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Taniguchi et al.

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(54) **SIGNAL TRANSFER MODULE FOR TOOL CHANGER**

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

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(30) **Foreign Application Priority Data**

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(51) **LOC (10) Cl.** **15-09**

(52) **U.S. Cl.**
USPC **D15/138**

(58) **Field of Classification Search**
USPC D8/70, 71, 354; D15/124, 126, 138
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 4,917,619 A * 4/1990 Nishiwaki B23K 9/323
439/191
- 4,995,493 A * 2/1991 Cotsman B25J 15/0491
192/150
- 5,044,063 A * 9/1991 Voellmer B23Q 3/15553
294/86.4
- D367,661 S * 3/1996 Few D15/150
- D379,820 S * 6/1997 Few D15/5
- 5,779,609 A * 7/1998 Cullen B23K 9/287
219/98
- 5,809,639 A * 9/1998 Alvite H05K 13/003
29/740

- 5,993,365 A * 11/1999 Stagnitto B25J 15/0491
414/736
- 6,491,612 B1 * 12/2002 Kurup B23K 9/20
285/268
- 6,533,594 B1 * 3/2003 Kurup B23K 11/362
439/191
- D500,510 S * 1/2005 Annis D15/199
- 2011/0277603 A1 * 11/2011 Uchimura B23B 5/08
82/159
- 2012/0116570 A1 * 5/2012 Nishioka B23Q 3/15706
700/179
- 2014/0256527 A1 * 9/2014 Liu B23Q 3/15706
483/54
- 2015/0072845 A1 * 3/2015 Murota B23Q 3/15706
483/7
- 2016/0052146 A1 * 2/2016 Berrocal B23B 31/30
483/1

FOREIGN PATENT DOCUMENTS

JP 2012-250327 A 12/2012

* cited by examiner

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(57) **CLAIM**

The ornamental design for a signal transfer module for tool changer, as shown and described.

DESCRIPTION

FIG. 1 is a front perspective view of a signal transfer module for a tool changer showing our new design; FIG. 2 is a left side elevational view thereof; FIG. 3 is a right side elevational view thereof; FIG. 4 is a top view thereof; FIG. 5 is a bottom view thereof; FIG. 6 is a front view thereof; and, FIG. 7 is a rear view thereof.

1 Claim, 7 Drawing Sheets

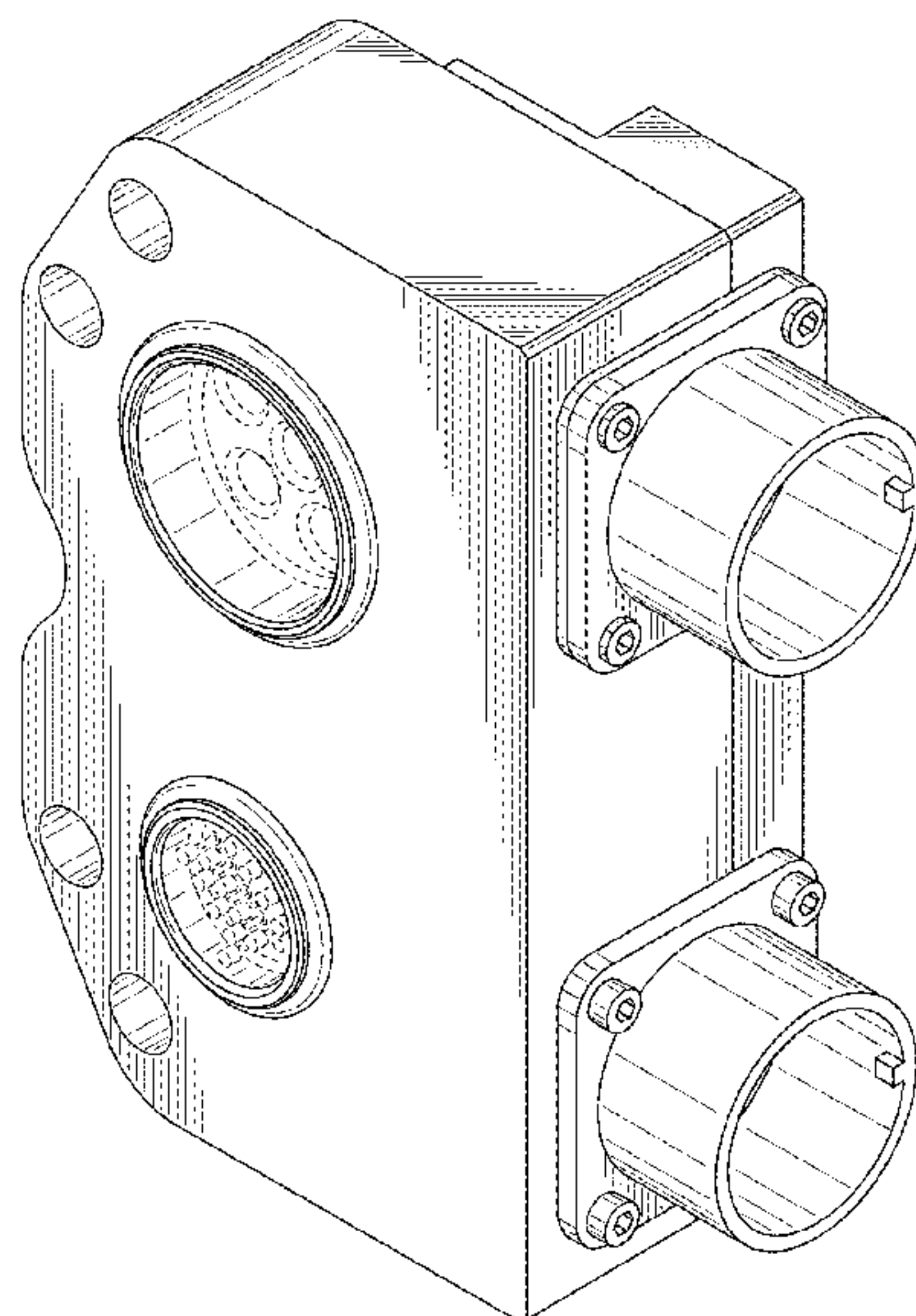


FIG. 1

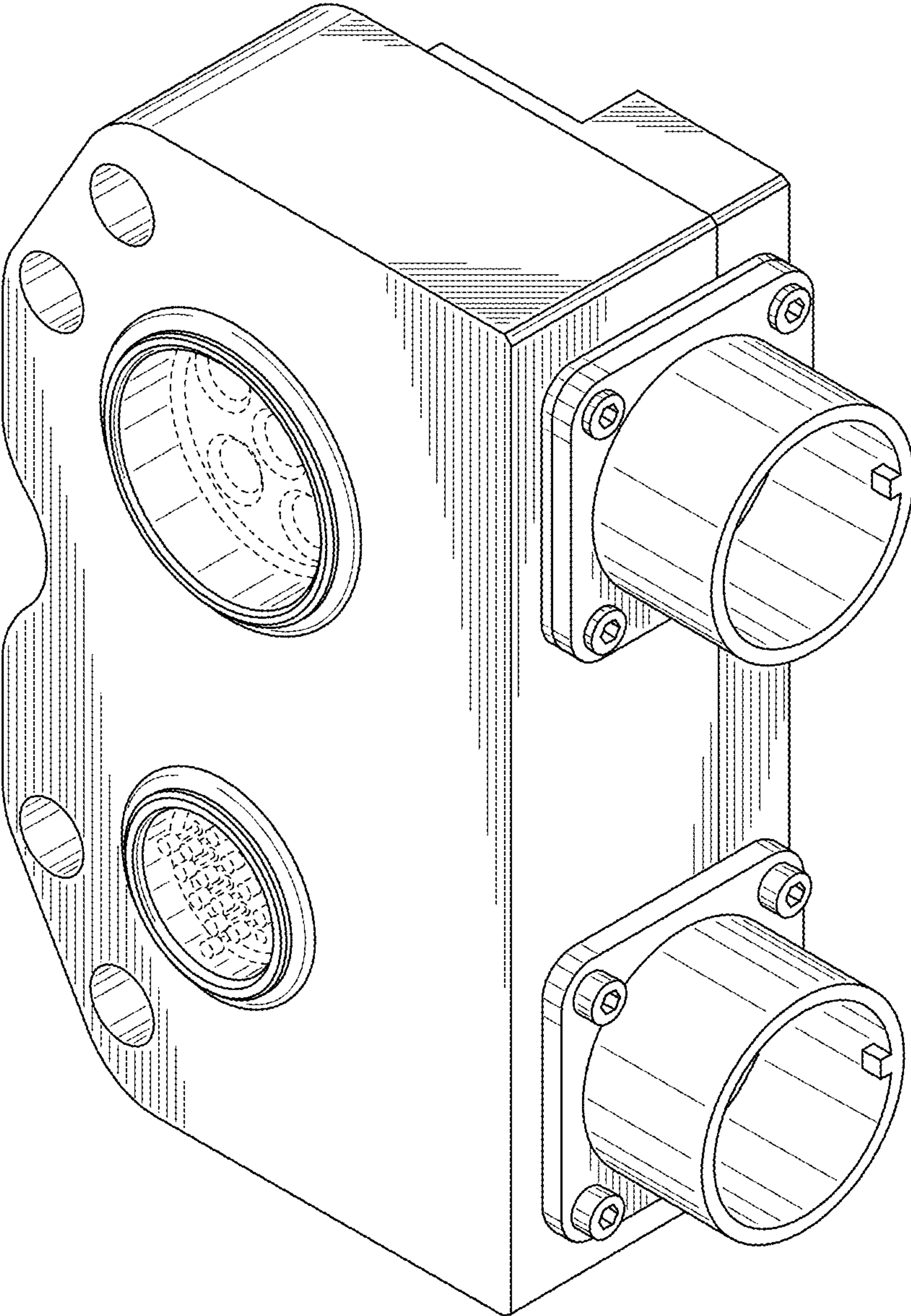


FIG. 2

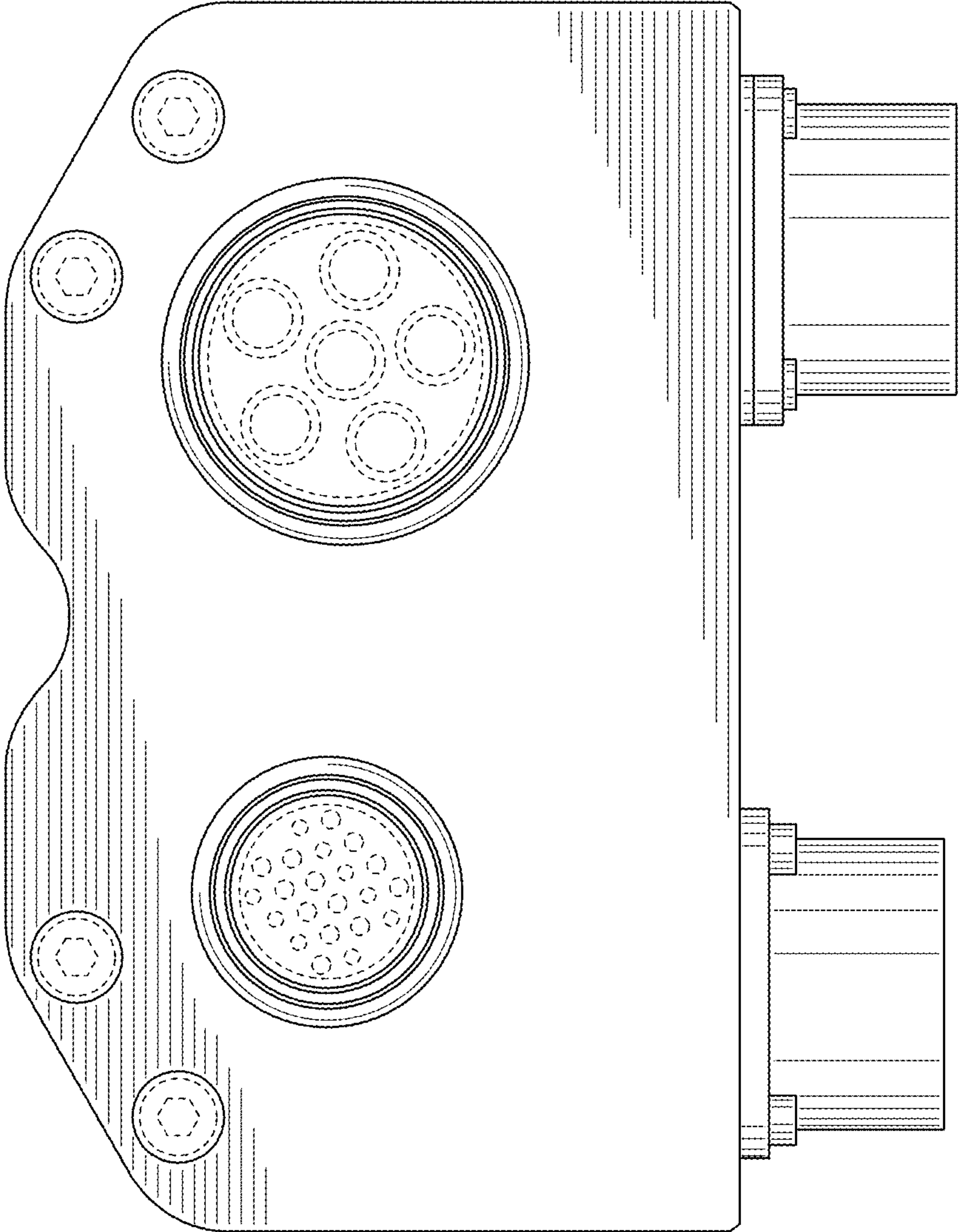


FIG. 3

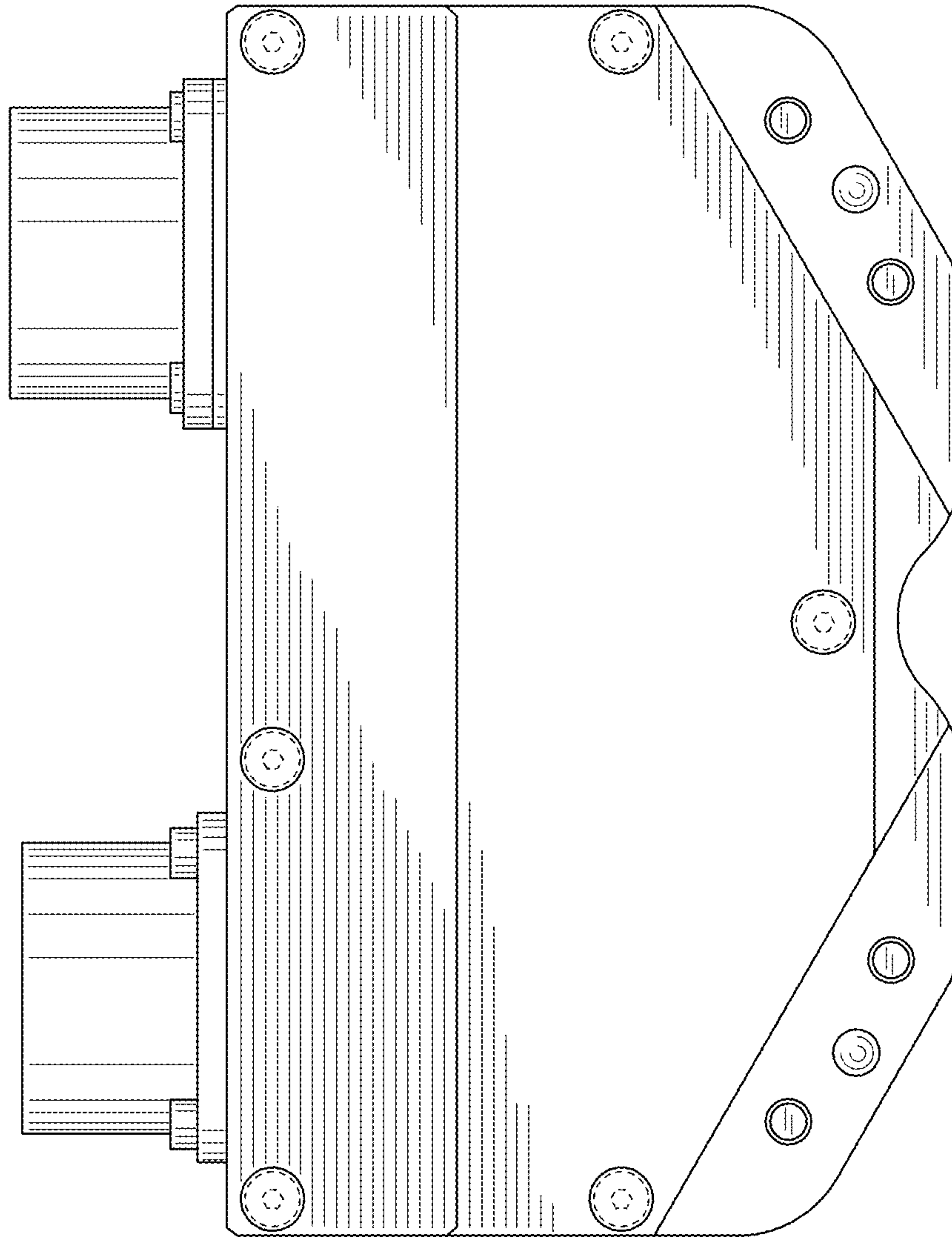


FIG. 4

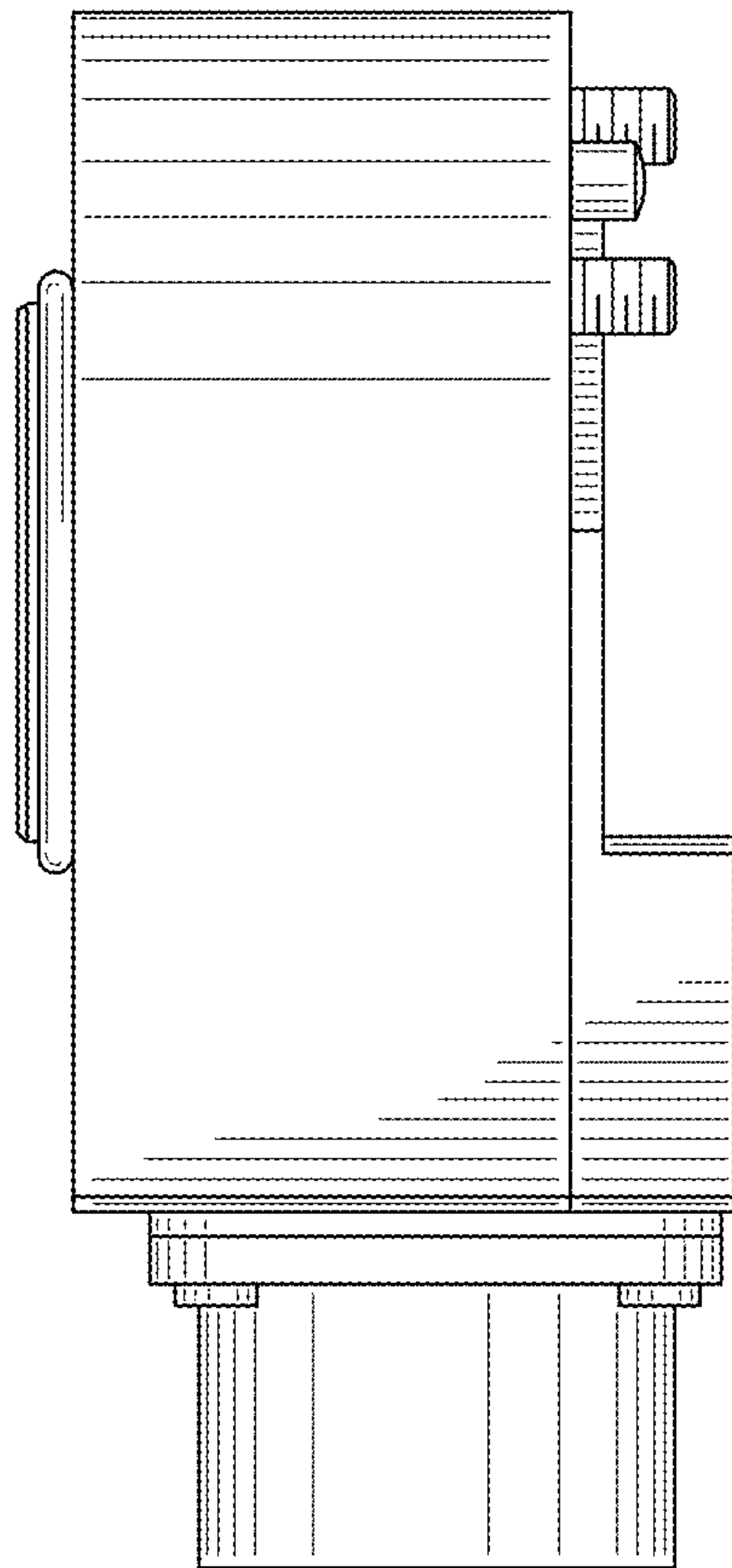


FIG. 5

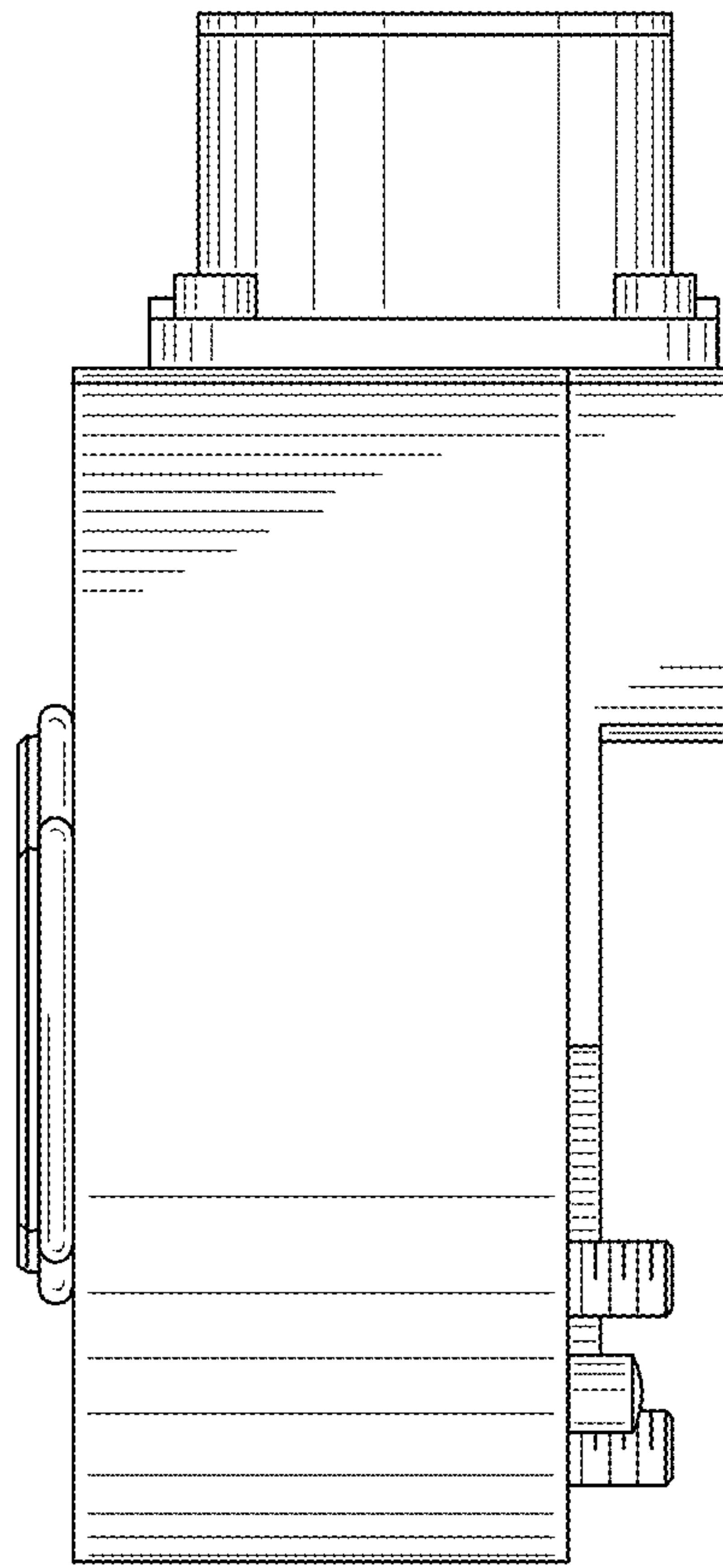


FIG. 6

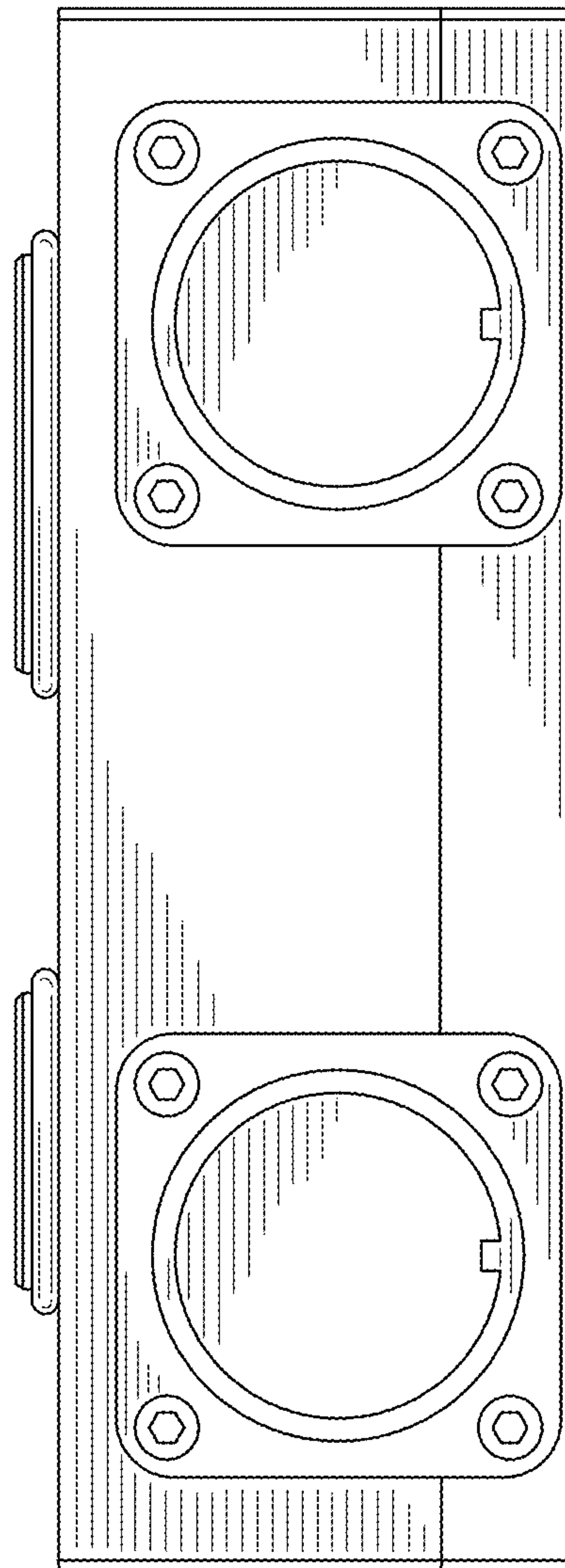


FIG. 7

