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

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(54) **ELECTRIC CYLINDER**

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(\*) Notice: This patent is subject to a terminal disclaimer.

(\*\*) 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 ..... **D15/143**

(58) **Field of Classification Search**

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D13/184; D15/1-5, 7, 9, 143, 148, 149;  
D23/231, 232, 25

CPC ..... F16H 25/2018; F16H 25/2204; F16H  
2025/2031; F16H 2025/2053; F16H  
2025/2062; F16H 2025/2068; F16H  
2025/2081

See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

D271,976 S \* 12/1983 Brown ..... D15/7  
D384,674 S \* 10/1997 Grolle ..... D15/7  
D540,355 S \* 4/2007 Nagai ..... D15/143  
D542,314 S \* 5/2007 Nagai ..... D15/143

(Continued)

**FOREIGN PATENT DOCUMENTS**

DE 102010044793 A1 \* 3/2012 ..... E05B 17/0025  
TW 149849 10/2012  
WO WO 2015049930 A1 \* 4/2015 ..... B21D 5/02

**OTHER PUBLICATIONS**

Servo Cylinder Lineup, posted on sinto.co.jp, copyrighted 2012, no production date given, [online], [site visited May 23, 2017], Available from Internet, <URL: [http://www.sinto.co.jp/en/product/mechatronics/servo\\_cylinder/lineup/index.html](http://www.sinto.co.jp/en/product/mechatronics/servo_cylinder/lineup/index.html)>.\*

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(57) **CLAIM**

The ornamental design for an electric cylinder, as shown and described.

**DESCRIPTION**

FIG. 1 is a top perspective view of an electric cylinder including a rod part of the present invention.

FIG. 2 is a bottom perspective view of the electric cylinder of FIG. 1, wherein the rod part does not project.

FIG. 3 is a front view of the electric cylinder of FIG. 1.

FIG. 4 is a rear view of the electric cylinder of FIG. 1.

FIG. 5 is a top plan view of the electric cylinder of FIG. 1.

FIG. 6 is a bottom view of the electric cylinder of FIG. 1.

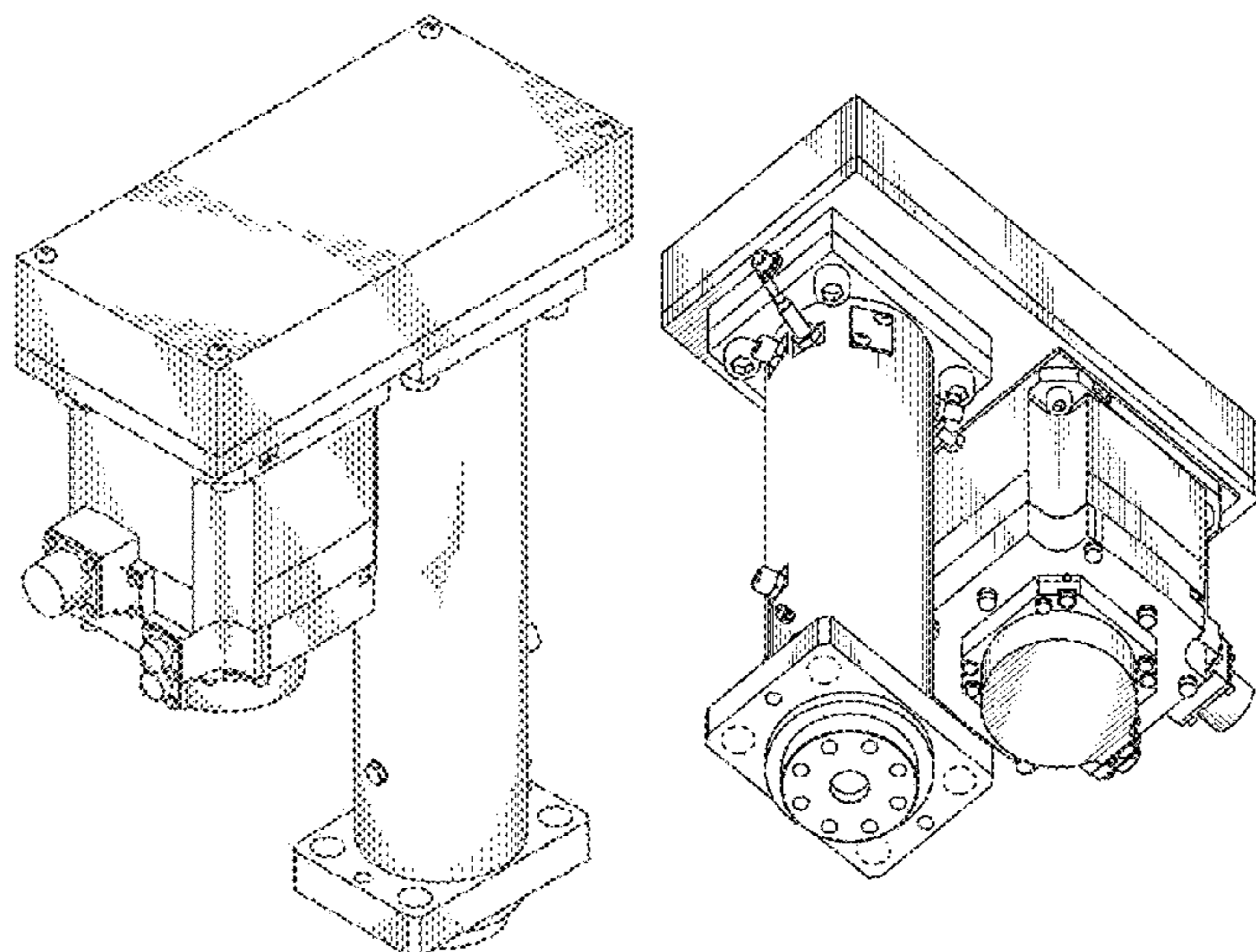
FIG. 7 is a right side view of the electric cylinder of FIG. 1.

FIG. 8 is a left side view of the electric cylinder of FIG. 1; and,

FIG. 9 is a bottom perspective view of the electric cylinder of FIG. 1, wherein the rod part projects.

The broken lines show portions of the electric cylinder that form no part of the claimed design.

**1 Claim, 9 Drawing Sheets**



(56)

**References Cited**

## U.S. PATENT DOCUMENTS

D543,221 S \* 5/2007 Nagai ..... D15/143  
D669,098 S \* 10/2012 Hariwara ..... D15/7  
D693,863 S \* 11/2013 Takagi ..... D15/143  
D715,841 S \* 10/2014 Comben ..... D15/143  
D753,795 S \* 4/2016 Rahms ..... D23/233  
D760,805 S \* 7/2016 Monden ..... D15/7  
2007/0062317 A1 \* 3/2007 Nagai ..... F16D 35/005  
74/89  
2011/0298323 A1 \* 12/2011 Brieschke ..... F16H 25/20  
310/83  
2014/0298933 A1 \* 10/2014 Kohlmeyer ..... F16H 25/20  
74/89.32

## OTHER PUBLICATIONS

Press-fitting and riveting servo cylinders, posted on sinto.co.jp, copyrighted 2012, no production date given, [online], [site visited May 23, 2017], Available from Internet, <URL: <http://www.sinto.co.jp/en/industry/rail/>>.\*

Runnerbreaker Electric Servo Cylinder, posted yuatsuki.com, no posted date given, no production date given, [online], [site visited May 23, 2017], Available from Internet, <URL: <http://www.yuatsuki.com/en/product07.html>>.\*

DXJ3-Electro-hydraulic servo proportional valve-OBE, posted on duplomatic.com, no posted date given, no production date given, [online], [site visited May 23, 2017], Available from Internet, <URL: [http://www.duplomatic.com/en\\_US/prodotti/valvole-proporzionali/ad-alta-dinamica/](http://www.duplomatic.com/en_US/prodotti/valvole-proporzionali/ad-alta-dinamica/)>.\*

\* cited by examiner

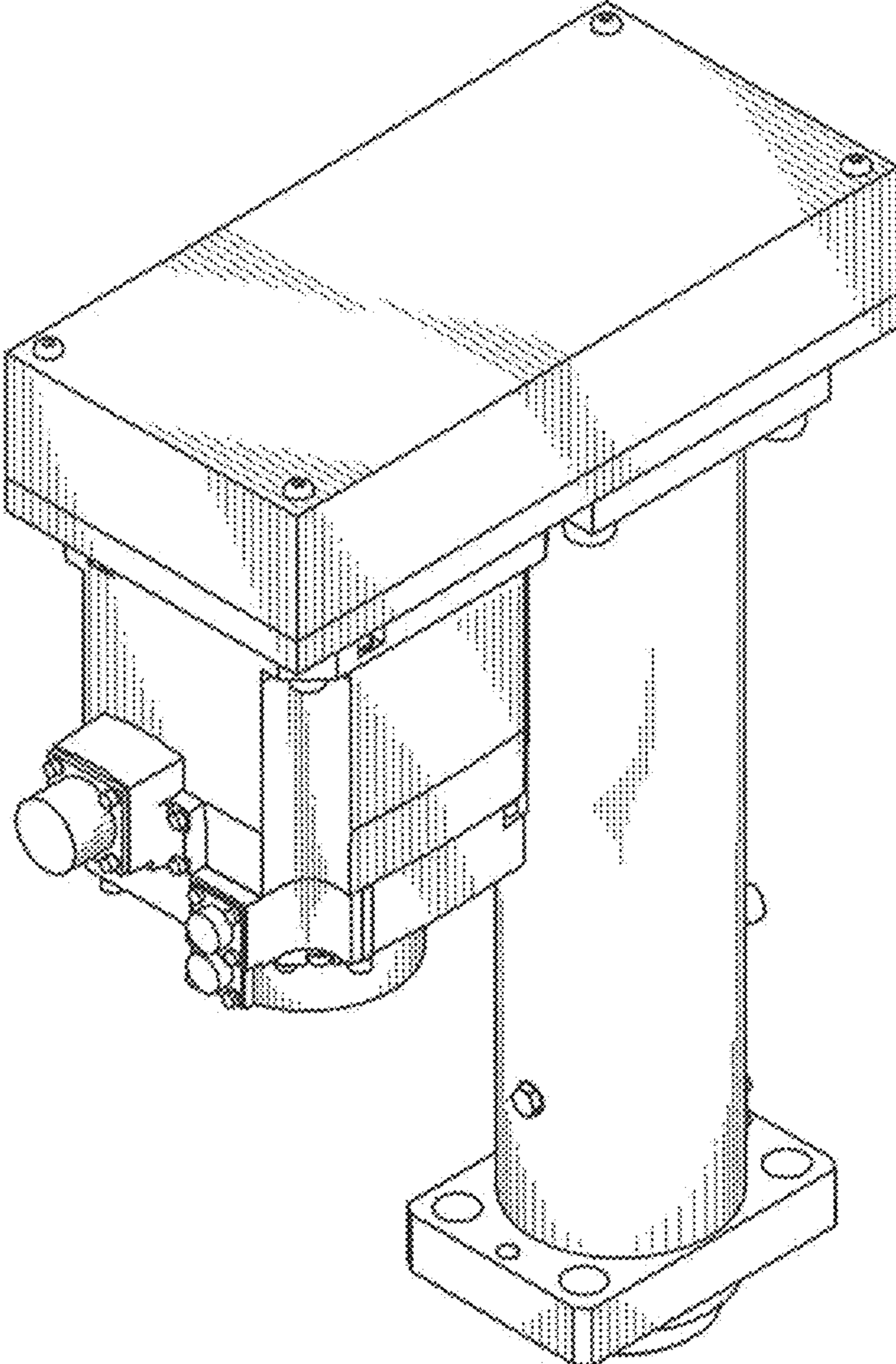


FIG. 1

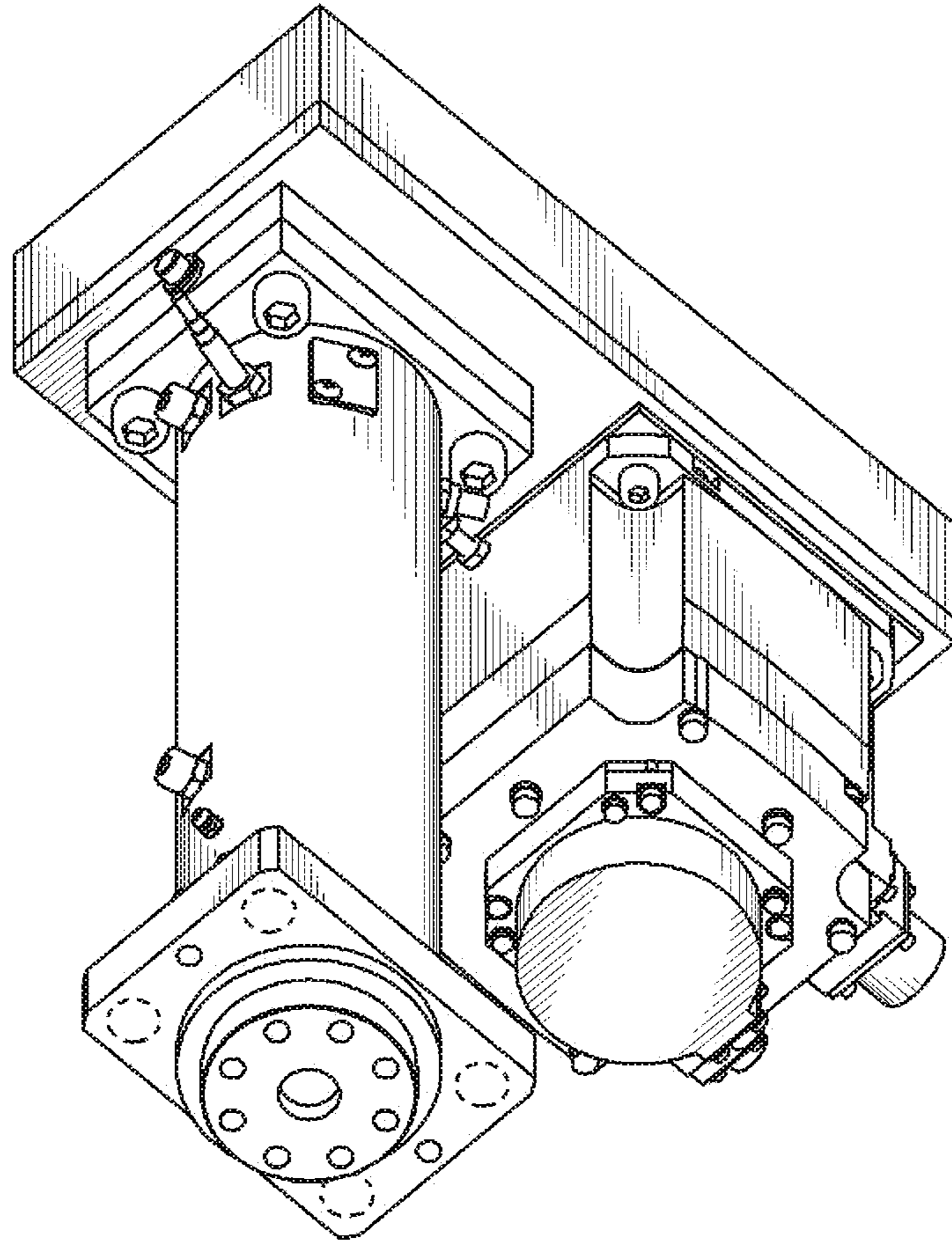


FIG. 2

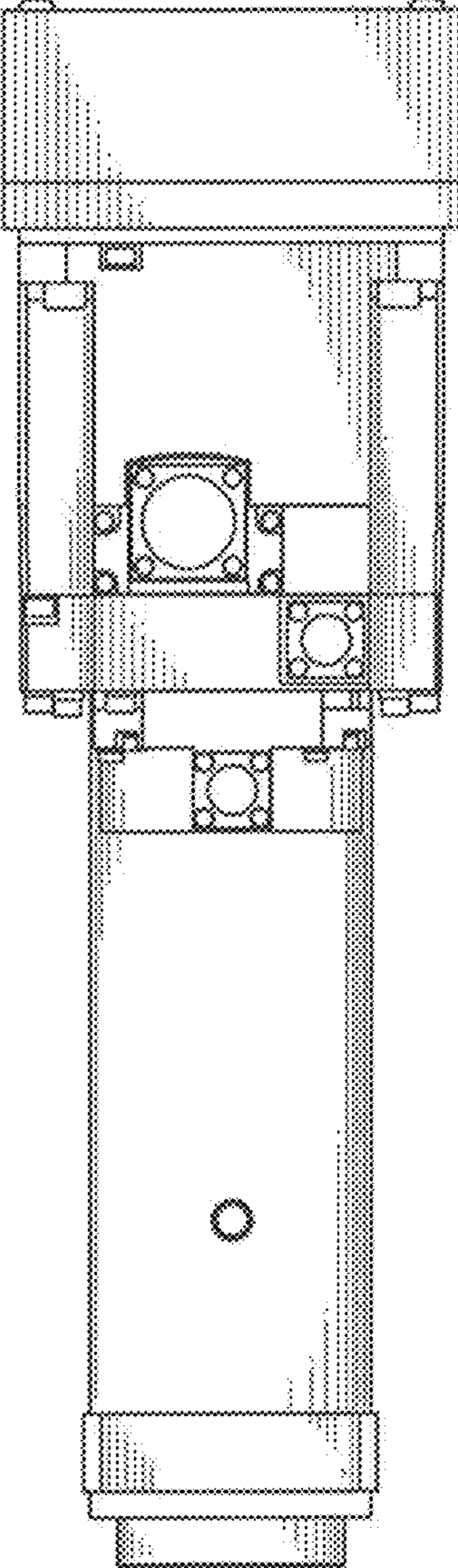


FIG. 3

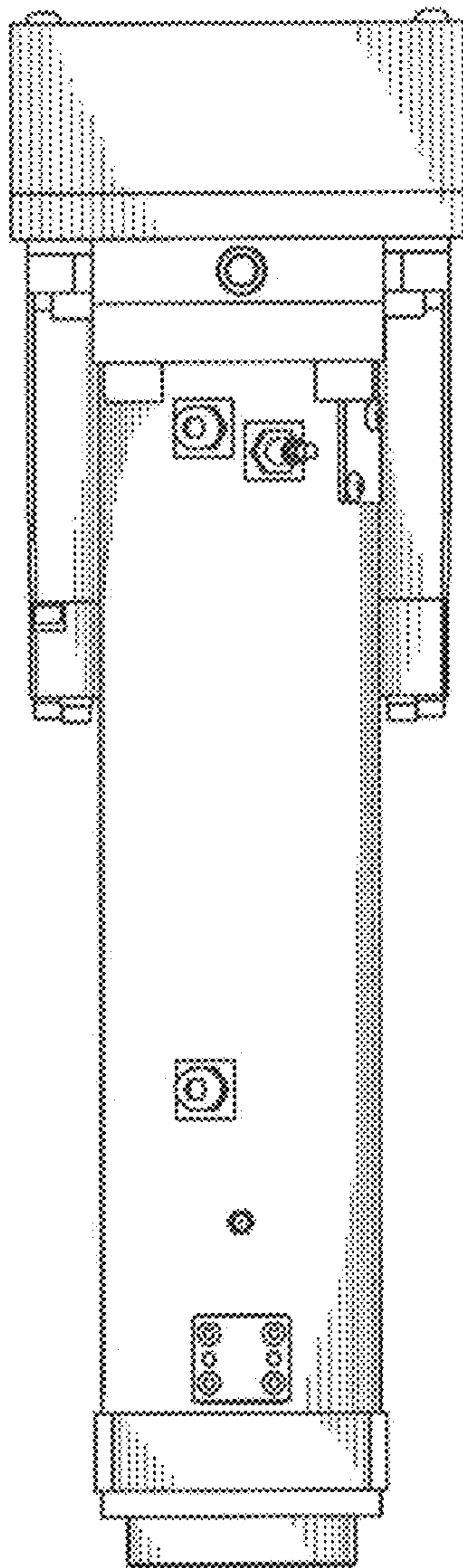


FIG. 4

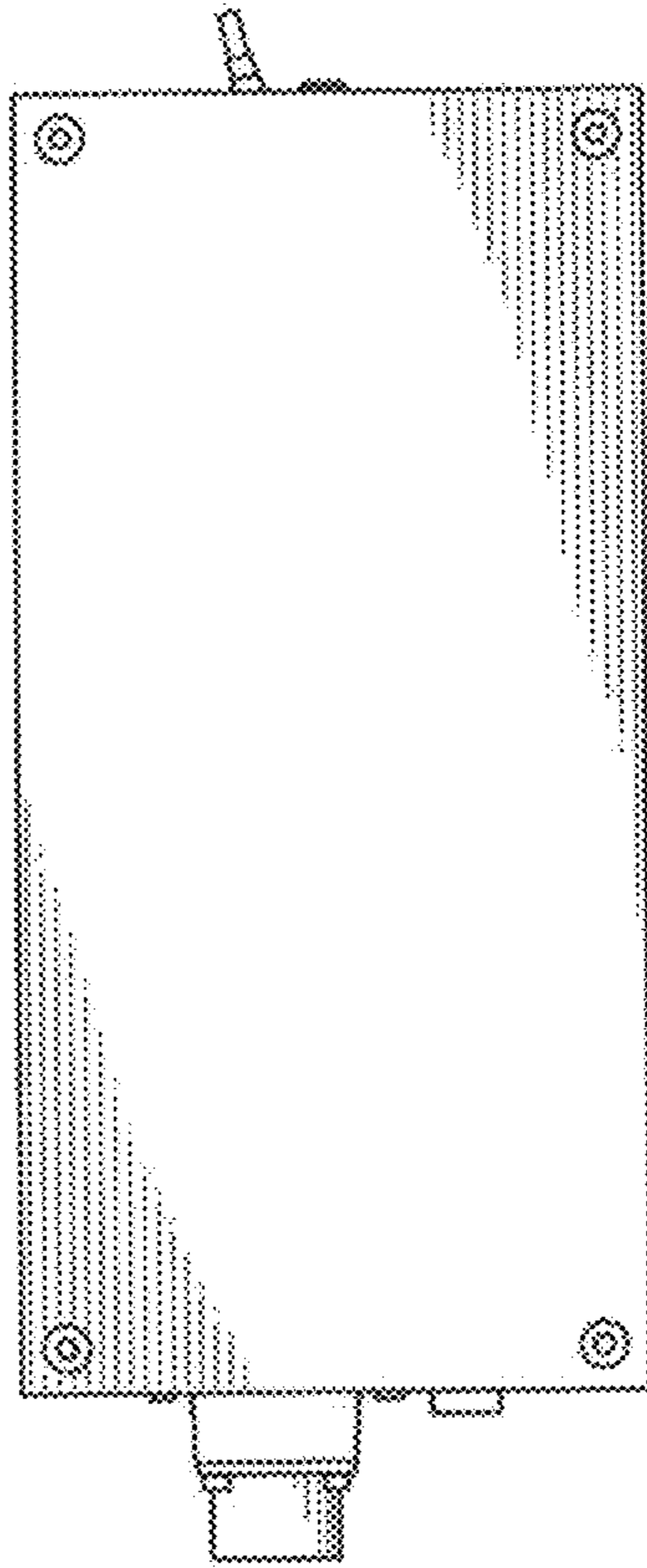


FIG. 5

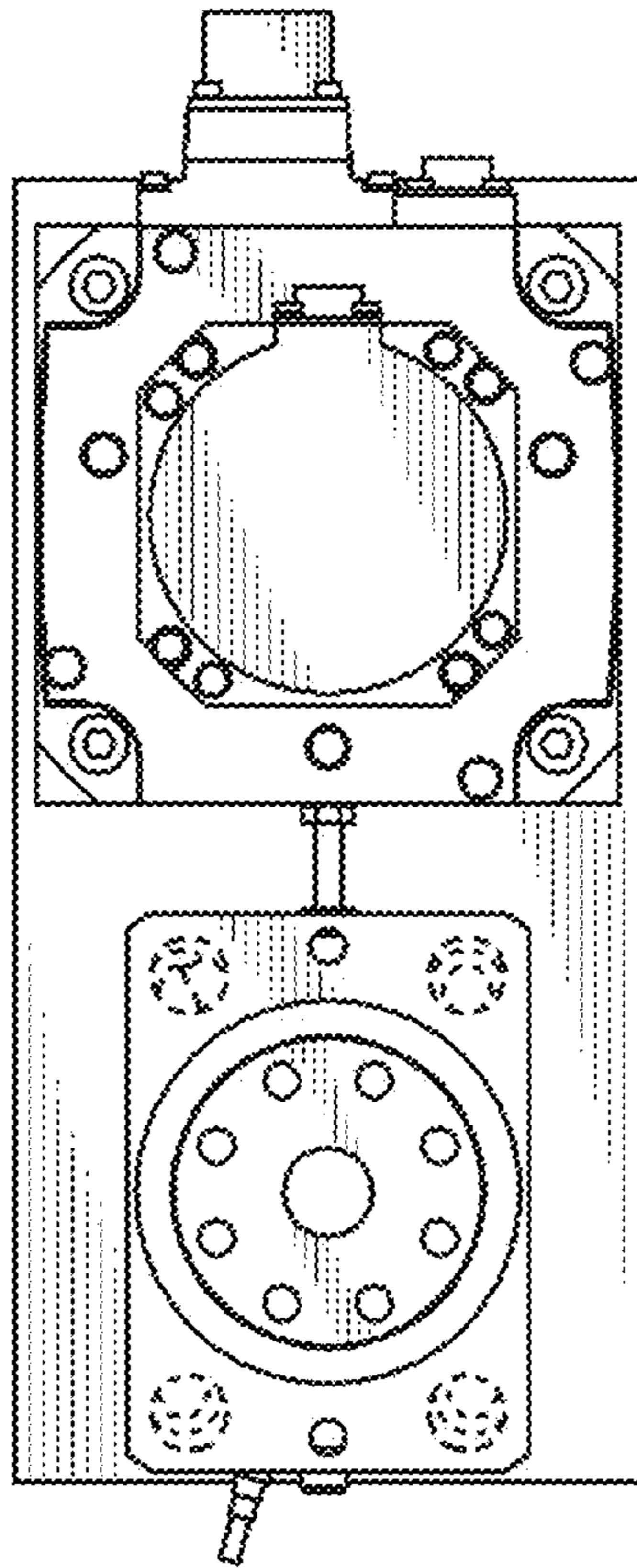


FIG. 6



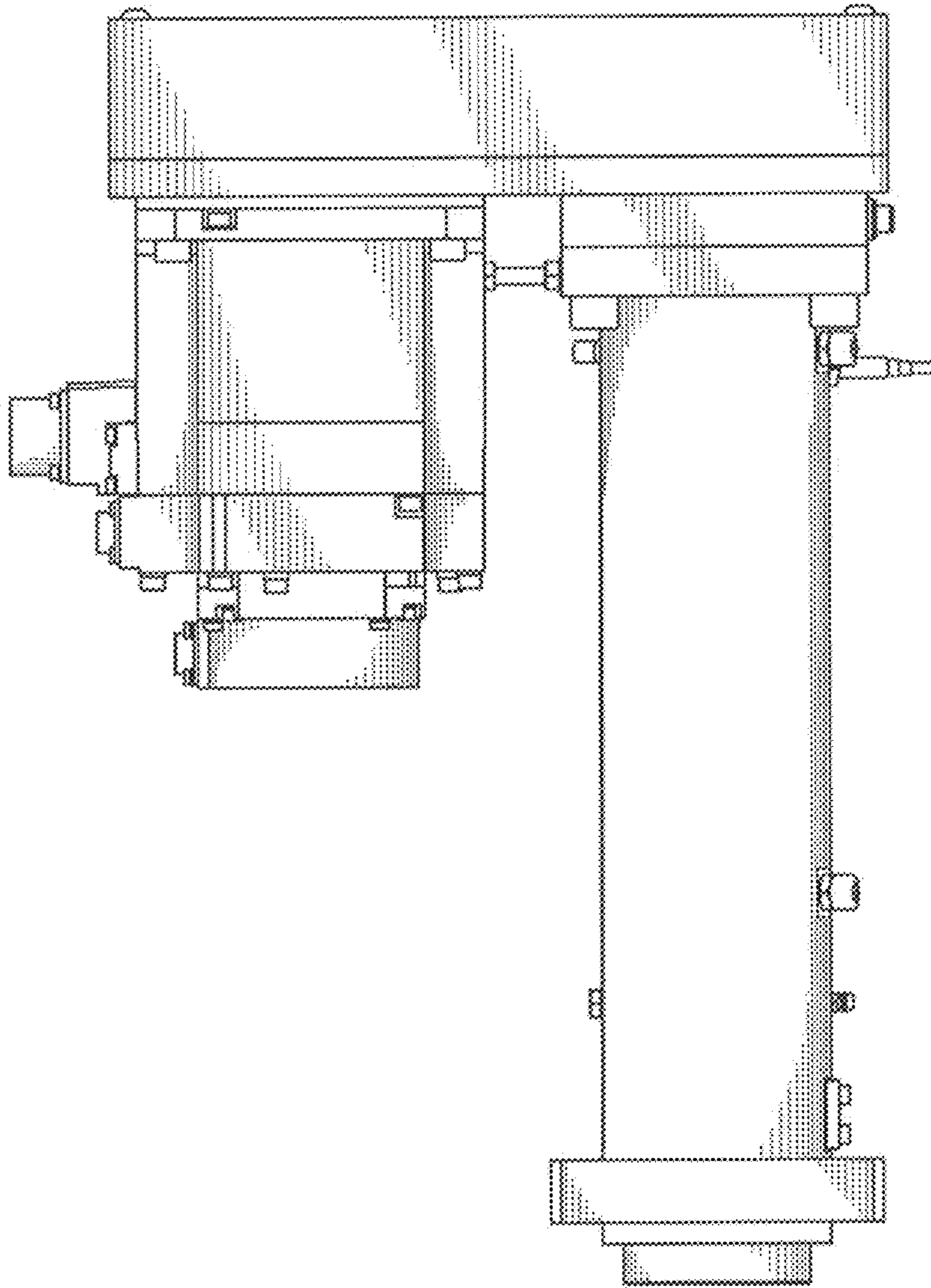


FIG. 7

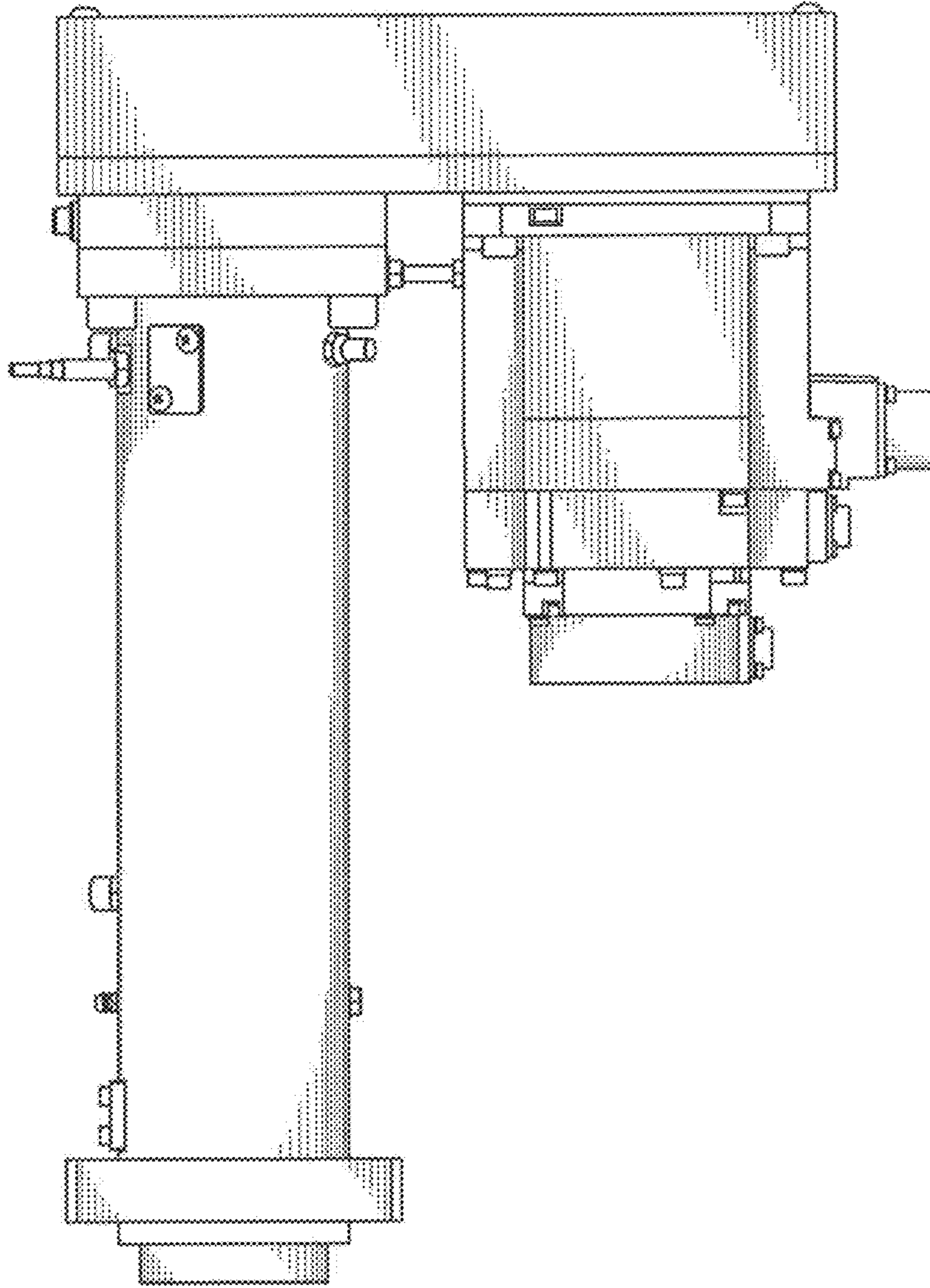


FIG. 8

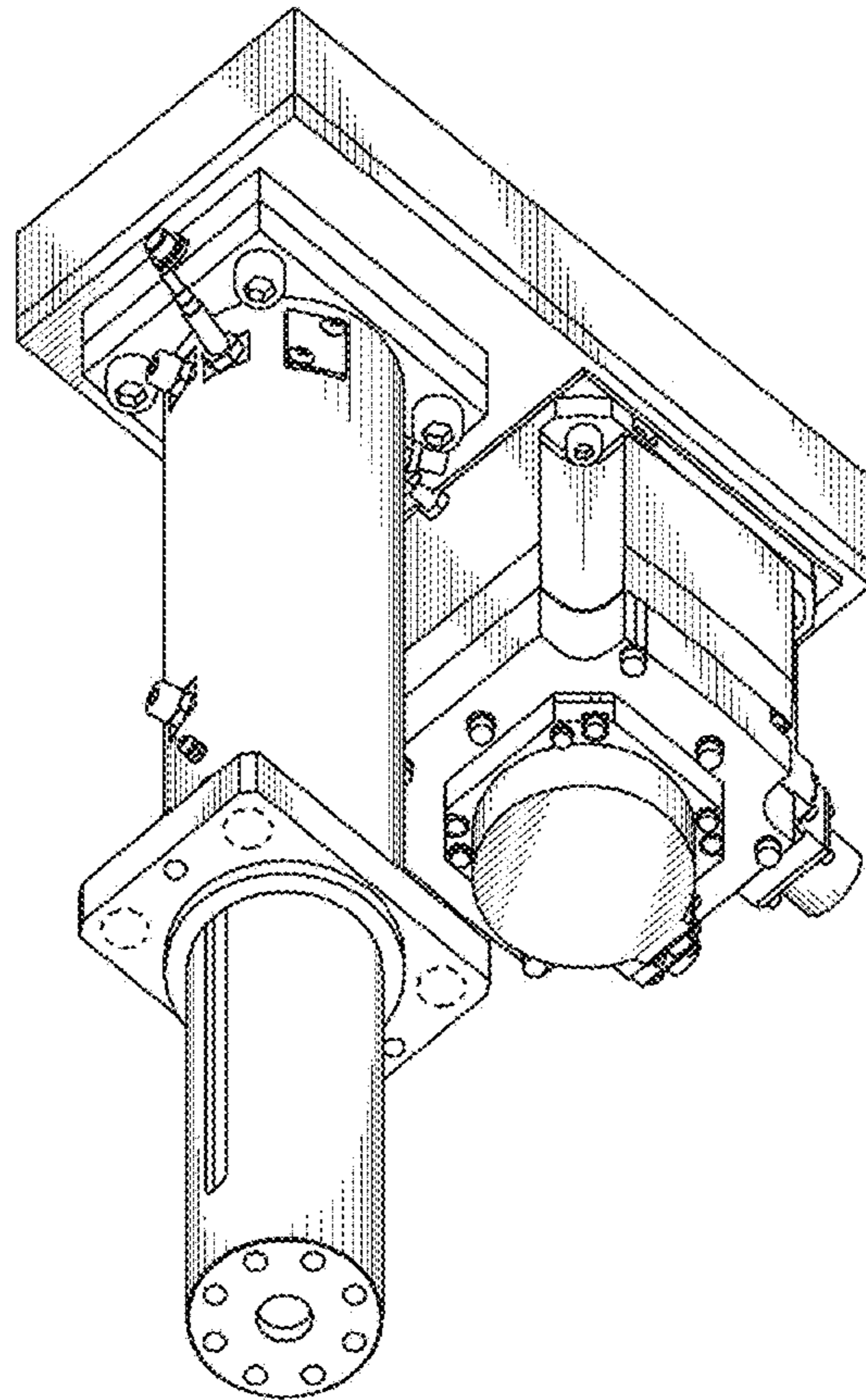


FIG. 9