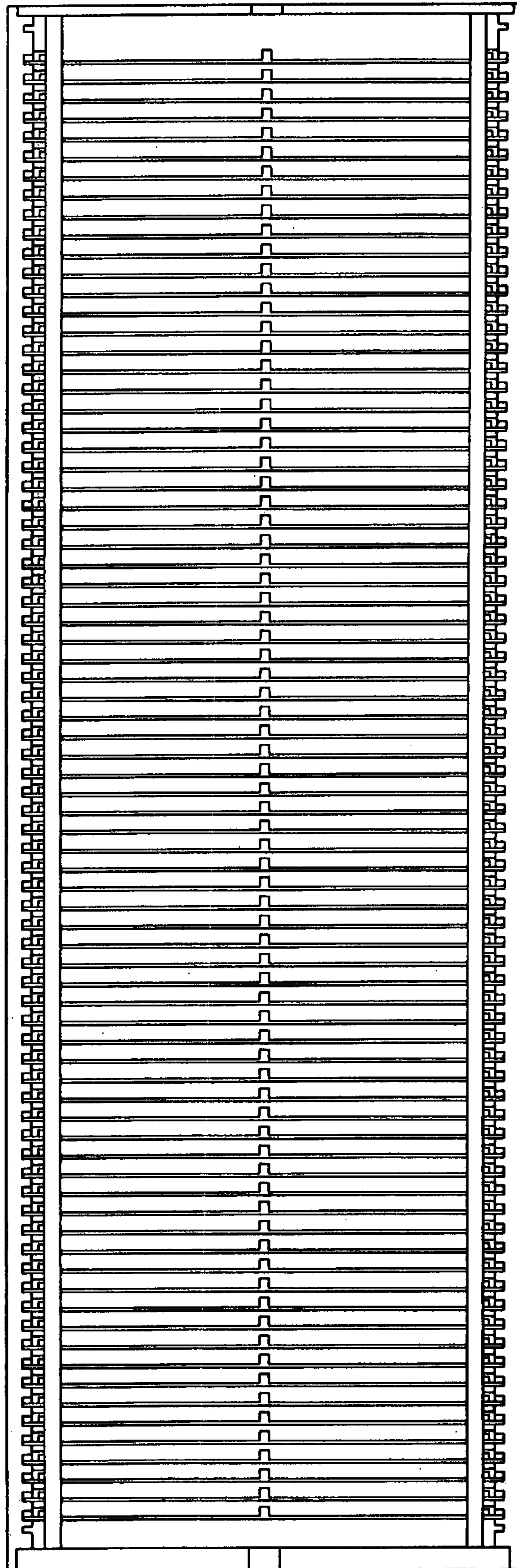


FIG. 4

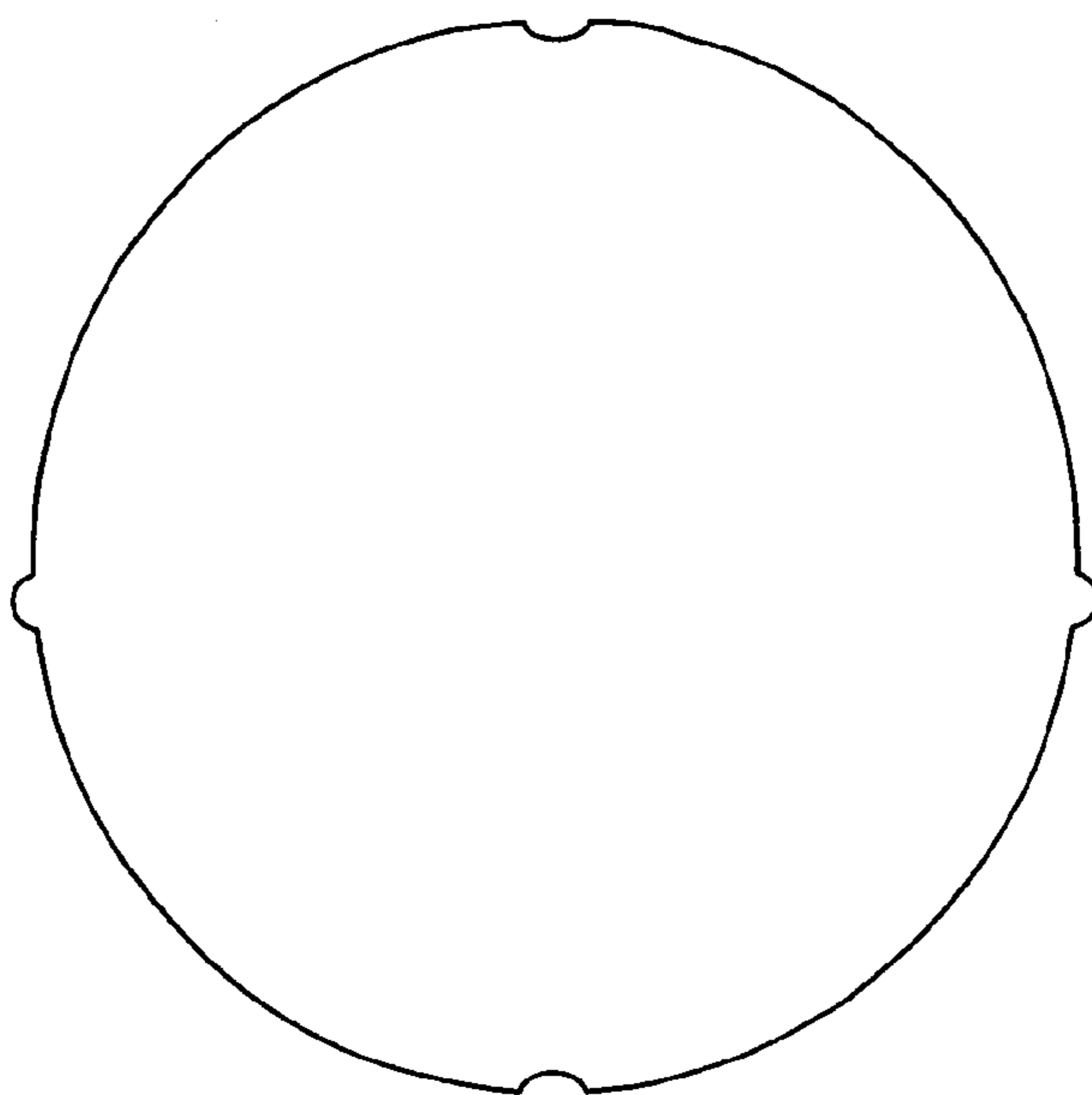


FIG. 5

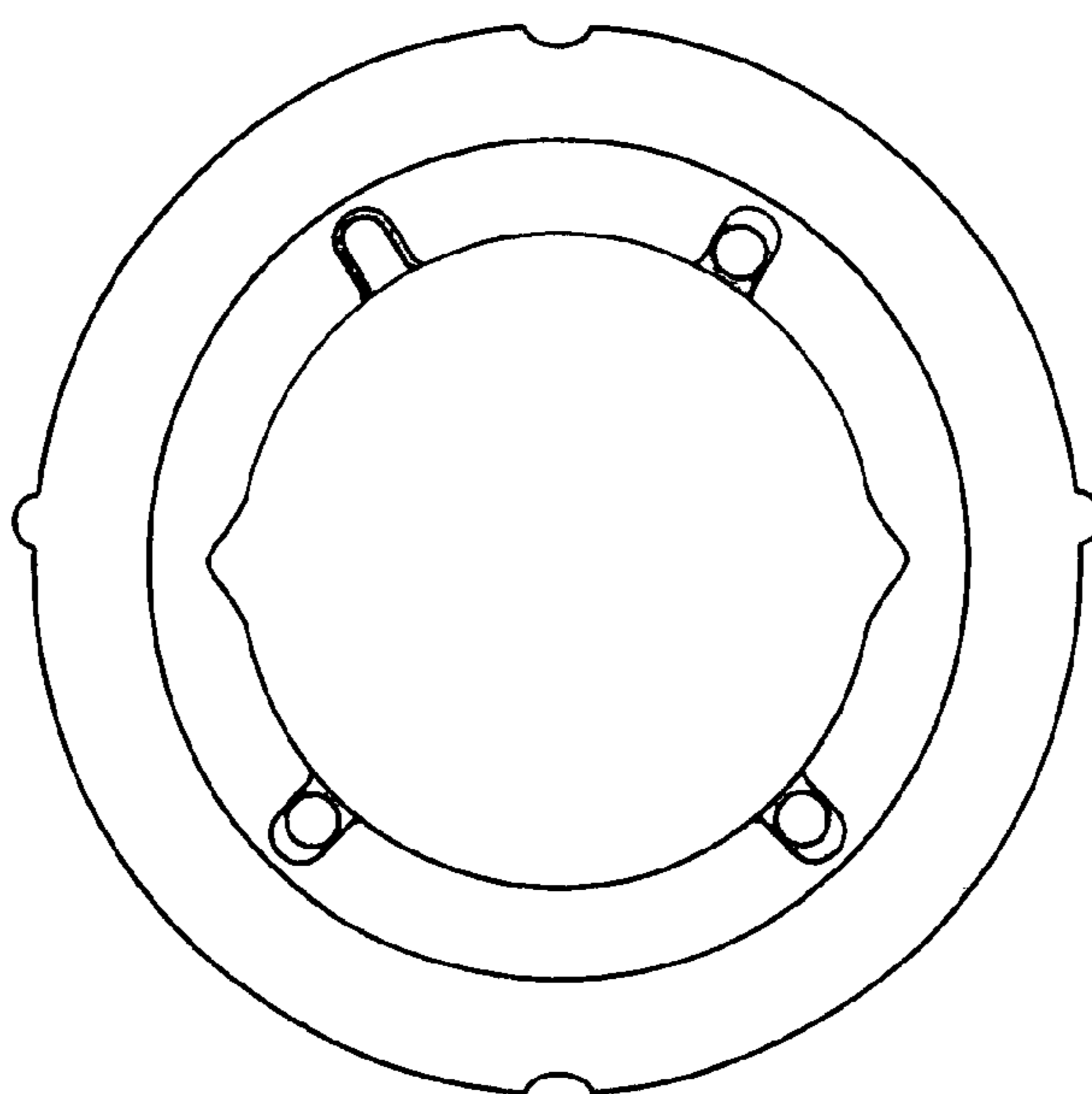


FIG. 6

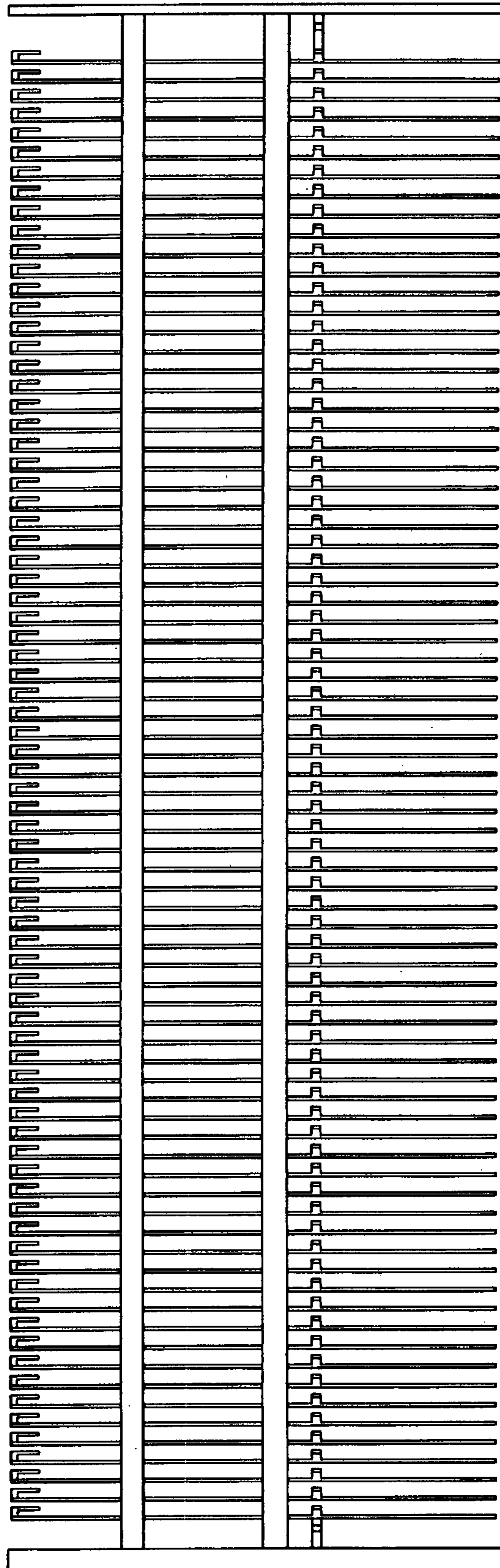


FIG. 7

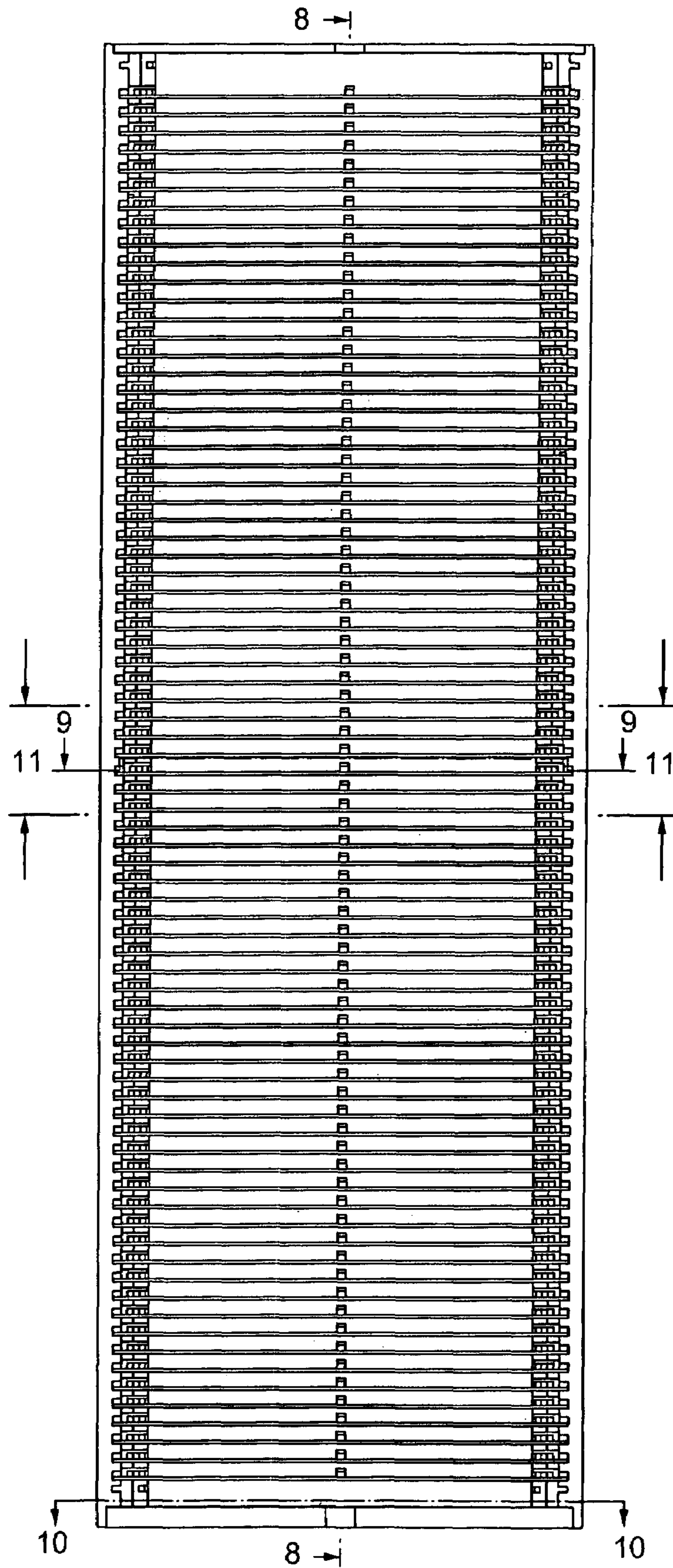
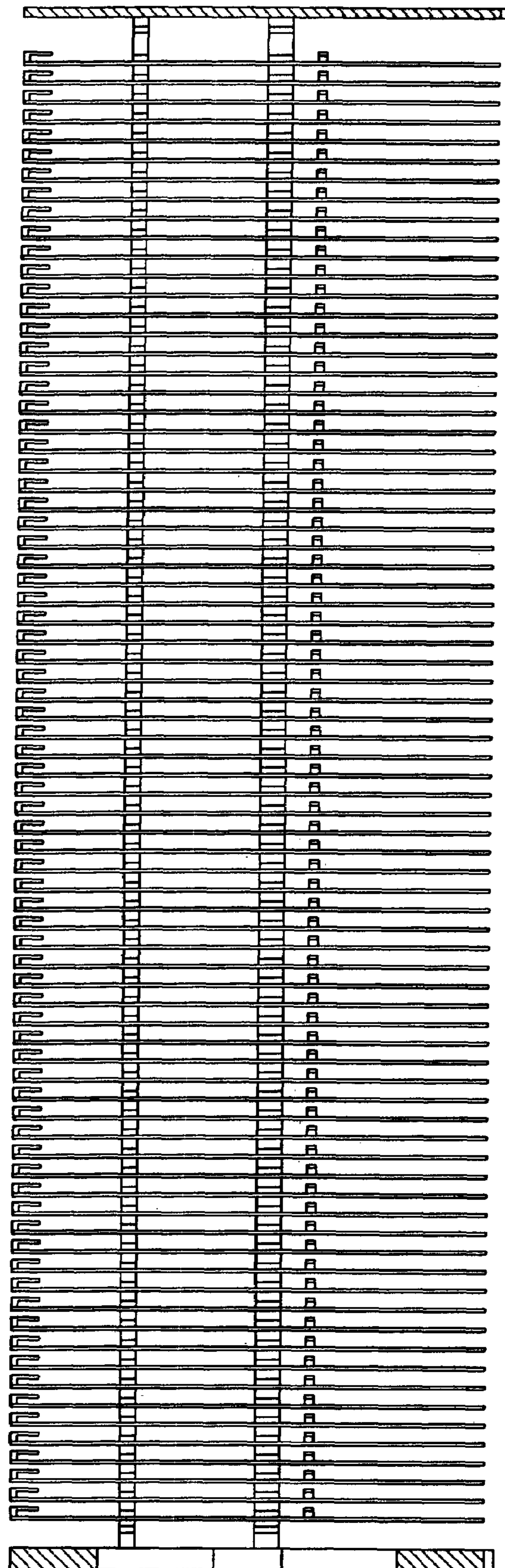


FIG. 8



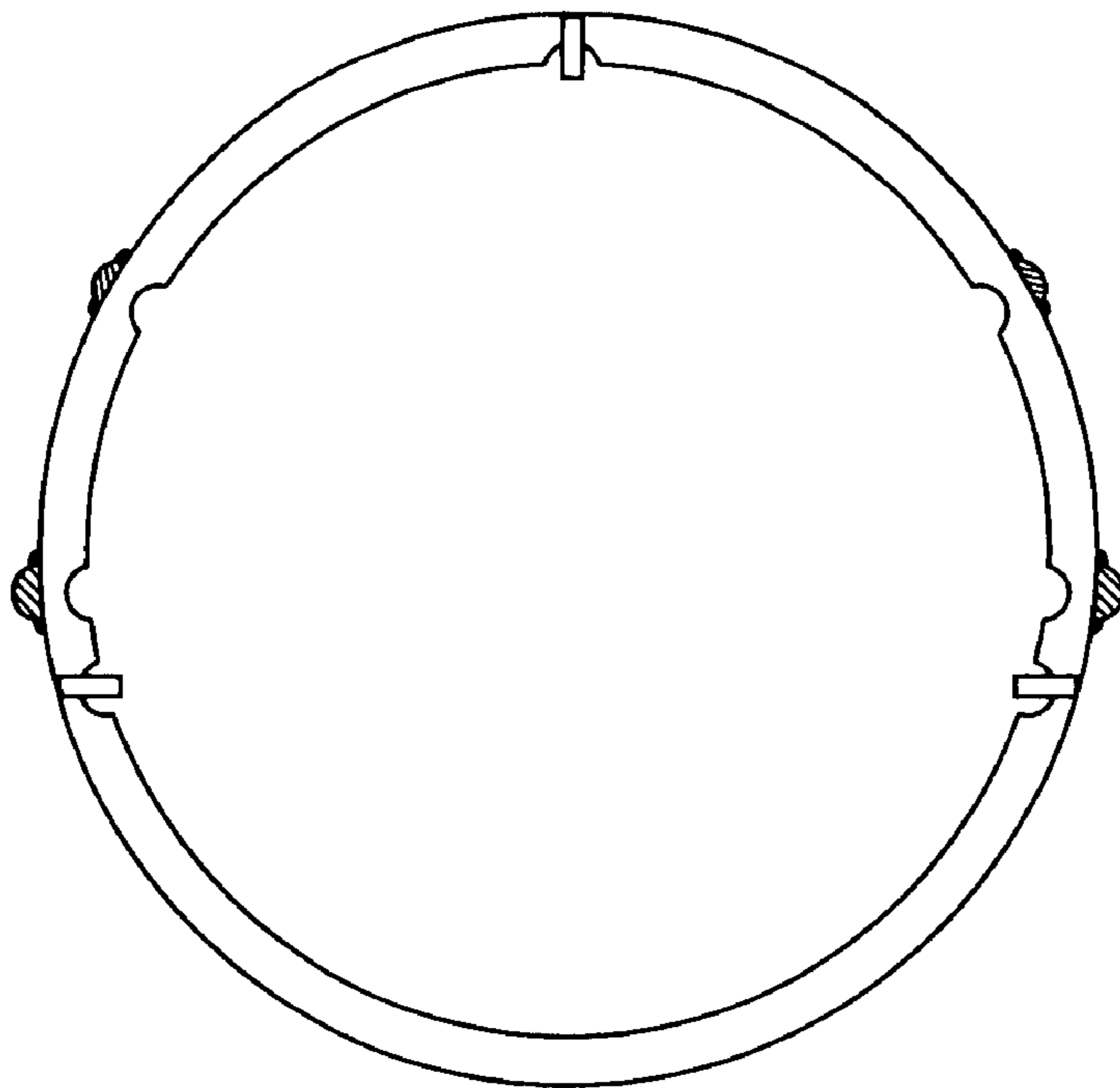


FIG. 9

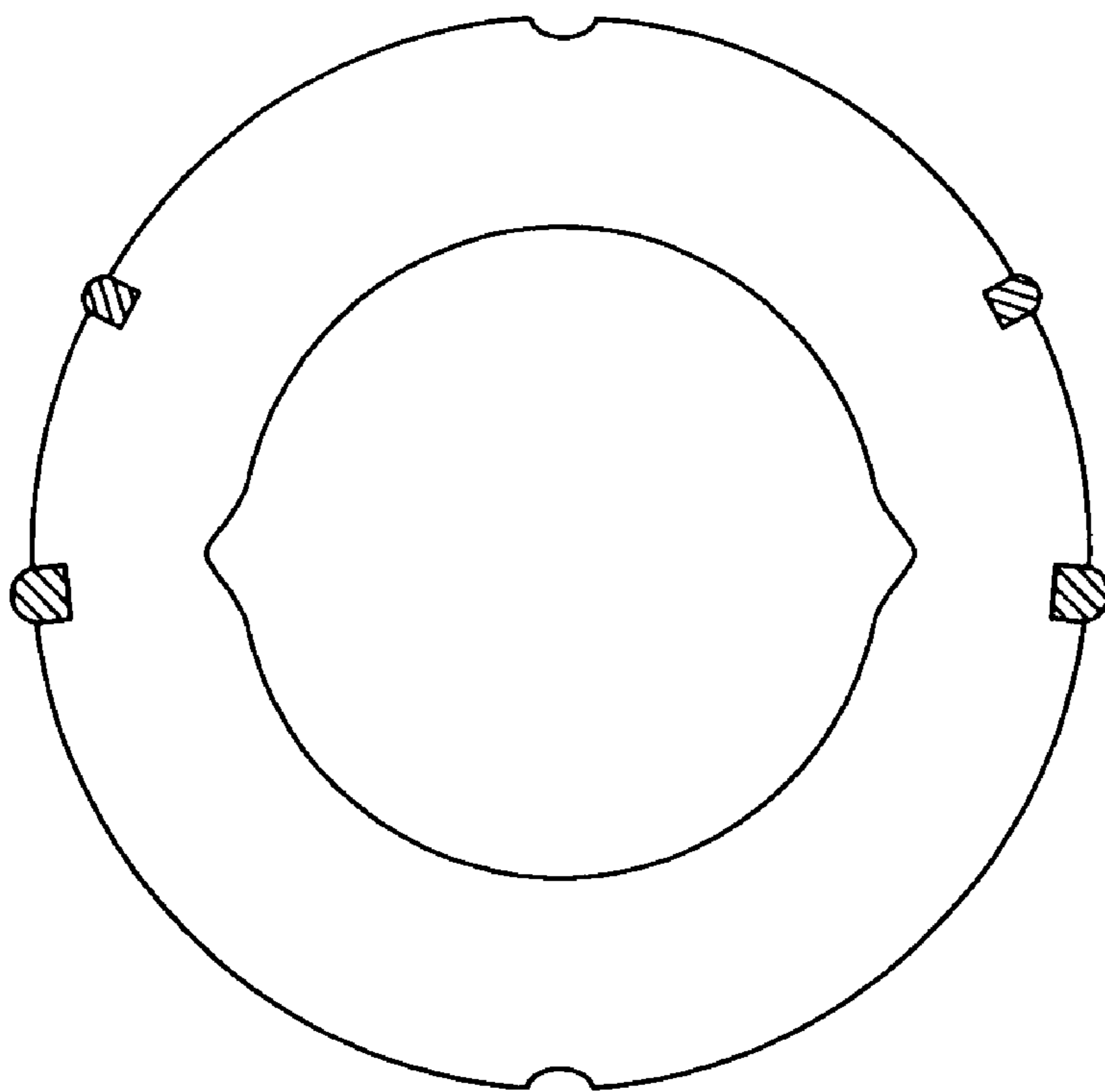


FIG. 10

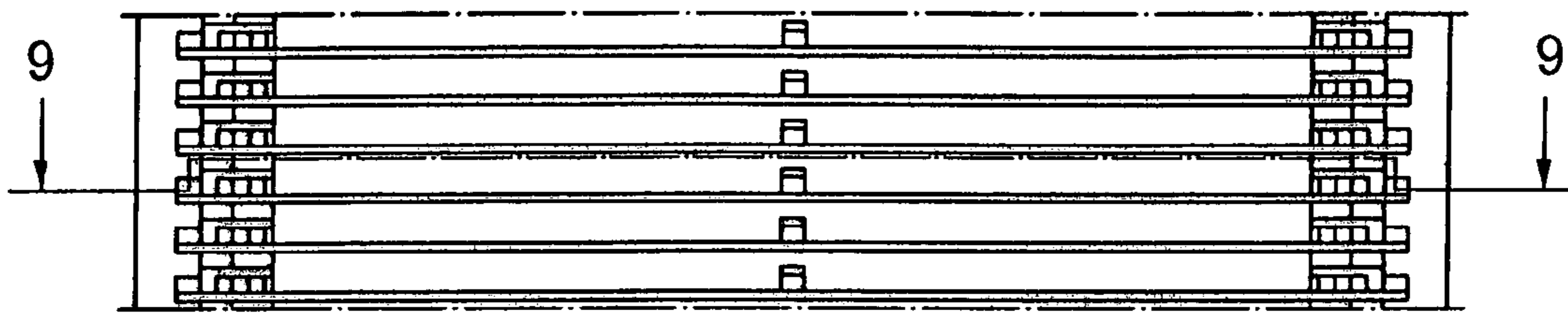


FIG. 11