



US00D814431S

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

(10) **Patent No.:** **US D814,431 S**
(45) **Date of Patent:** **** Apr. 3, 2018**

(54) **POWER SEMICONDUCTOR DEVICE**

(71) Applicant: **mitsubishi electric corporation**, Tokyo (JP)

(72) Inventors: **Manabu Matsumoto**, Tokyo (JP);
Yoshitaka Otsubo, Tokyo (JP);
Hiroyuki Masumoto, Tokyo (JP)

(73) Assignee: **Mitsubishi Electric Corporation**,
Tokyo (JP)

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

(21) Appl. No.: **29/545,425**

(22) Filed: **Nov. 12, 2015**

(30) **Foreign Application Priority Data**

May 15, 2015 (JP) 2015-010577

(51) **LOC (11) Cl.** **13-03**

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

(58) **Field of Classification Search**
USPC D13/182, 103, 110, 118, 123, 124, 133,
D13/145-147, 149, 152, 154, 173, 175,
D13/184, 199

CPC H01L 23/04; H01L 23/055; H01L 23/48;
H01L 23/552; H01L 25/18; H01L 25/50;
H01L 23/24; H01R 12/585; H05K 5/02;
H05K 7/00; H05K 7/14; H05K 7/1427;
H05K 7/1435; H05K 5/00

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D357,672 S * 4/1995 Terasawa D13/182
D469,059 S * 1/2003 Ando D13/110
D556,686 S * 12/2007 Matsuo D13/110
D587,662 S * 3/2009 Soutome D13/182
D705,184 S * 5/2014 Takahashi D13/182

D762,185 S * 7/2016 Muehlensiep D13/182
9,418,975 B1 * 8/2016 Yoneyama H01L 25/18
D767,516 S * 9/2016 Yoneyama D13/182
D773,412 S * 12/2016 Yoneyama D13/182
D773,413 S * 12/2016 Yoneyama D13/182
9,627,284 B2 * 4/2017 Tsukamoto H01L 23/552
9,660,356 B1 * 5/2017 Nakamura H01R 4/30
D790,491 S * 6/2017 Hayashida D13/182
D798,249 S * 9/2017 Vinciarelli D13/182
D799,439 S * 10/2017 Hayashiguchi D13/182

(Continued)

OTHER PUBLICATIONS

Marsh Electronics Inc, Power semiconductors, no date, [online],
[site visited May 25, 2017]. Available from Internet, <URL: https://
www.marshelectronics.com/semiconductors.php>.*

Primary Examiner — Thomas Johannes

Assistant Examiner — Shawn T Gingrich

(74) *Attorney, Agent, or Firm* — Studebaker & Brackett
PC

(57) **CLAIM**

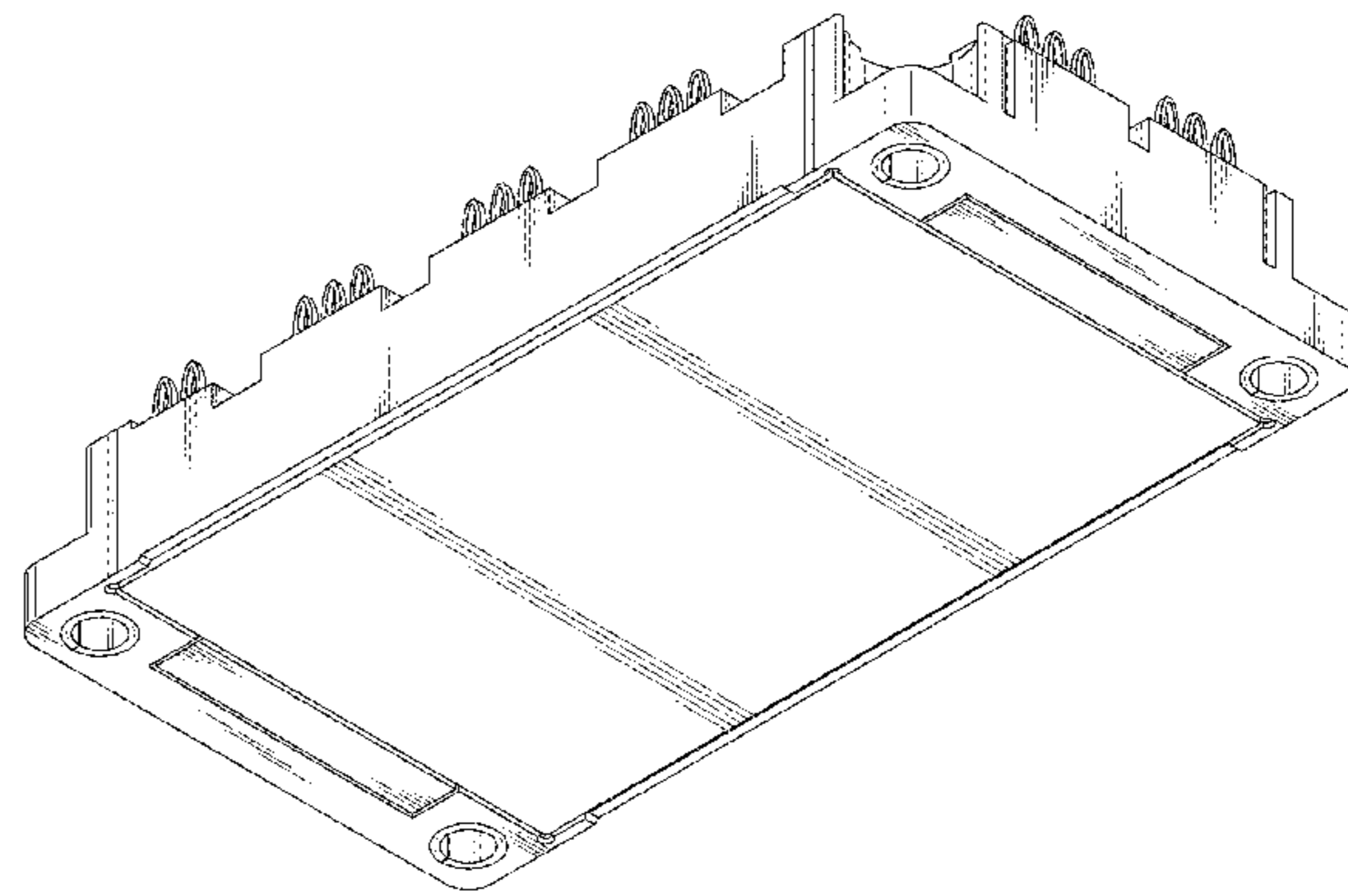
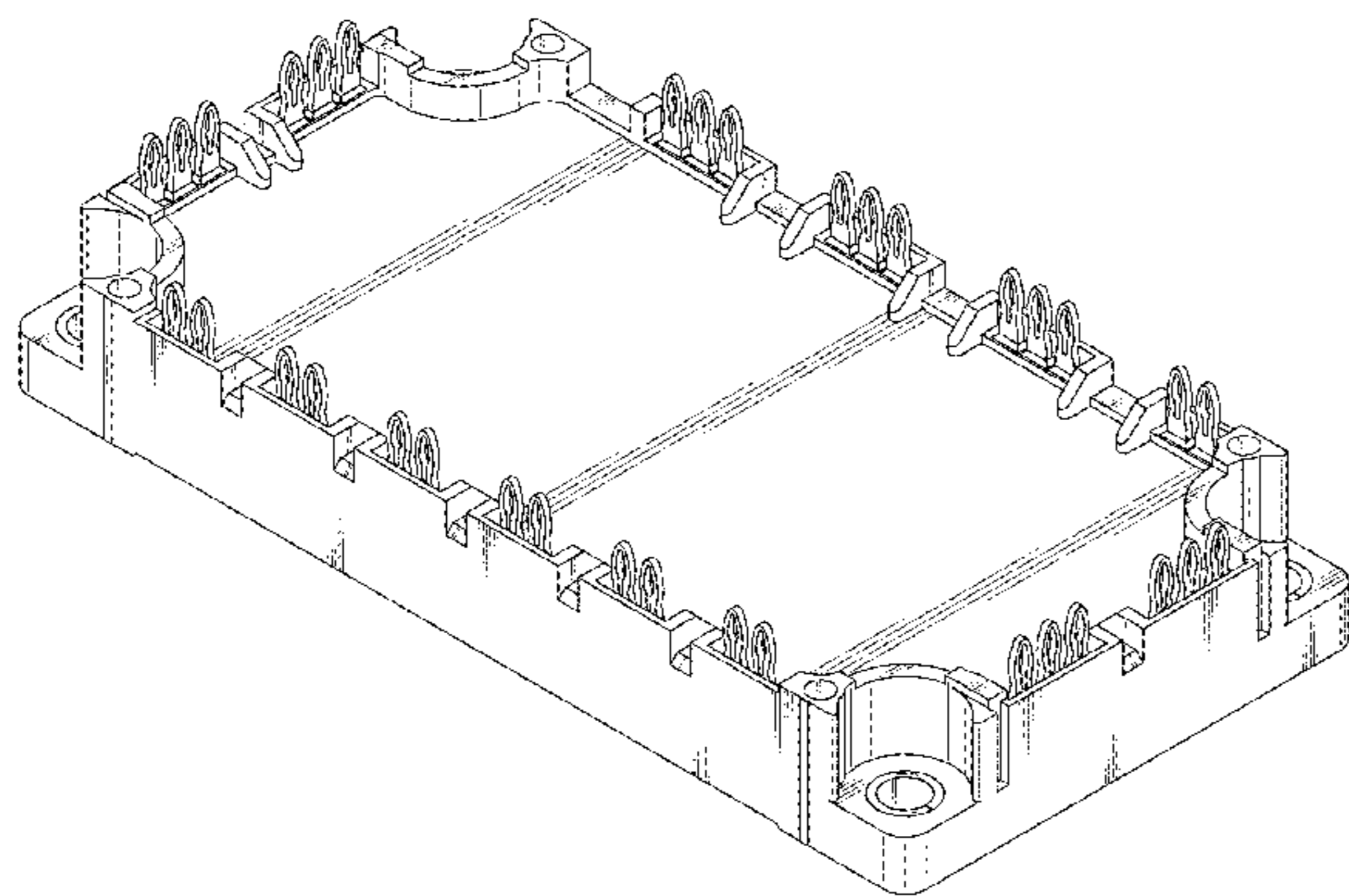
The ornamental design for a power semiconductor device, as
shown and described.

DESCRIPTION

FIG. 1 is a front, top and right side perspective view of a
power semiconductor device, showing our new design;
FIG. 2 is a rear, bottom and left side perspective view
thereof;
FIG. 3 is a front view thereof;
FIG. 4 is a rear view thereof;
FIG. 5 is a top view thereof;
FIG. 6 is a bottom view thereof;
FIG. 7 is a left side view thereof; and,
FIG. 8 is right side view thereof.

The broken line portion of the figure drawings is included to
show portions of the article that form no part of the claimed
design.

1 Claim, 5 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

2004/0227231 A1* 11/2004 Maly H01L 25/072
257/724
2008/0142948 A1* 6/2008 Matsumoto H01R 4/04
257/690
2016/0190915 A1* 6/2016 Horiuchi H01L 29/7393
363/132
2016/0276234 A1* 9/2016 Sugiyama H01L 23/053
2016/0284618 A1* 9/2016 Tsukamoto H01L 23/552
2016/0336245 A1* 11/2016 Egusa H01R 12/585

* cited by examiner

Fig. 1

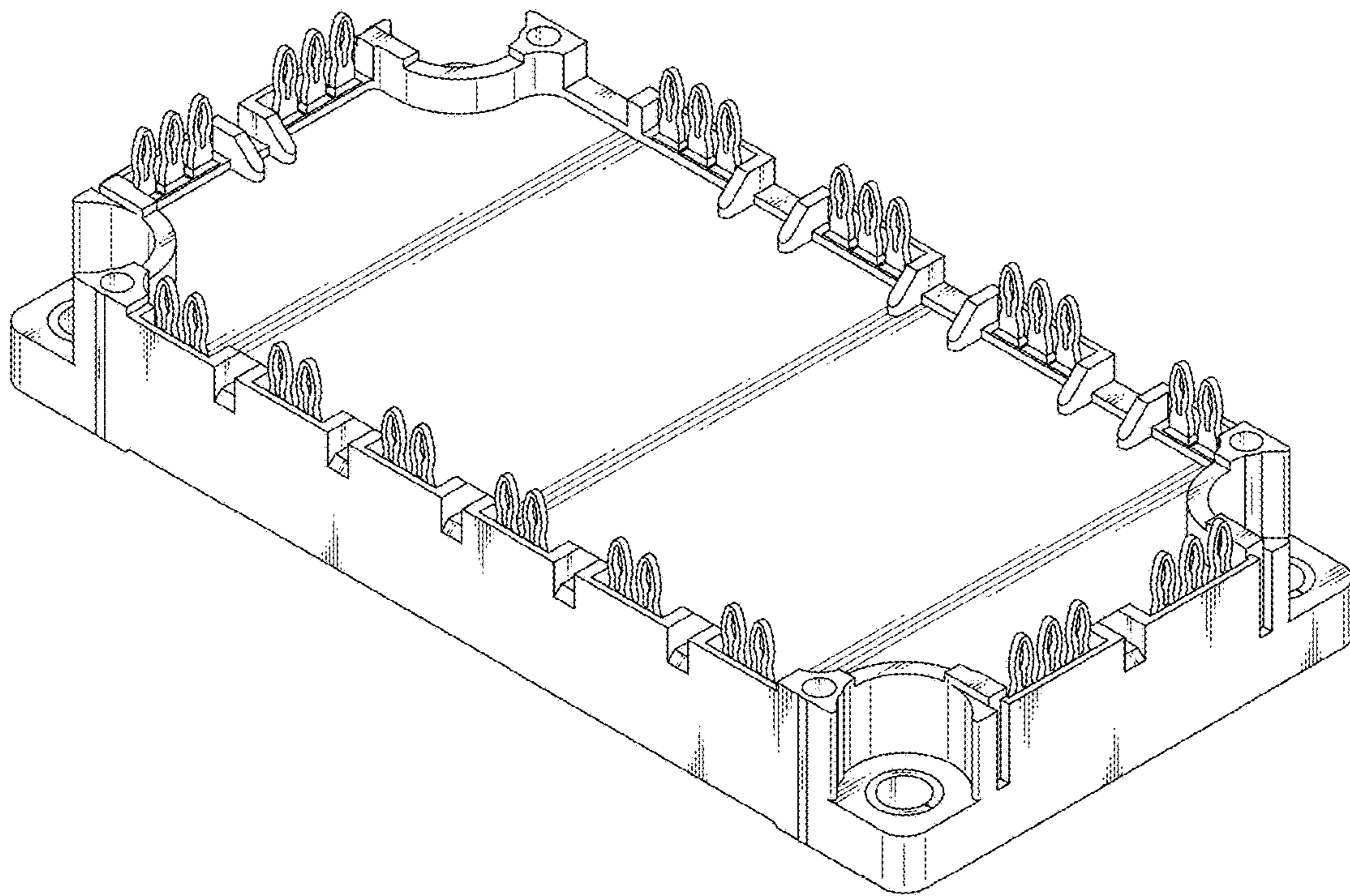


Fig. 2

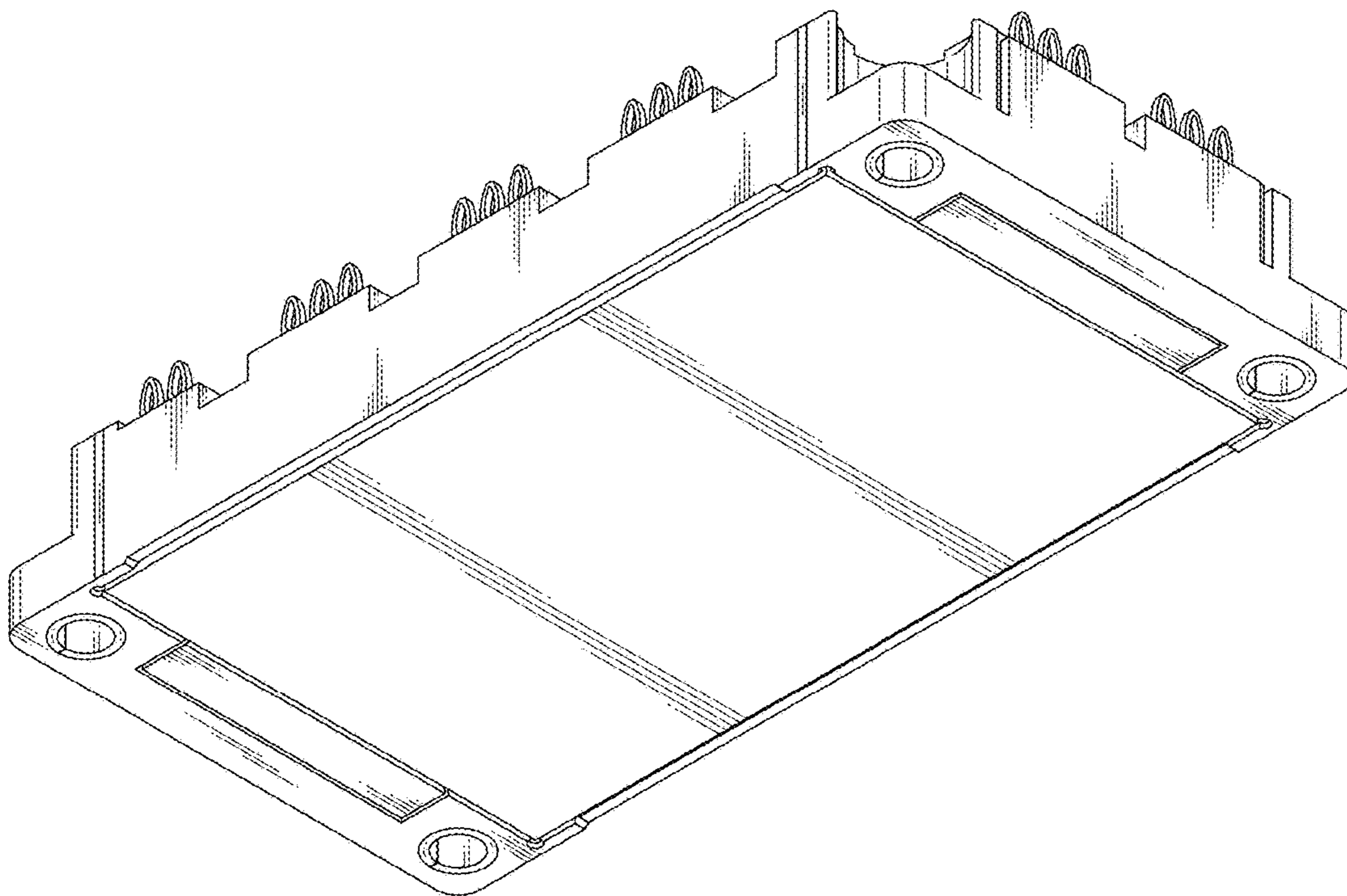


Fig. 3

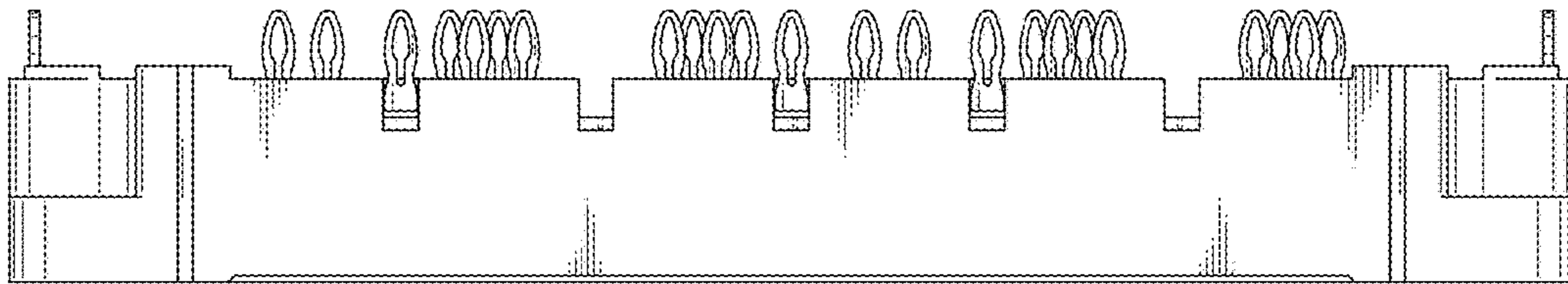


Fig. 4

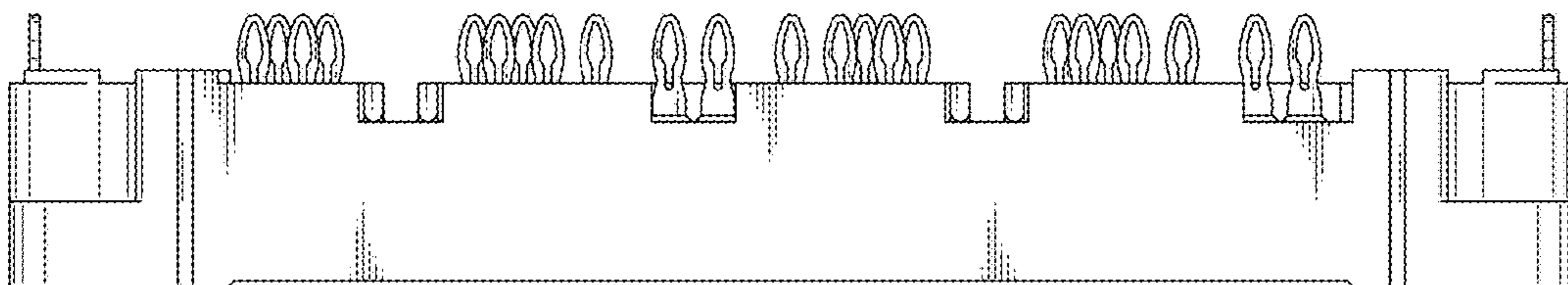


Fig. 5

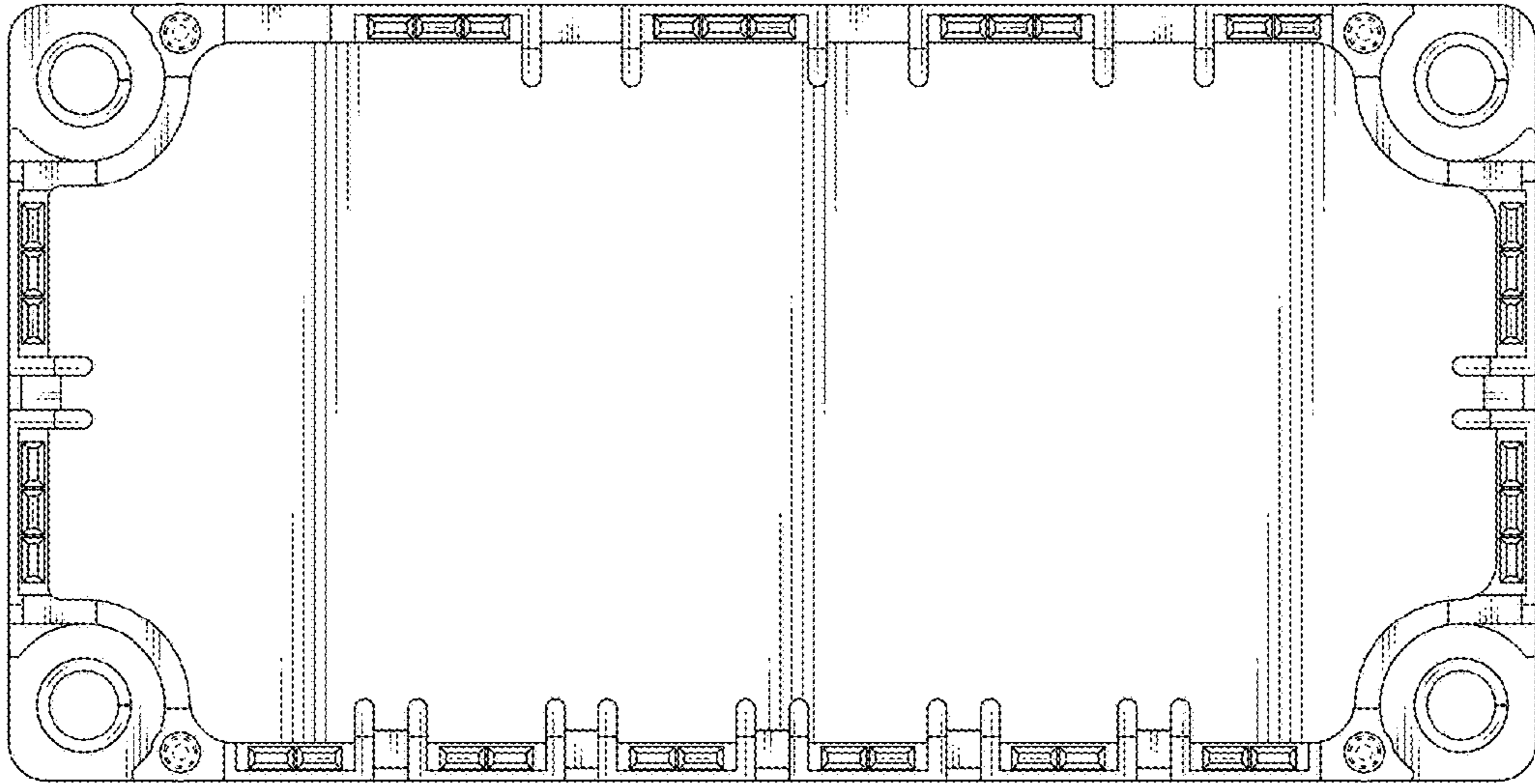


Fig. 6

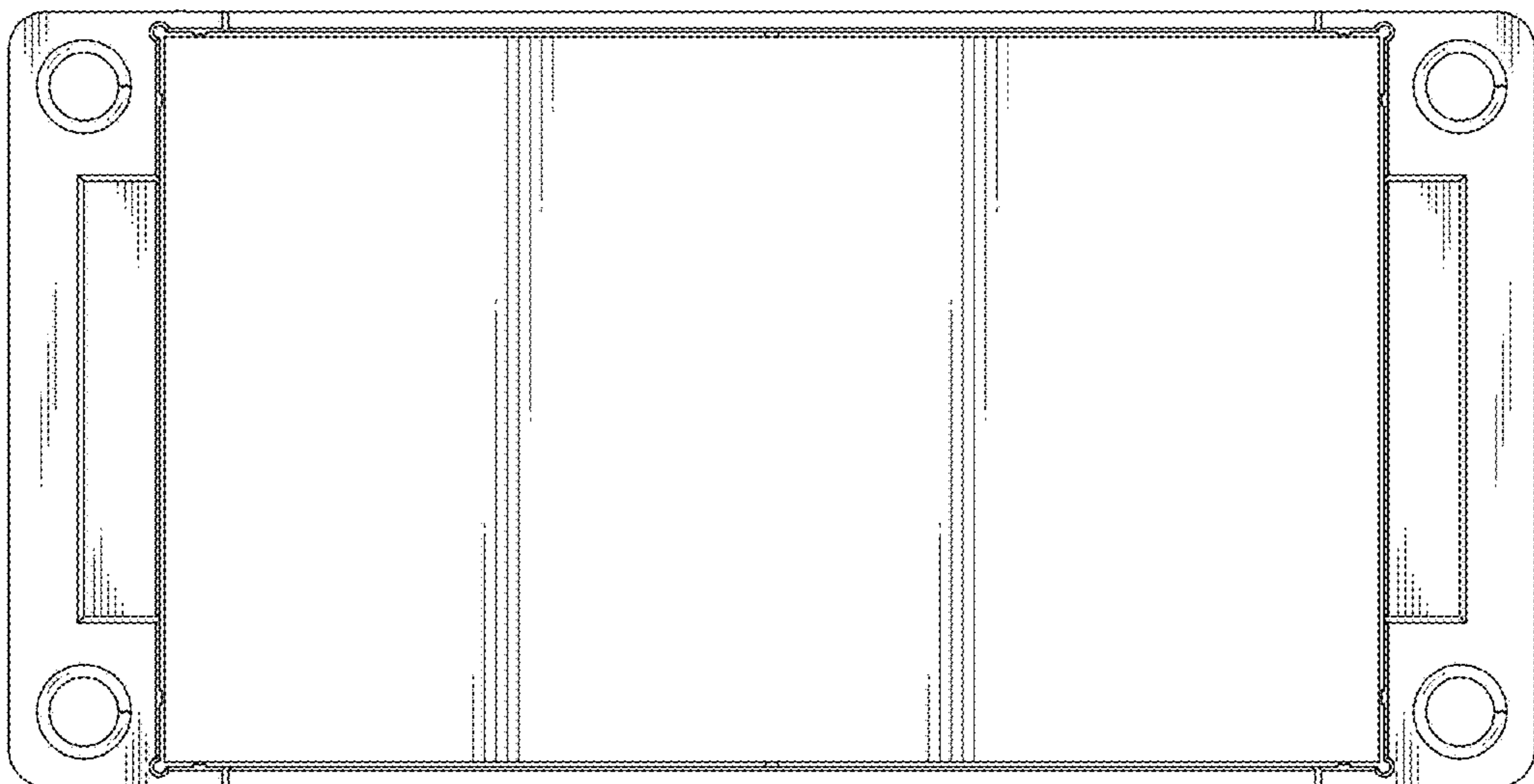


Fig. 7

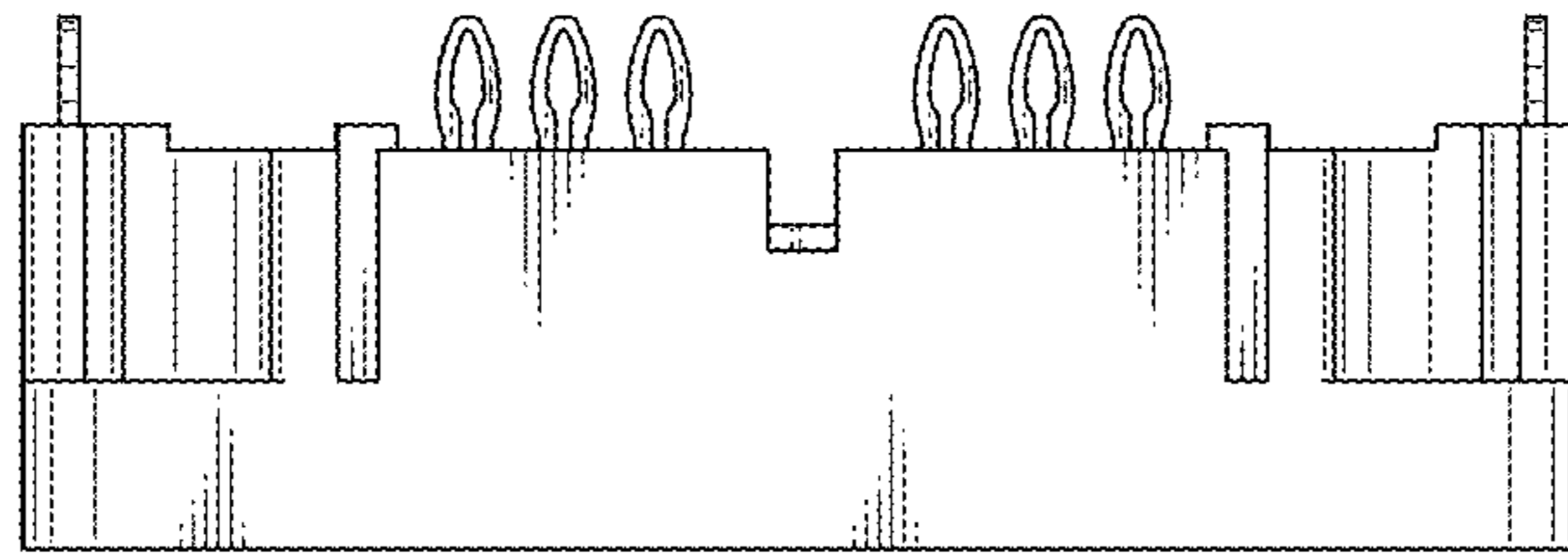


Fig. 8

