



US00D843547S

(12) **United States Design Patent** (10) **Patent No.:** **US D843,547 S**
Toshida et al. (45) **Date of Patent:** **** Mar. 19, 2019**

(54) **ION GENERATING MODULE**

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(JP)

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Tomokazu Hariya, Tsukubamirai (JP);
Naoto Sasada, Tsukubamirai (JP)

(73) Assignee: **SMC CORPORATION**, Chiyoda-ku
(JP)

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

(21) Appl. No.: **29/574,907**

(22) Filed: **Aug. 19, 2016**

(30) **Foreign Application Priority Data**

Feb. 19, 2016 (CN) 2016 3 0047744

(51) **LOC (11) Cl.** **23-01**

(52) **U.S. Cl.**
USPC **D23/207**

(58) **Field of Classification Search**
USPC D23/207, 213, 300, 314, 325, 332–336,
D23/342, 351, 352, 355–369, 370,
D23/386–388; D14/168
CPC A62B 21/00; B01D 46/0002; B01D 46/10;
F02M 35/04; F24F 13/20; H05F 3/04;
H01T 23/00; B03C 3/383
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D269,808 S * 7/1983 Morton D23/358
4,974,115 A * 11/1990 Breidegam H05F 3/04
361/213
5,550,703 A * 8/1996 Beyer H05F 3/04
361/213
D420,420 S * 2/2000 Heine D23/200
6,653,638 B2 * 11/2003 Fujii H01T 23/00
250/324
D490,497 S * 5/2004 Okazaki D23/209

D490,876 S * 6/2004 Okazaki D23/209
D550,340 S * 9/2007 Sato D23/355
7,497,898 B2 * 3/2009 Sato B03C 3/383
313/230
D636,840 S * 4/2011 Yasuoka D23/207
D636,841 S * 4/2011 Yasuoka D23/207
D639,898 S * 6/2011 Yasuoka D23/207
D643,091 S * 8/2011 Yasuoka D23/207

OTHER PUBLICATIONS

SMC Bar Ionizer reference found online [Jul. 5, 2017]—[http://www.smcusa.com/products/IZS40-41-42-Bar-Type-Ionizer-\(Standard-Feedback-Sensor-and-Dual-AC-Types\)-126272](http://www.smcusa.com/products/IZS40-41-42-Bar-Type-Ionizer-(Standard-Feedback-Sensor-and-Dual-AC-Types)-126272).*

* cited by examiner

Primary Examiner — Brandon M Rosati

Assistant Examiner — John A Voytek

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Maier & Neustadt, L.L.P.

(57) **CLAIM**

The ornamental design for an ion generating module, as shown and described.

DESCRIPTION

FIG. 1 is a front, top, left side perspective view of an ion generating module according to a first embodiment of our design;

FIG. 2 is a right side elevational view thereof;

FIG. 3 is a left side elevational view thereof;

FIG. 4 is a top elevational view thereof;

FIG. 5 is a bottom elevational view thereof;

FIG. 6 is a back elevational view thereof;

FIG. 7 is a front elevational view thereof;

FIG. 8 is an enlarged view along lines B-B' of FIG. 6;

FIG. 9 is an enlarged view along lines C-C' of FIG. 7;

FIG. 10 is an enlarged cross-sectional view along lines A-A' of FIG. 2;

FIG. 11 is a front, bottom, left side perspective view thereof;

FIG. 12 is a front, top, left side perspective view of an ion generating module according to a second embodiment of our design;

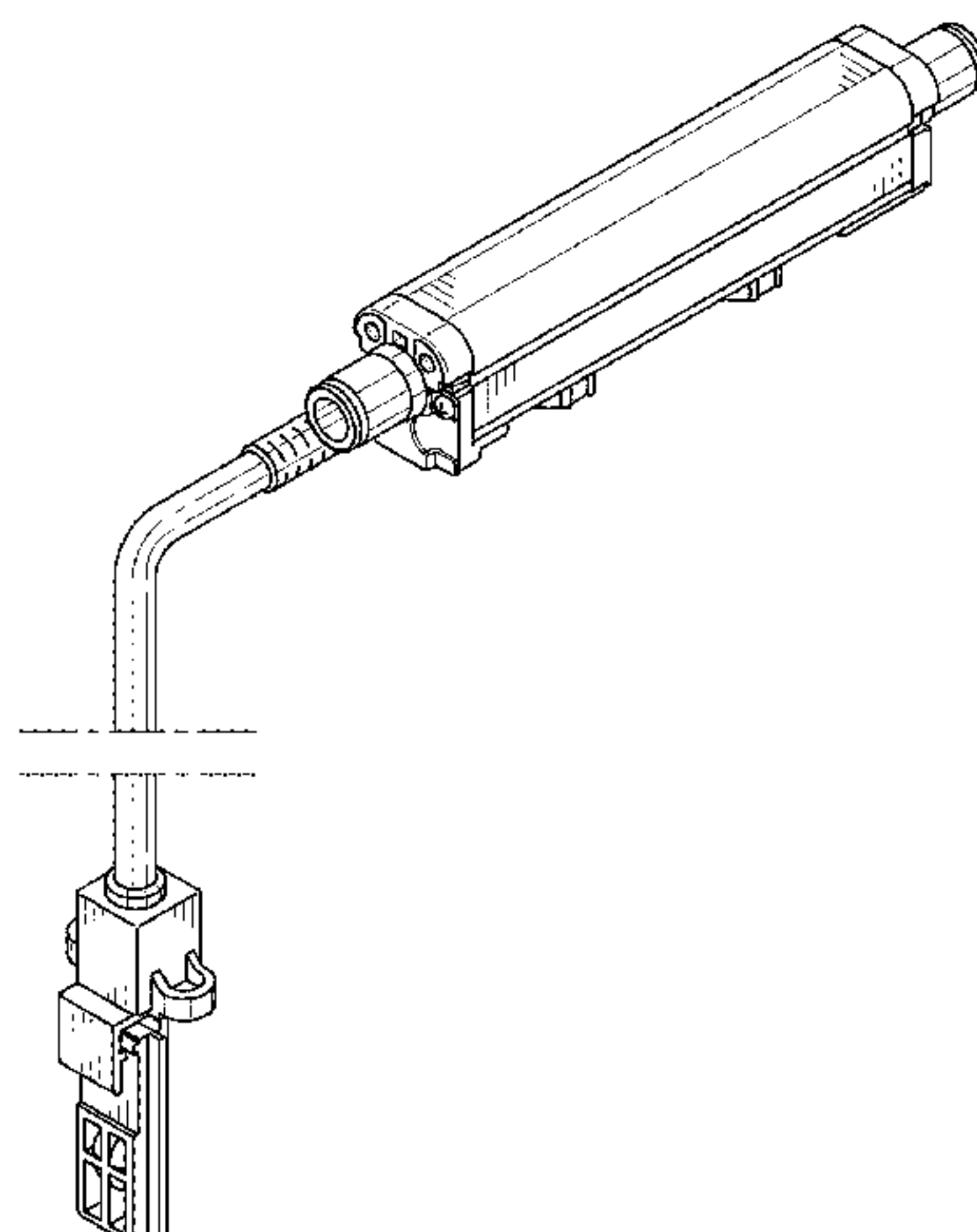


FIG. 13 is a right side elevational view thereof;
 FIG. 14 is a left side elevational view thereof;
 FIG. 15 is a top elevational view thereof;
 FIG. 16 is a bottom elevational view thereof;
 FIG. 17 is a back elevational view thereof;
 FIG. 18 is a front elevational view thereof;
 FIG. 19 is an enlarged view along lines B-B' of FIG. 17;
 FIG. 20 is an enlarged view along lines C-C' of FIG. 18;
 FIG. 21 is a front, bottom, left side perspective view thereof;
 FIG. 22 is an enlarged cross-sectional view along lines A-A' of FIG. 13;
 FIG. 23 is a front, top, left side perspective view of an ion generating module according to a third embodiment of our design;
 FIG. 24 is a right side elevational view thereof;
 FIG. 25 is a left side elevational view thereof;
 FIG. 26 is a top elevational view thereof;
 FIG. 27 is a bottom elevational view thereof;
 FIG. 28 is a back elevational view thereof;
 FIG. 29 is a front elevational view thereof;
 FIG. 30 is an enlarged right side elevational view thereof;
 FIG. 31 is an enlarged left side elevational view thereof;
 FIG. 32 is an enlarged top elevational view thereof;
 FIG. 33 is an enlarged bottom elevational view thereof;
 FIG. 34 is an enlarged back elevational view thereof;
 FIG. 35 is an enlarged front elevational view thereof;
 FIG. 36 is an enlarged view along lines B-B' of FIG. 34;
 FIG. 37 is an enlarged view along lines C-C' of FIG. 35;
 FIG. 38 is a front, bottom, left side perspective view thereof;
 FIG. 39 is an enlarged cross-sectional view along lines A-A' of FIG. 30;
 FIG. 40 is a front, top, left side perspective view of an ion generating module according to a fourth embodiment of our design;
 FIG. 41 is a right side elevational view thereof;
 FIG. 42 is a left side elevational view thereof;
 FIG. 43 is a top elevational view thereof;
 FIG. 44 is a bottom elevational view thereof;
 FIG. 45 is a back elevational view thereof;
 FIG. 46 is a front elevational view thereof;
 FIG. 47 is an enlarged right side elevational view thereof;
 FIG. 48 is an enlarged left side elevational view thereof;
 FIG. 49 is an enlarged top elevational view thereof;
 FIG. 50 is an enlarged bottom elevational view thereof;
 FIG. 51 is an enlarged back elevational view thereof;
 FIG. 52 is an enlarged front elevational view thereof;
 FIG. 53 is an enlarged view along lines B-B' of FIG. 51;
 FIG. 54 is an enlarged view along lines C-C' of FIG. 52;
 FIG. 55 is a front, bottom, left side perspective view thereof;
 FIG. 56 is an enlarged cross-sectional view along lines A-A' of FIG. 47;
 FIG. 57 is a front, top, left side perspective view of an ion generating module according to a fifth embodiment of our design;
 FIG. 58 is a right side elevational view thereof;
 FIG. 59 is a left side elevational view thereof;
 FIG. 60 is a top elevational view thereof;
 FIG. 61 is a bottom elevational view thereof;
 FIG. 62 is a back elevational view thereof;
 FIG. 63 is a front elevational view thereof;
 FIG. 64 is an enlarged back elevational view between lines B-B' of FIG. 62;
 FIG. 65 is an enlarged front elevational view between lines C-C' of FIG. 63;
 FIG. 66 is a front, bottom, left side perspective view thereof;

FIG. 67 is an enlarged cross-sectional view along lines A-A' of FIG. 58;
 FIG. 68 is a front, top, left side perspective view of an ion generating module according to a sixth embodiment of our design;
 FIG. 69 is a right side elevational view thereof;
 FIG. 70 is a left side elevational view thereof;
 FIG. 71 is a top elevational view thereof;
 FIG. 72 is a bottom elevational view thereof;
 FIG. 73 is a back elevational view thereof;
 FIG. 74 is a front elevational view thereof;
 FIG. 75 is an enlarged back elevational view between lines B-B' of FIG. 73;
 FIG. 76 is an enlarged front elevational view between lines C-C' of FIG. 74;
 FIG. 77 is a front, bottom, left side perspective view thereof;
 FIG. 78 is an enlarged cross-sectional view along line A-A' of FIG. 69;
 FIG. 79 is a front, top, left side perspective view of an ion generating module according to a seventh embodiment of our design;
 FIG. 80 is a right side elevational view thereof;
 FIG. 81 is a left side elevational view thereof;
 FIG. 82 is a top elevational view thereof;
 FIG. 83 is a bottom elevational view thereof;
 FIG. 84 is a back elevational view thereof;
 FIG. 85 is a front elevational view thereof;
 FIG. 86 is an enlarged right side elevational view thereof;
 FIG. 87 is an enlarged left side elevational view thereof;
 FIG. 88 is an enlarged top elevational view thereof;
 FIG. 89 is an enlarged bottom elevational view thereof;
 FIG. 90 is an enlarged back elevational view thereof;
 FIG. 91 is an enlarged front elevational view thereof;
 FIG. 92 is an enlarged back elevational view between lines B-B' of FIG. 90;
 FIG. 93 is an enlarged front elevational view between lines C-C' of FIG. 91;
 FIG. 94 is a front, bottom, left side perspective view thereof;
 FIG. 95 is an enlarged cross-sectional view along lines A-A' of FIG. 86;
 FIG. 96 is a front, top, left side perspective view of an ion generating module according to an eighth embodiment of our design;
 FIG. 97 is a right side elevational view thereof;
 FIG. 98 is a left side elevational view thereof;
 FIG. 99 is a top elevational view thereof;
 FIG. 100 is a bottom elevational view thereof;
 FIG. 101 is a back elevational view thereof;
 FIG. 102 is a front elevational view thereof;
 FIG. 103 is an enlarged right side elevational view thereof;
 FIG. 104 is an enlarged left side elevational view thereof;
 FIG. 105 is an enlarged top elevational view thereof;
 FIG. 106 is an enlarged bottom elevational view thereof;
 FIG. 107 is an enlarged back elevational view thereof;
 FIG. 108 is an enlarged front elevational view thereof;
 FIG. 109 is an enlarged back elevational view between lines B-B' of FIG. 107;
 FIG. 110 is an enlarged front elevational view between lines C-C' of FIG. 108;
 FIG. 111 is a front, bottom, left side perspective view thereof; and,
 FIG. 112 is an enlarged cross-sectional view along lines A-A' of FIG. 103.

The ion generating module is shown with a symbolic break (or breaks) in its length, represented by uneven dashed lines,

to represent that the length is not limited to the specific length shown. The uneven dashed lines represent boundary lines between claimed and unclaimed subject matter and form no part of the claimed design. Likewise, unclaimed subject matter between the uneven dashed boundary lines forms no part of the claimed design.

1 Claim, 112 Drawing Sheets

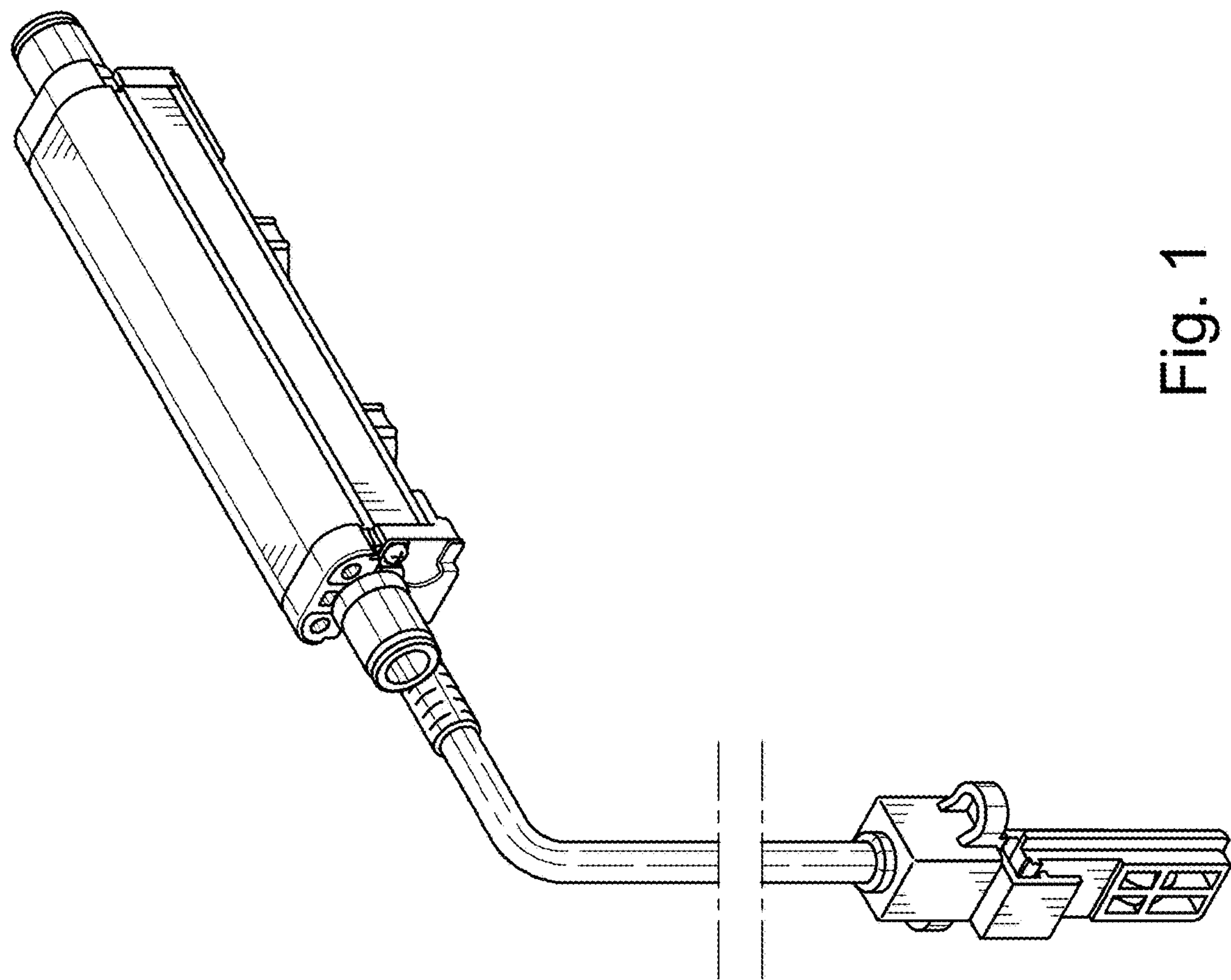


Fig. 1

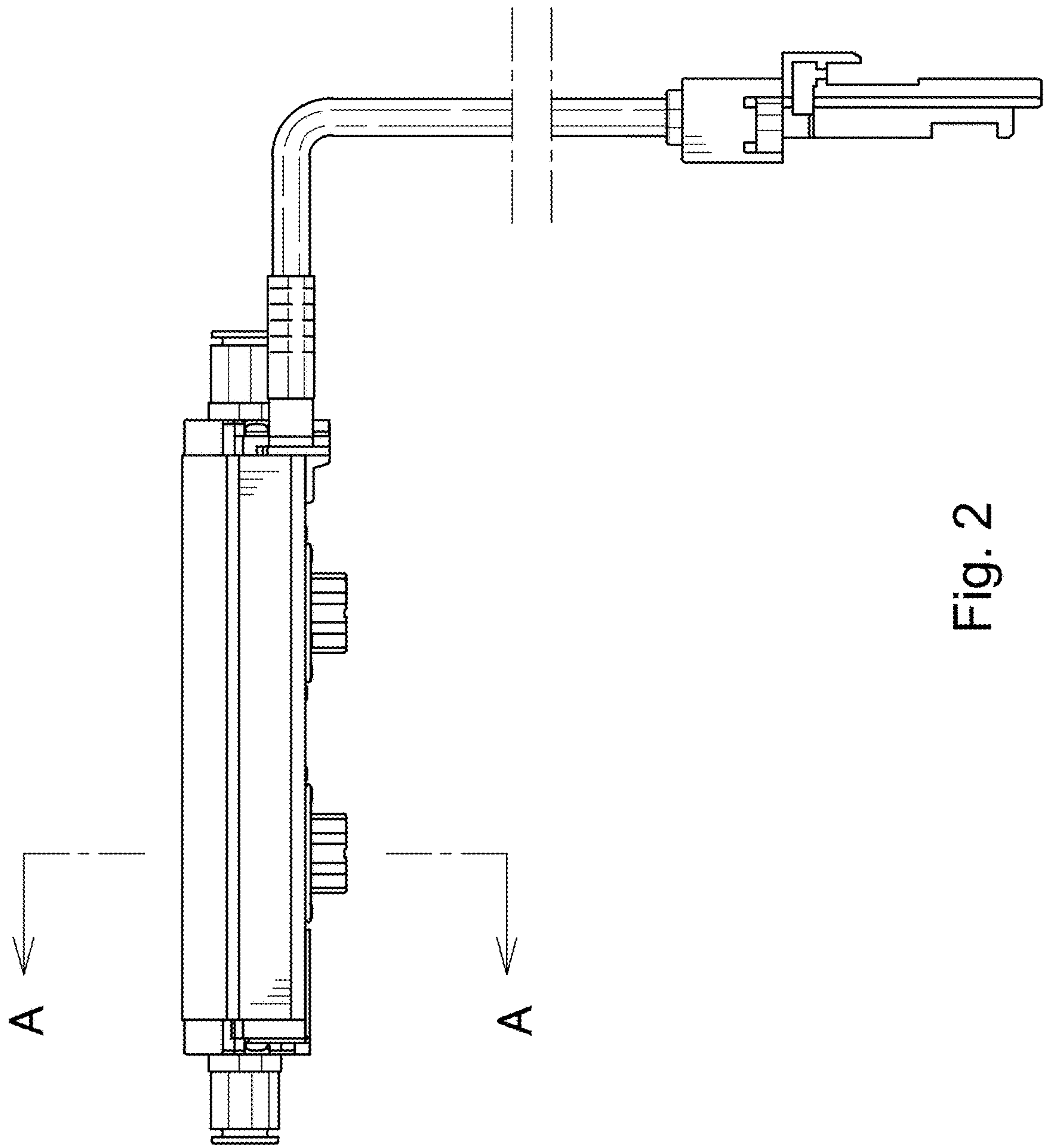


Fig. 2

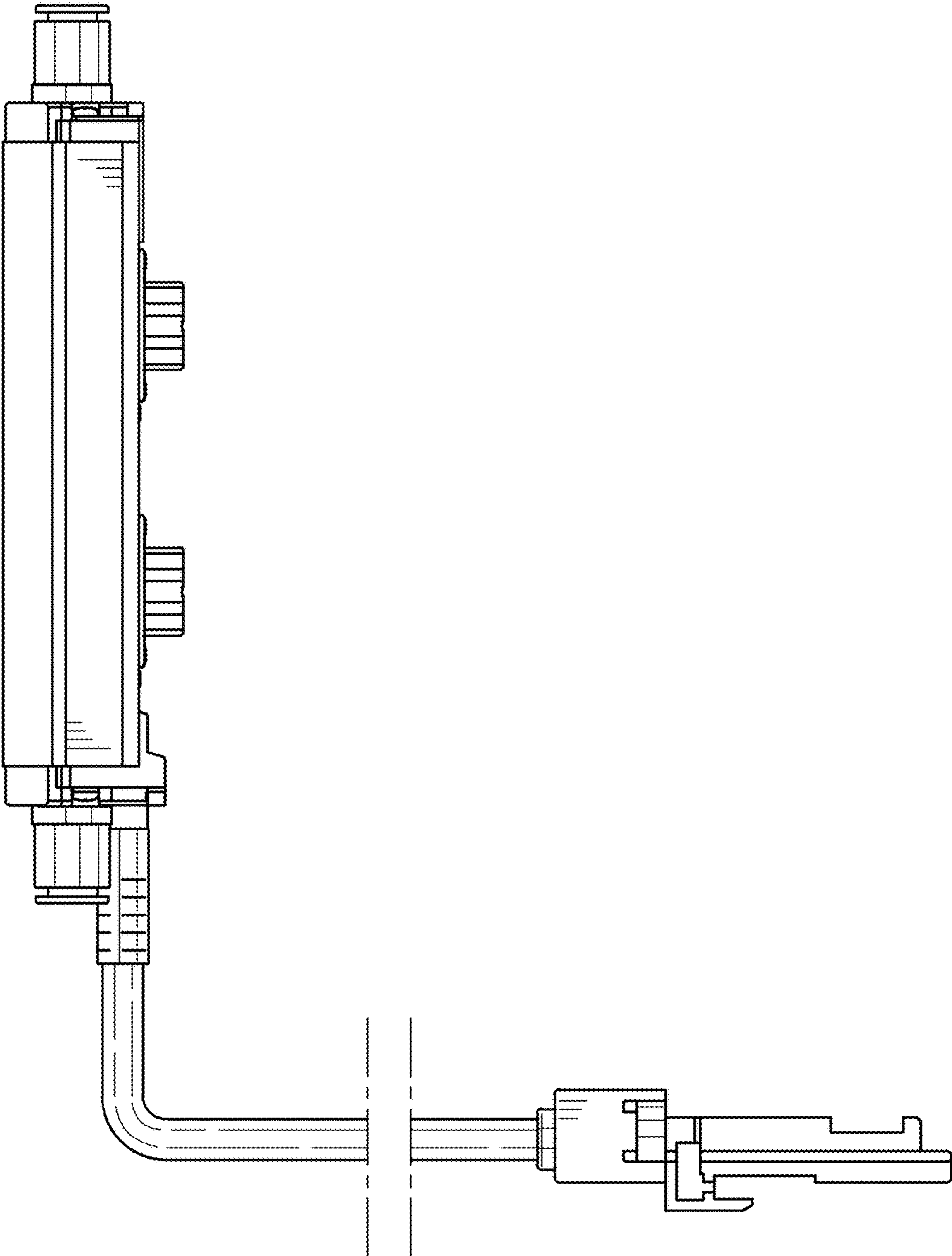


Fig. 3

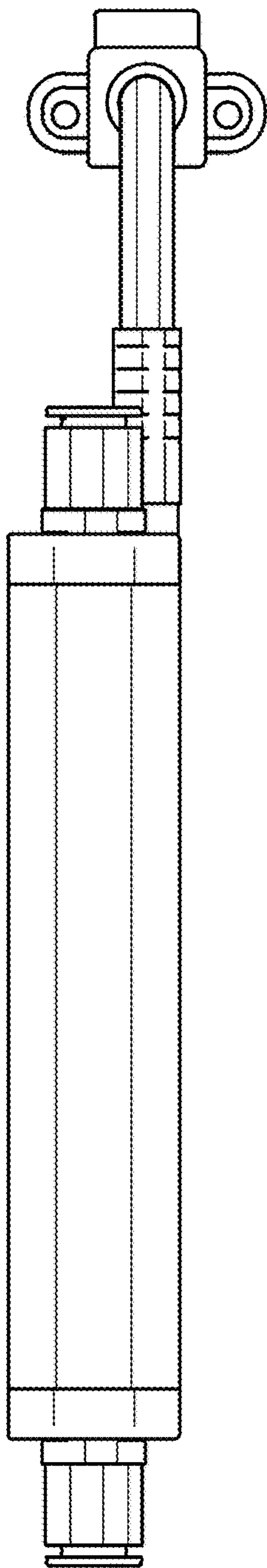


Fig. 4

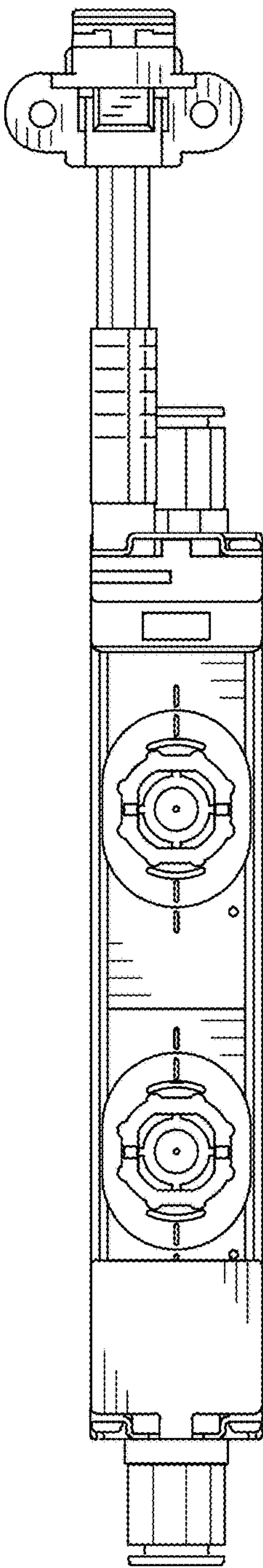


Fig. 5

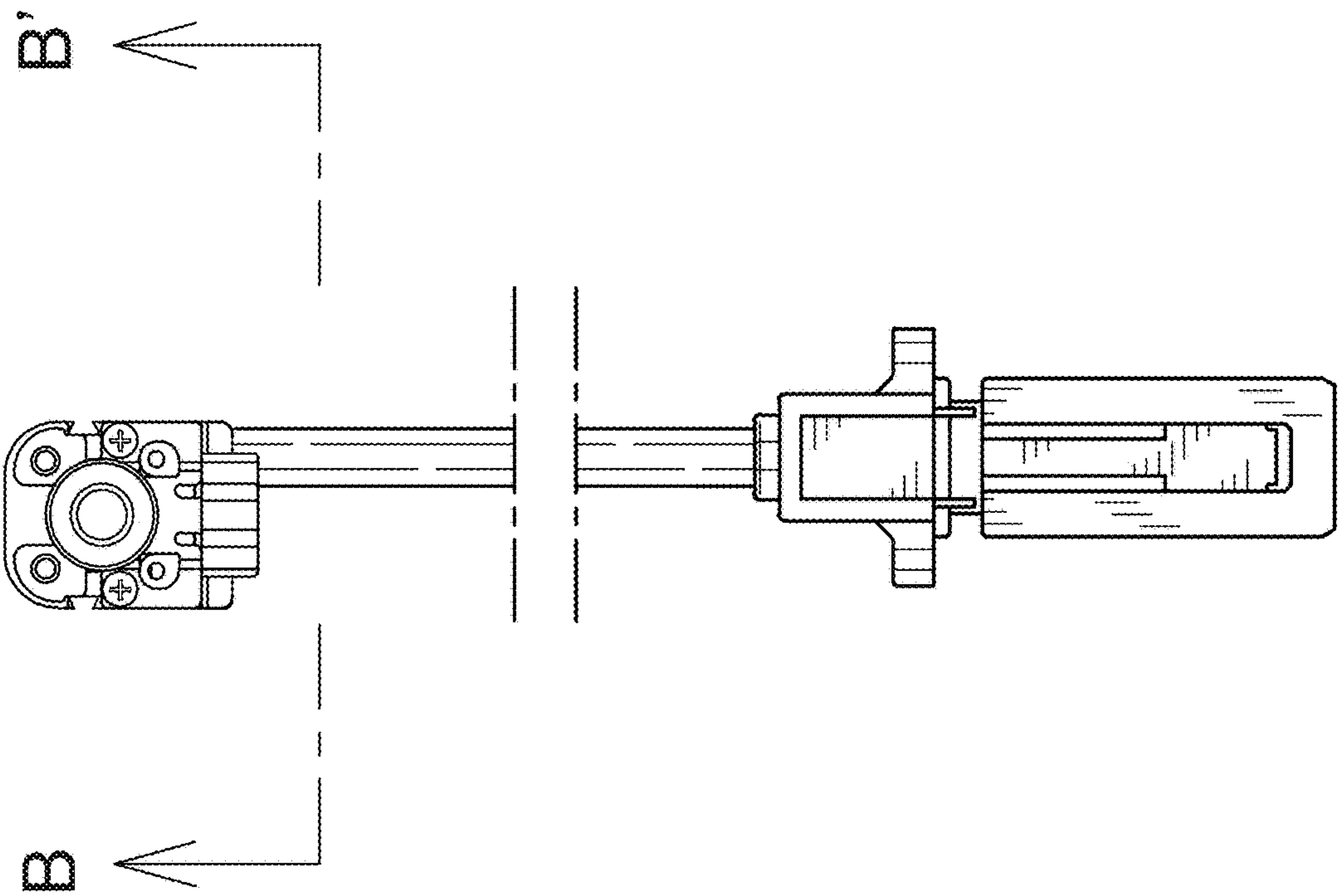


Fig. 6

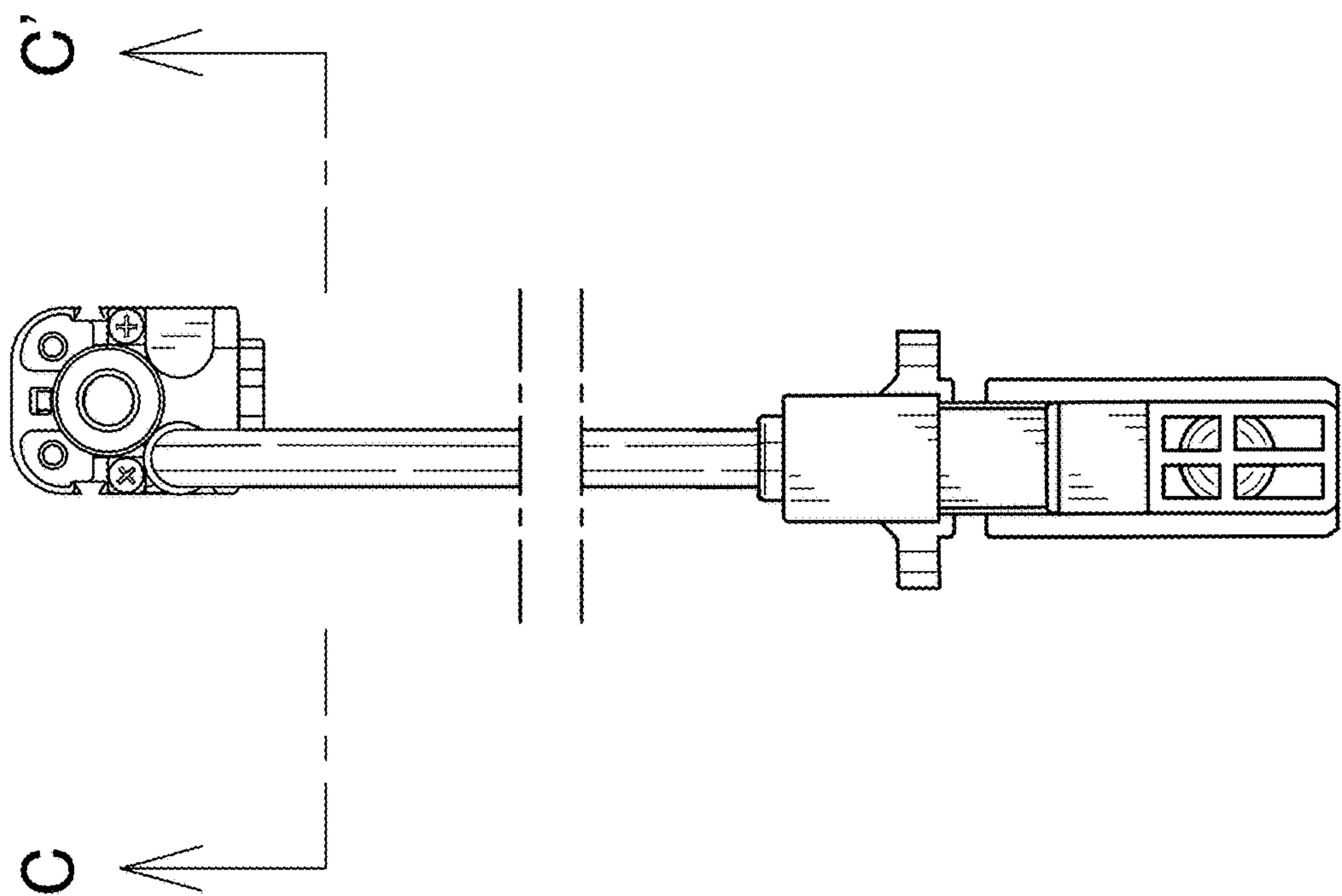


Fig. 7

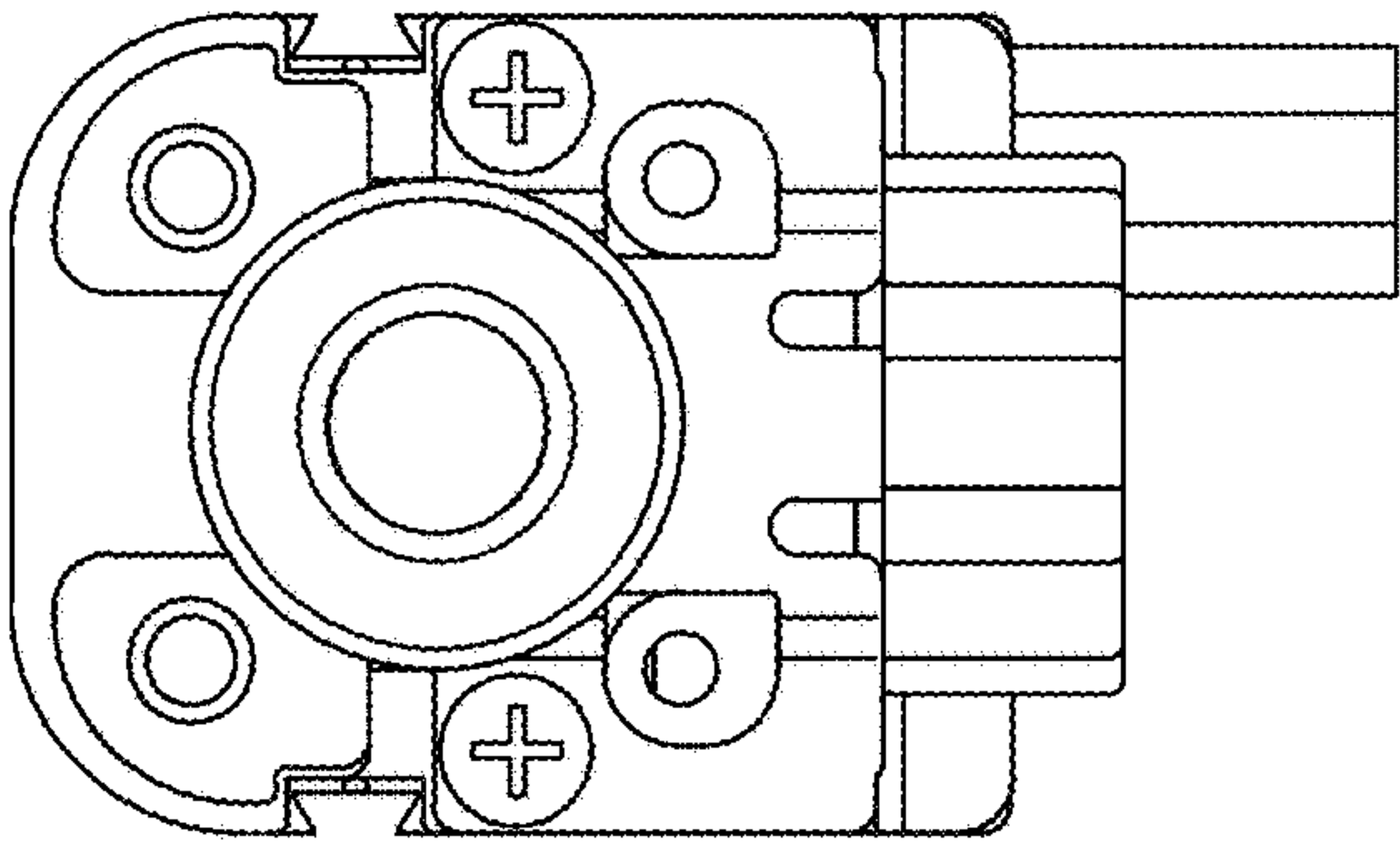


Fig. 8

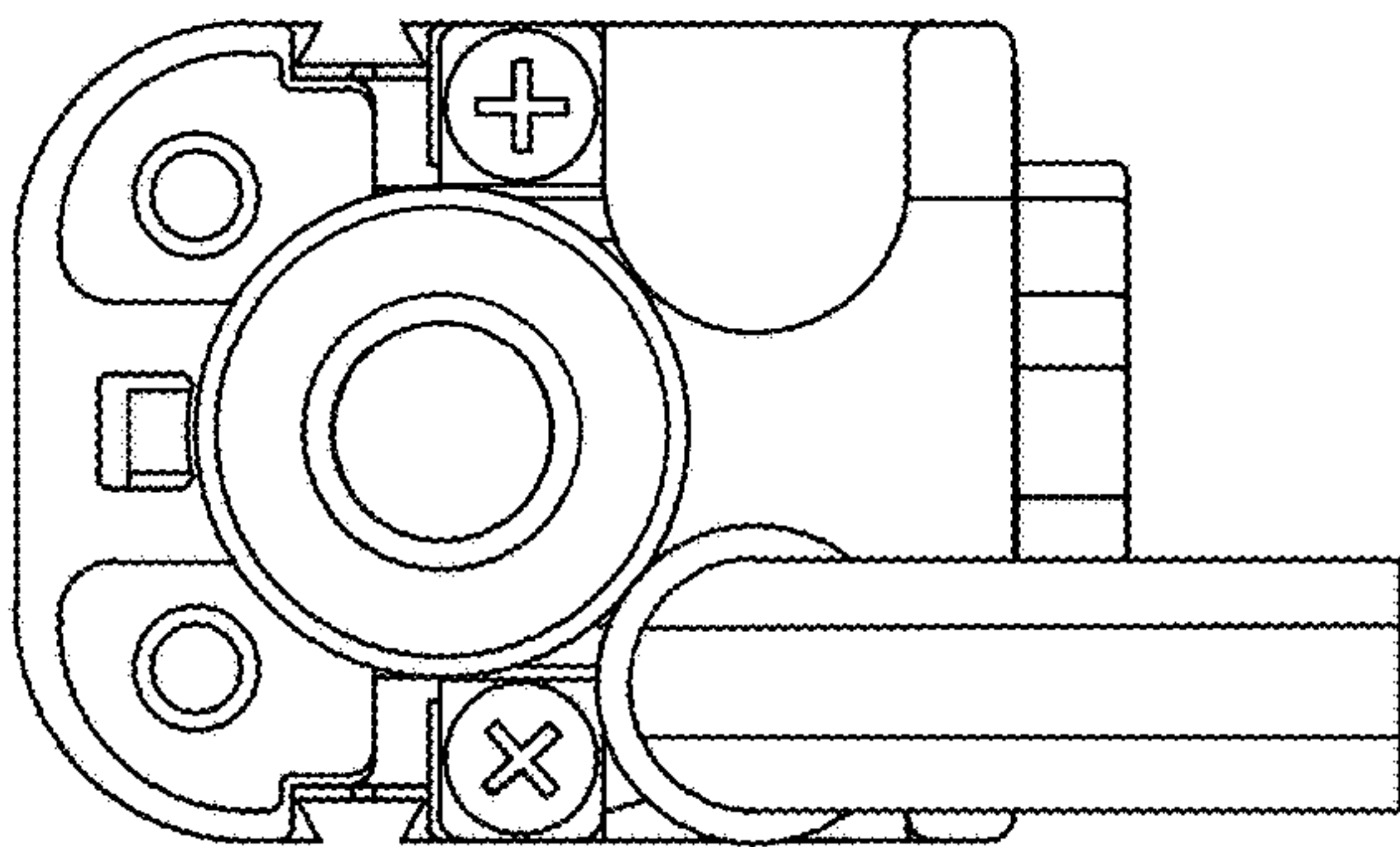


Fig. 9

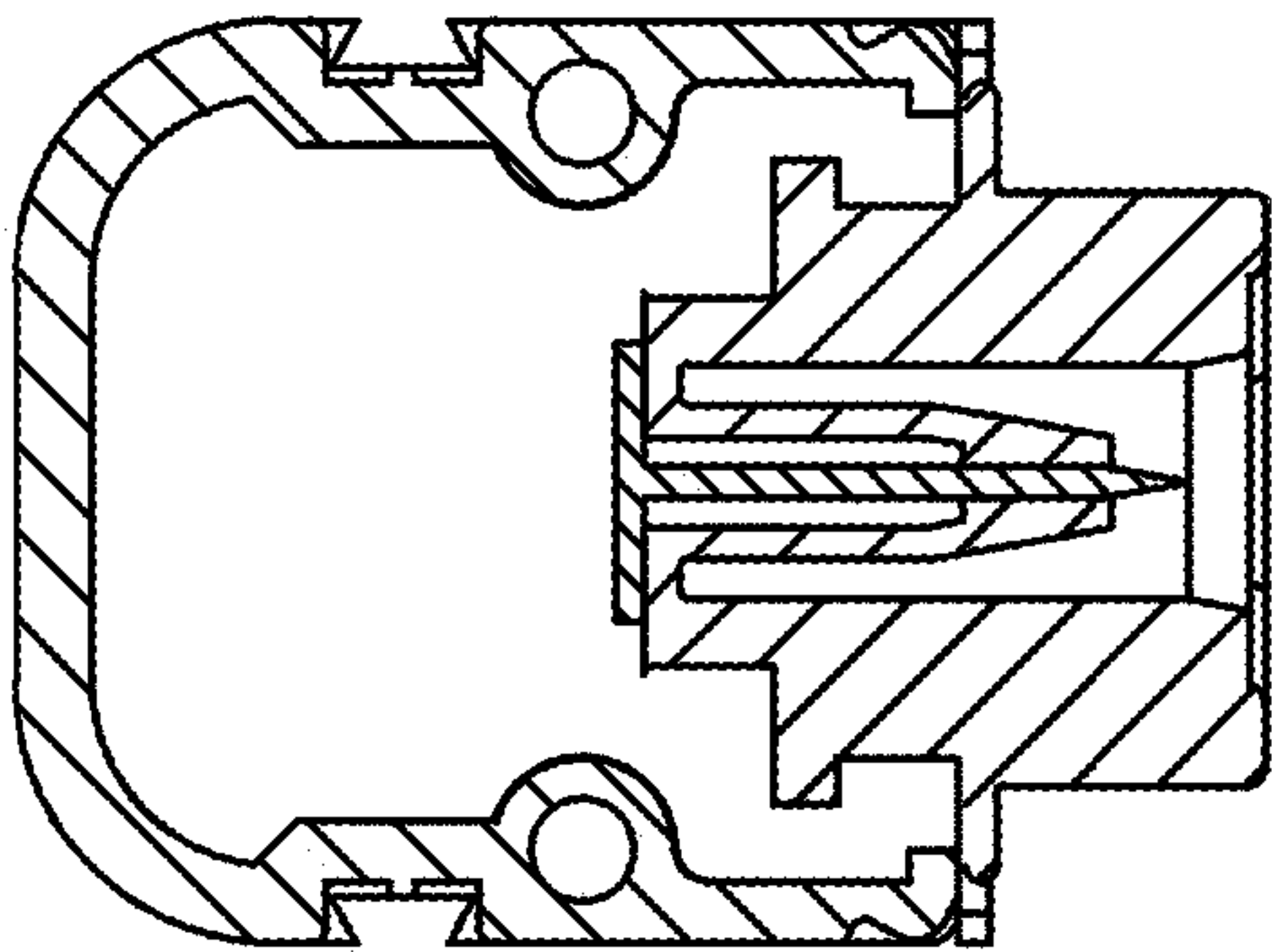


Fig. 10

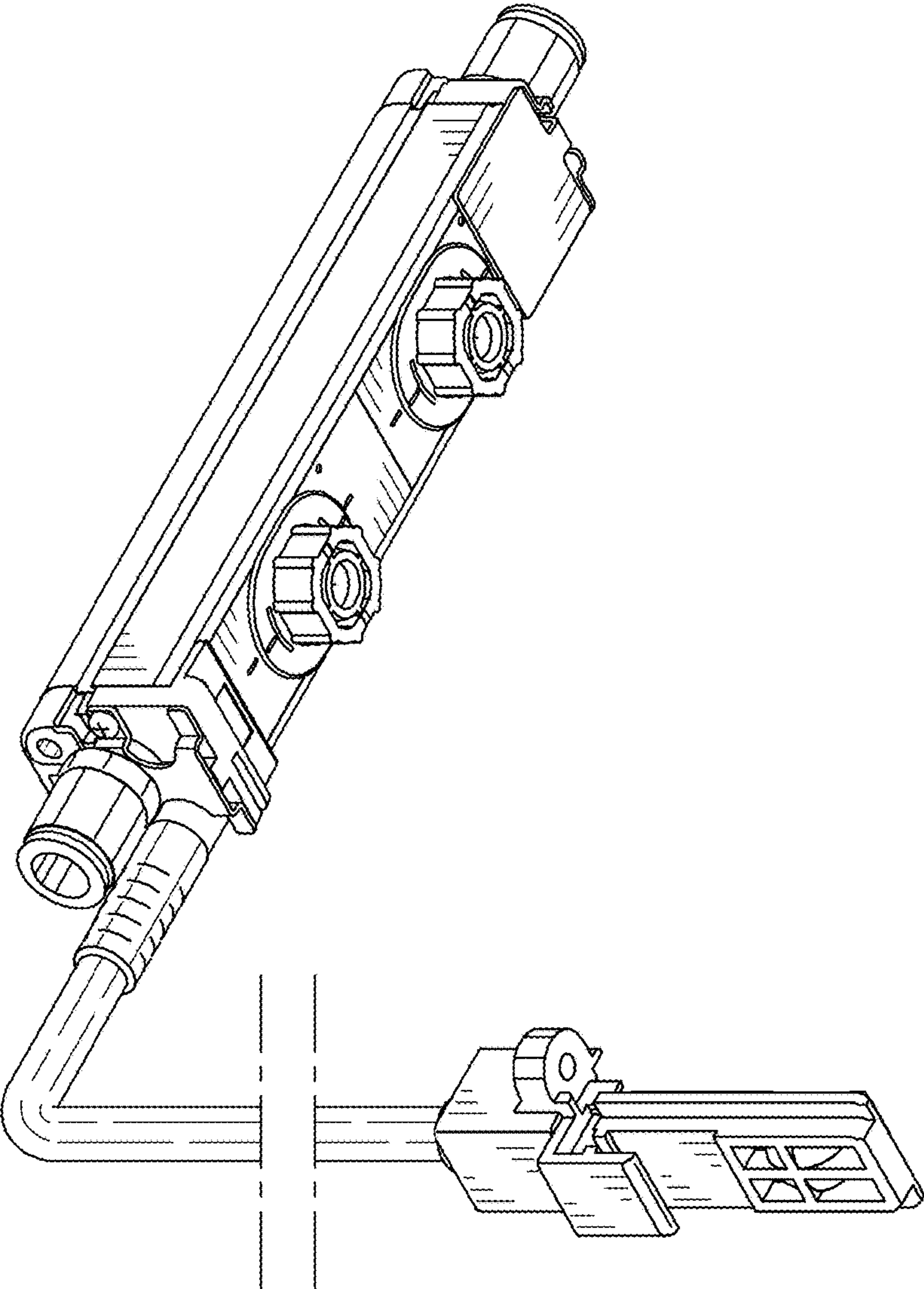


Fig. 11

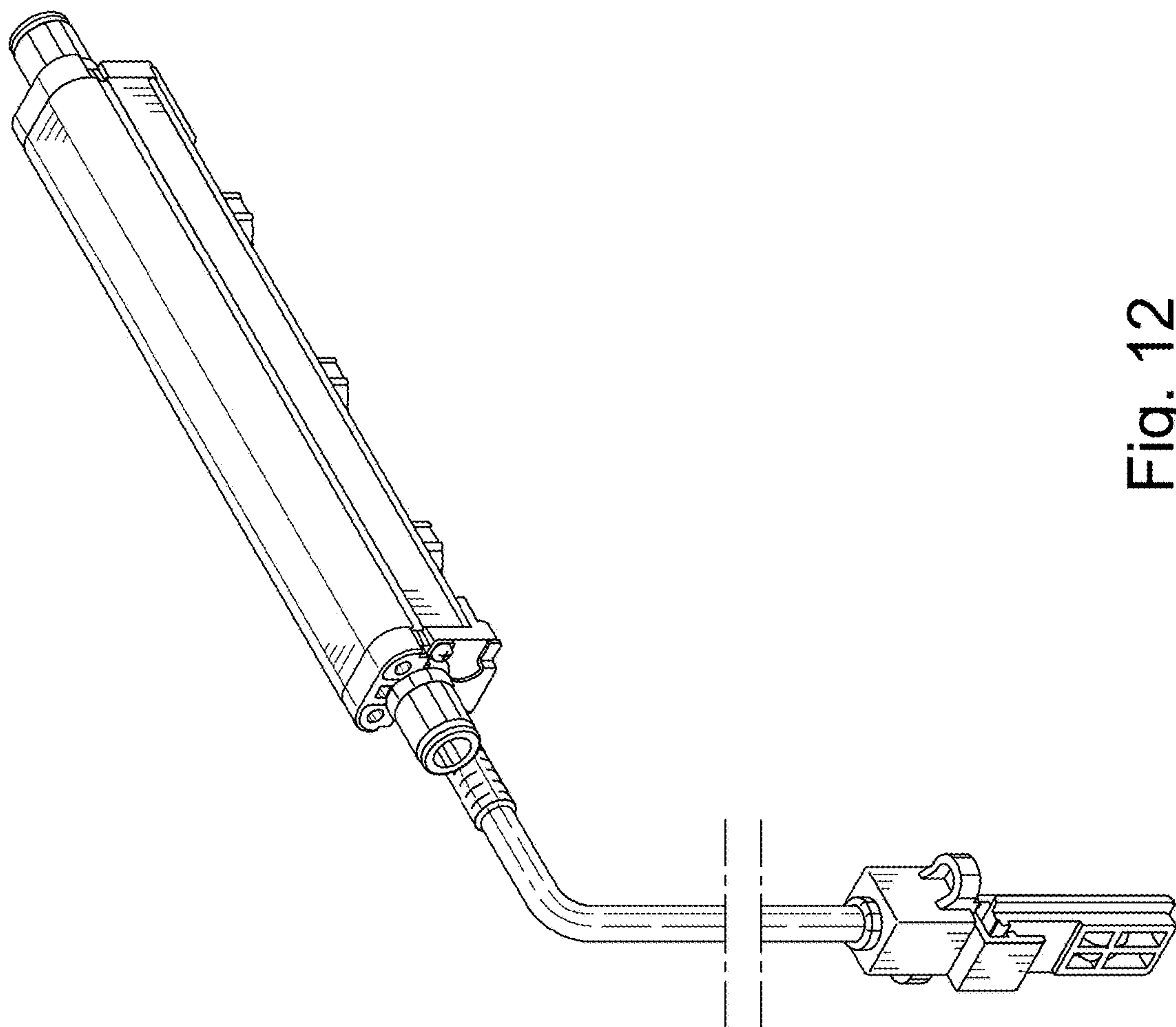


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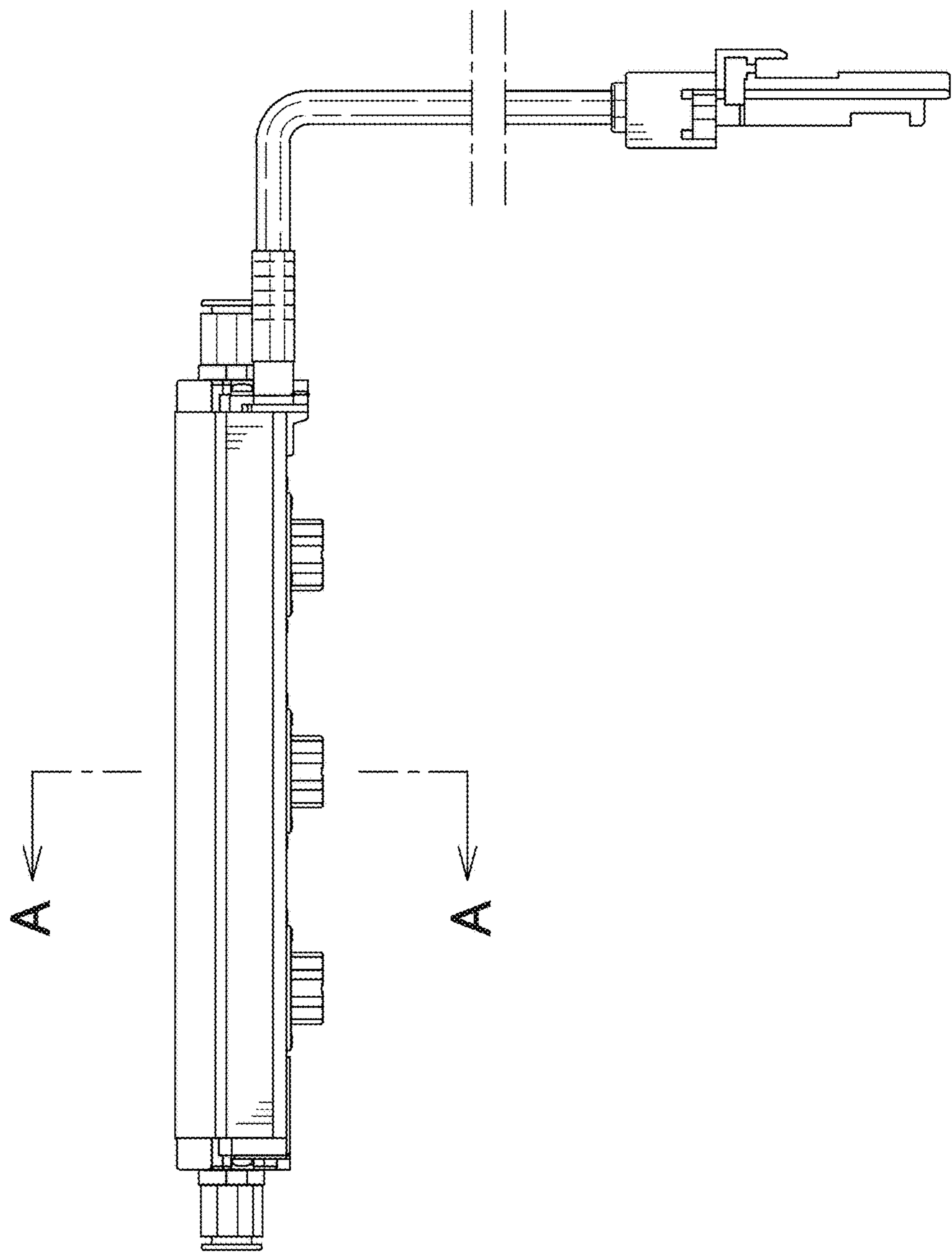


Fig. 13

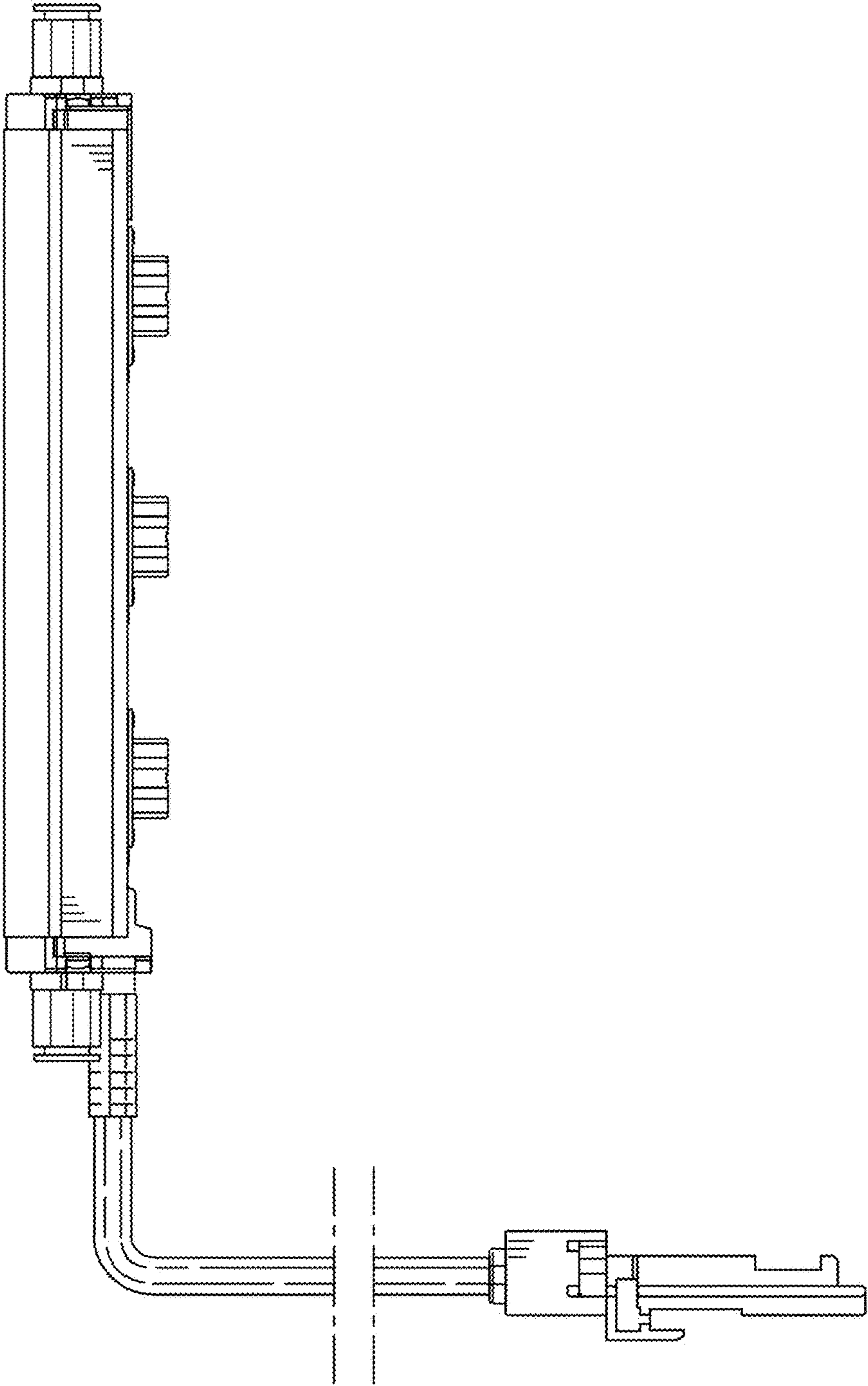


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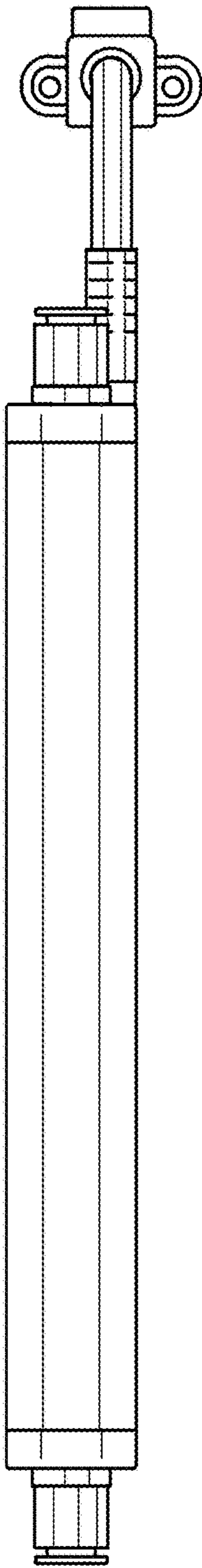


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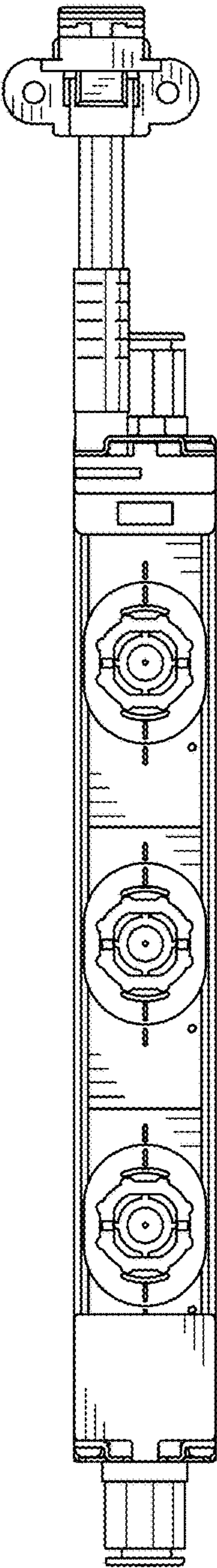


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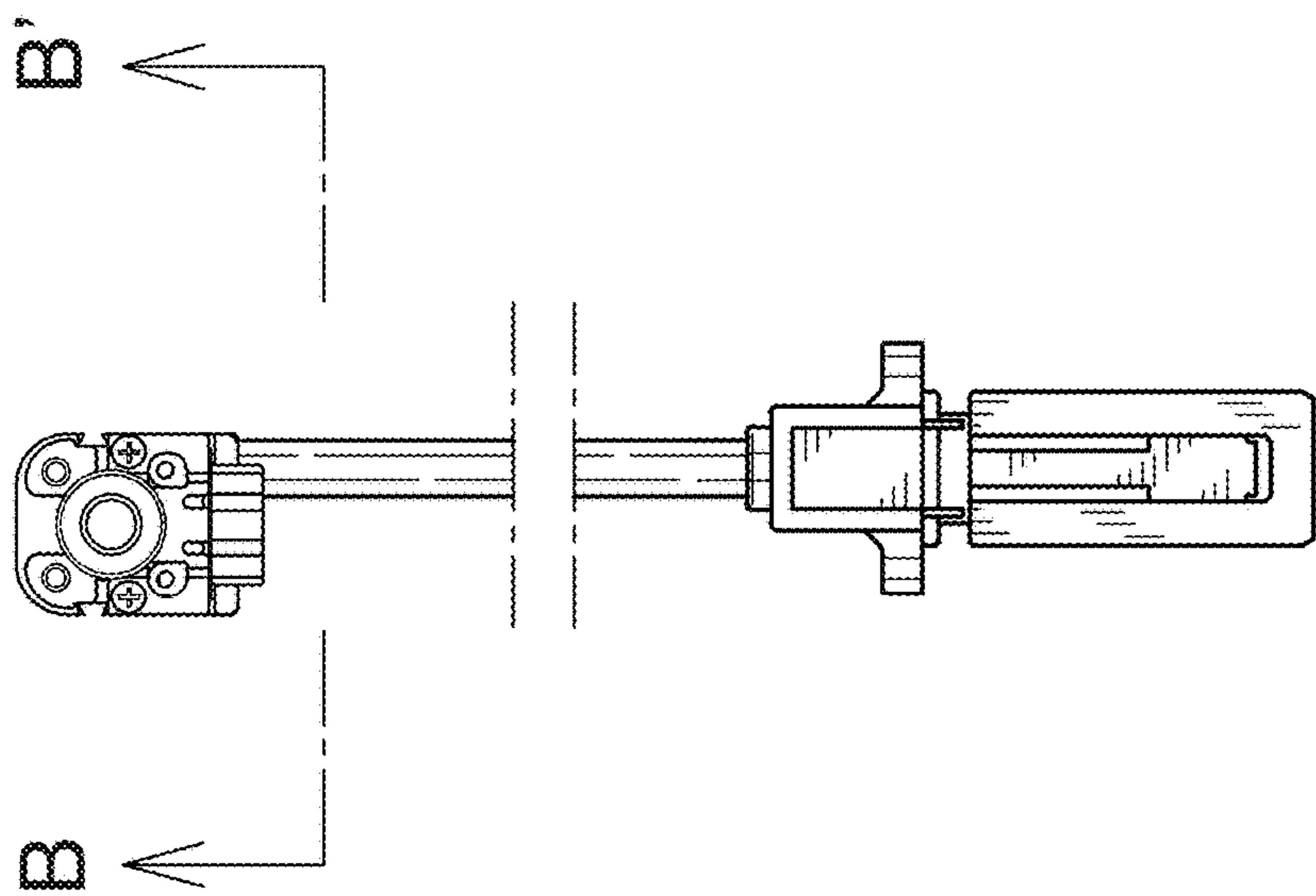


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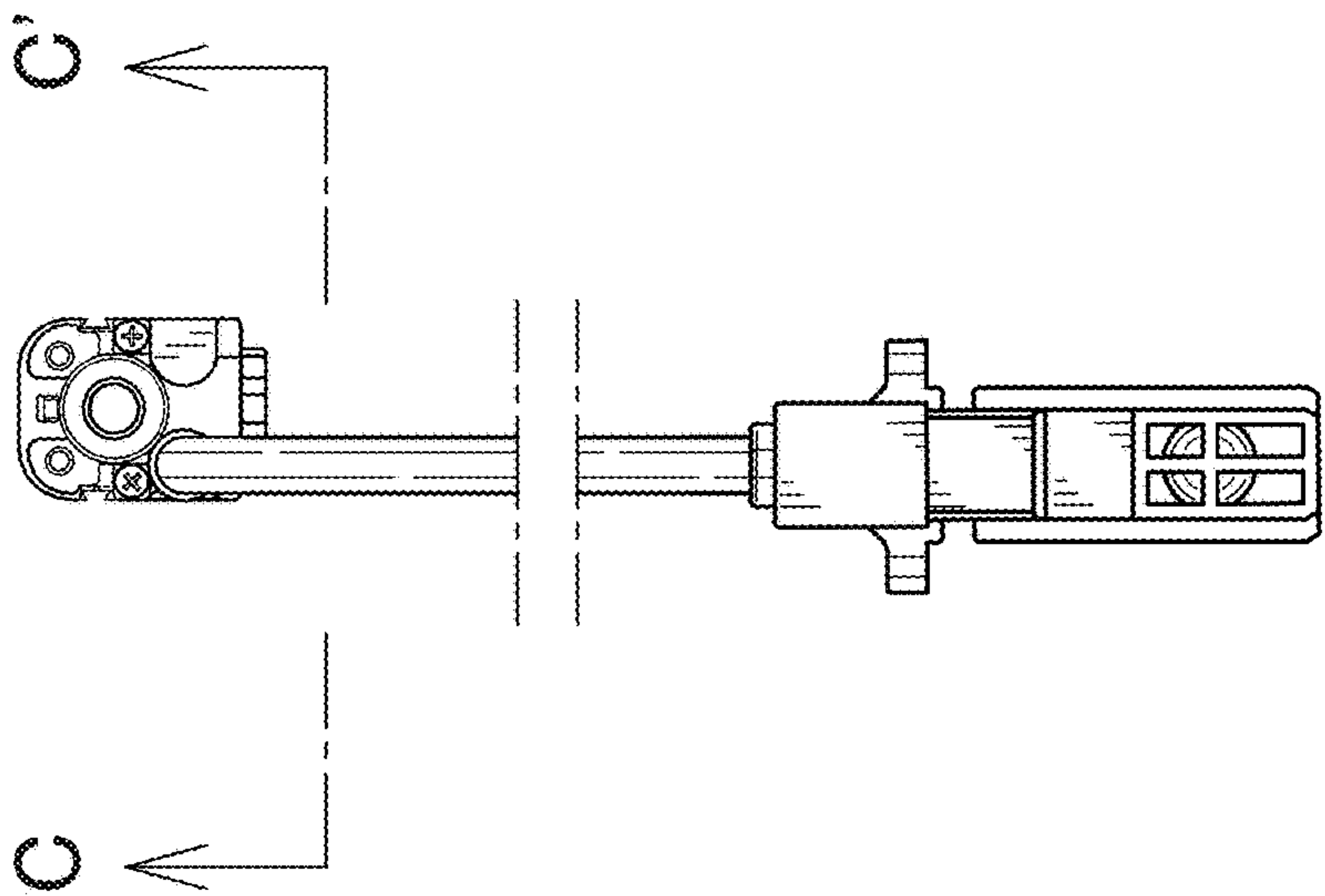


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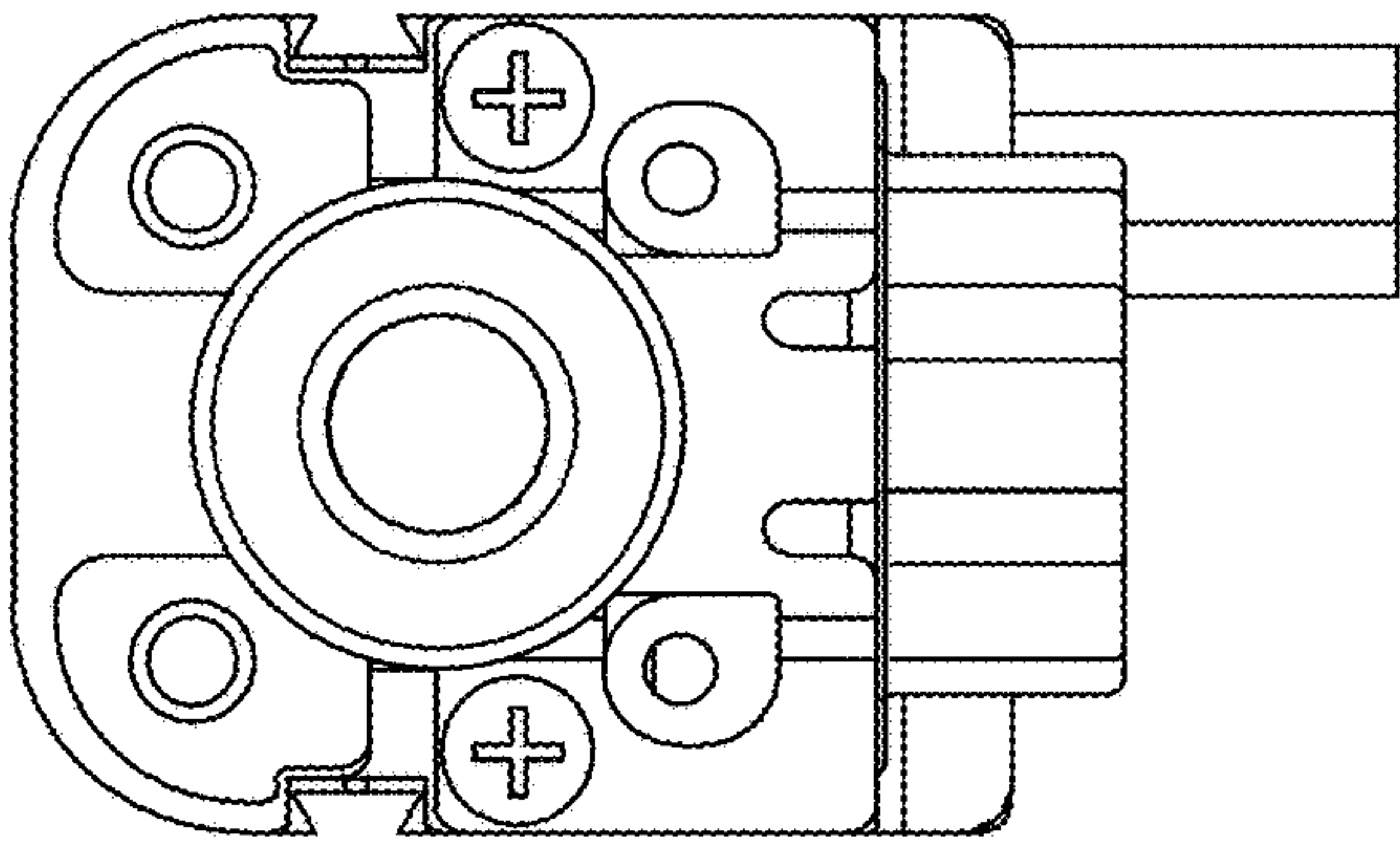


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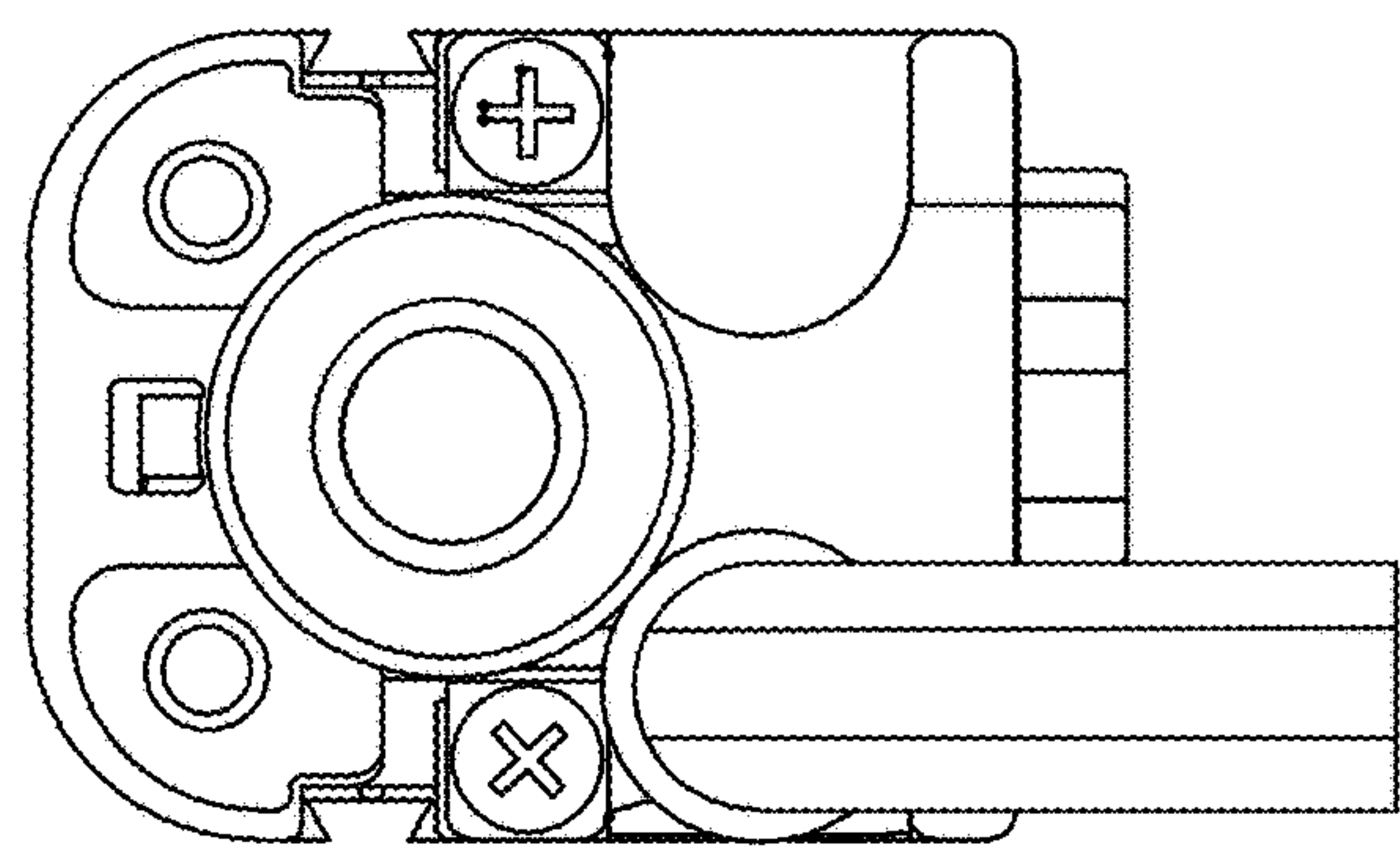


Fig. 20

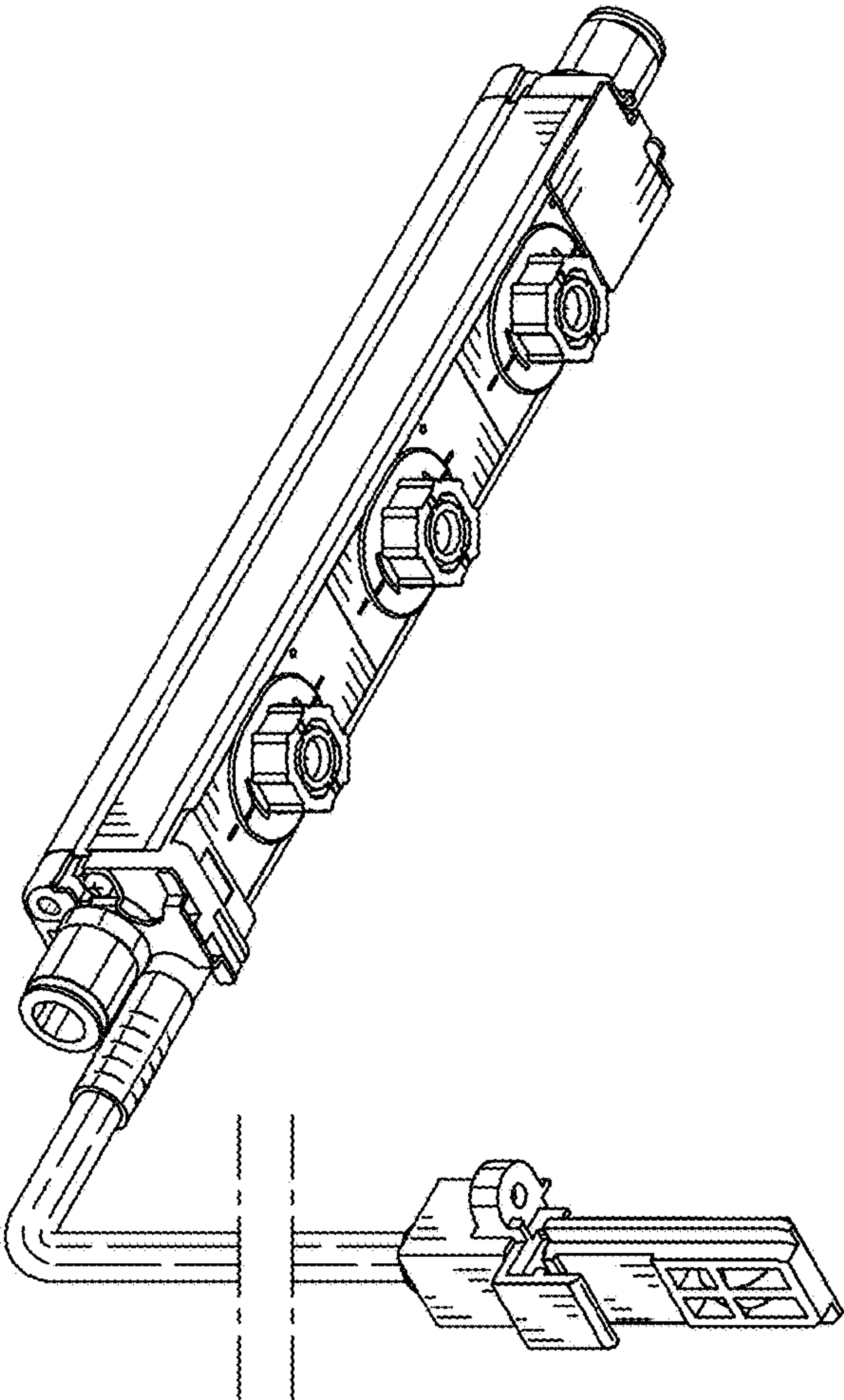


Fig. 21

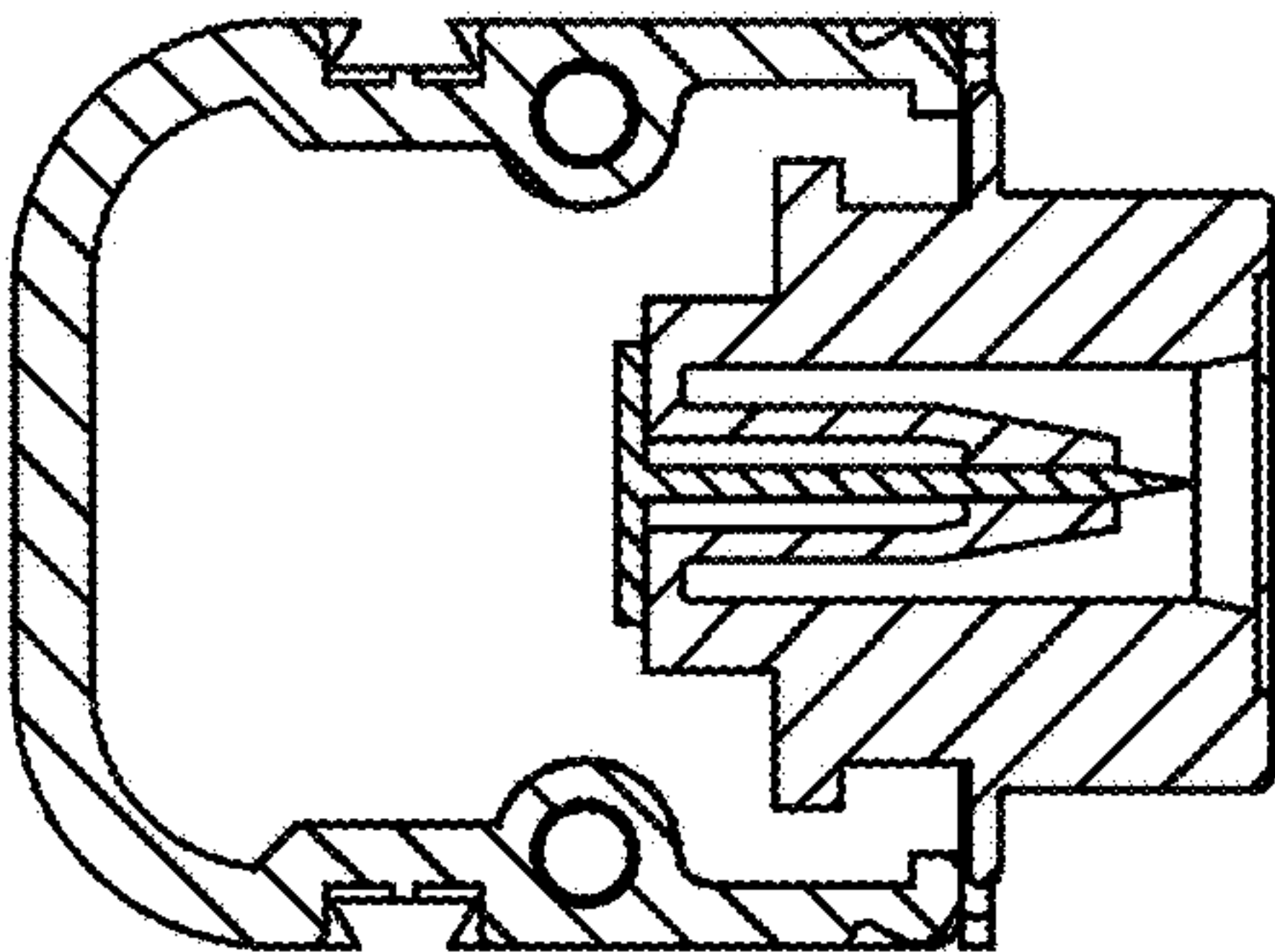


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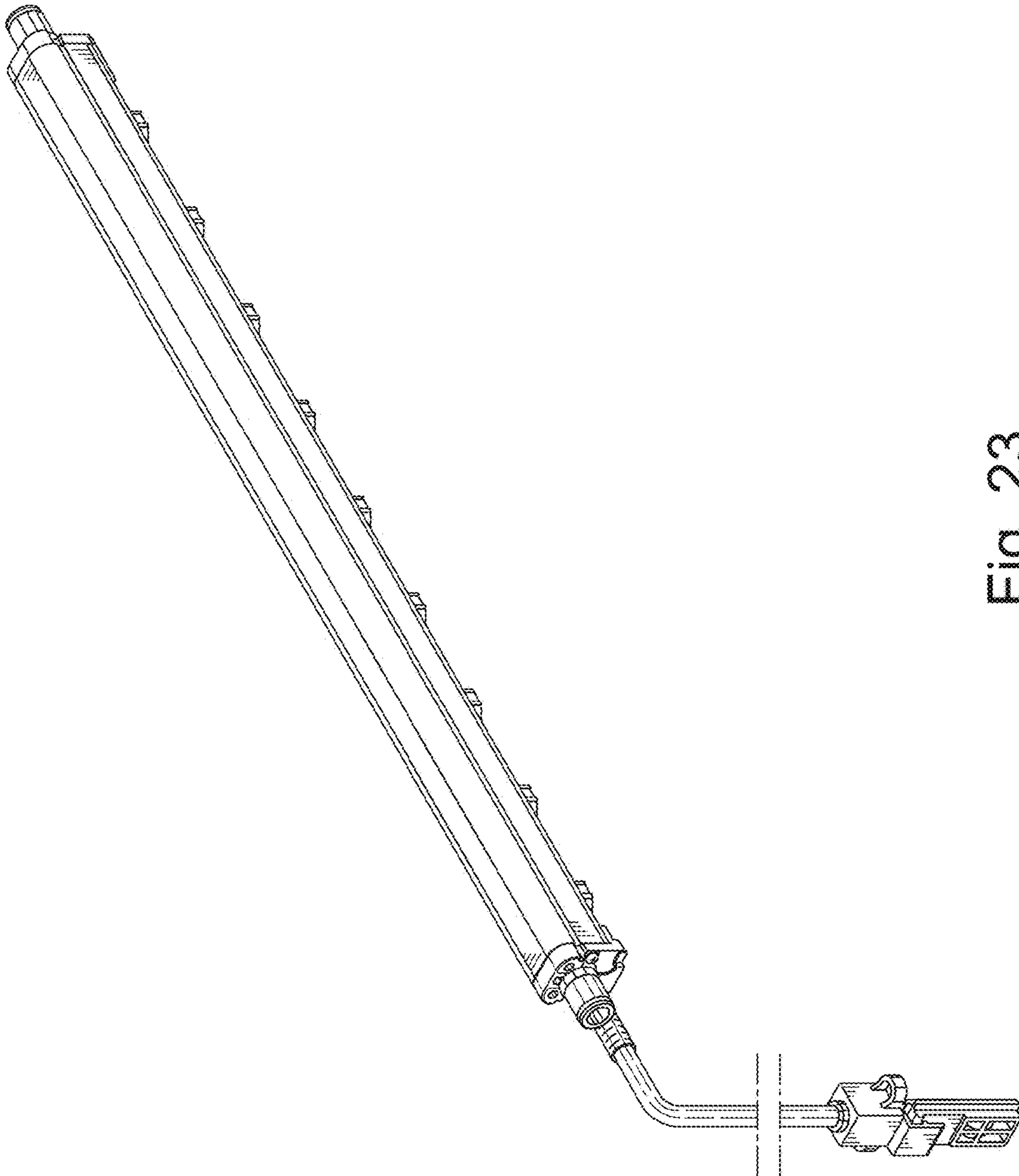


Fig. 23

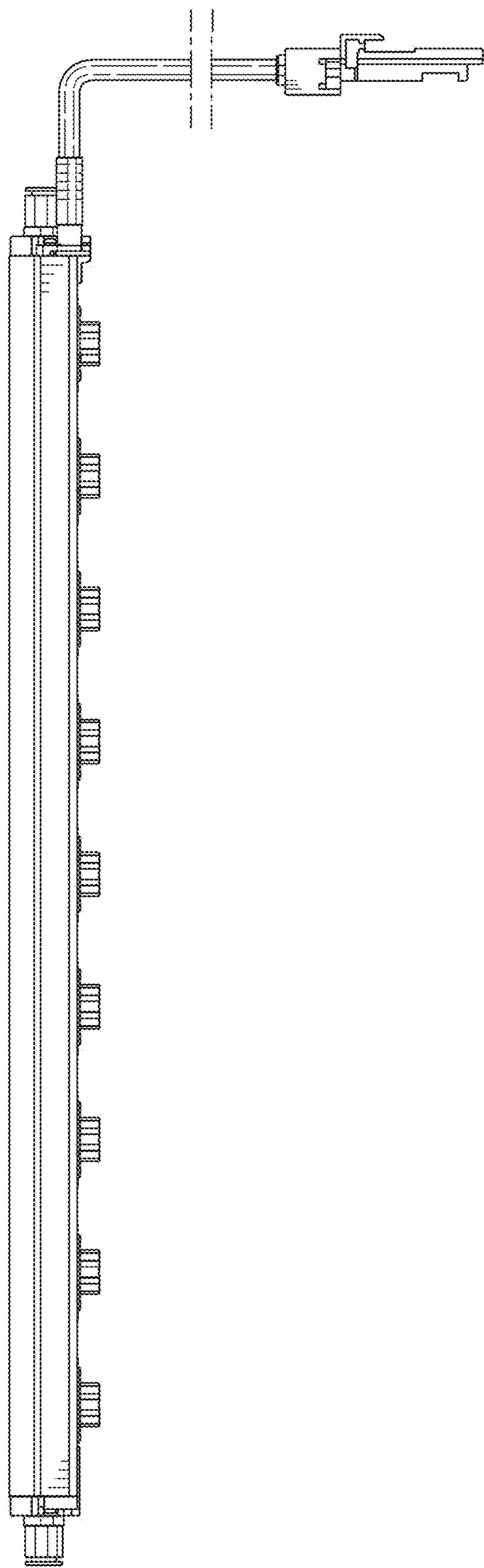


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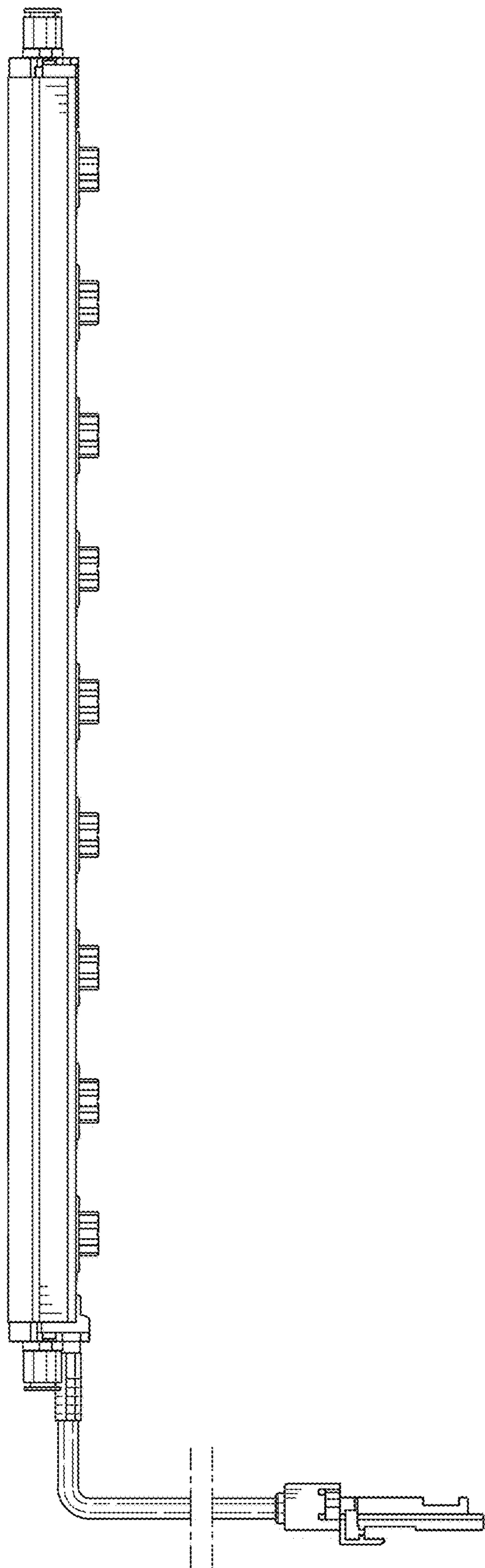


Fig. 25

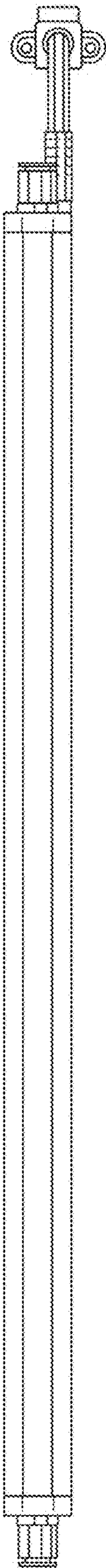


Fig. 26

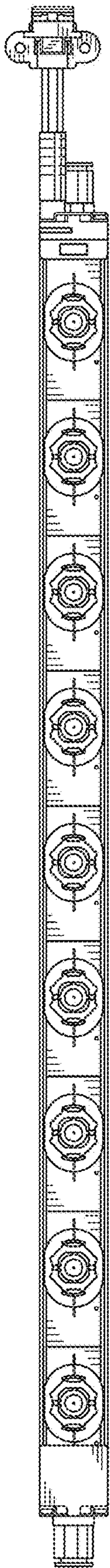


Fig. 27

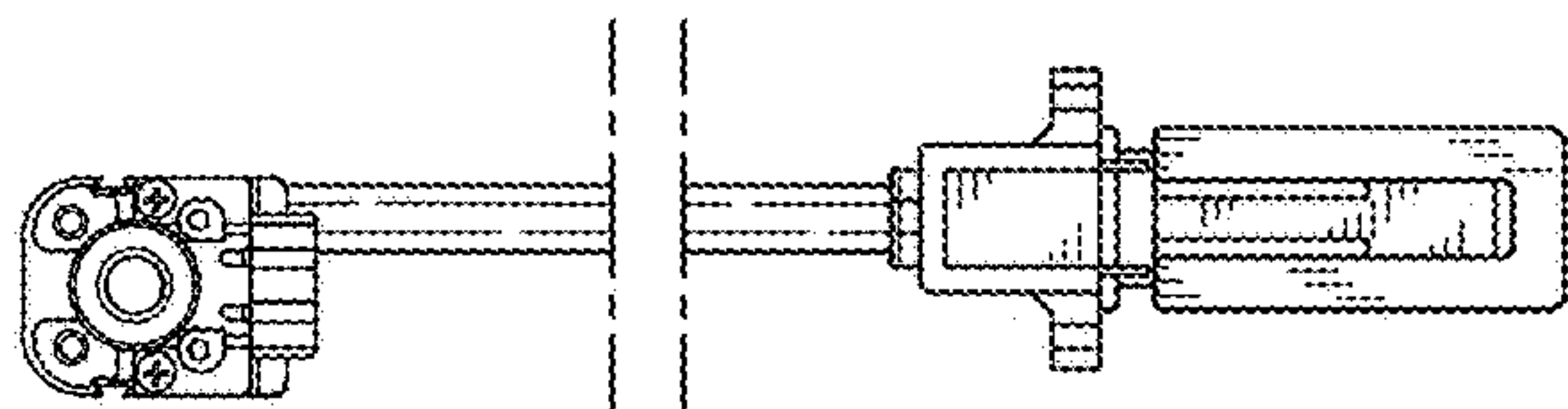


Fig. 28

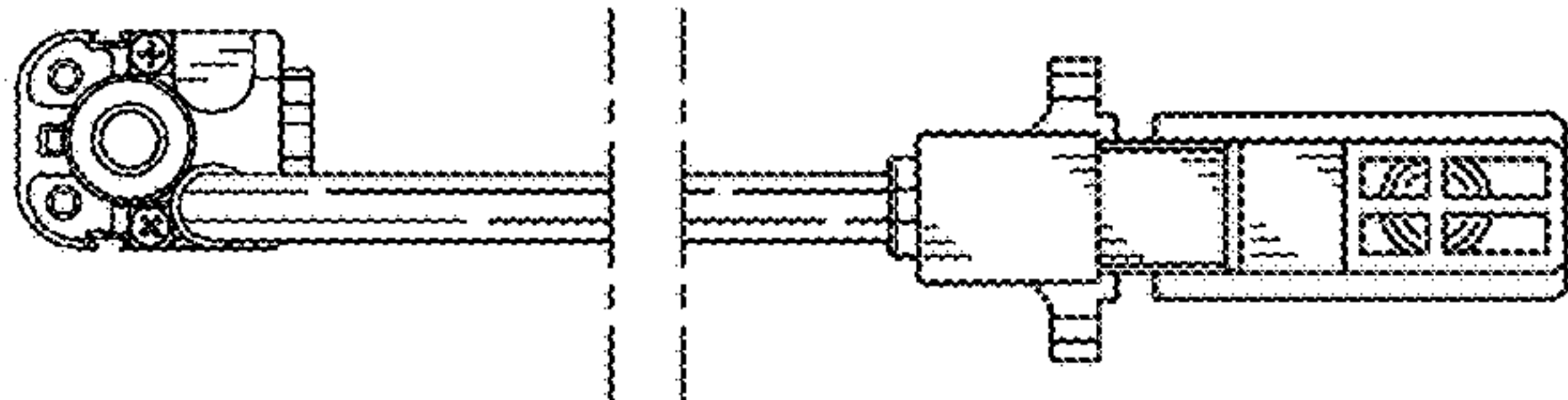


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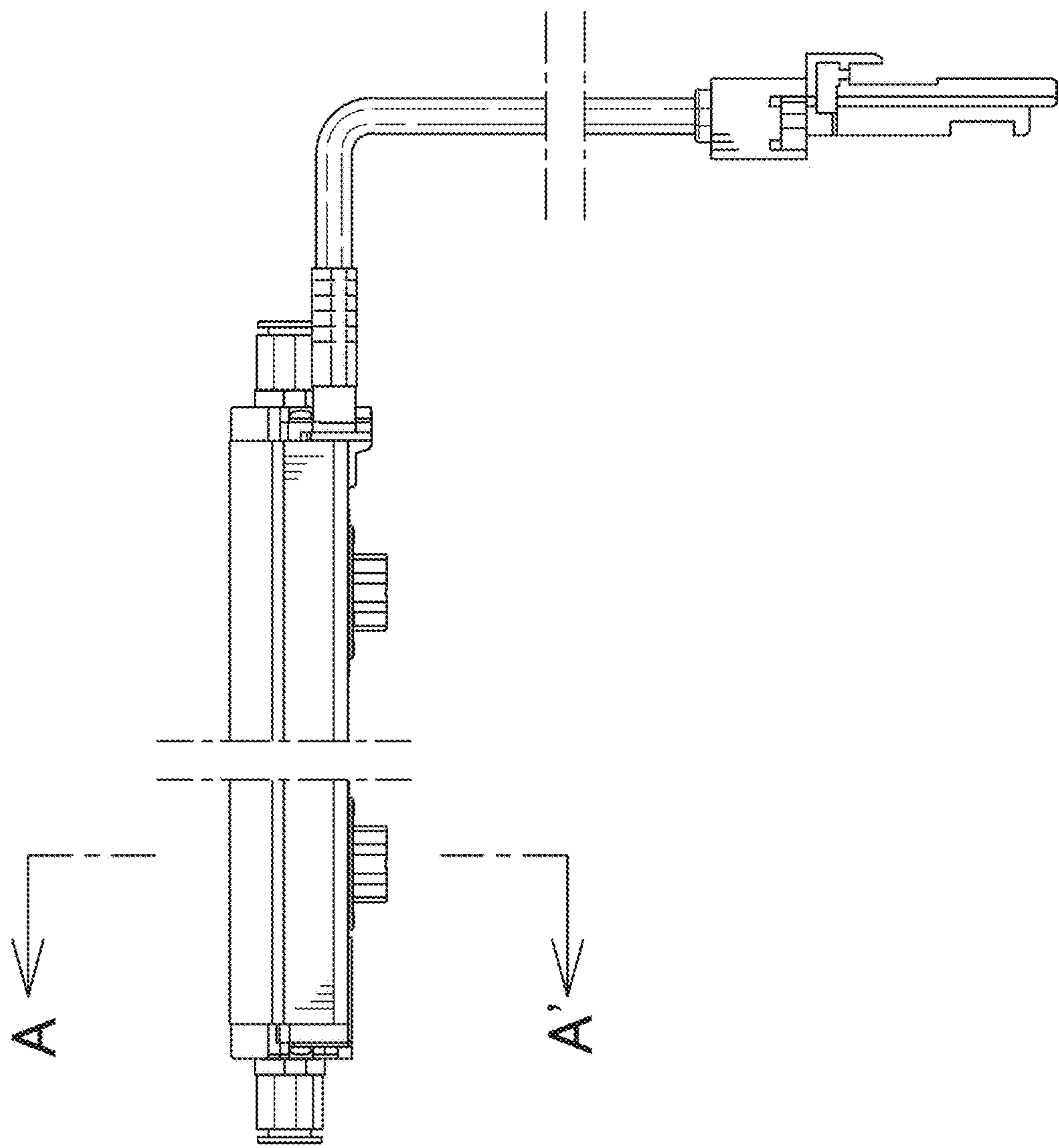


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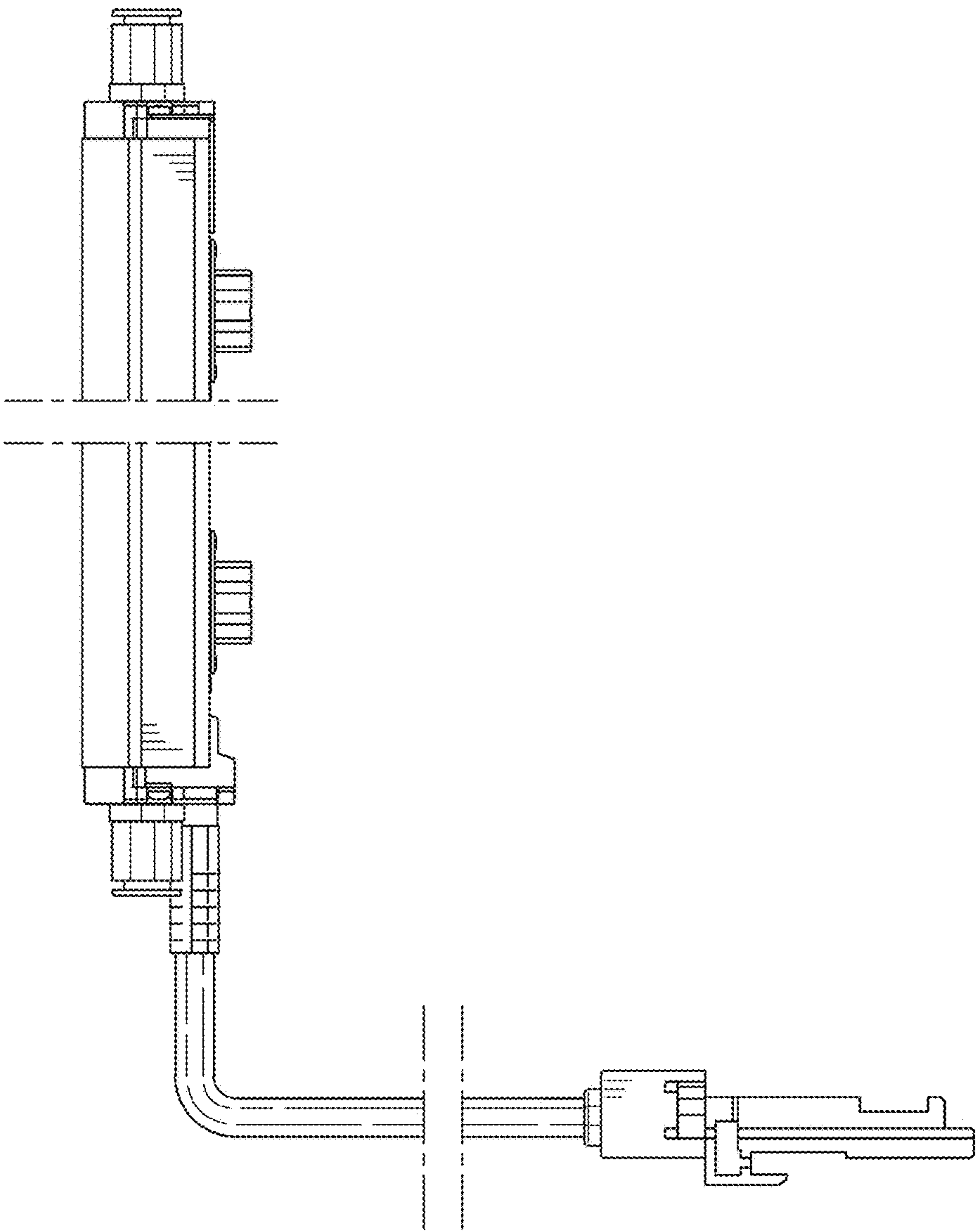


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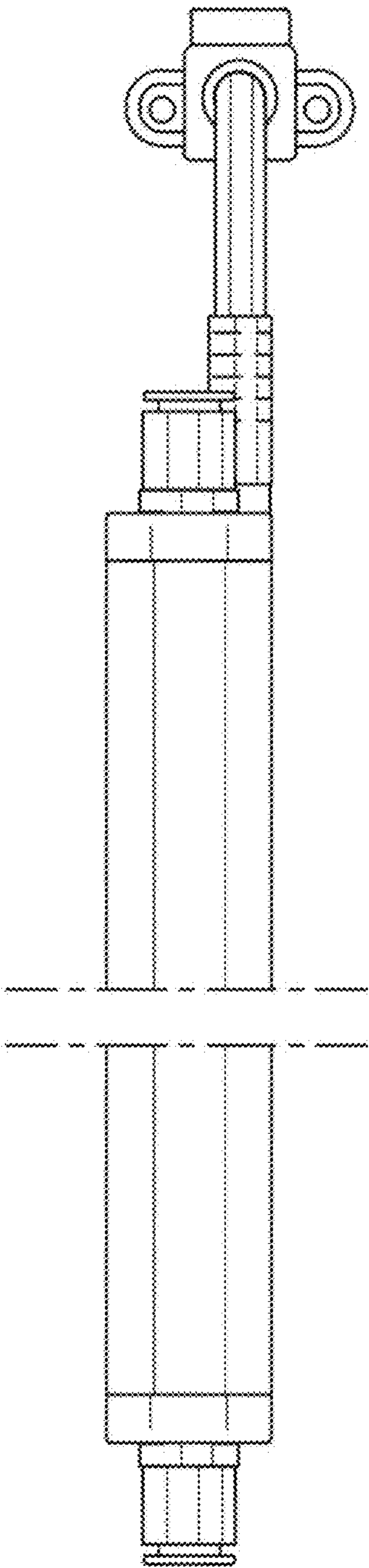


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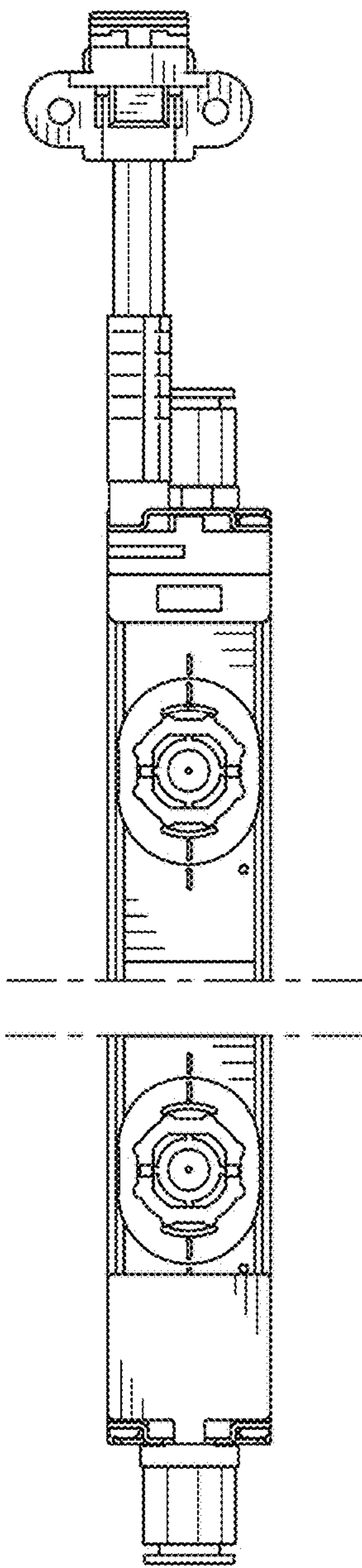


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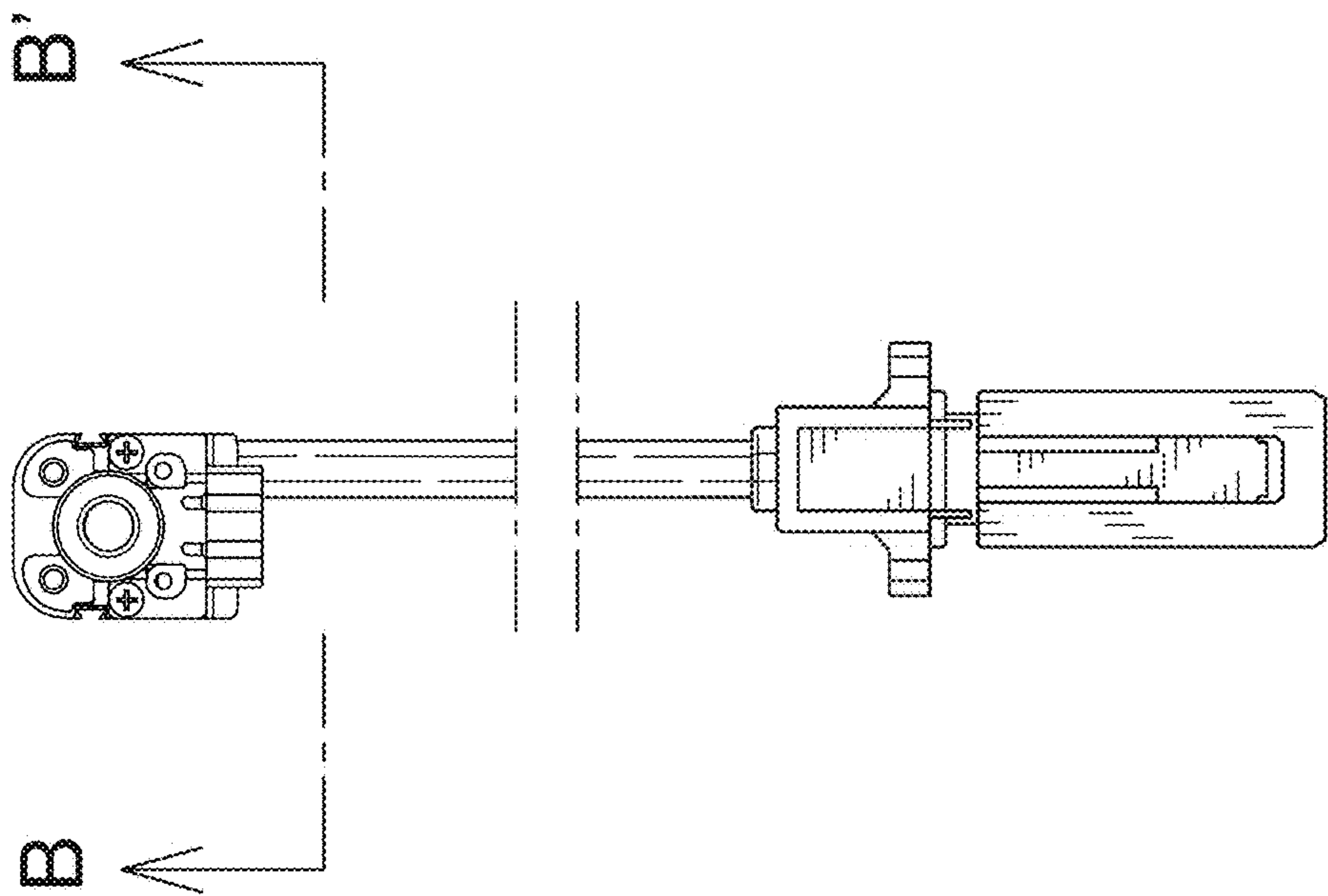


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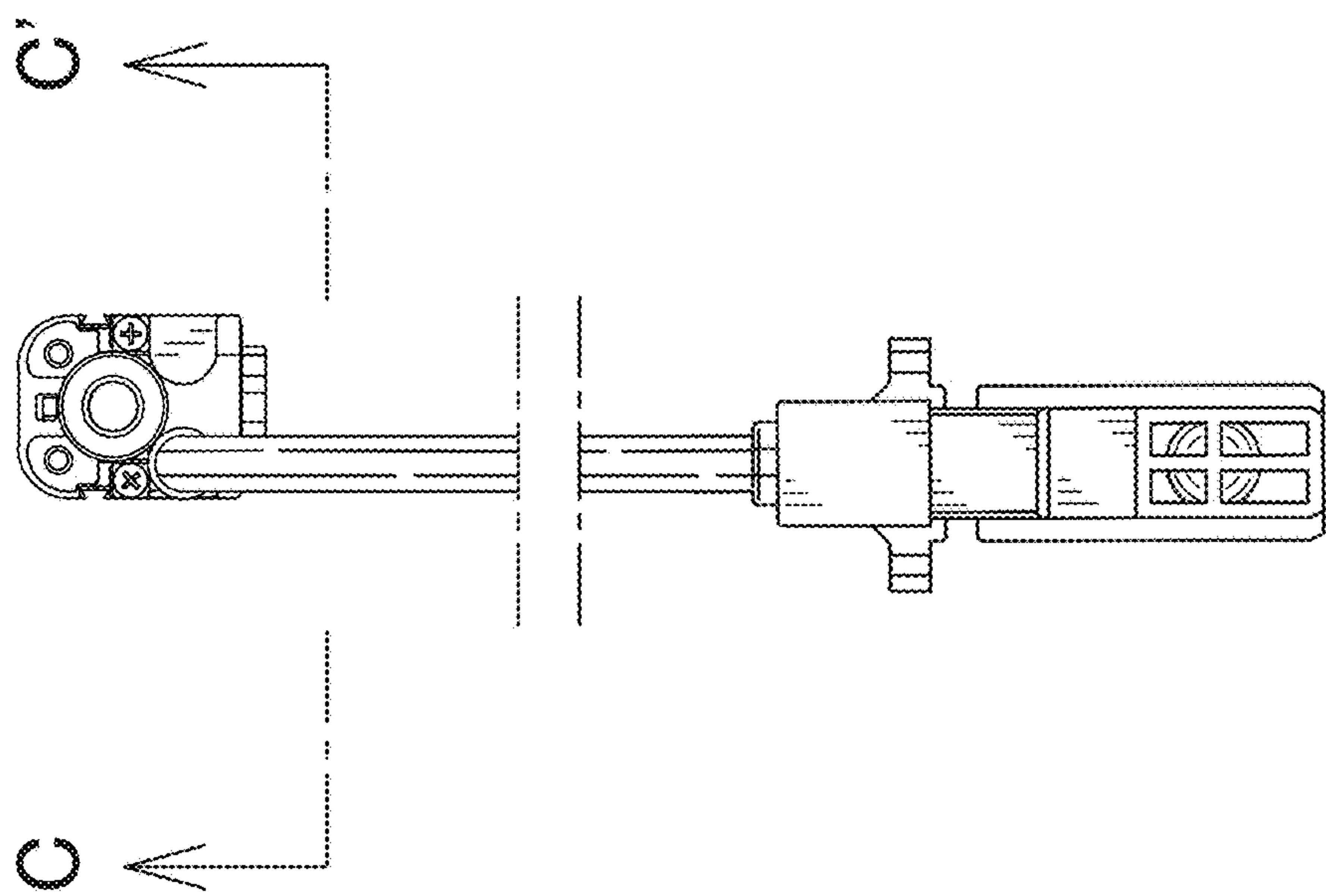


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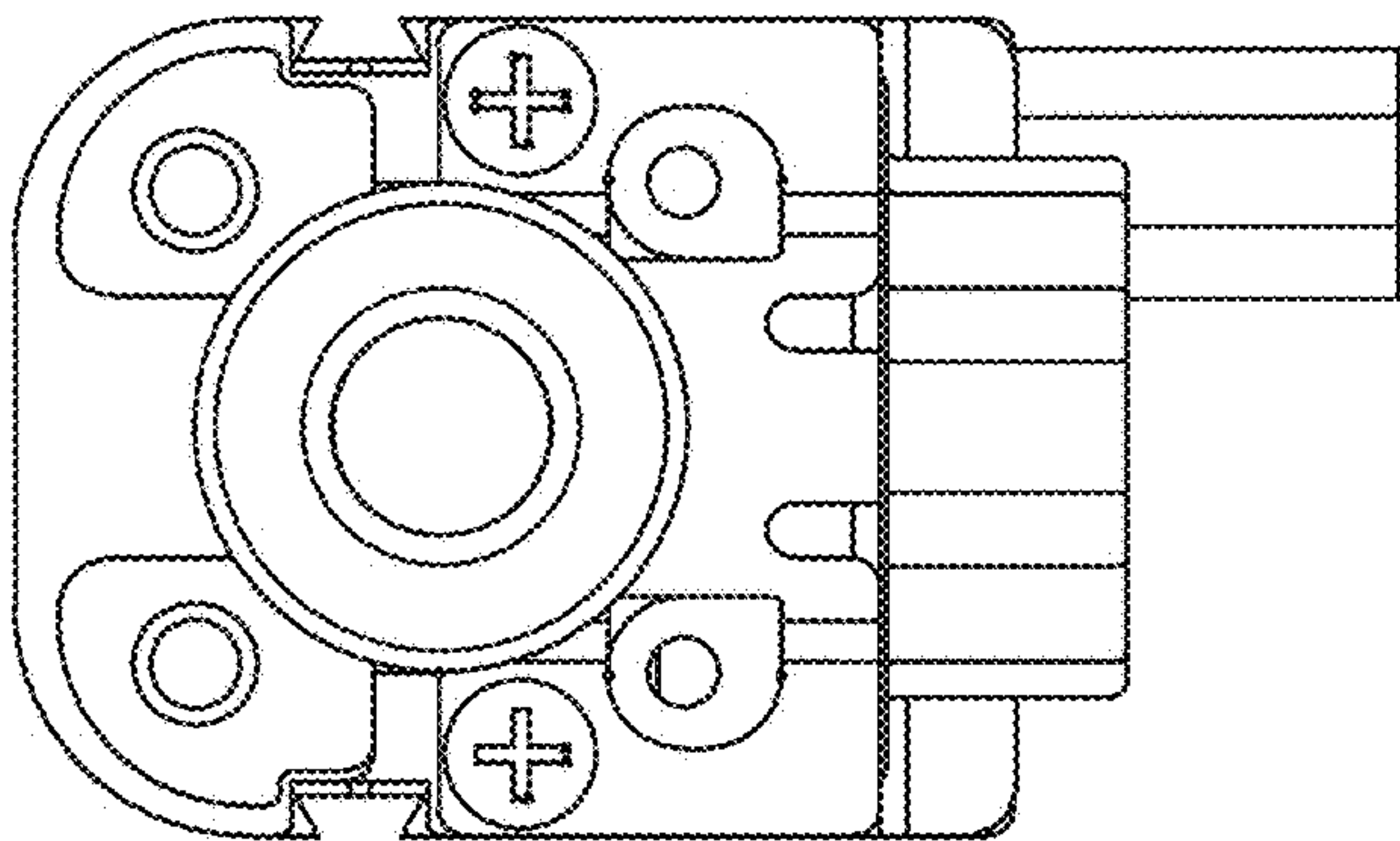


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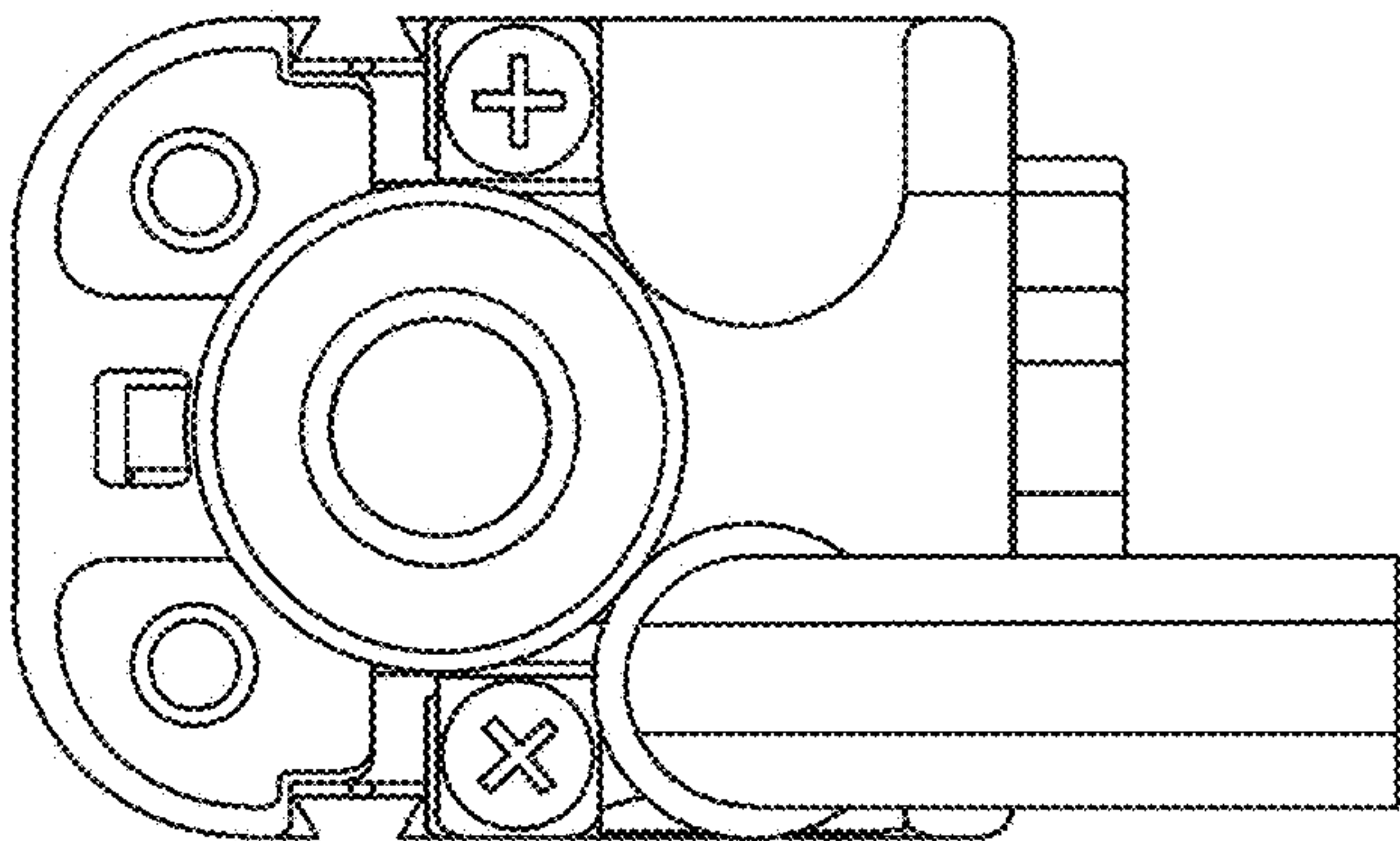


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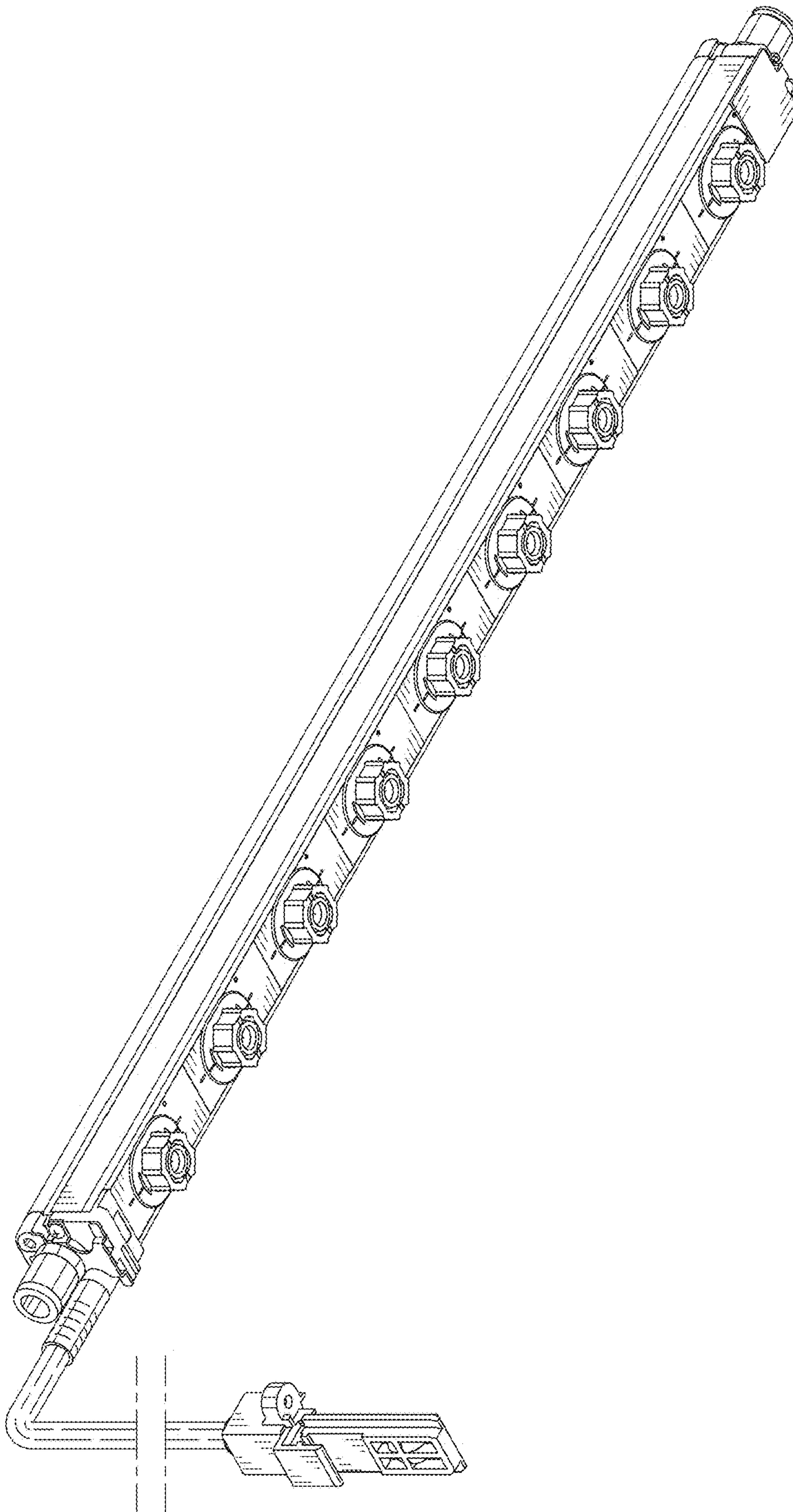


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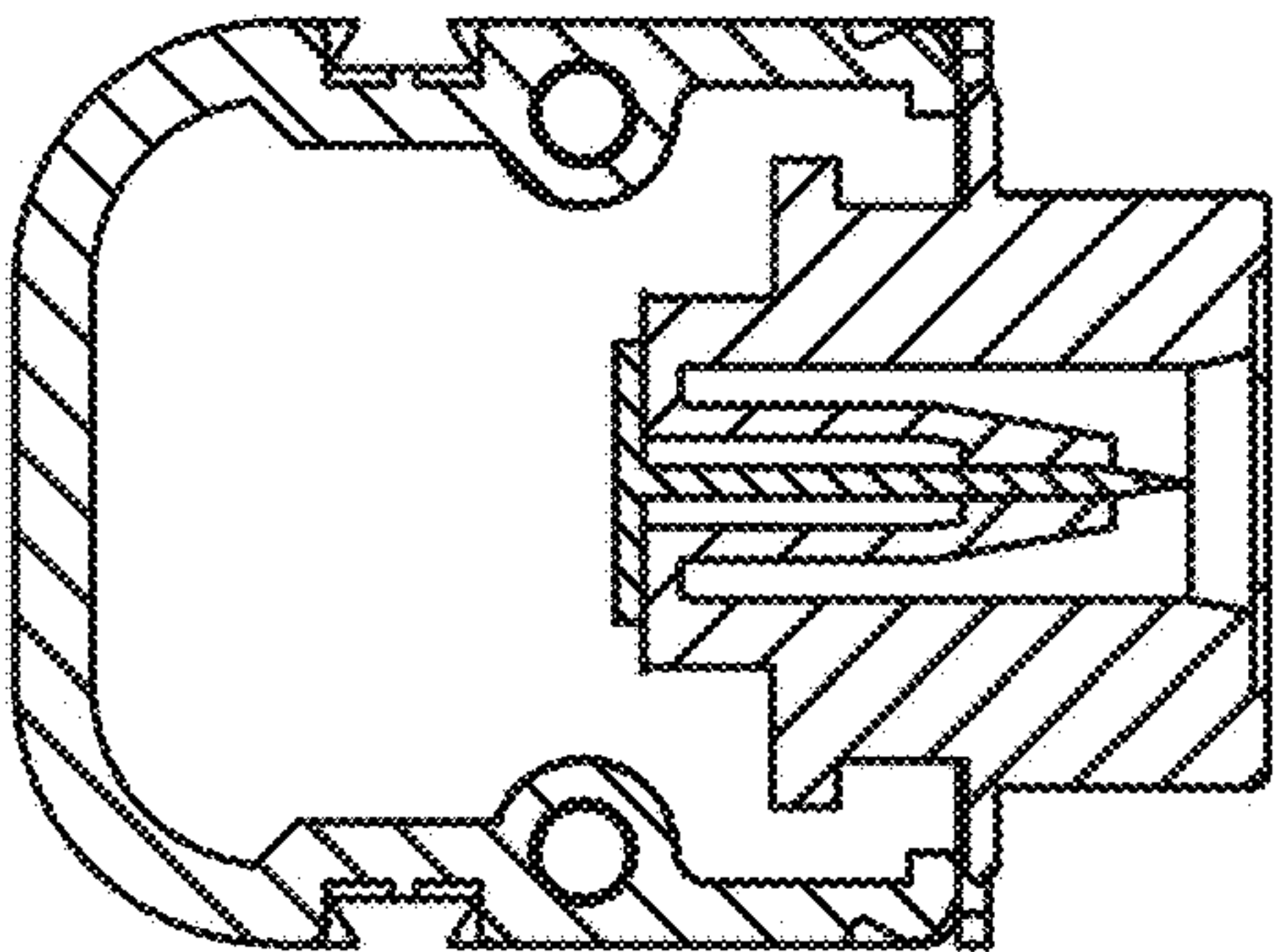


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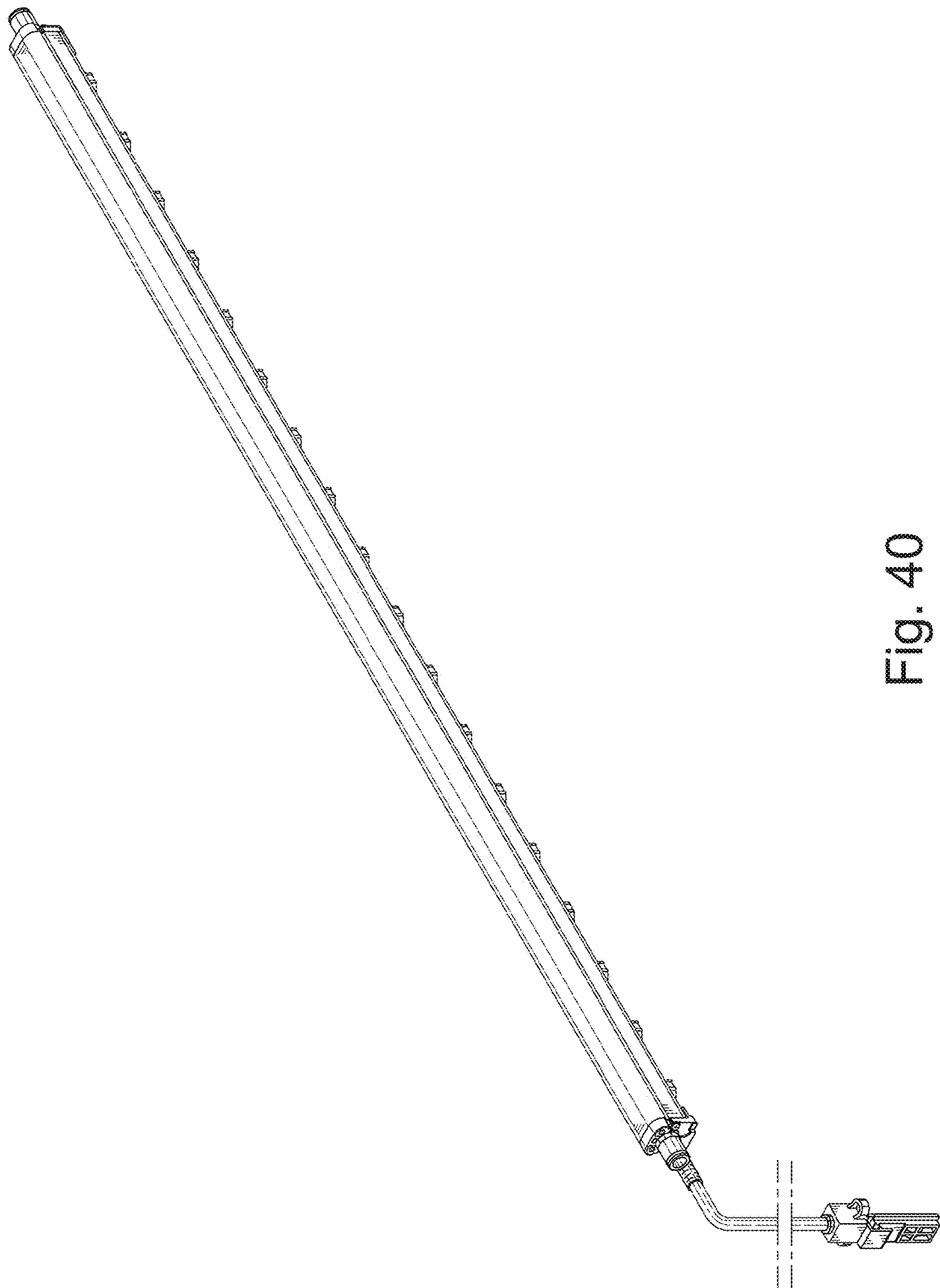


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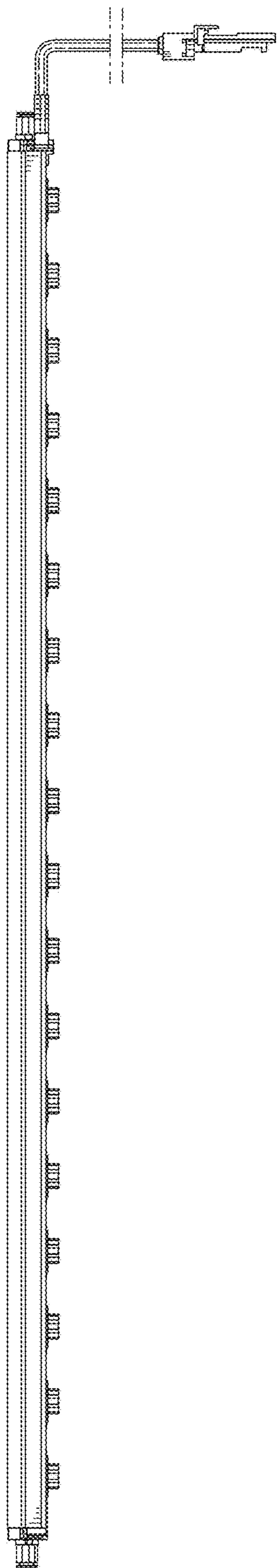


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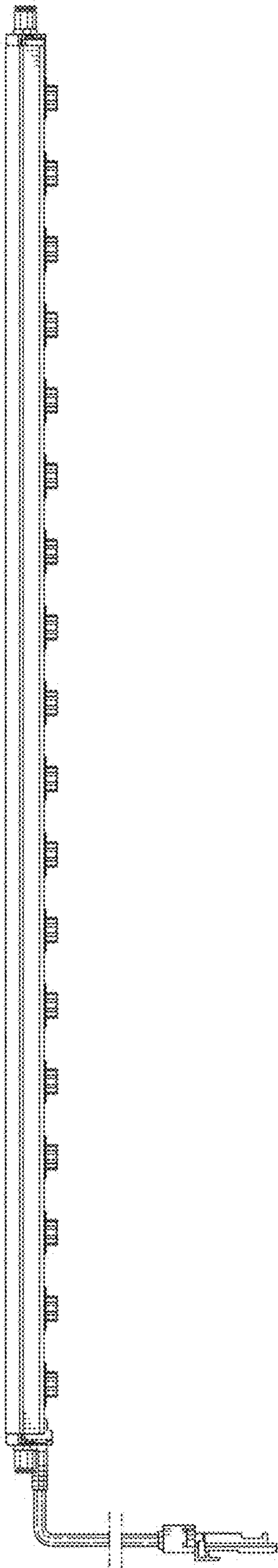


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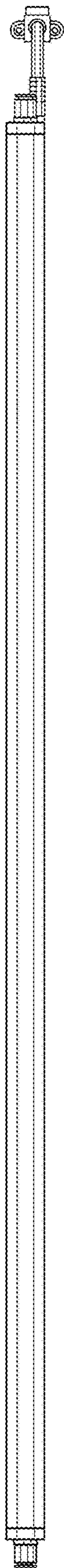


Fig. 43



Fig. 44

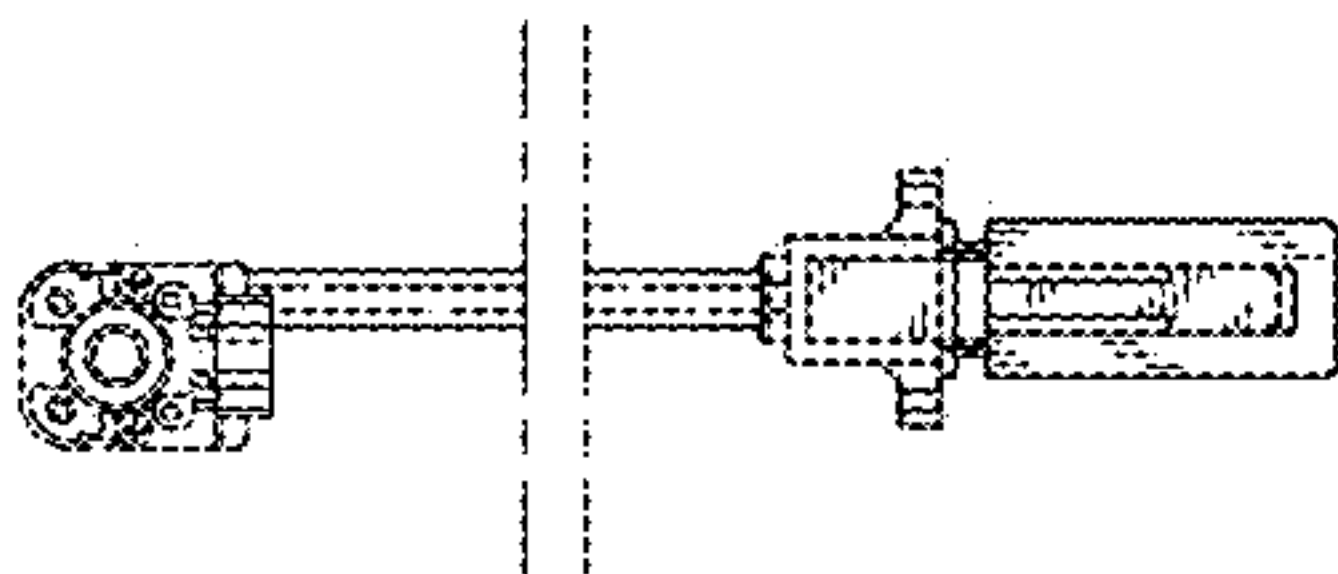


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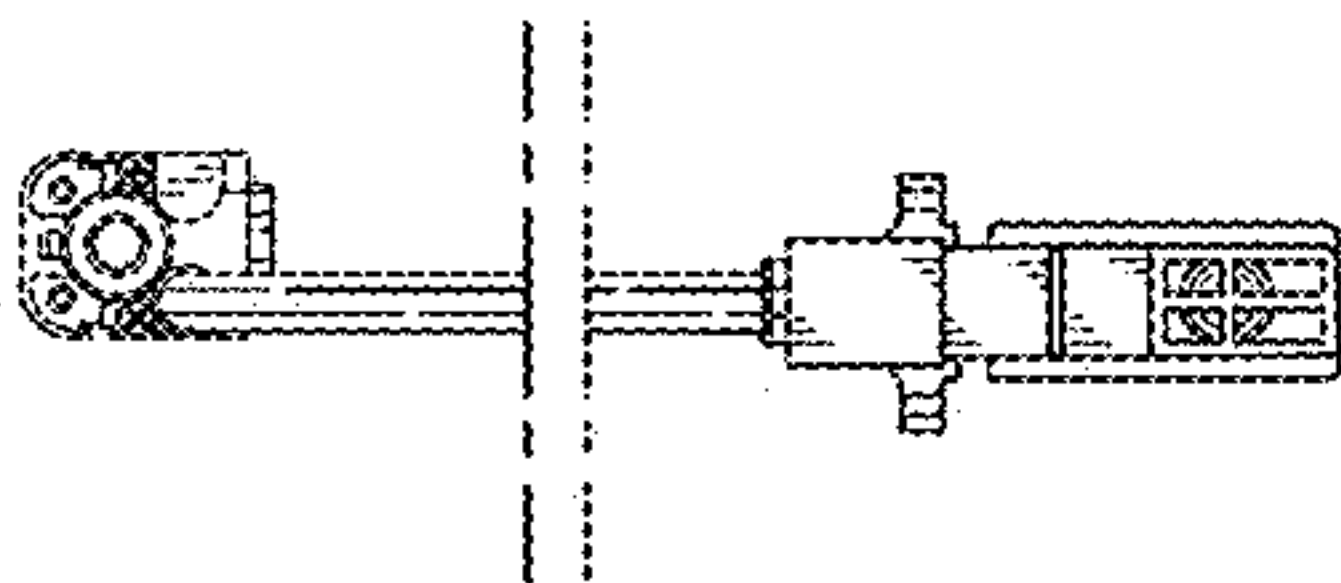


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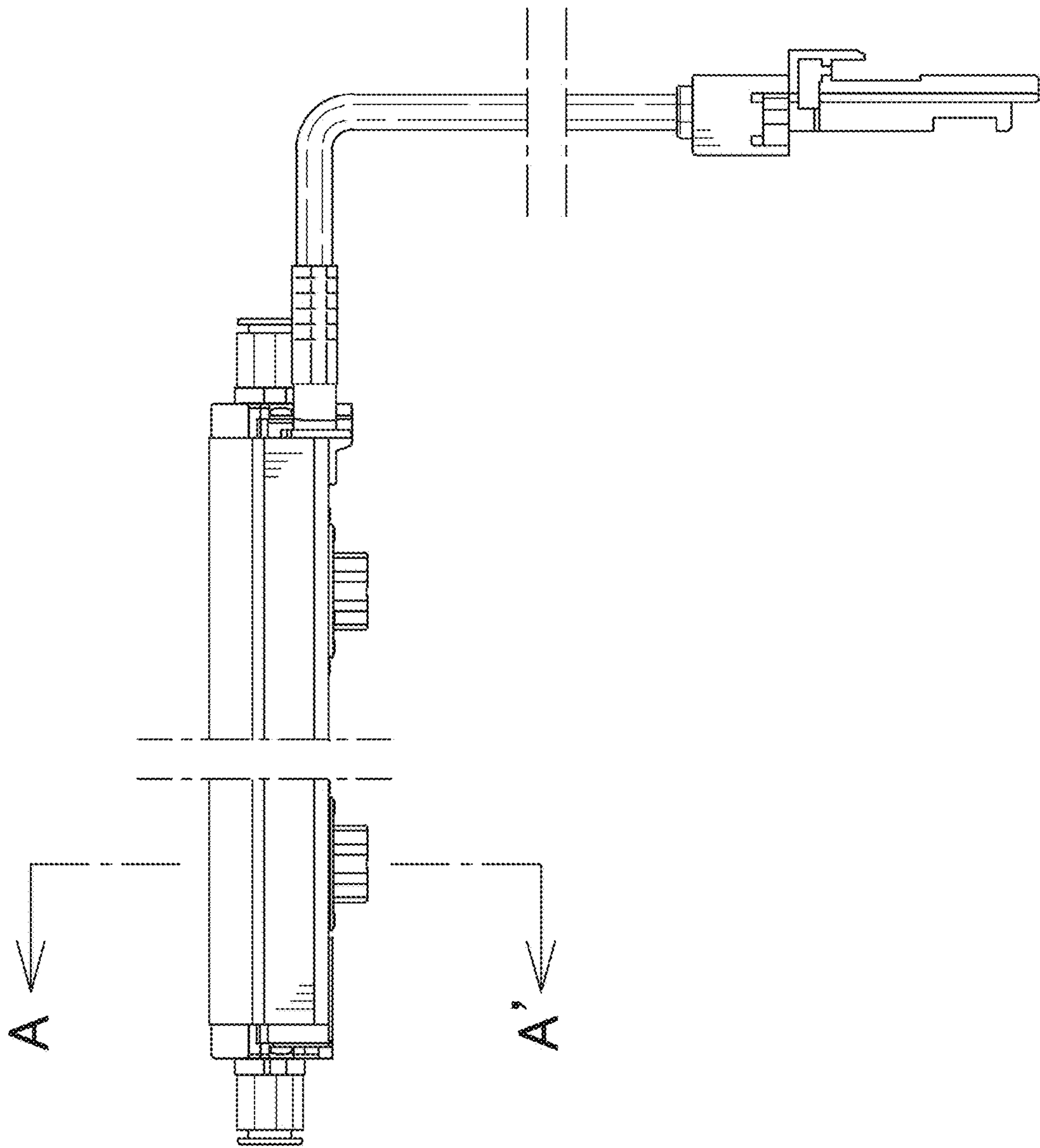


Fig. 47

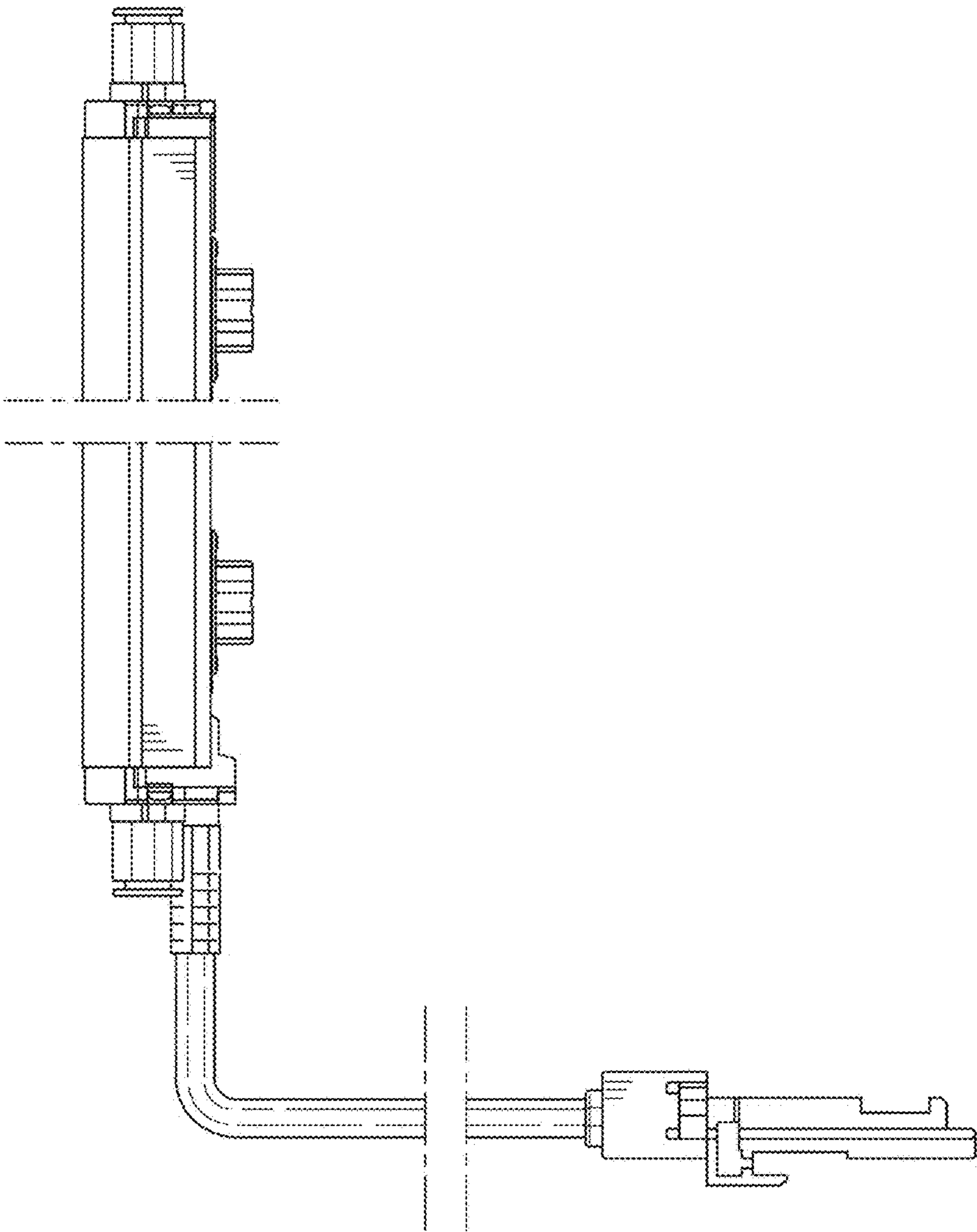


Fig. 48

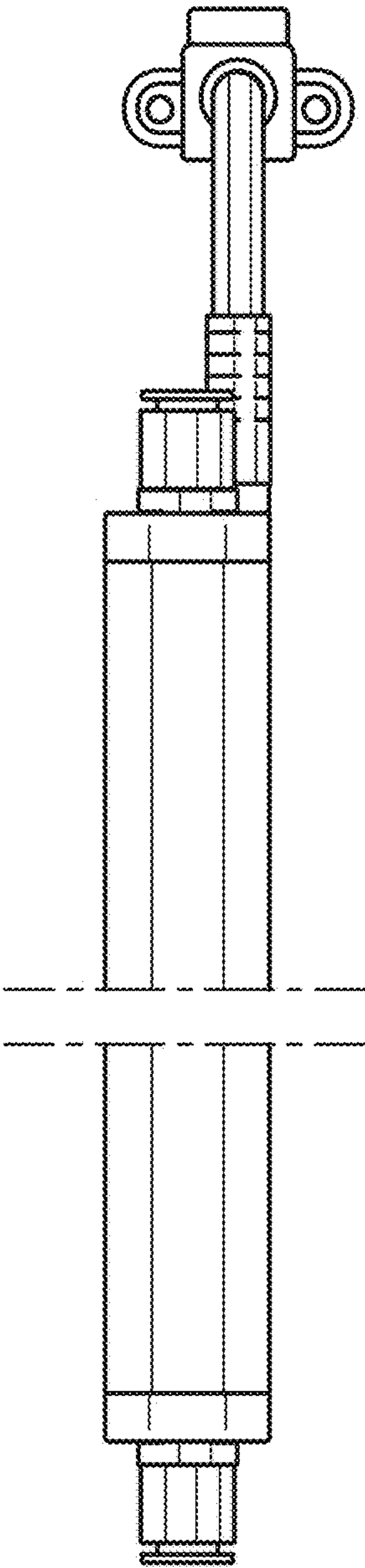


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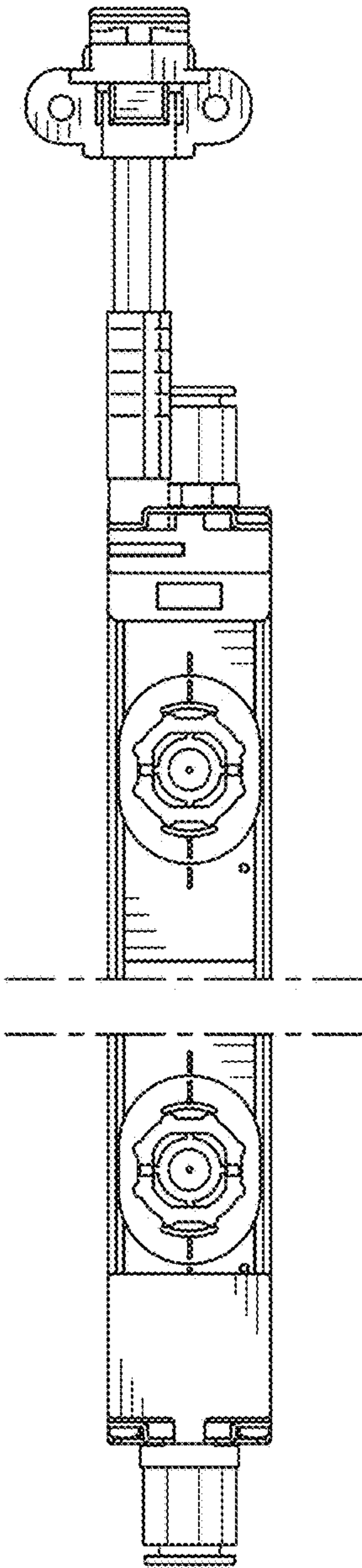


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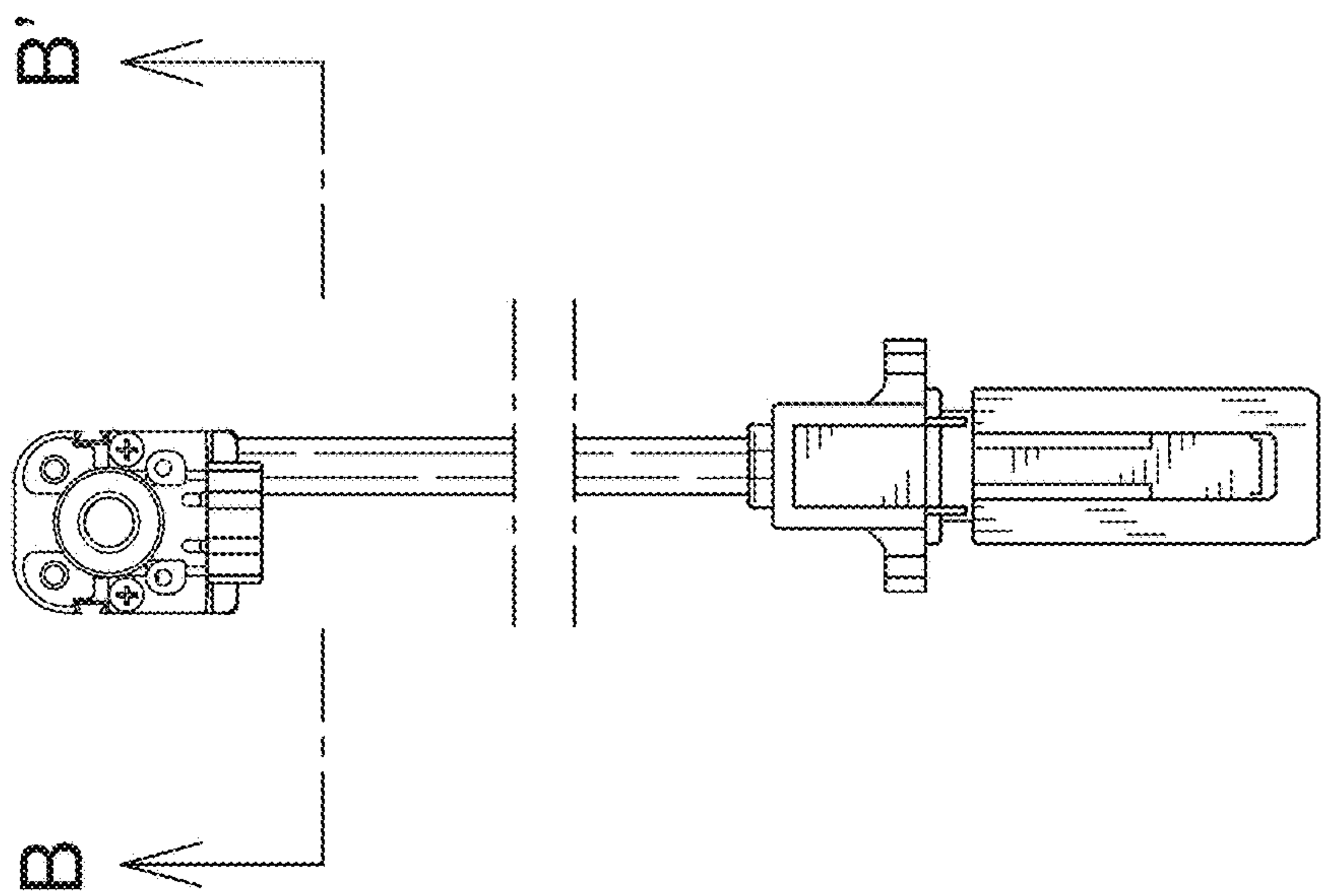


Fig. 51

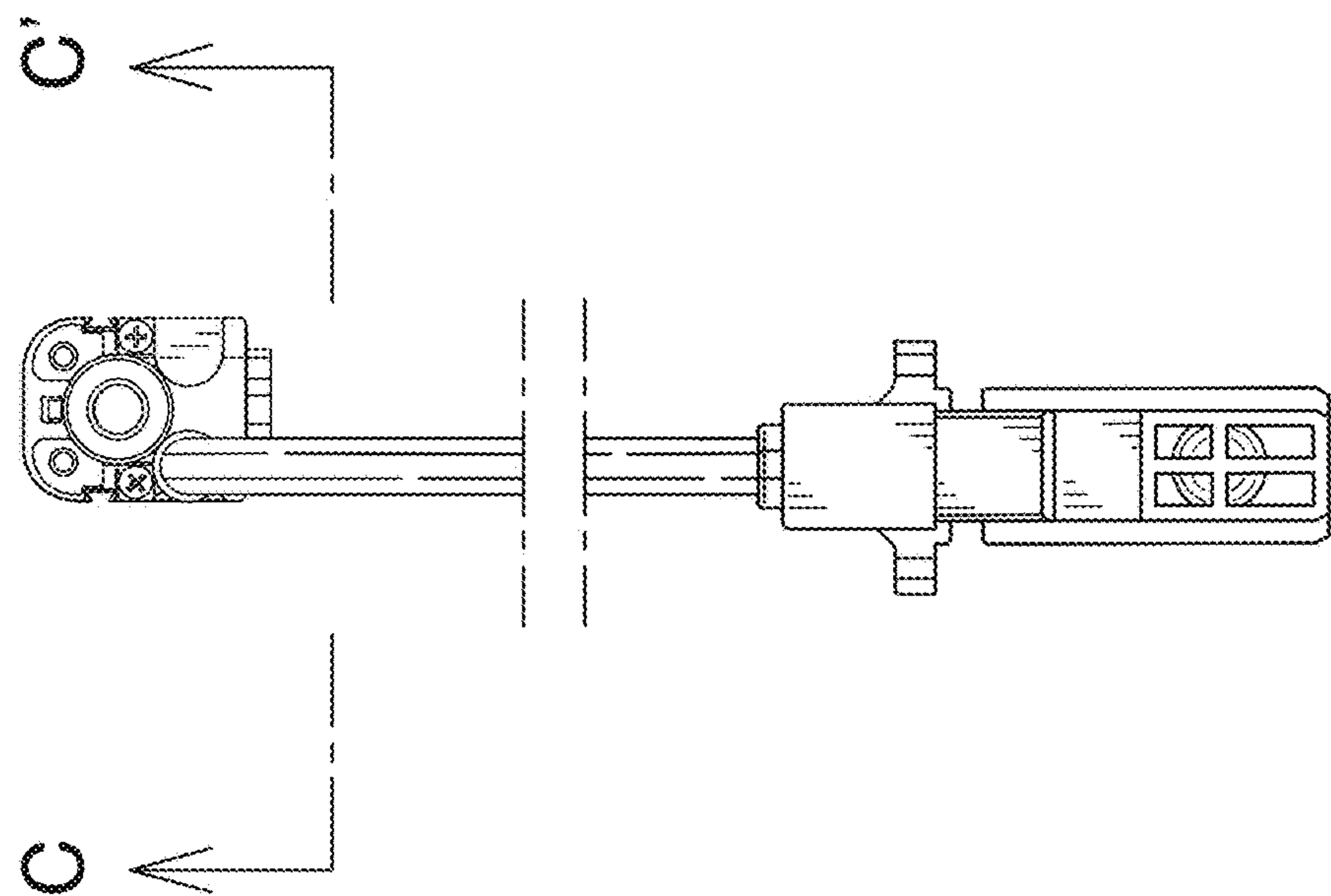


Fig. 52

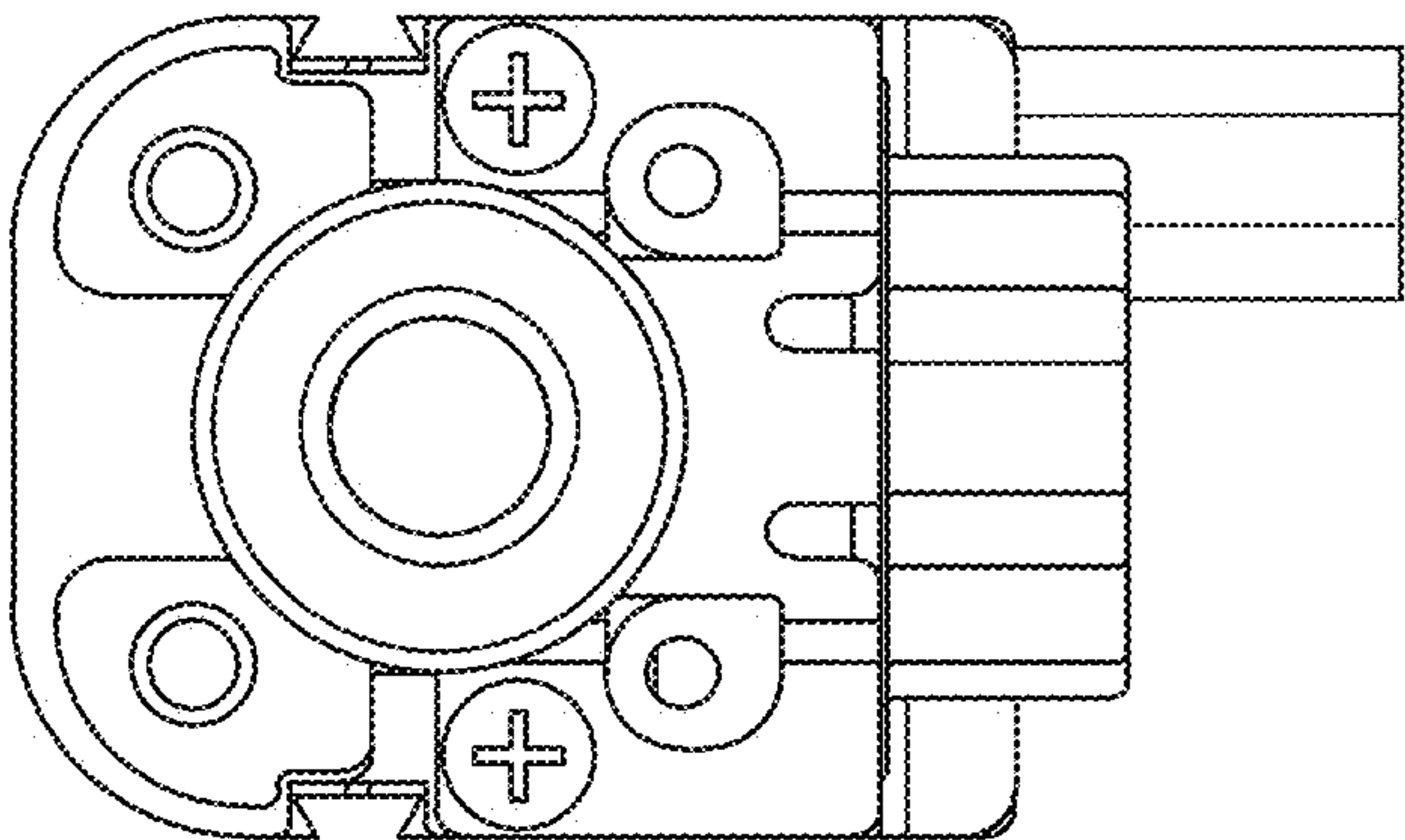


Fig. 53

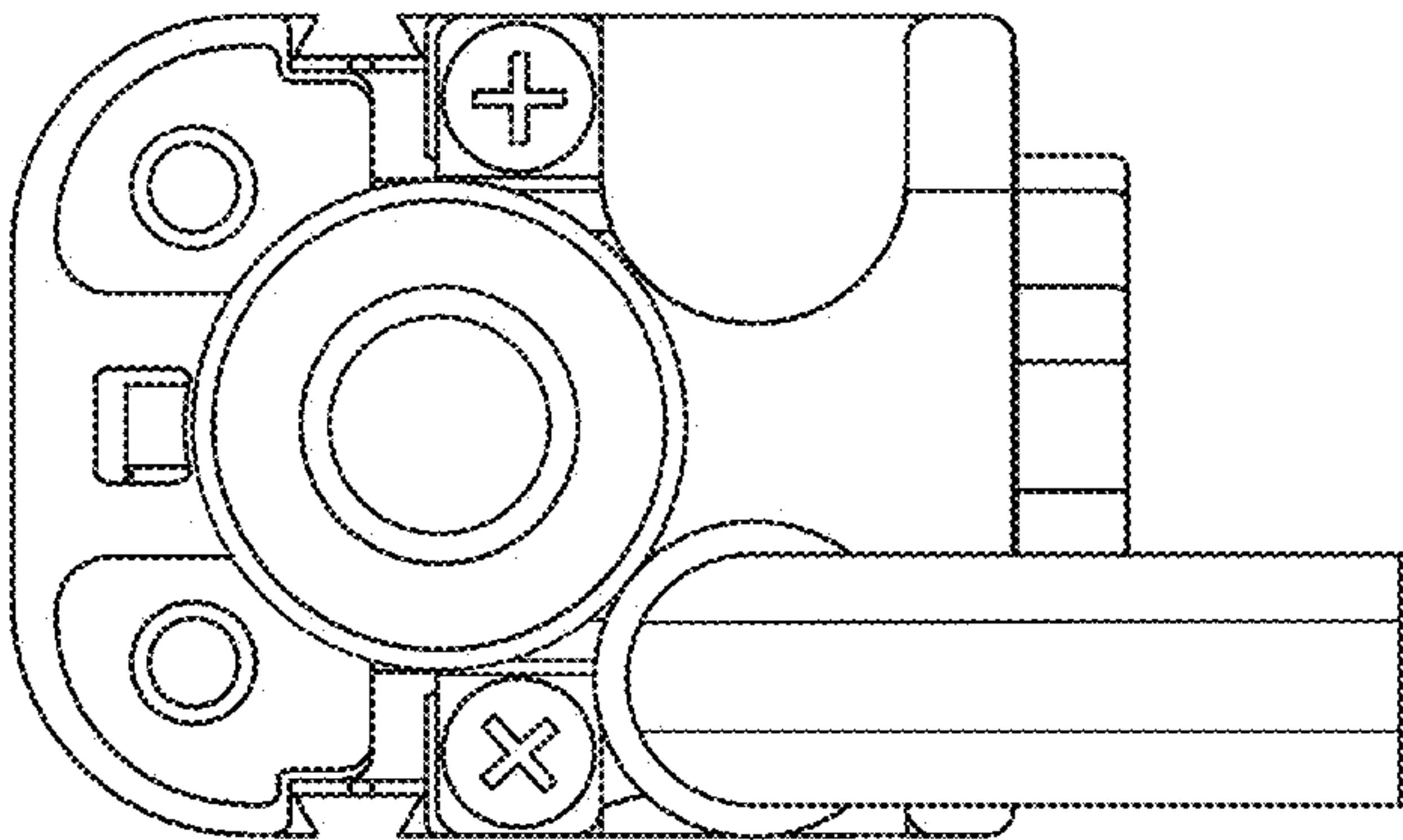


Fig. 54

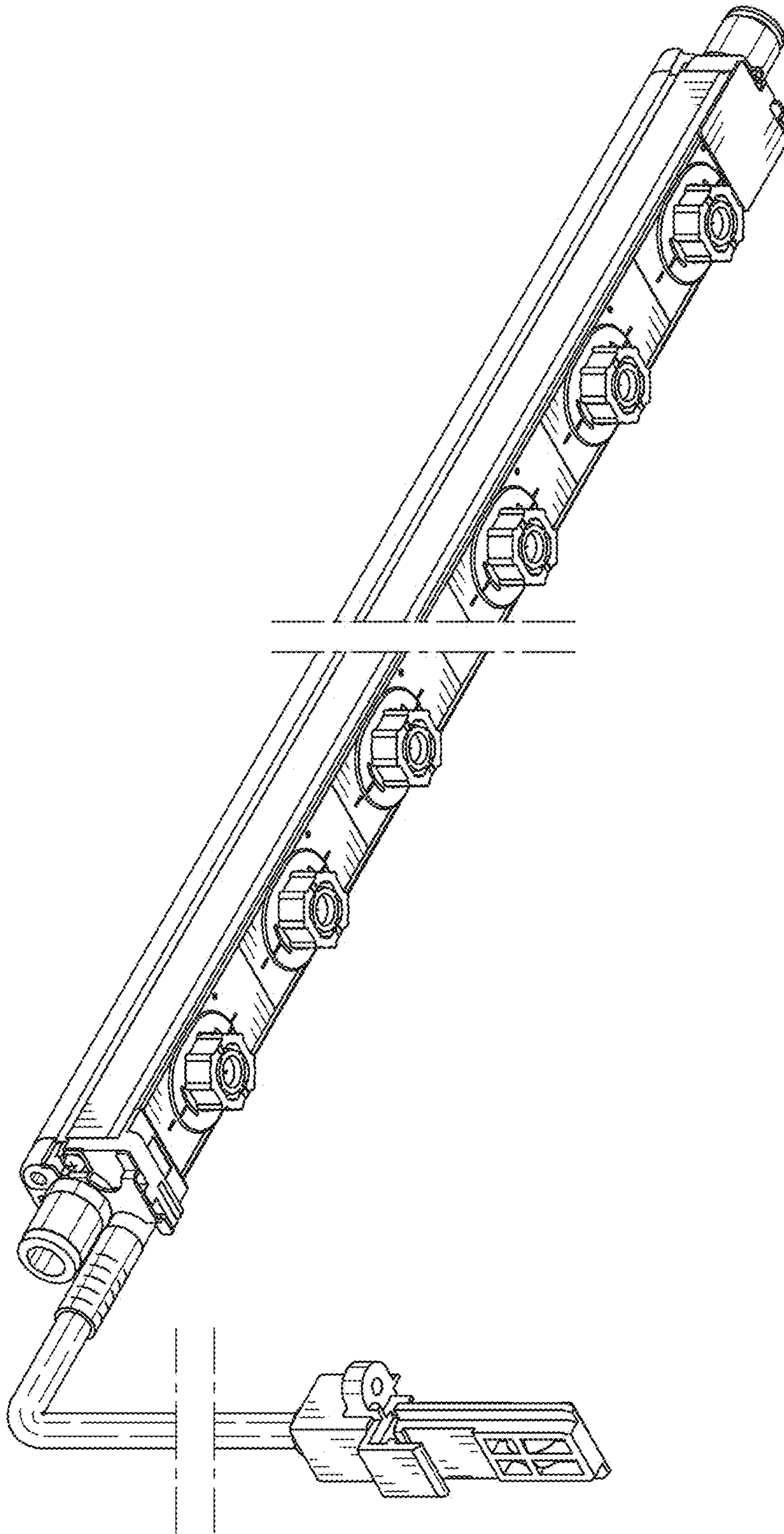


Fig. 55

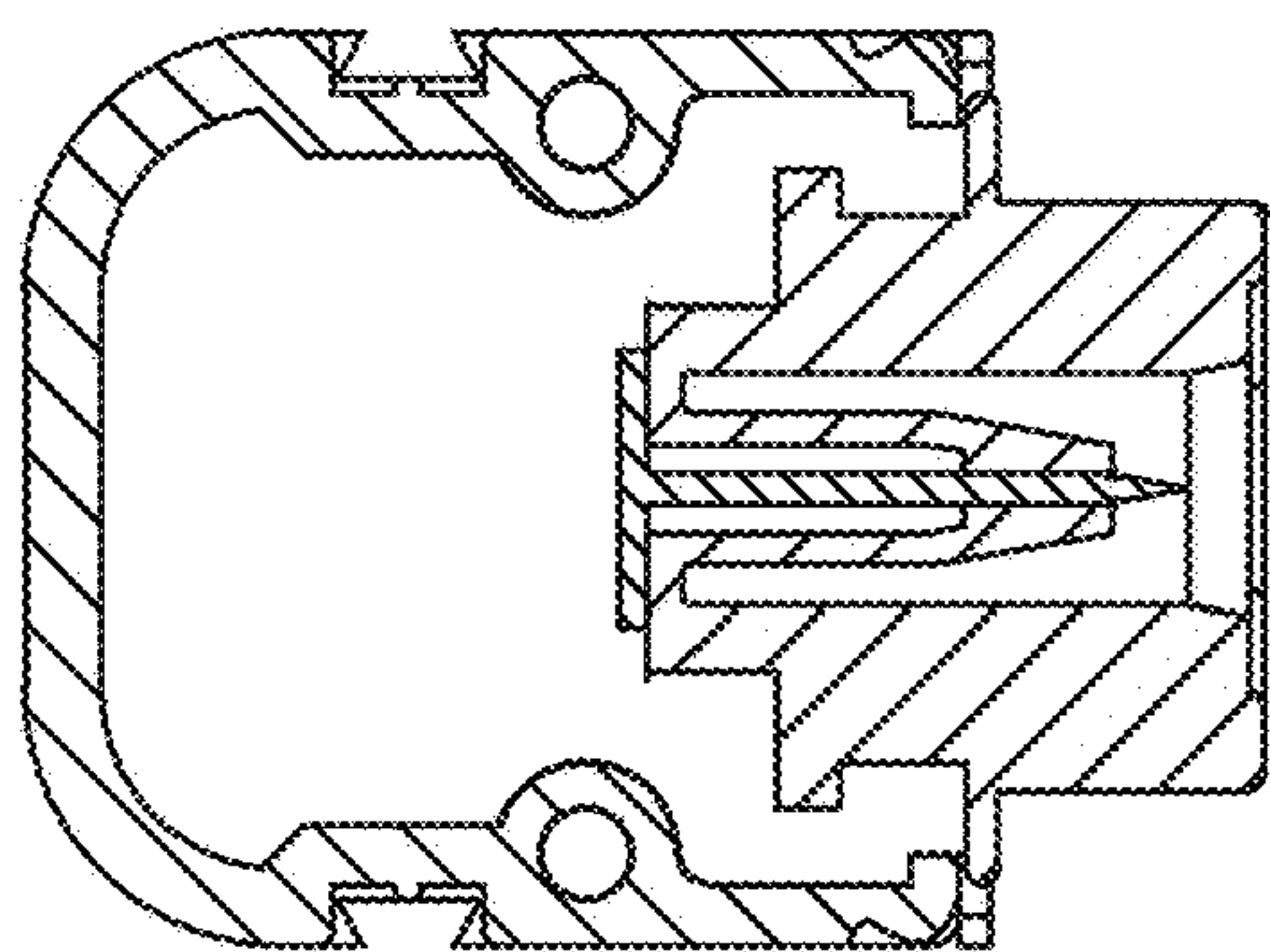


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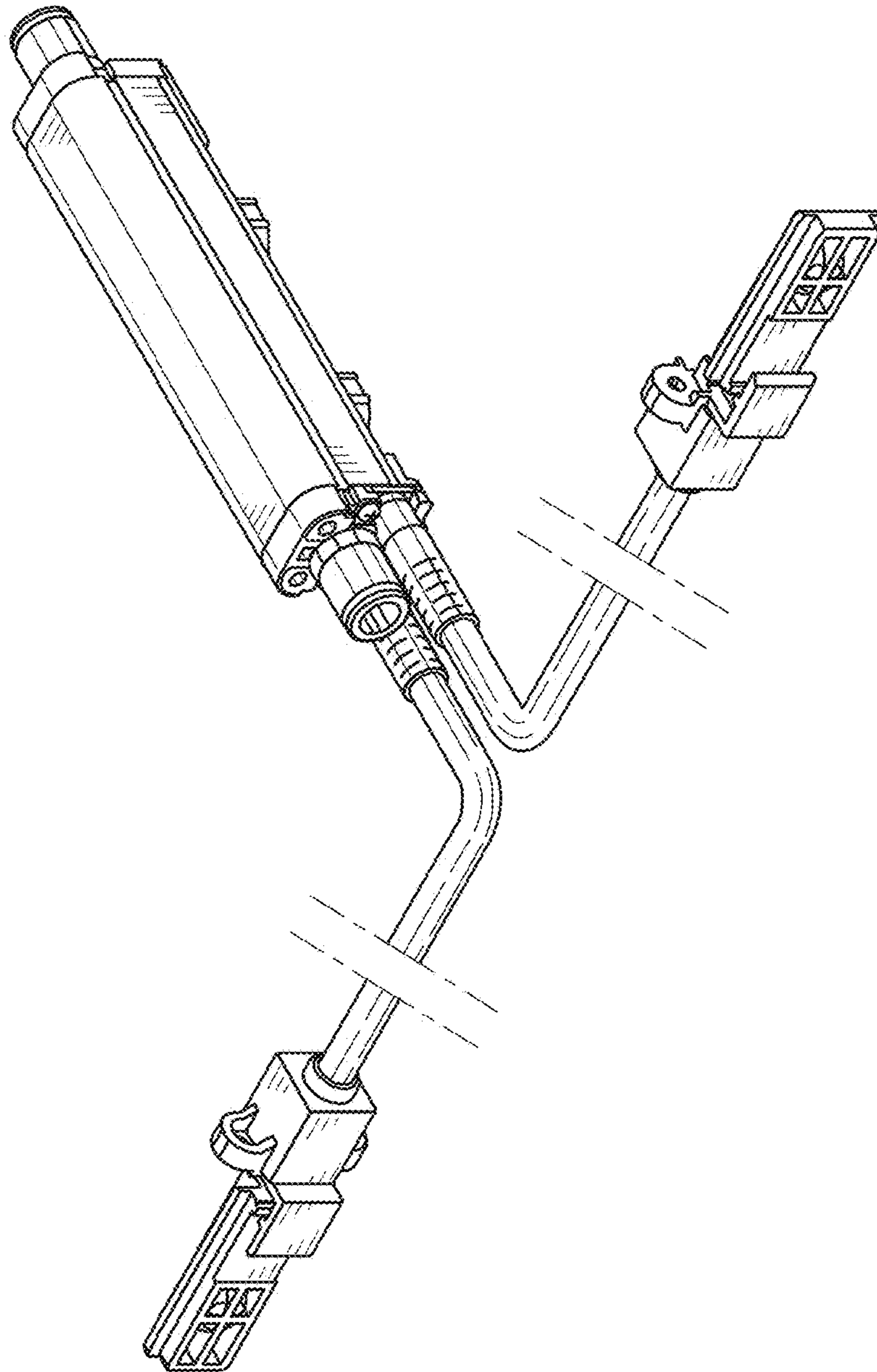


Fig. 57

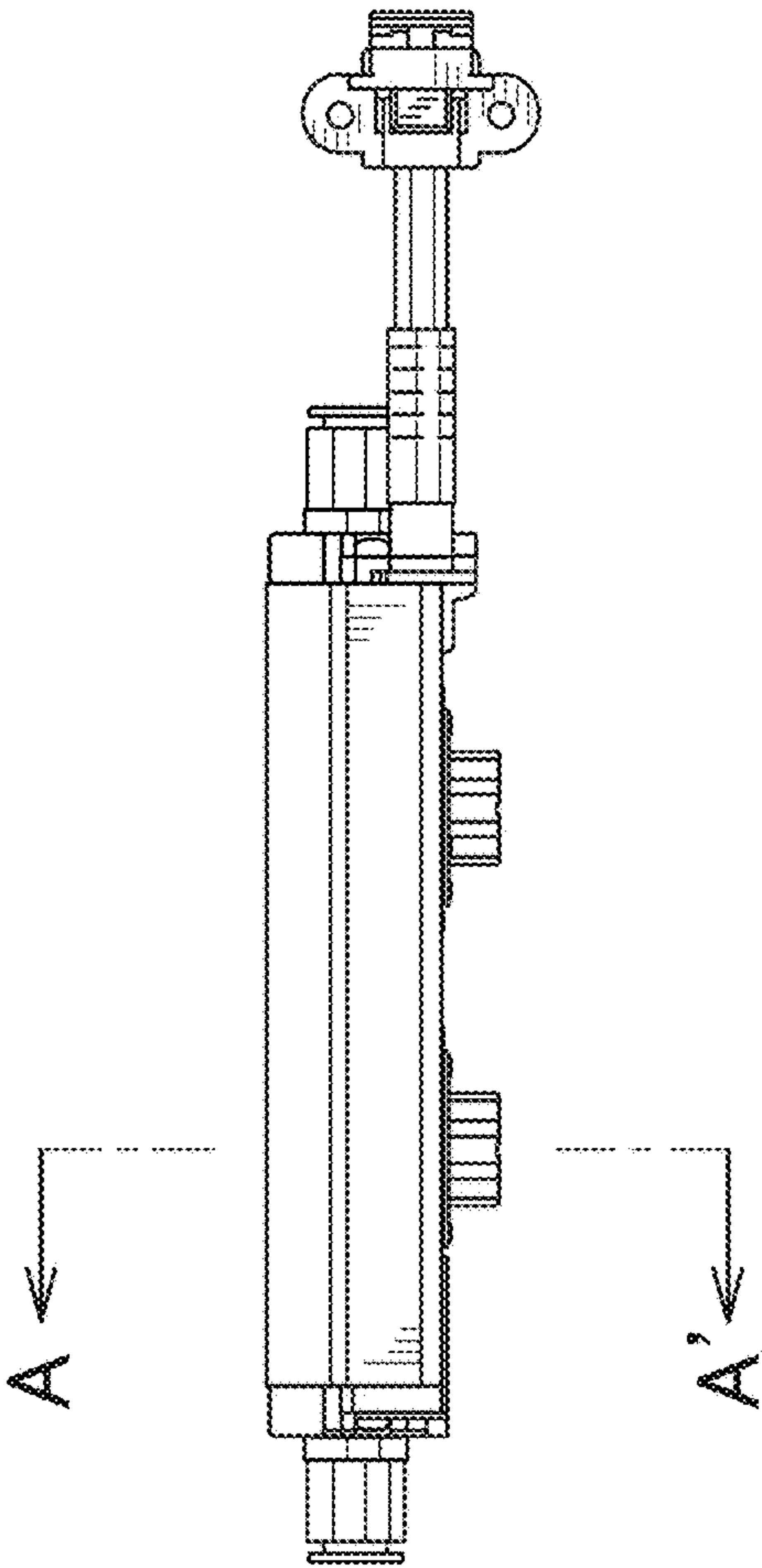


Fig. 58

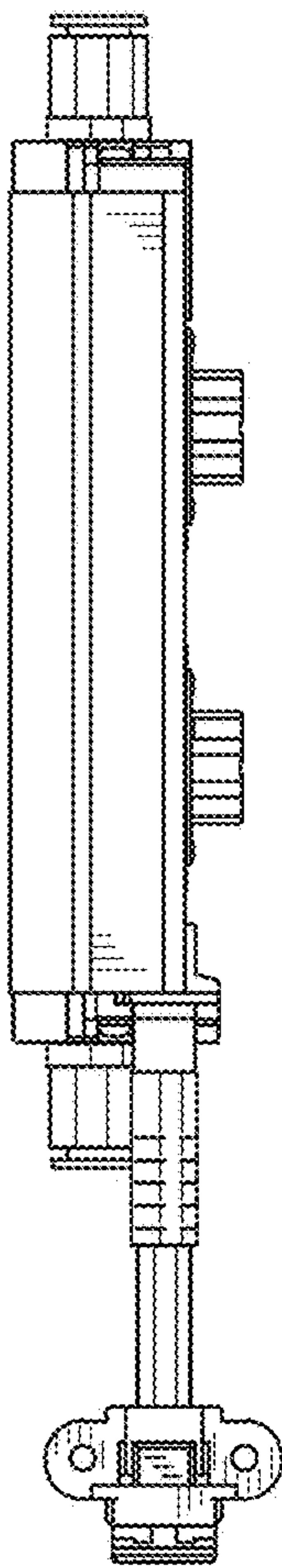


Fig. 59

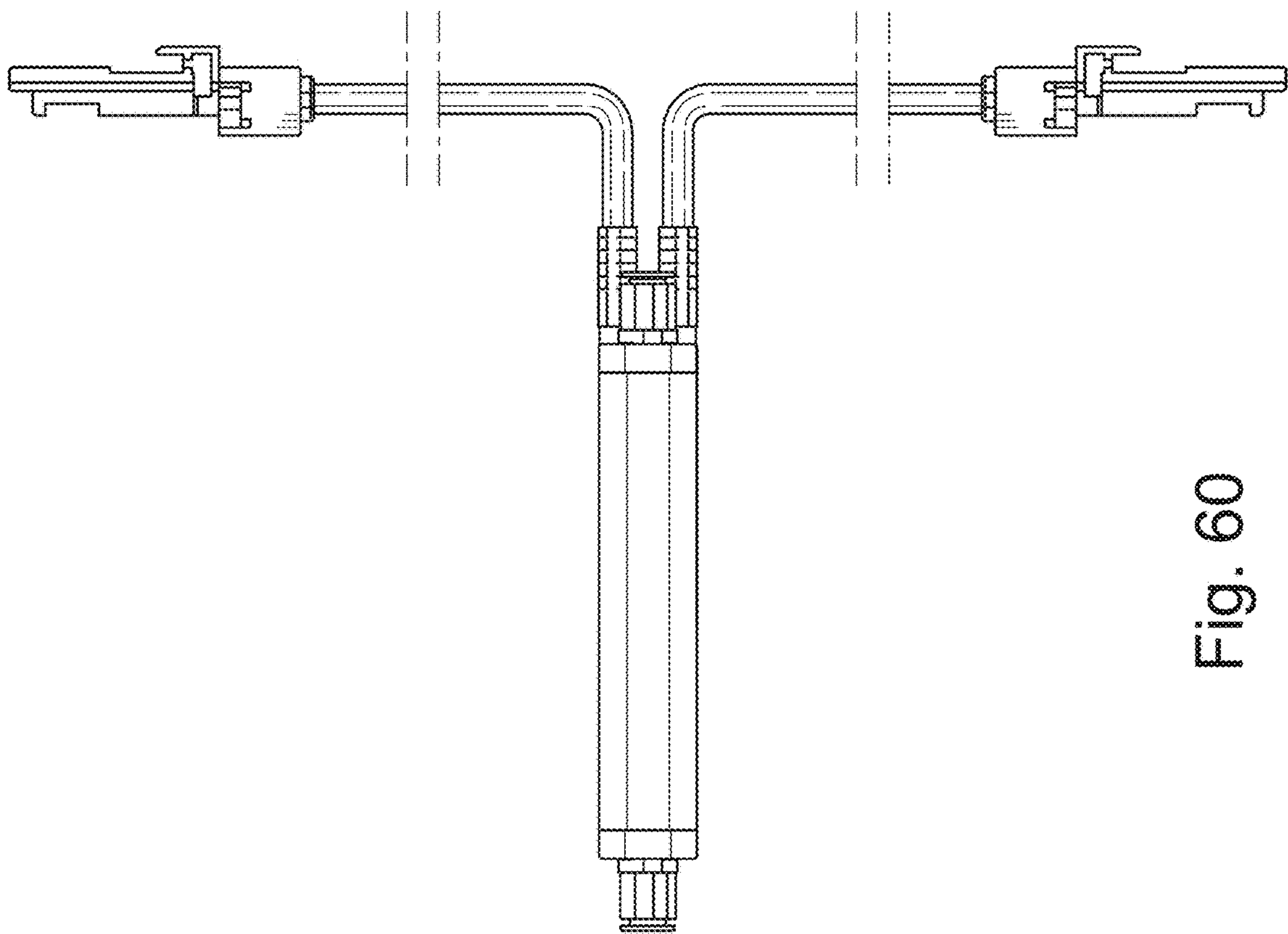


Fig. 60

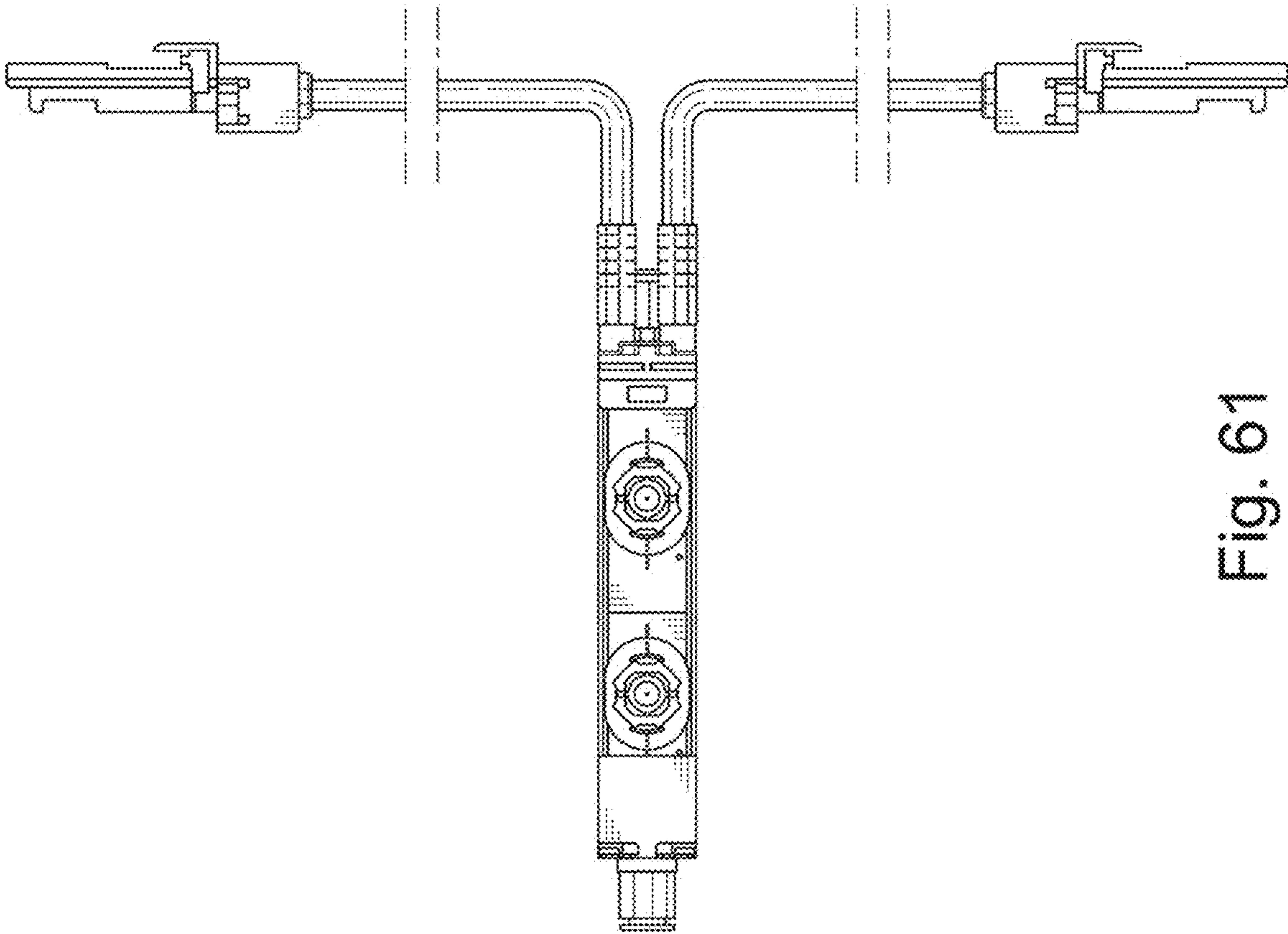


Fig. 61

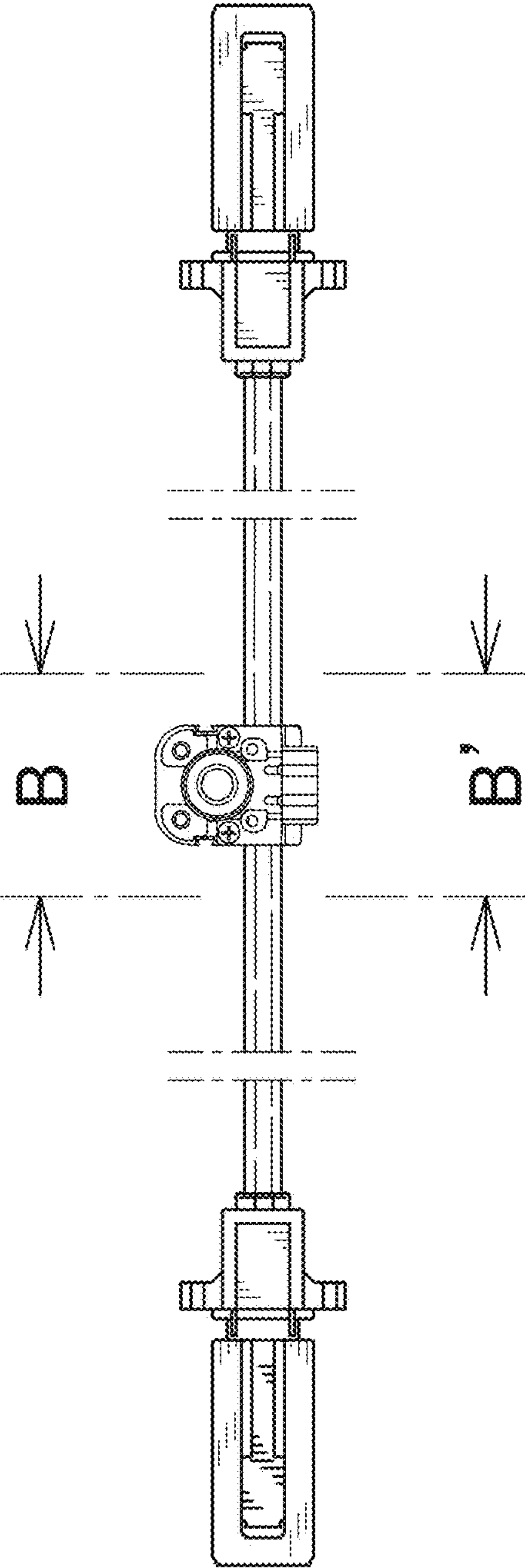


Fig. 62

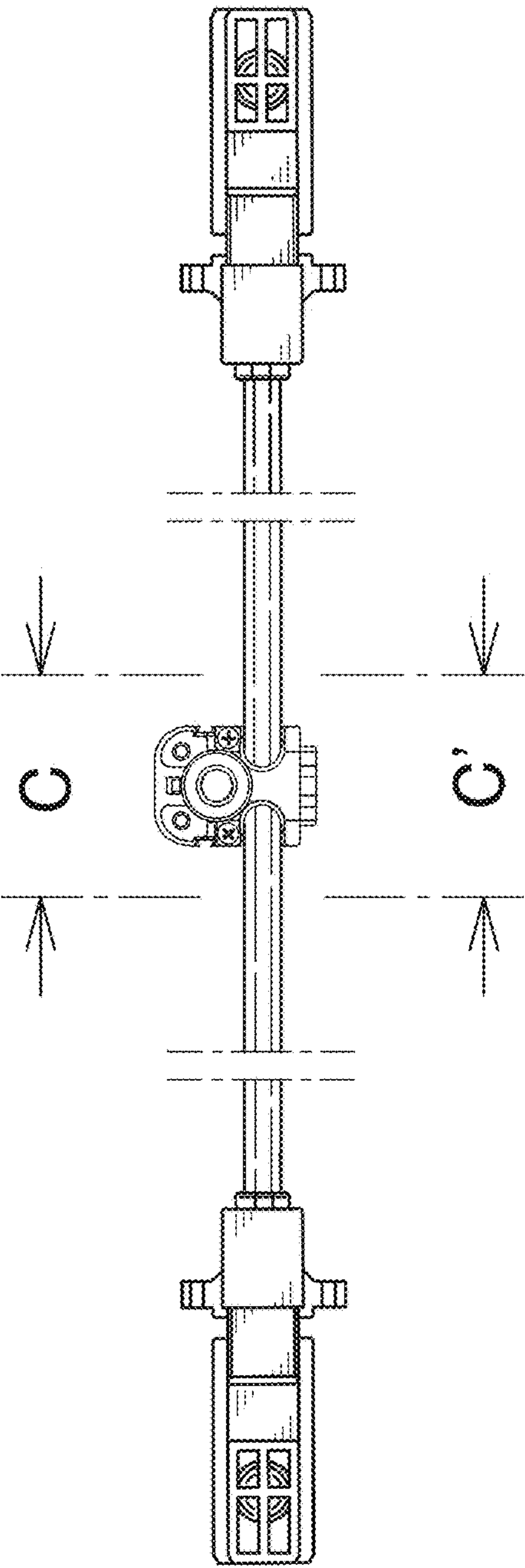


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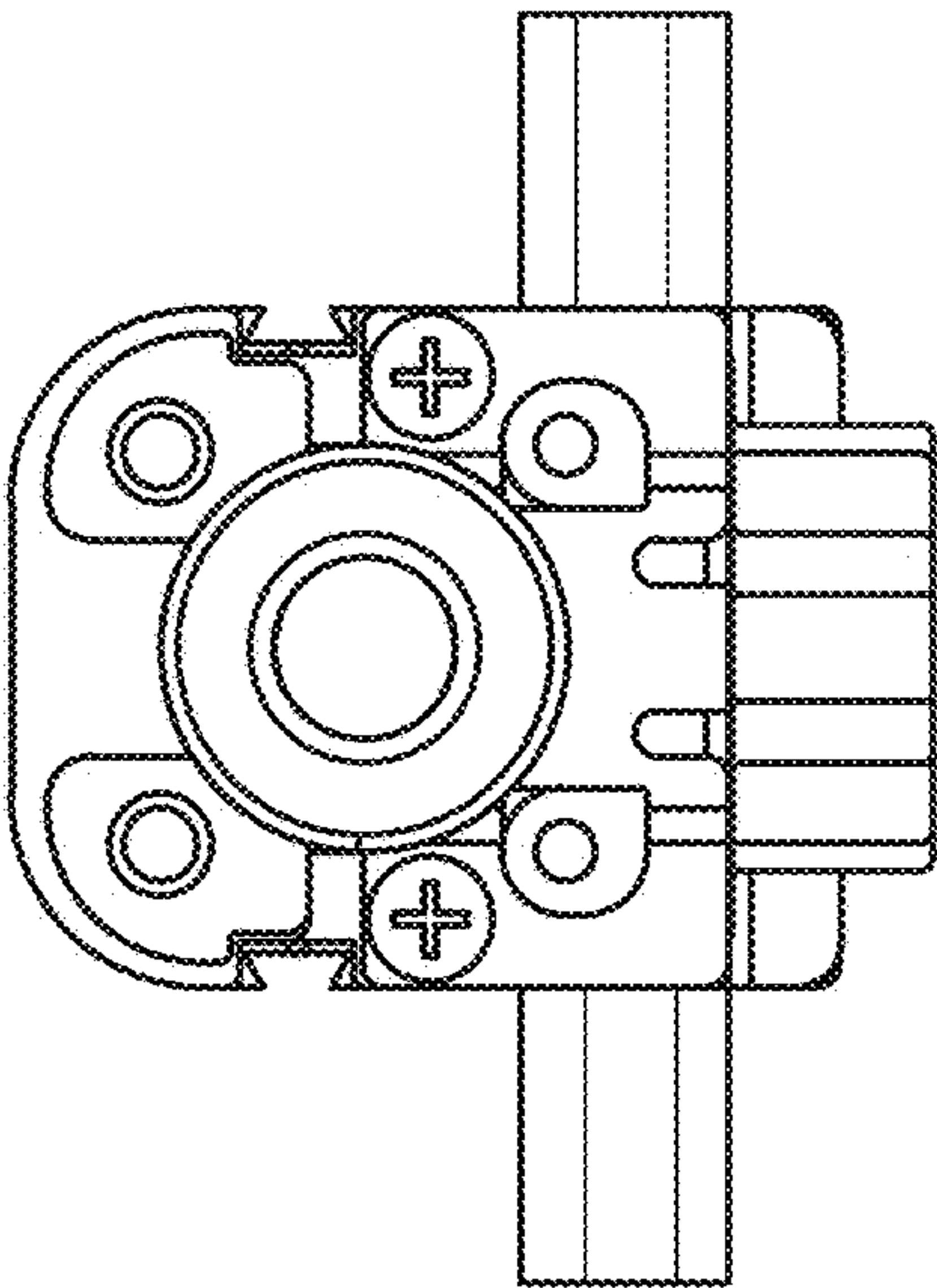


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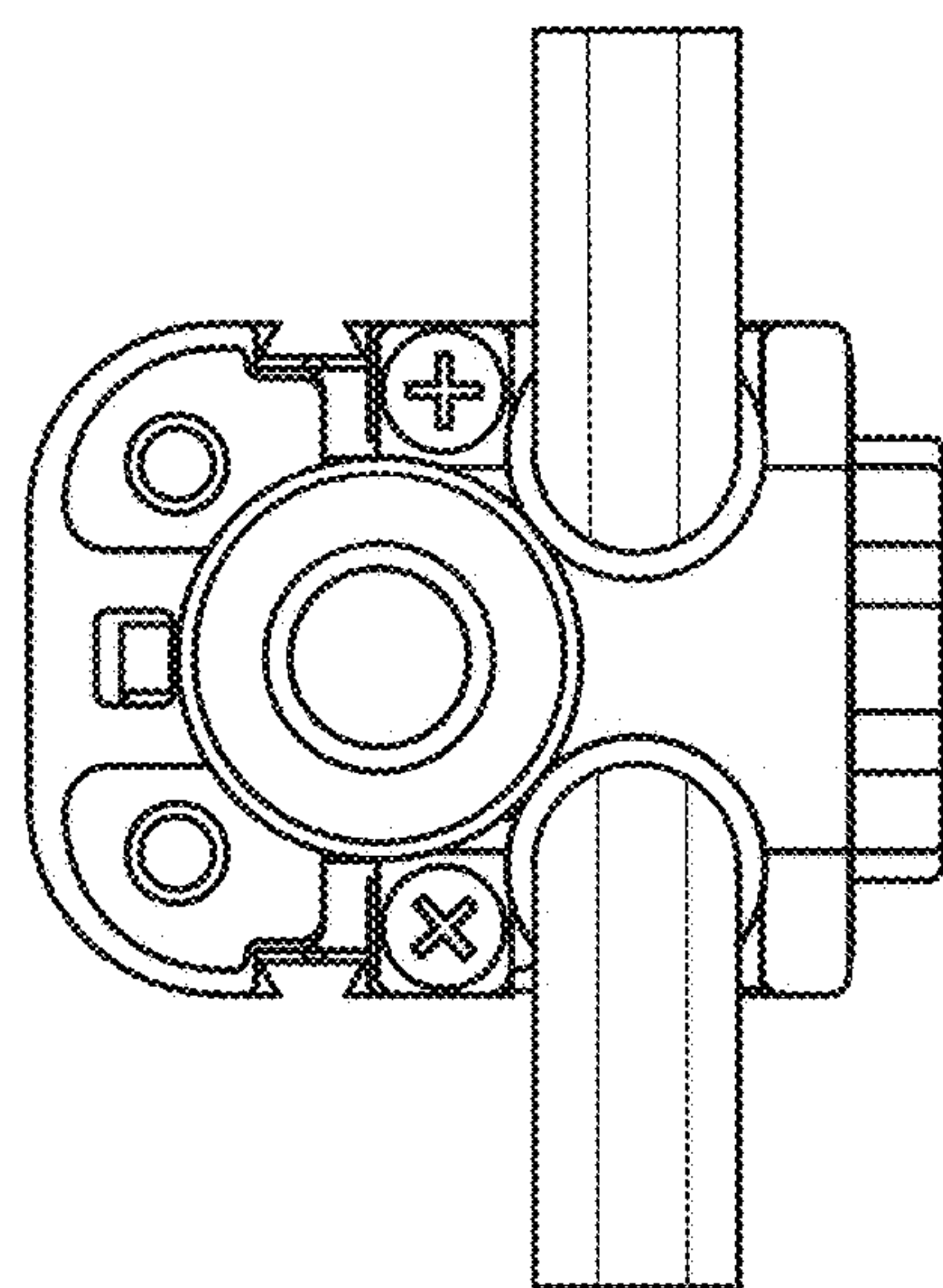


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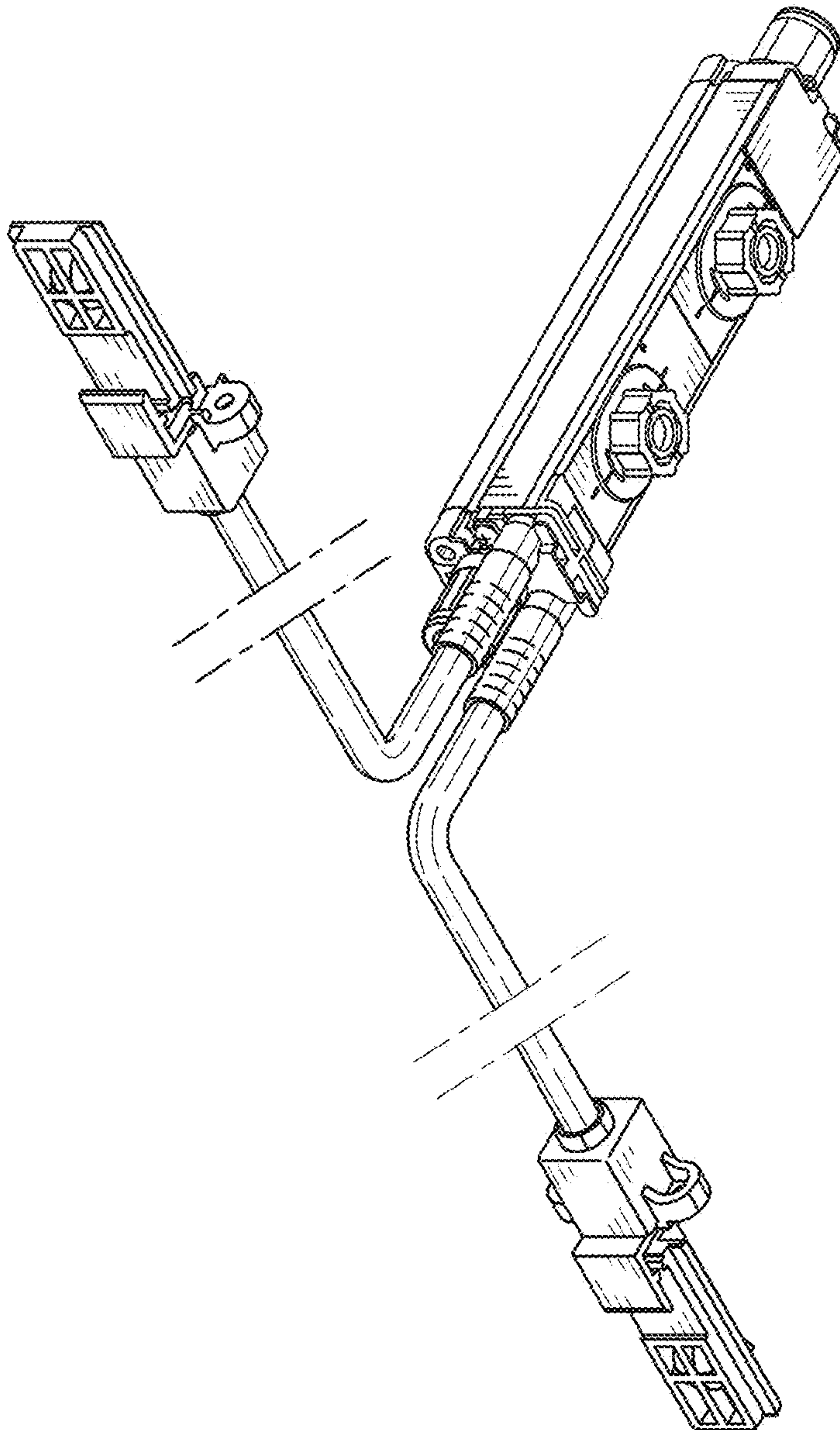


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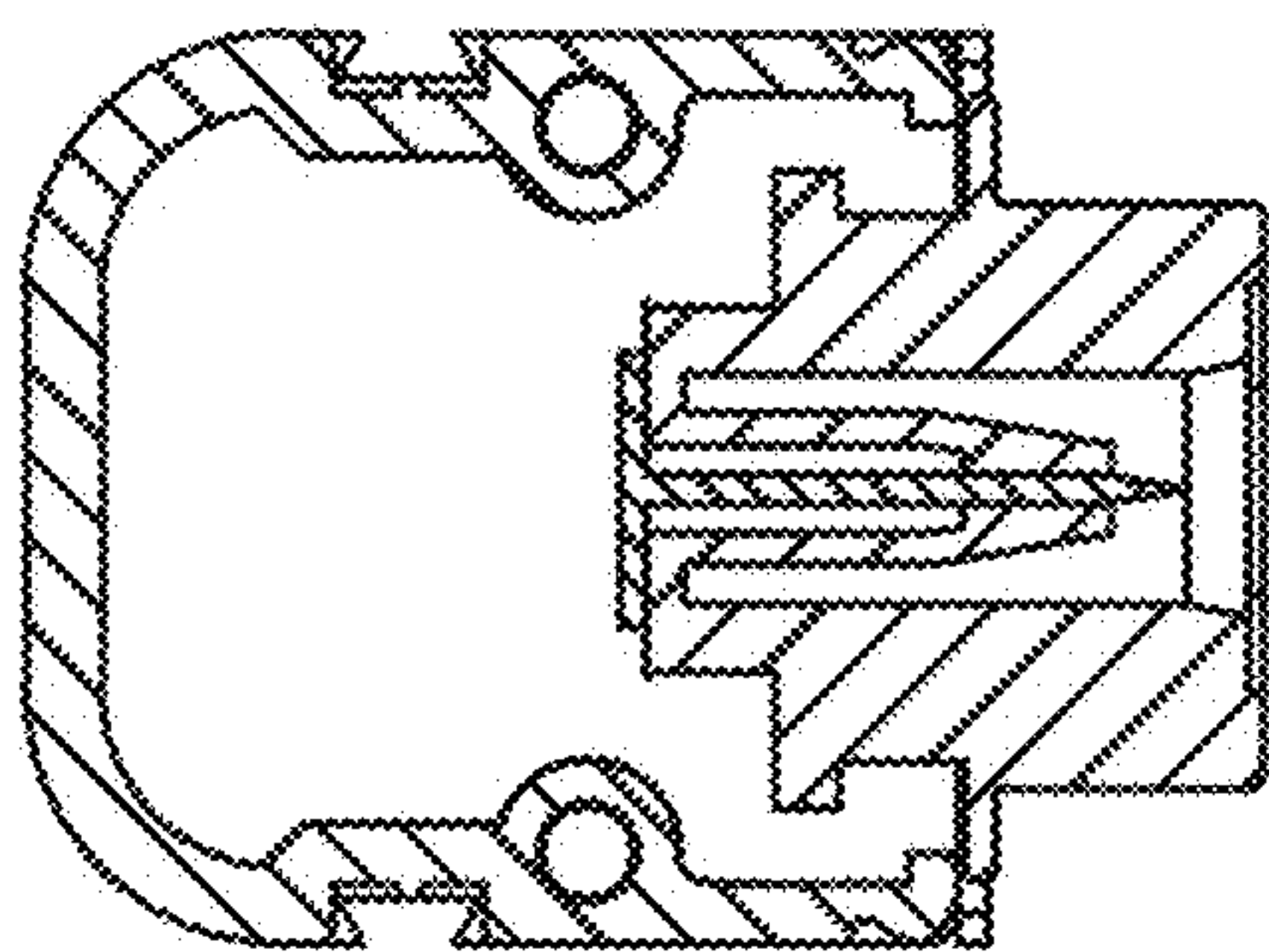


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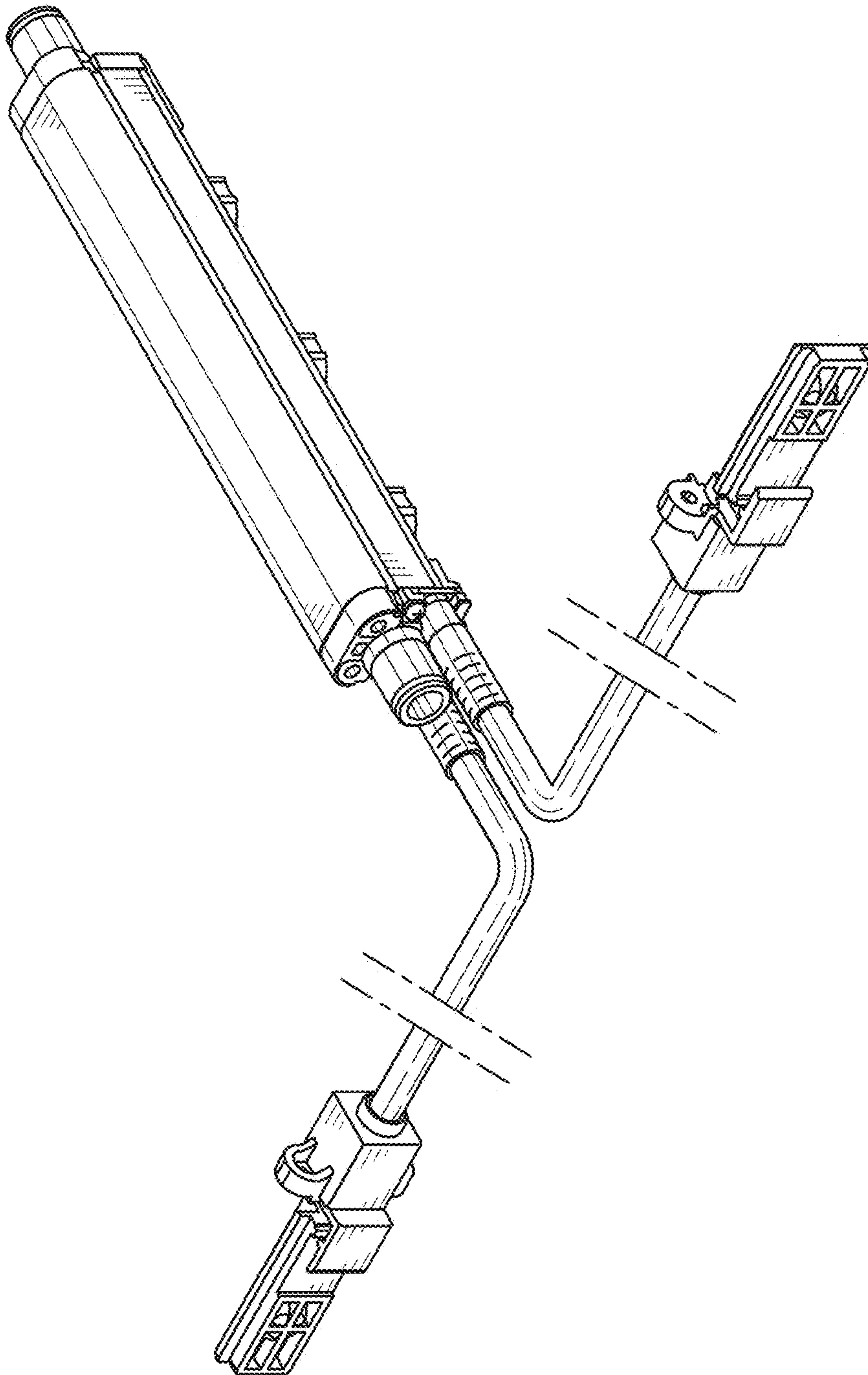


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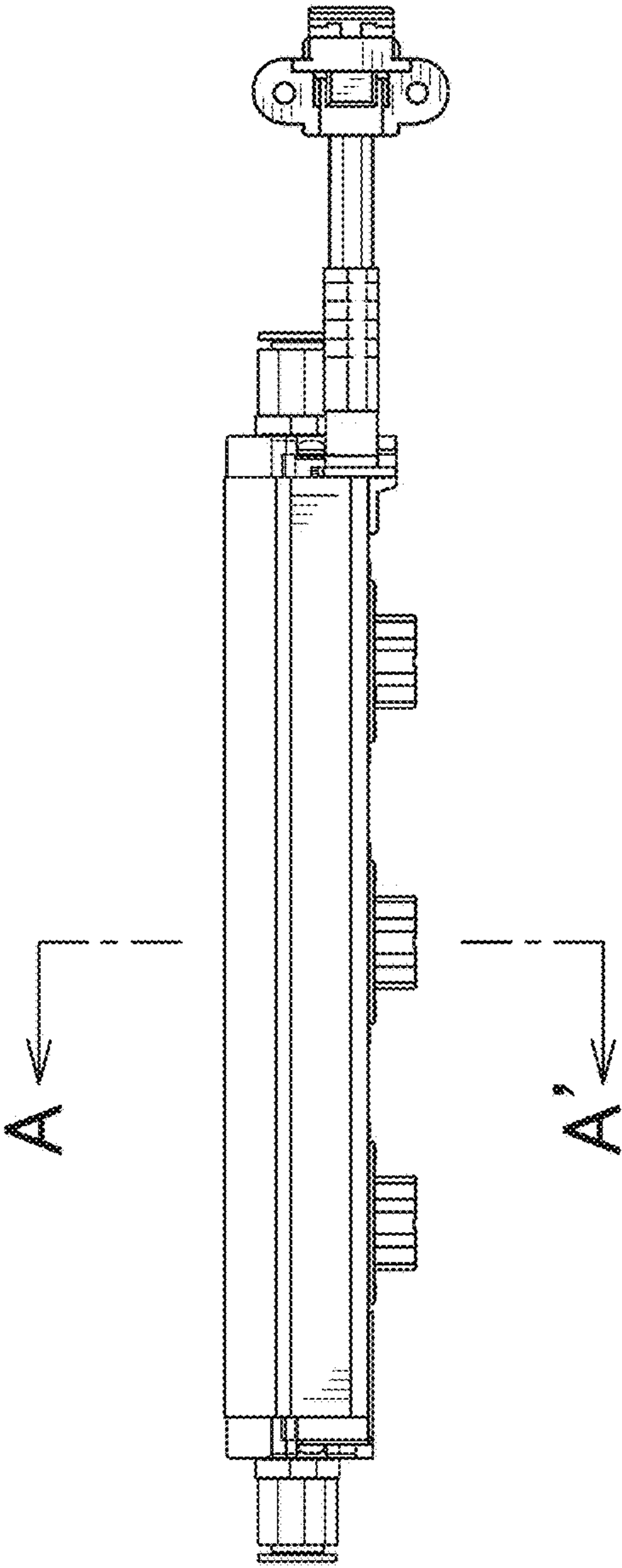


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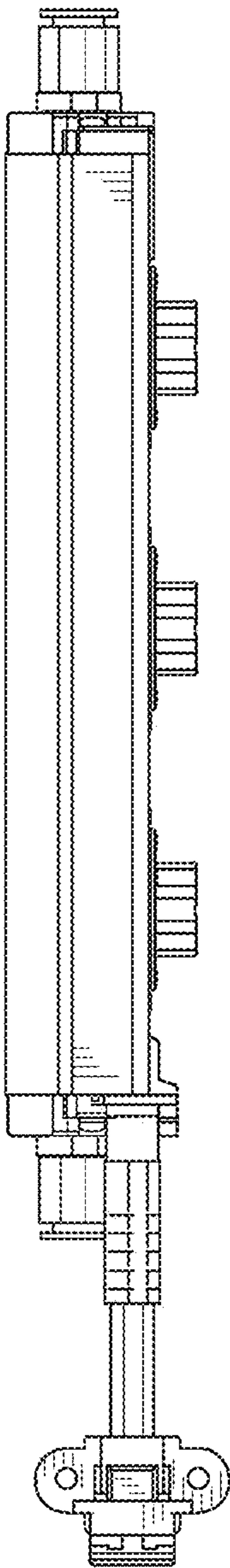


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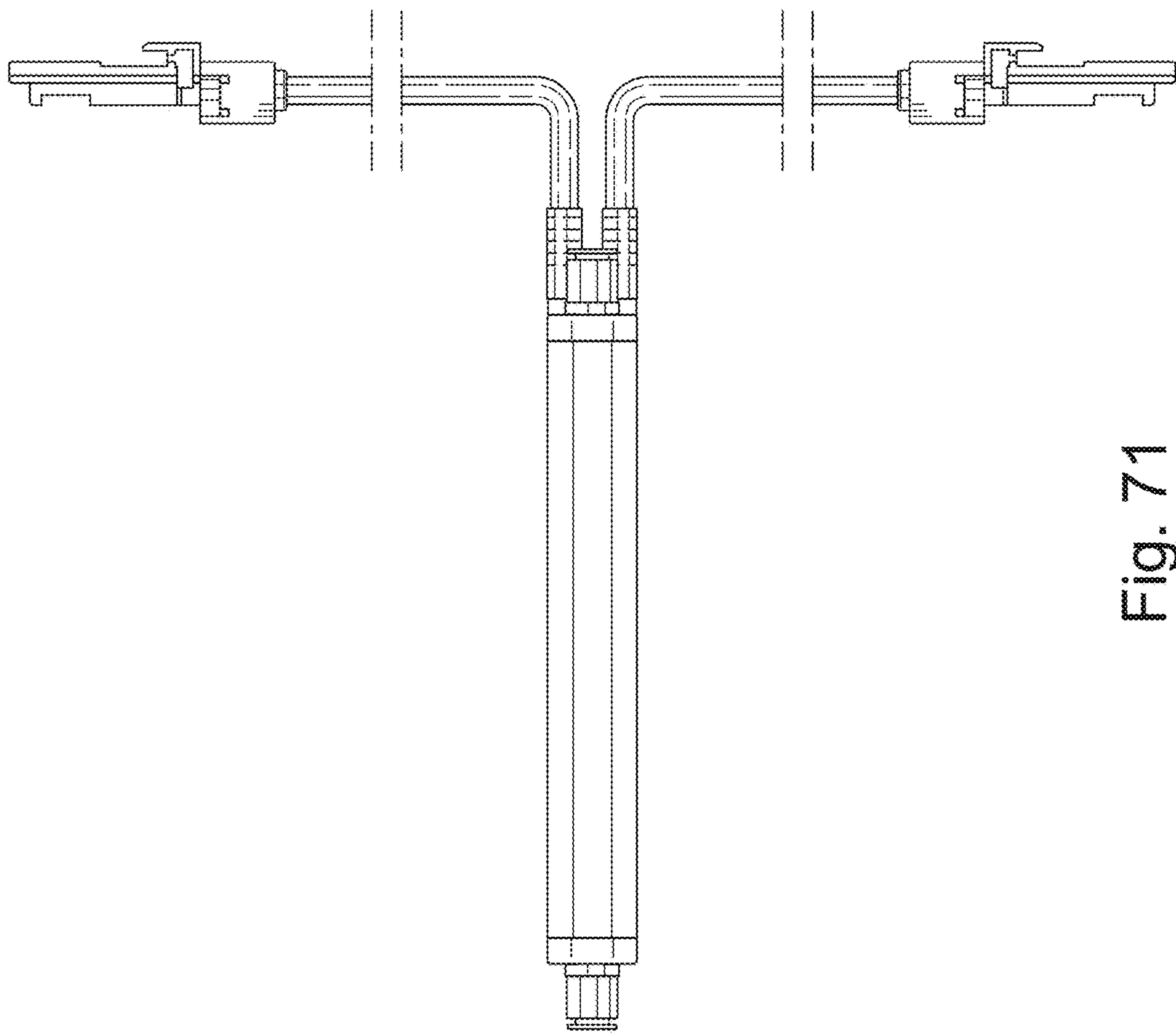


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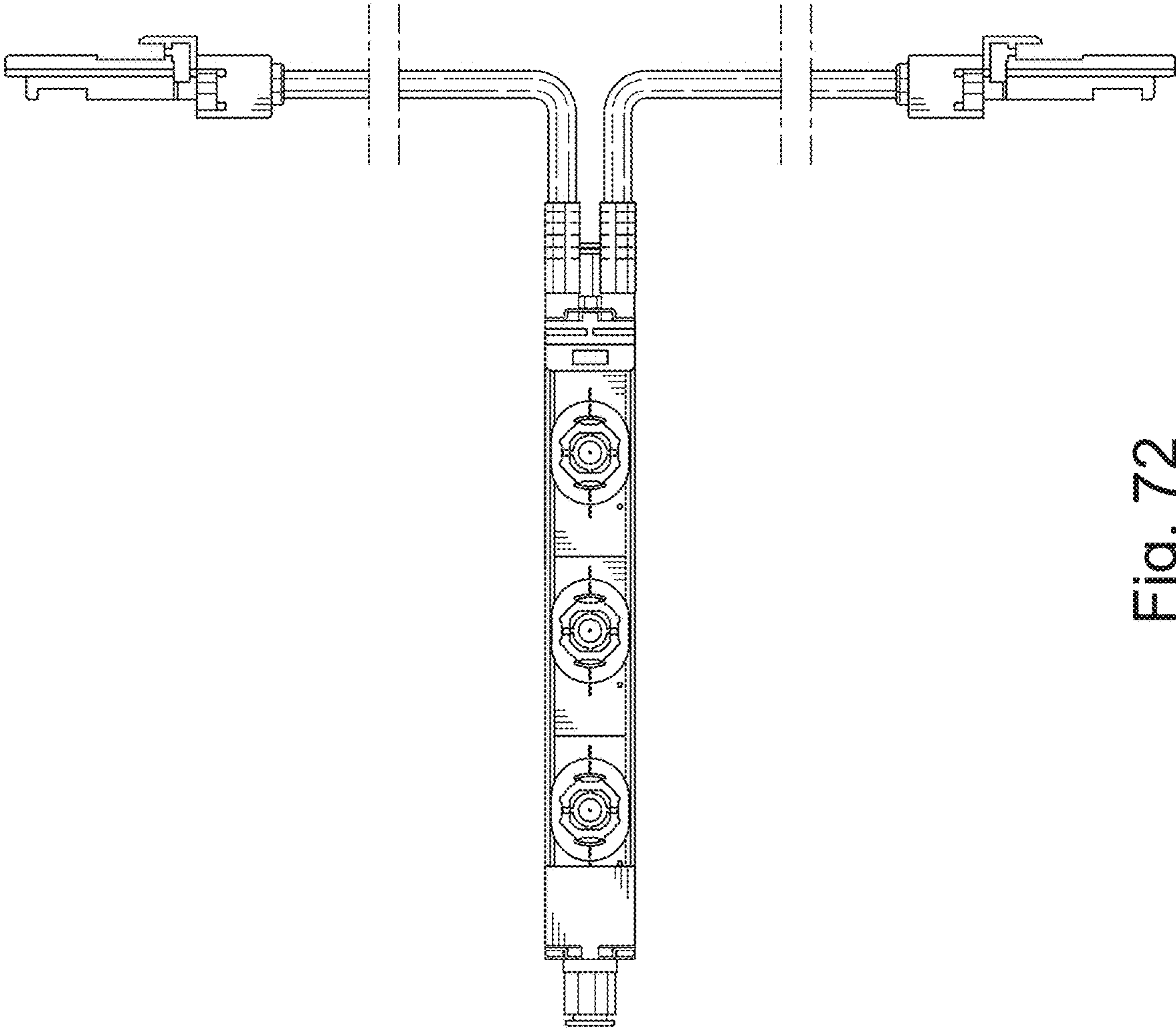


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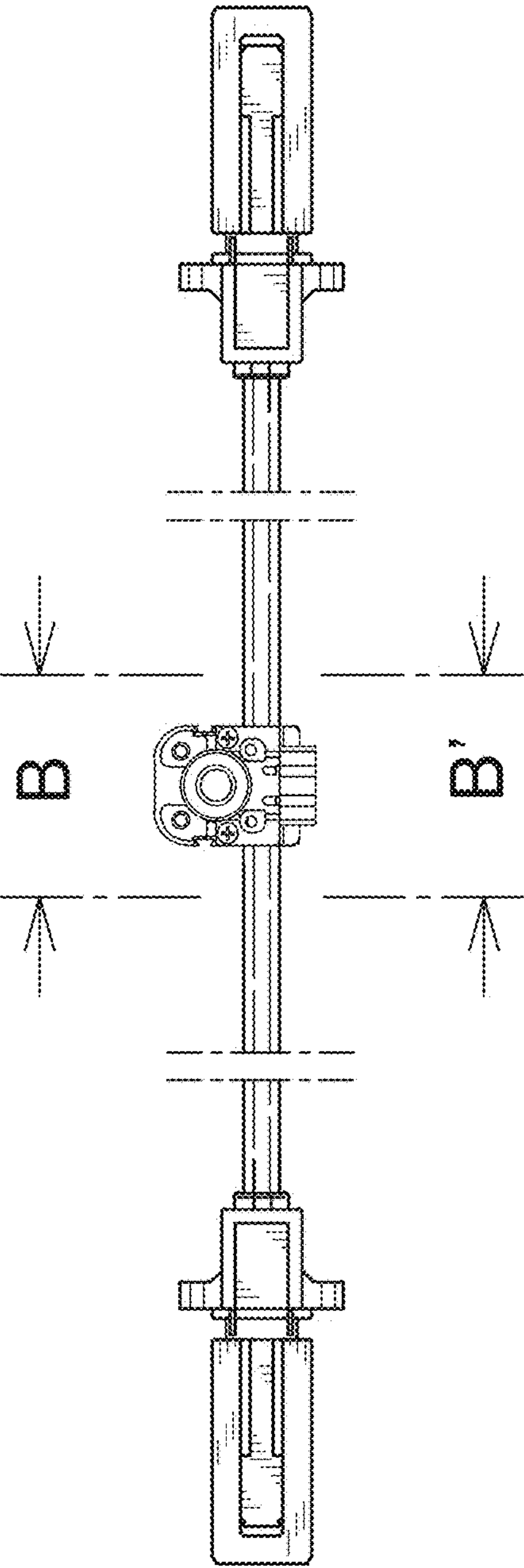


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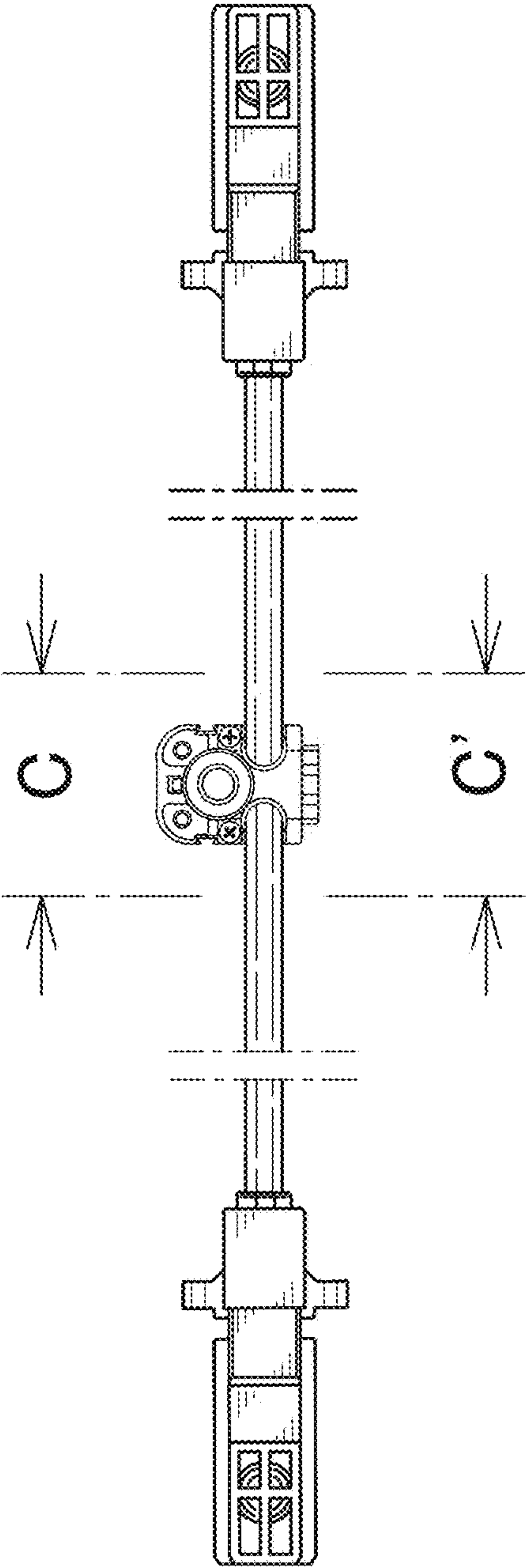


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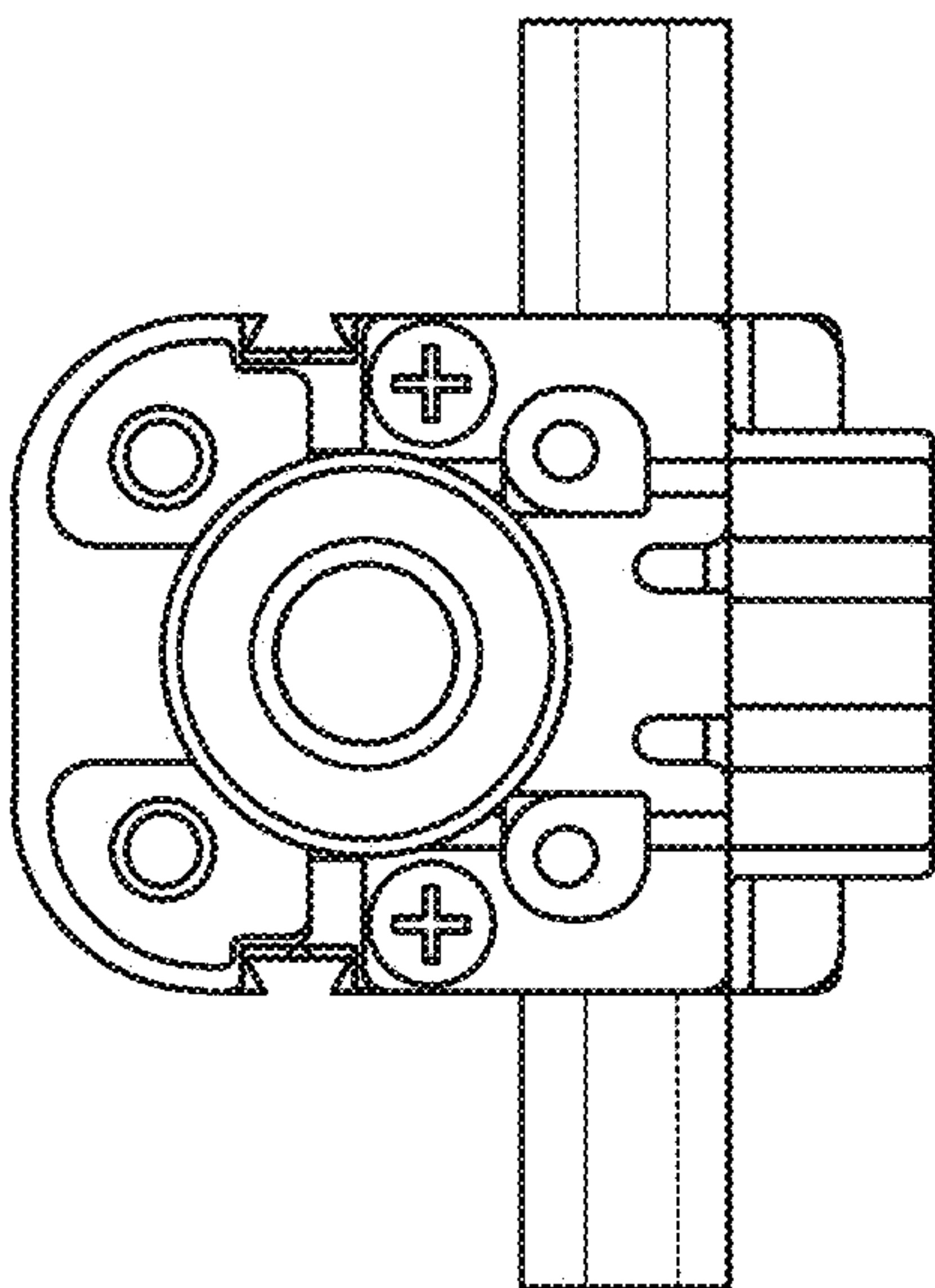


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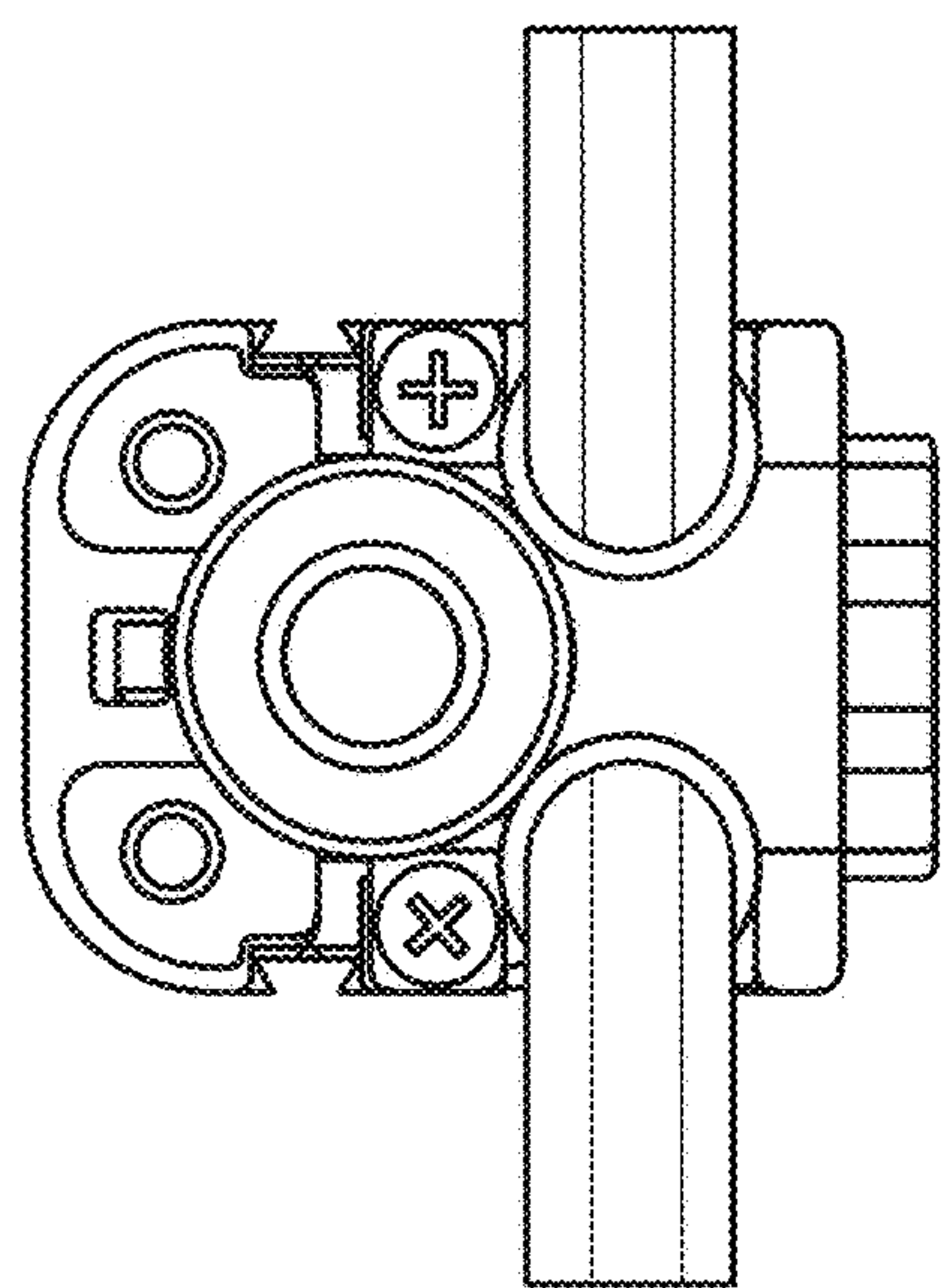


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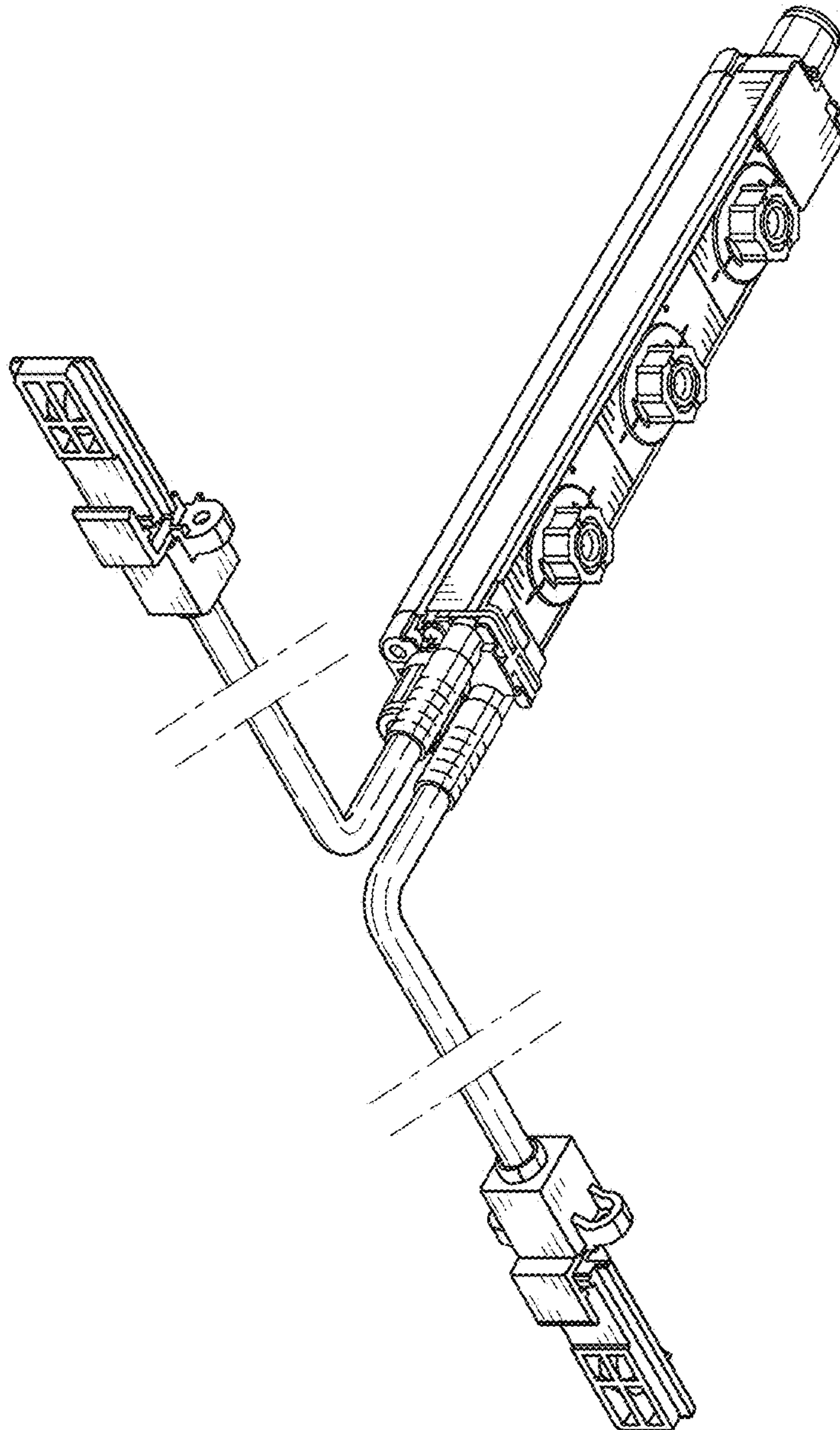


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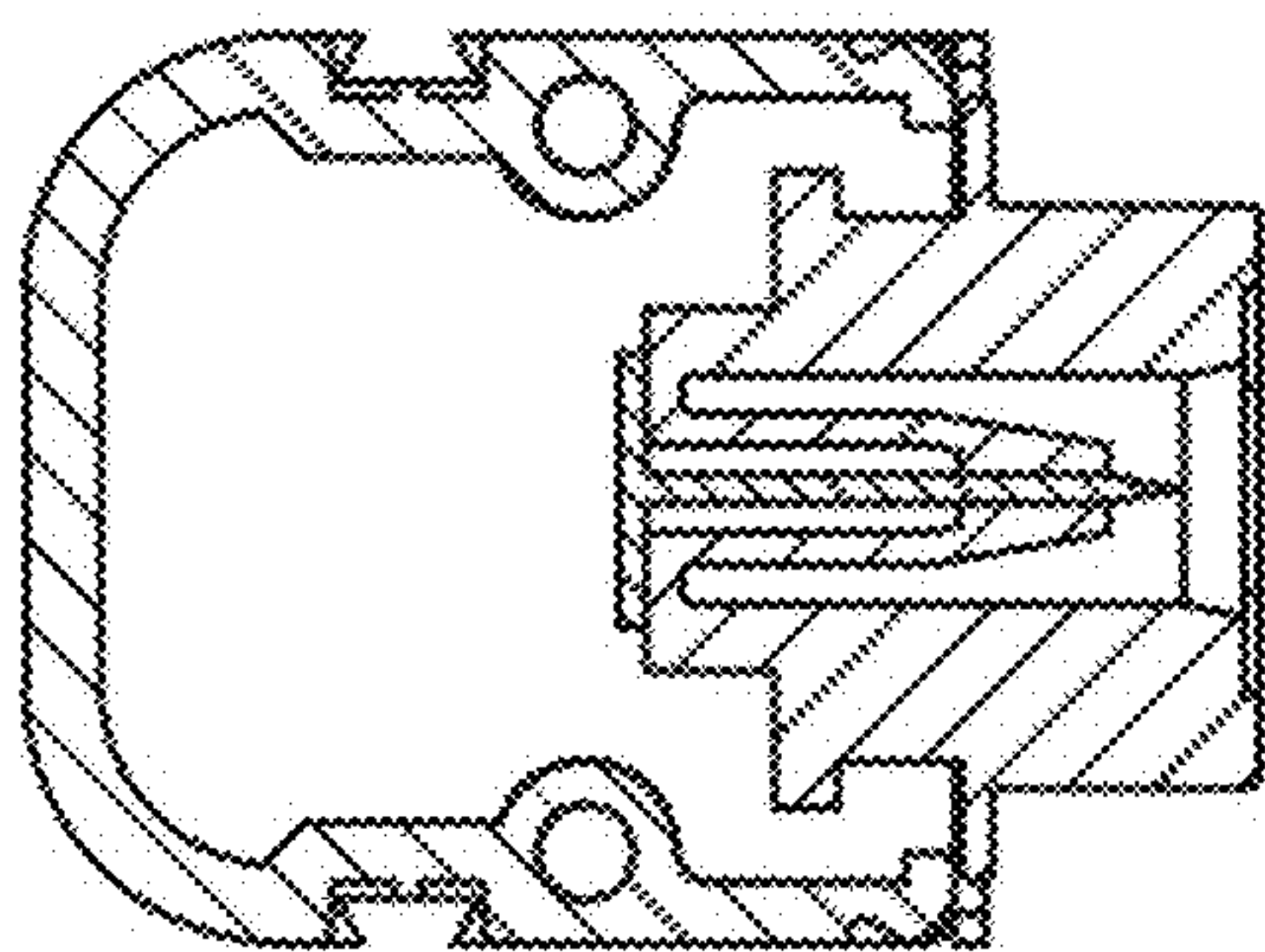


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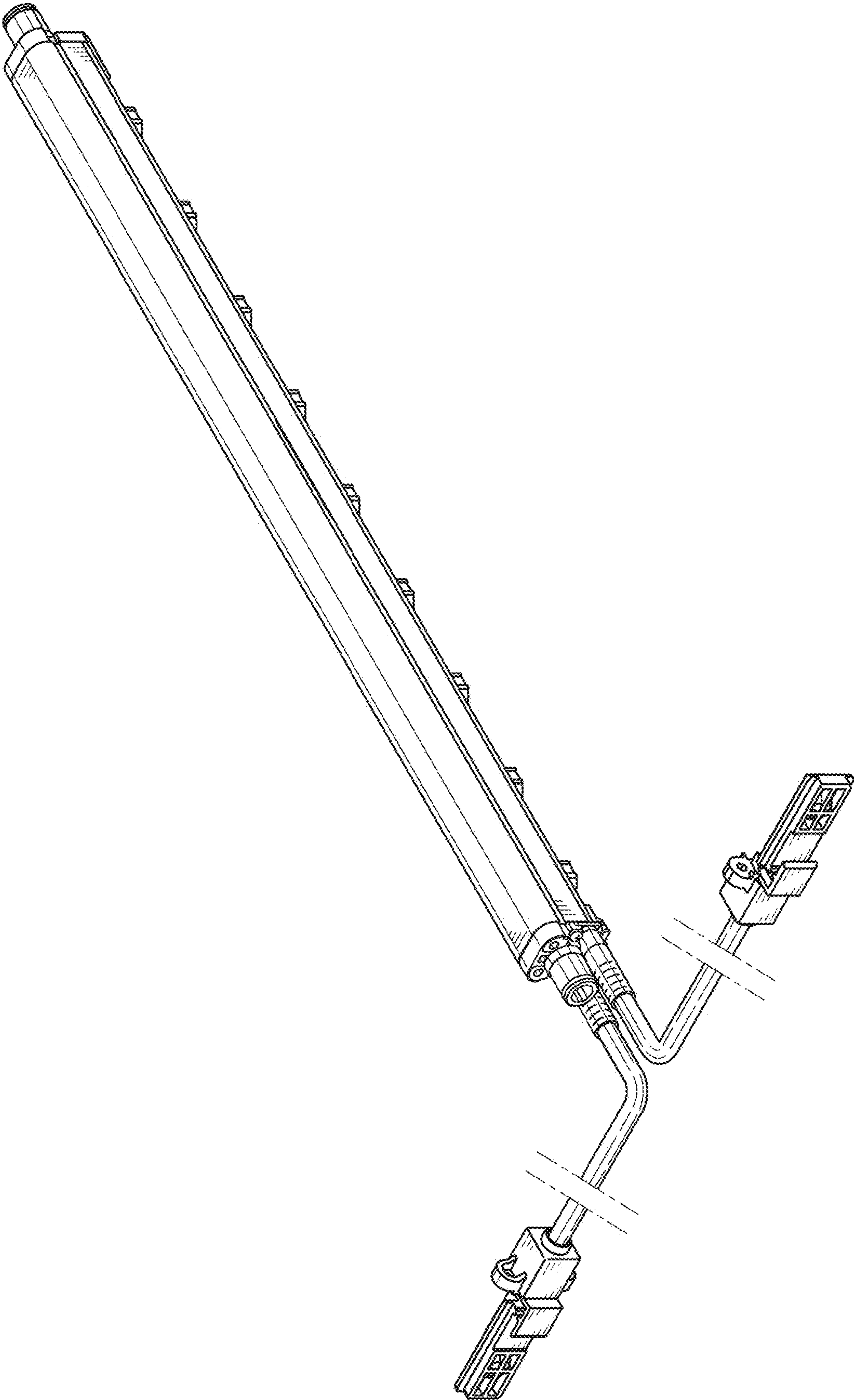


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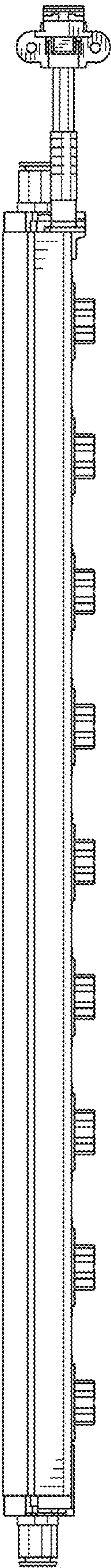


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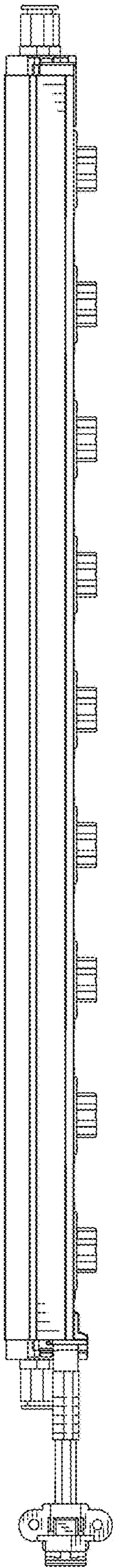


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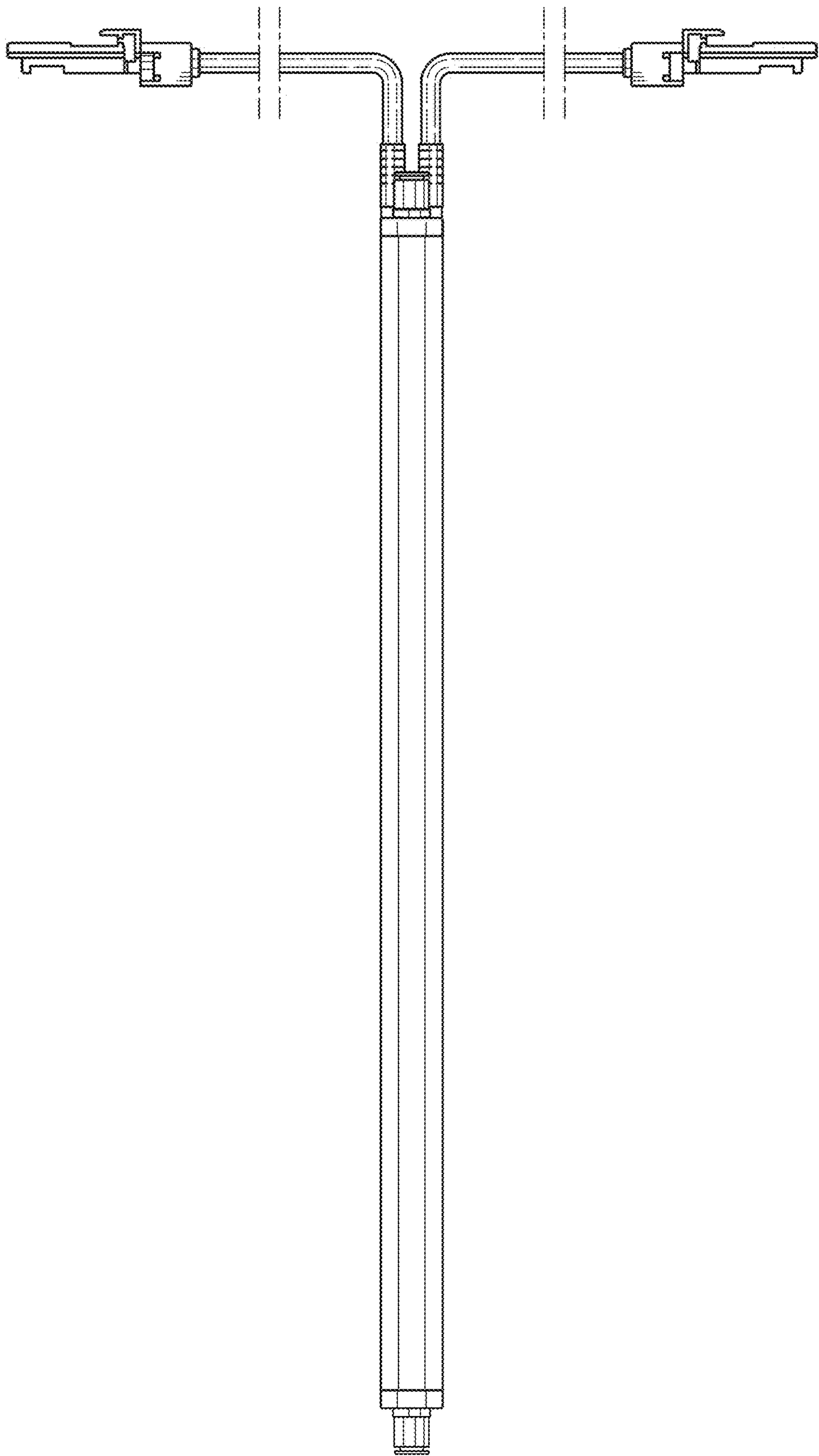


Fig. 82

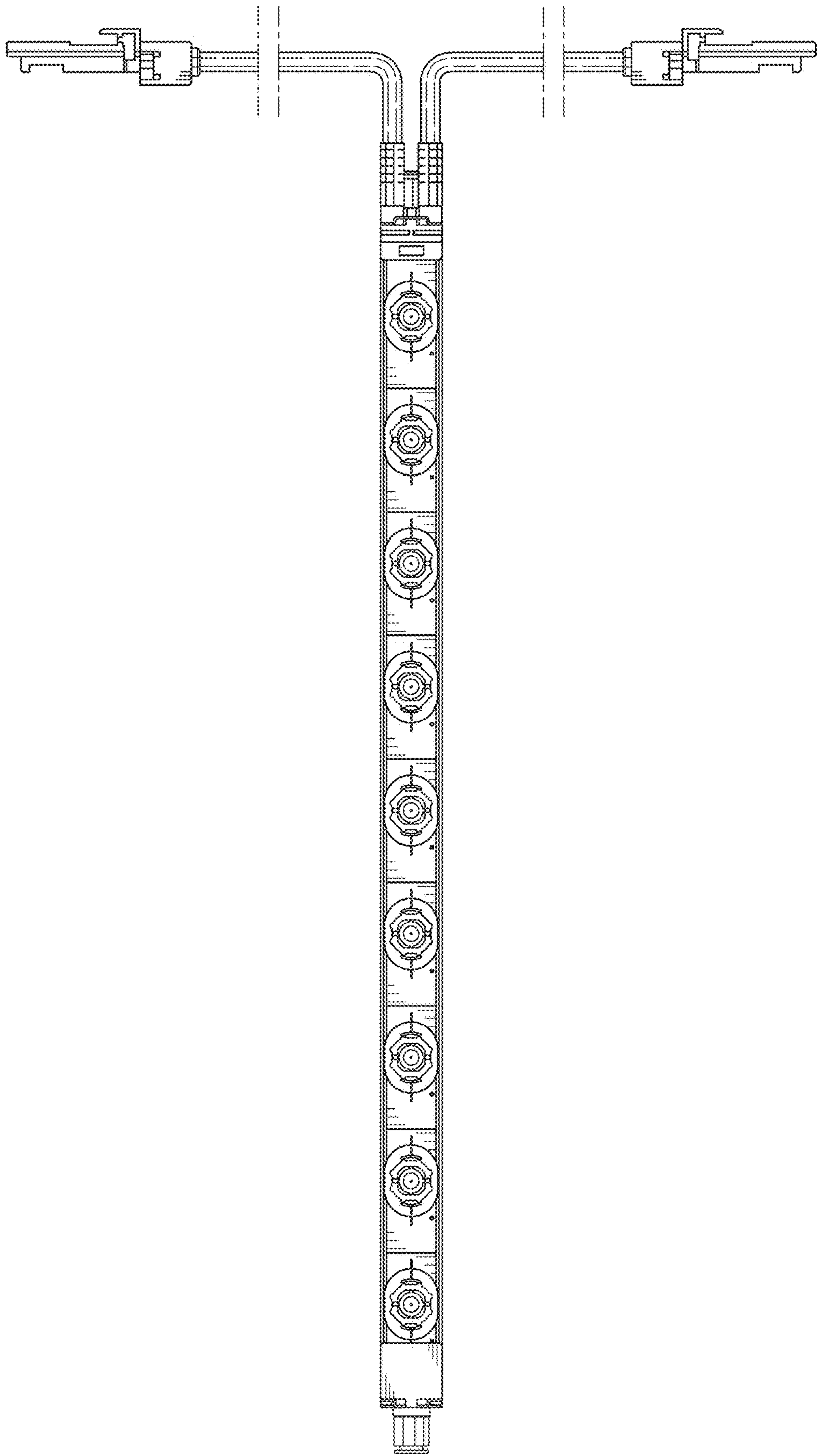


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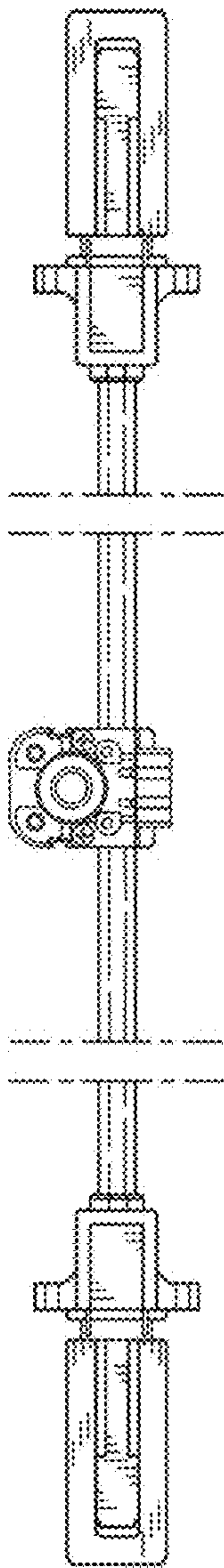


Fig. 84

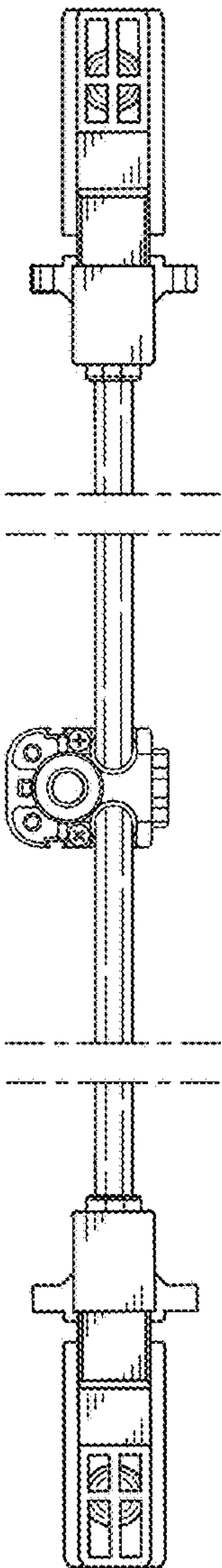


Fig. 85

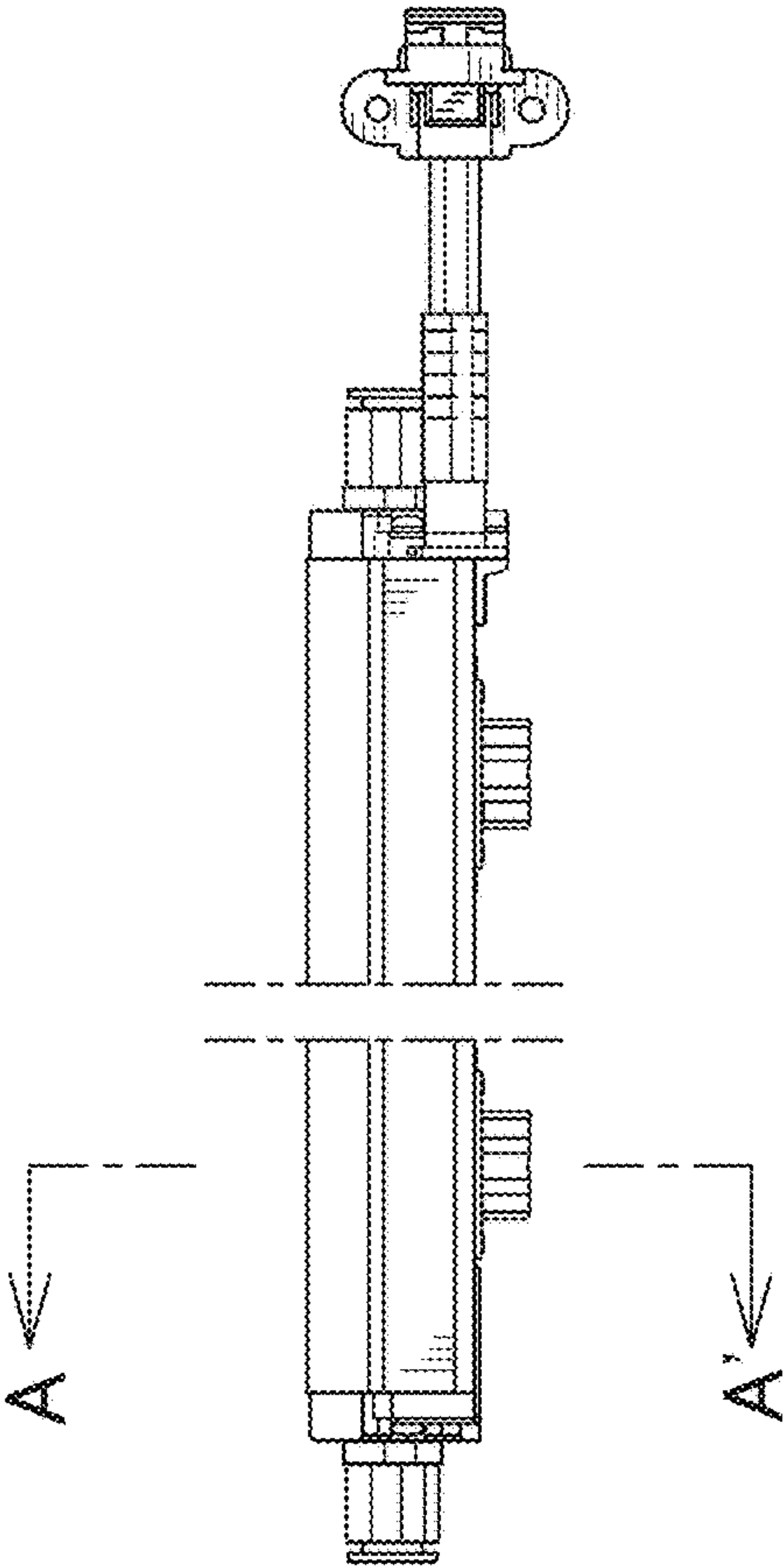


Fig. 86

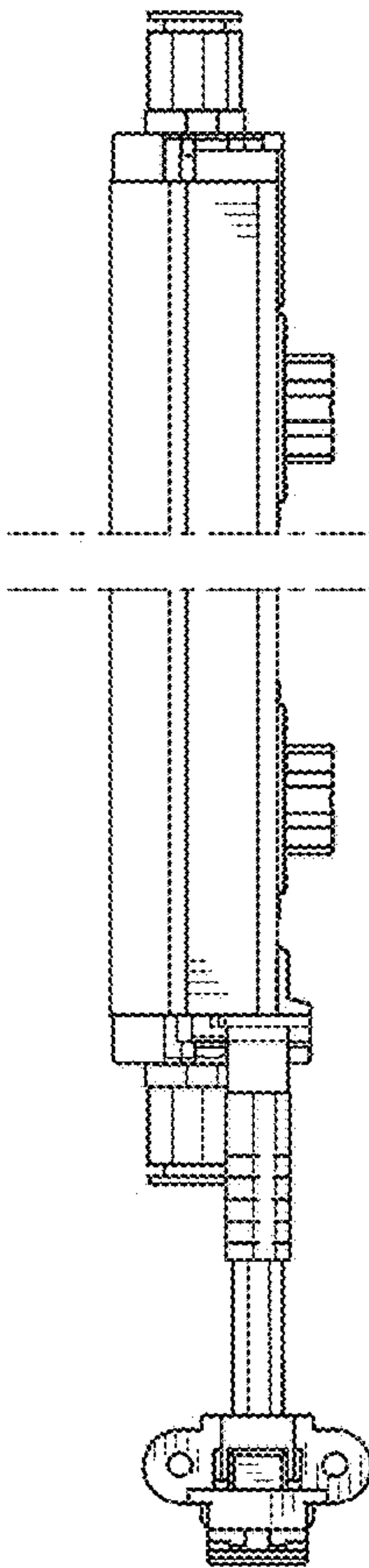


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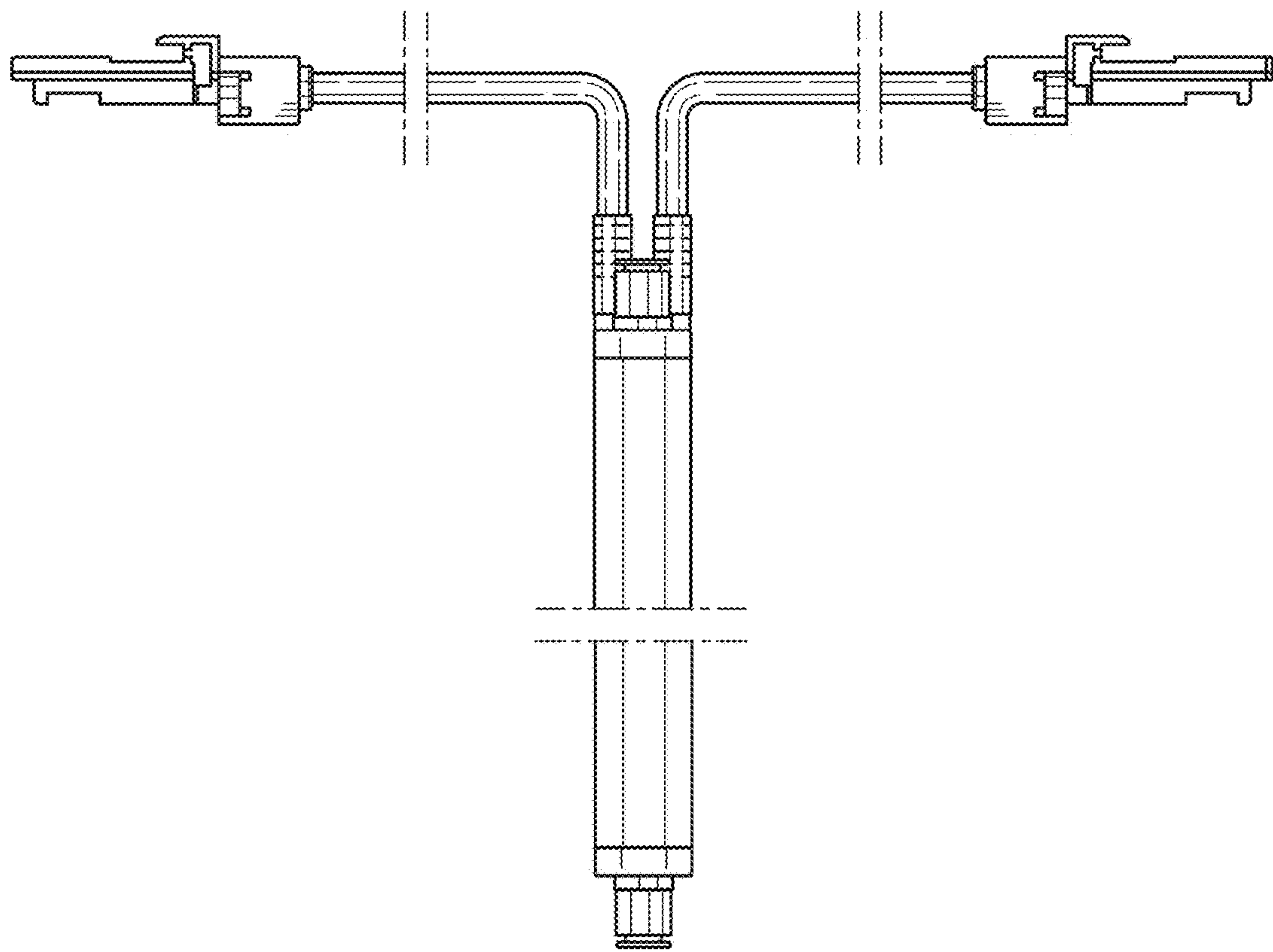


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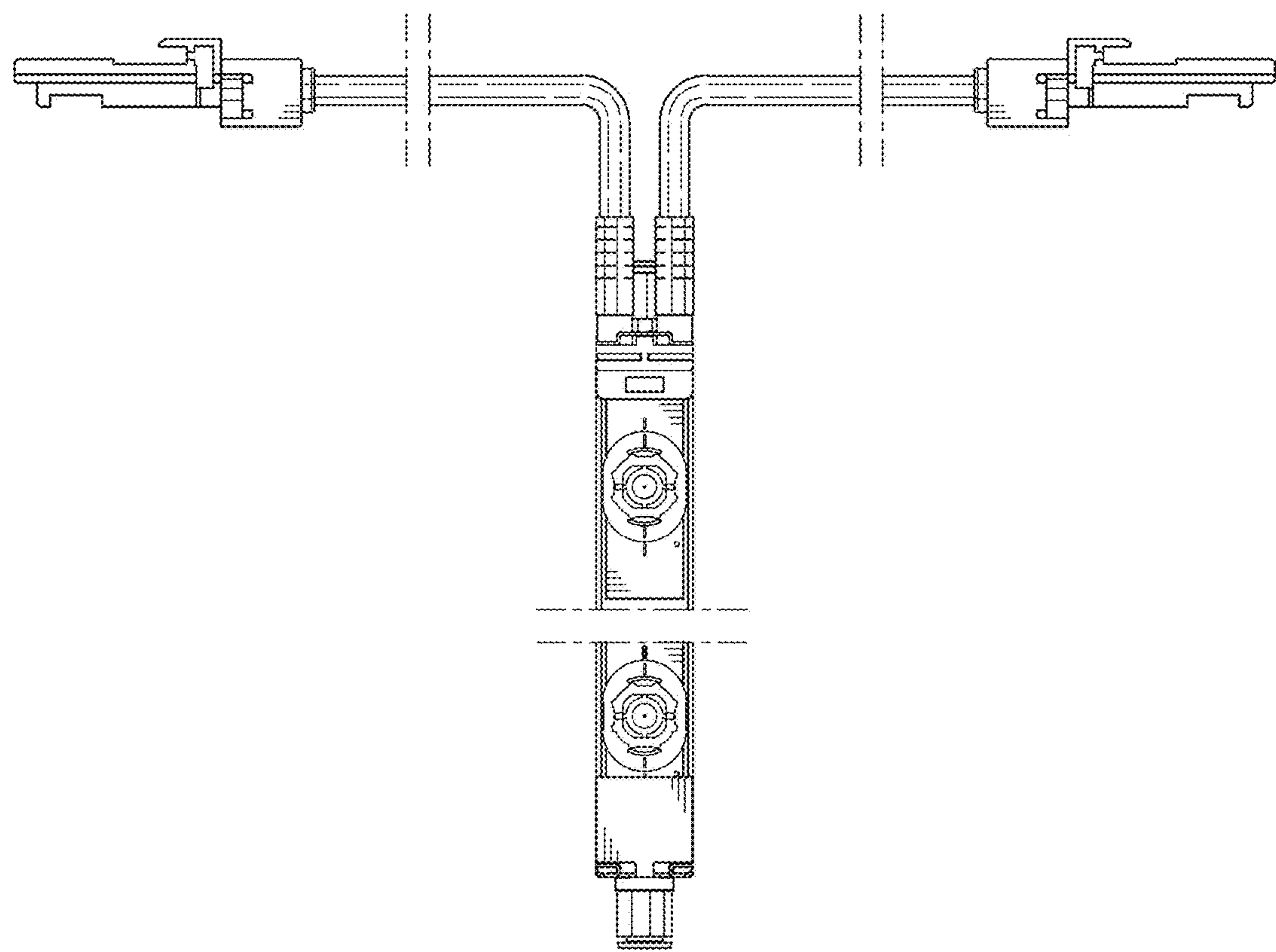


Fig. 89

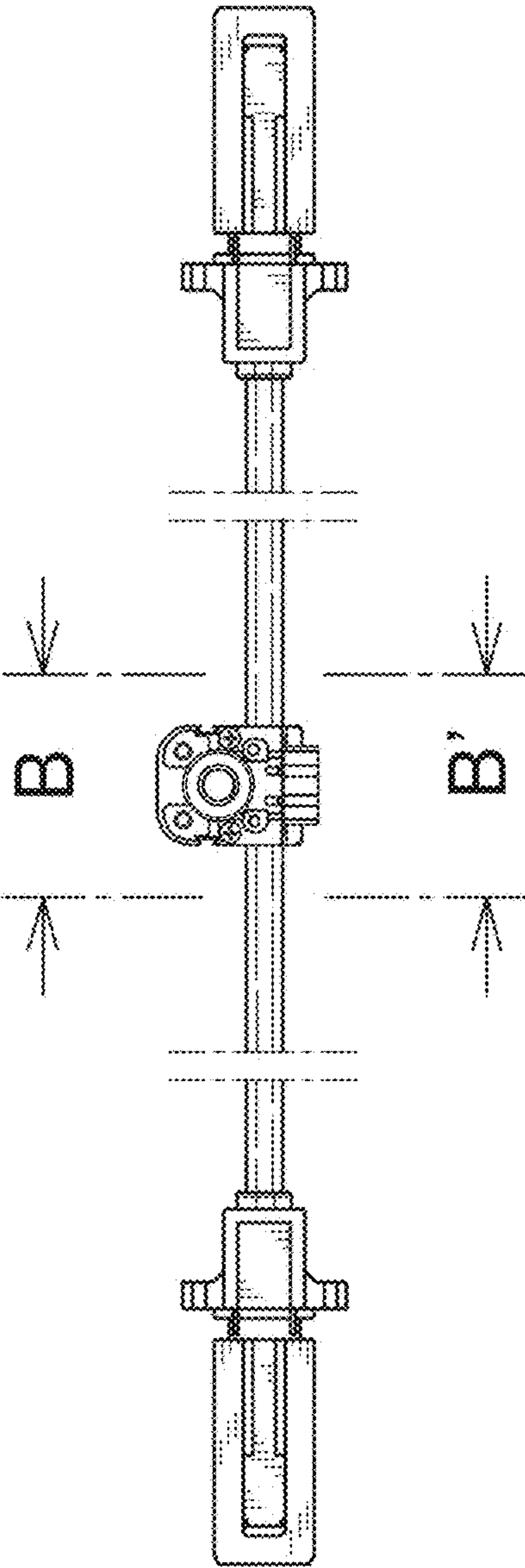


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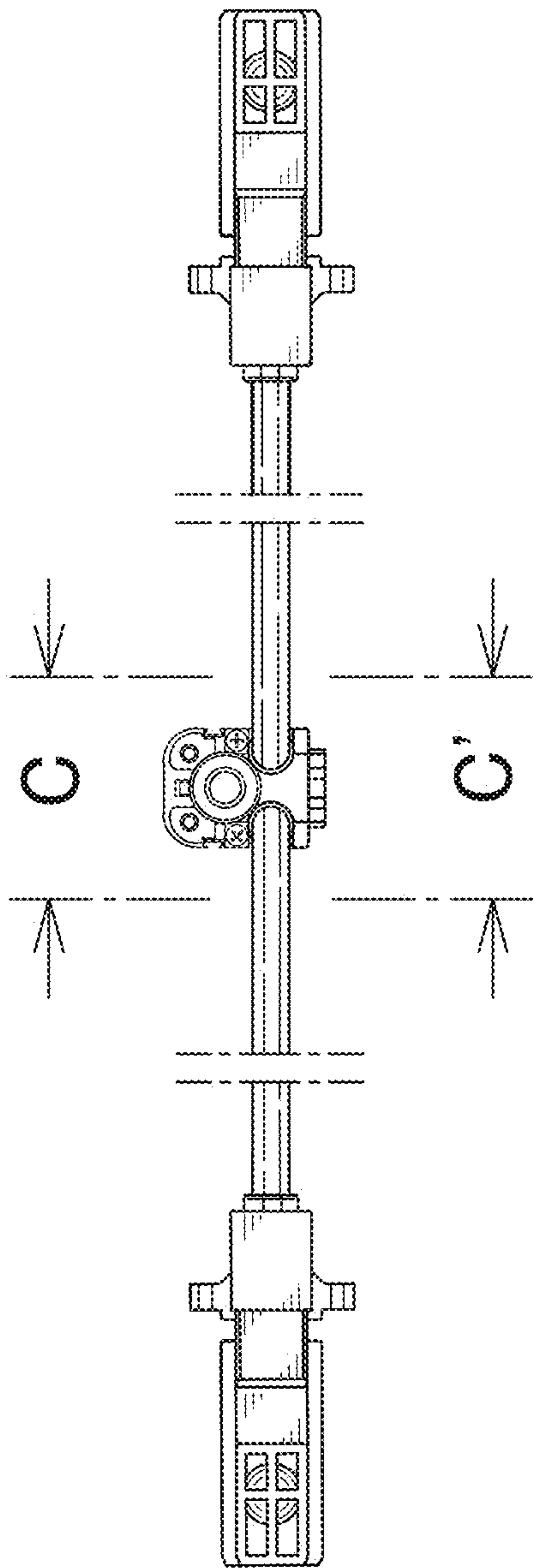


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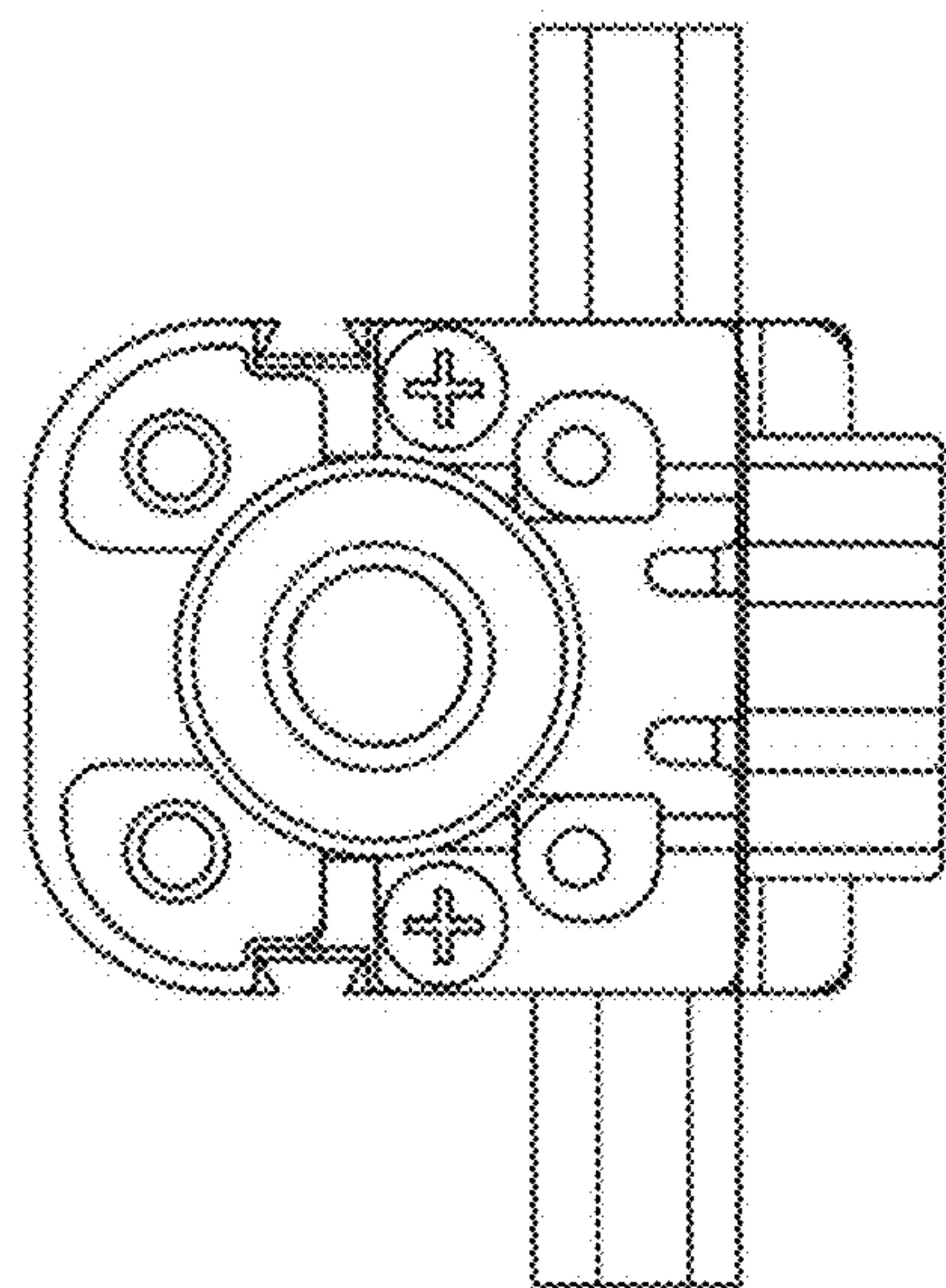


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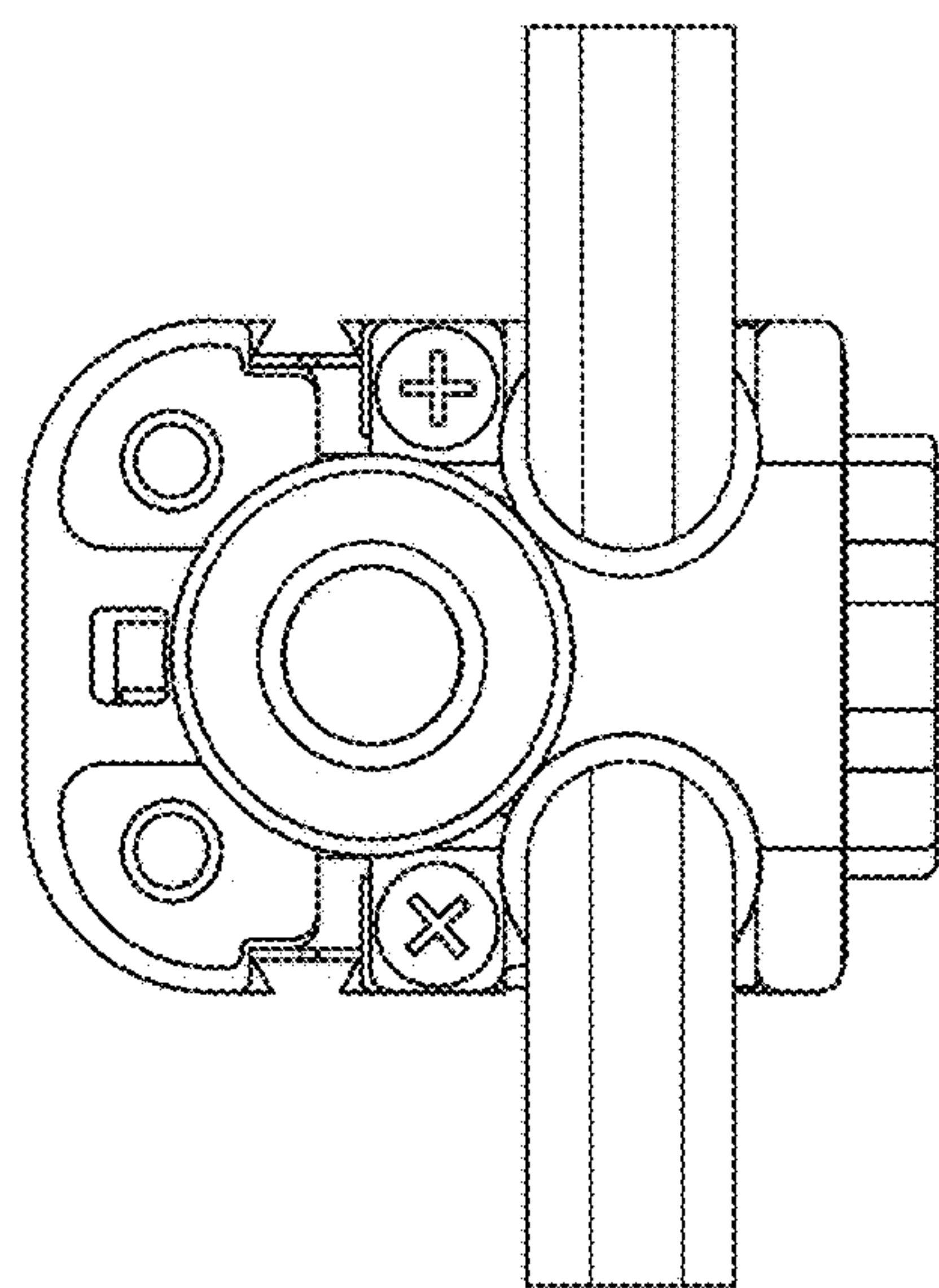


Fig. 93

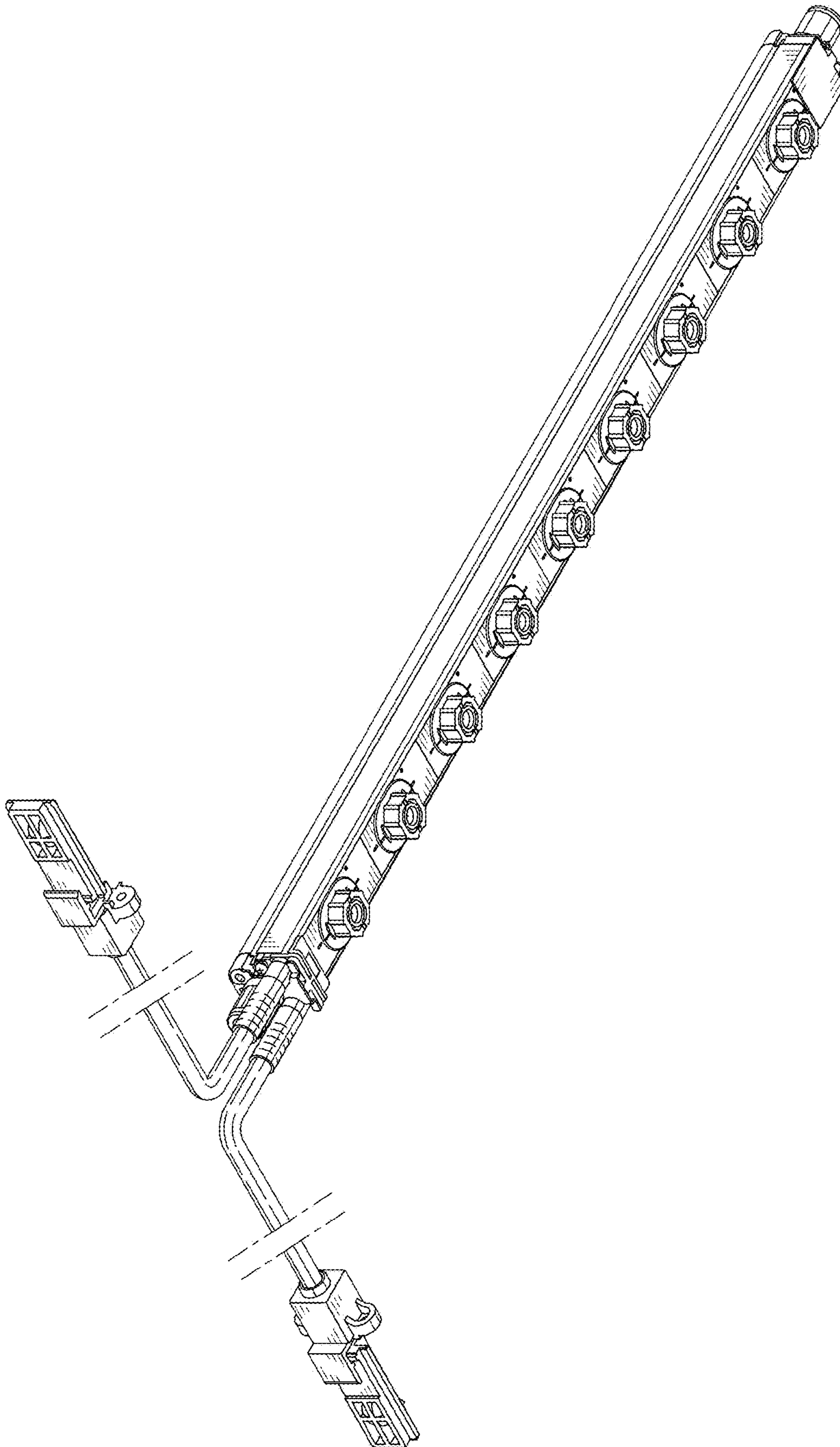


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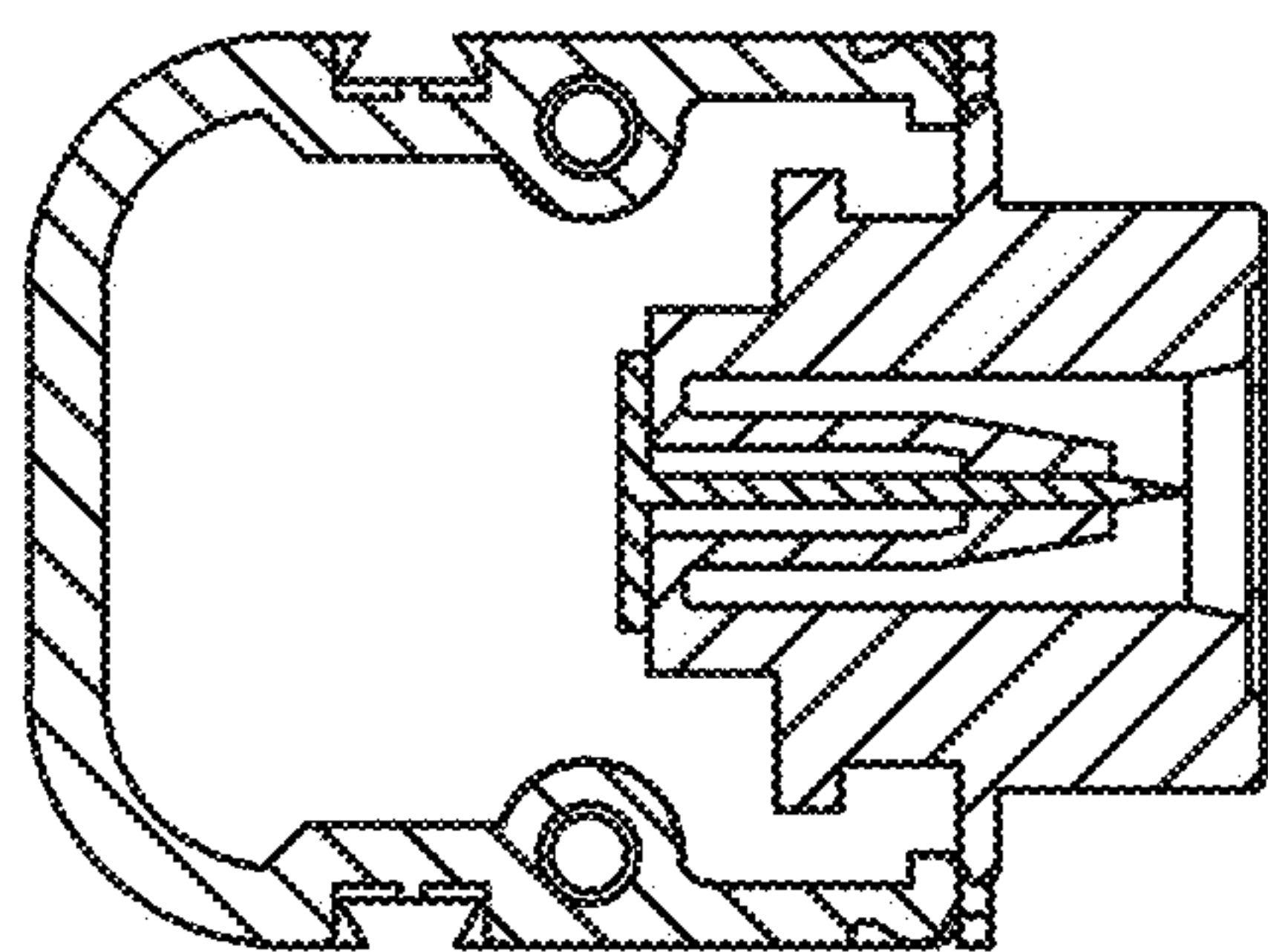


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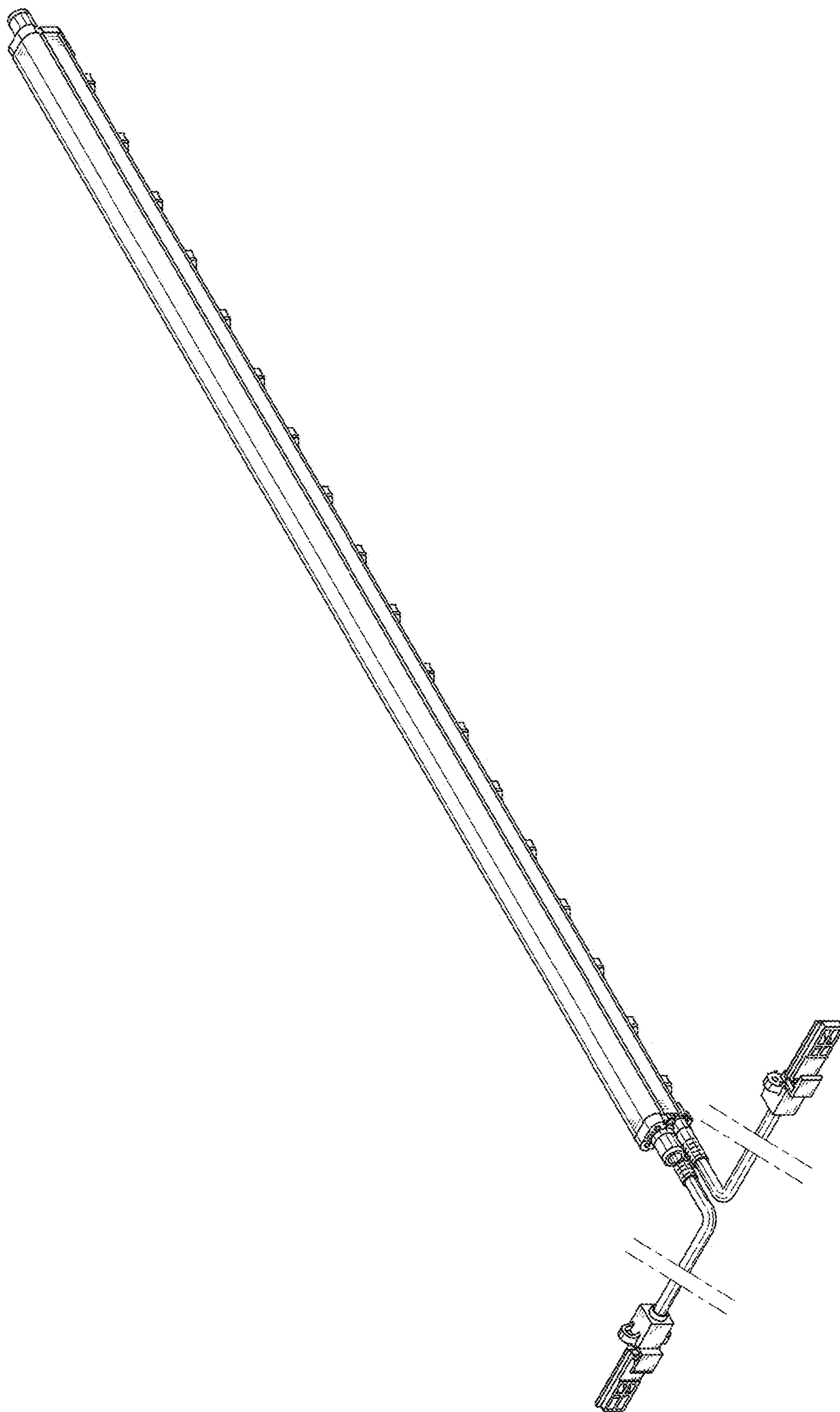


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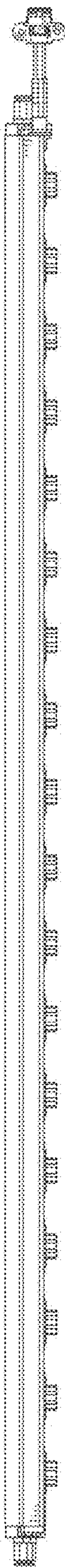


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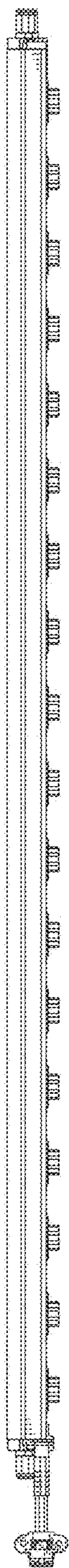


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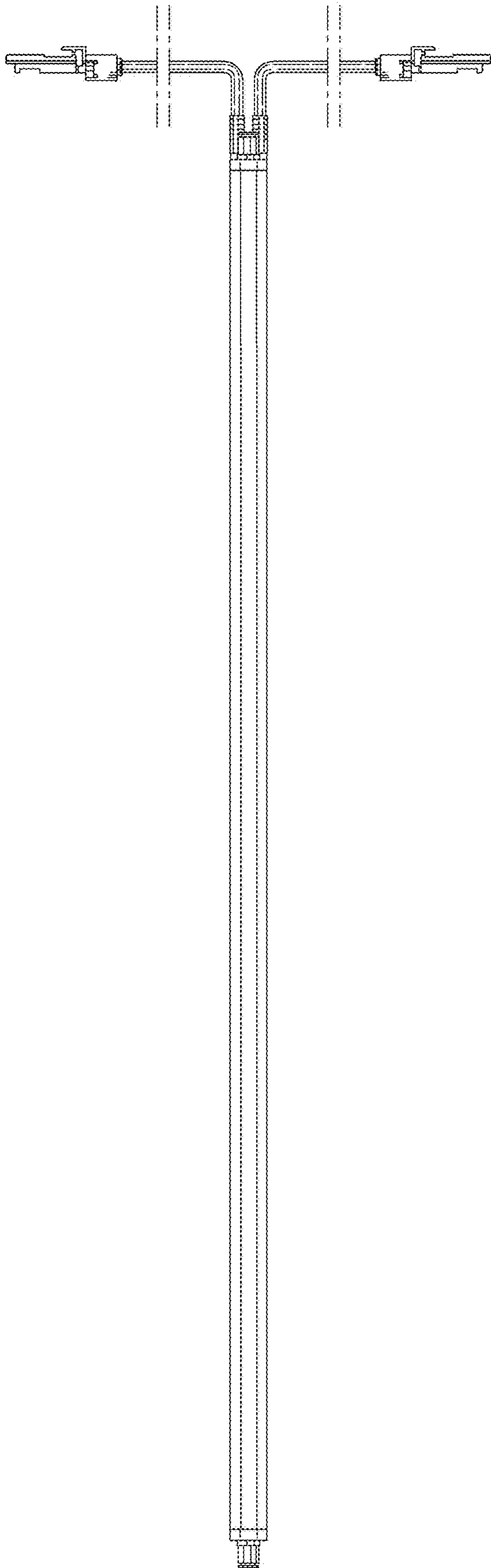


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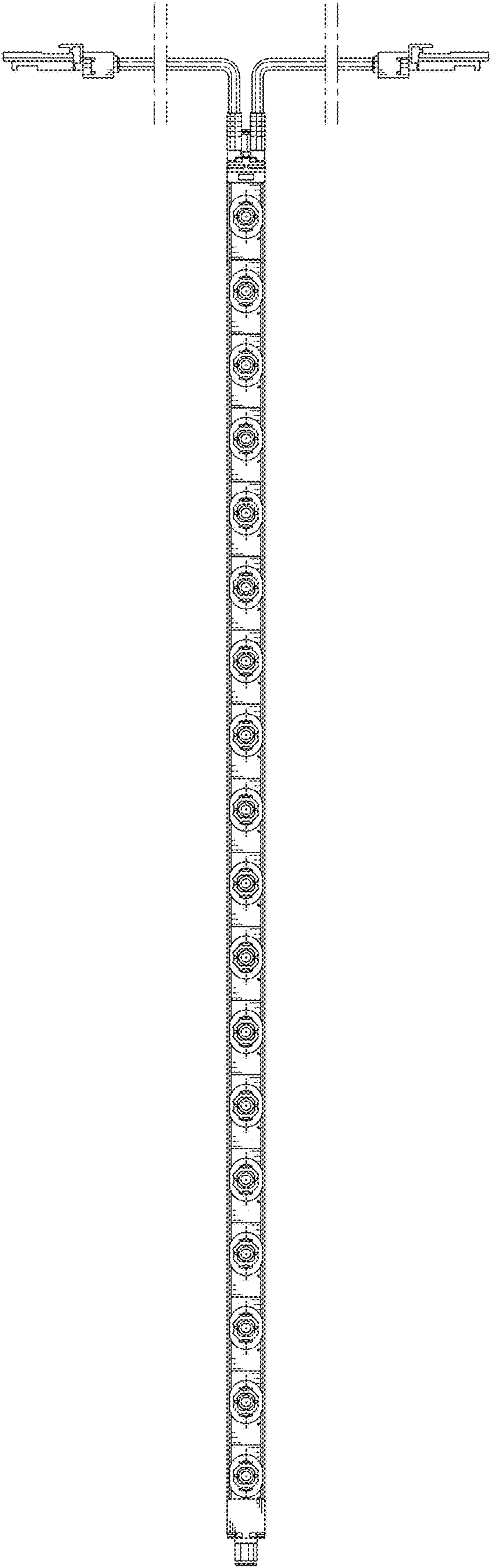


Fig. 100

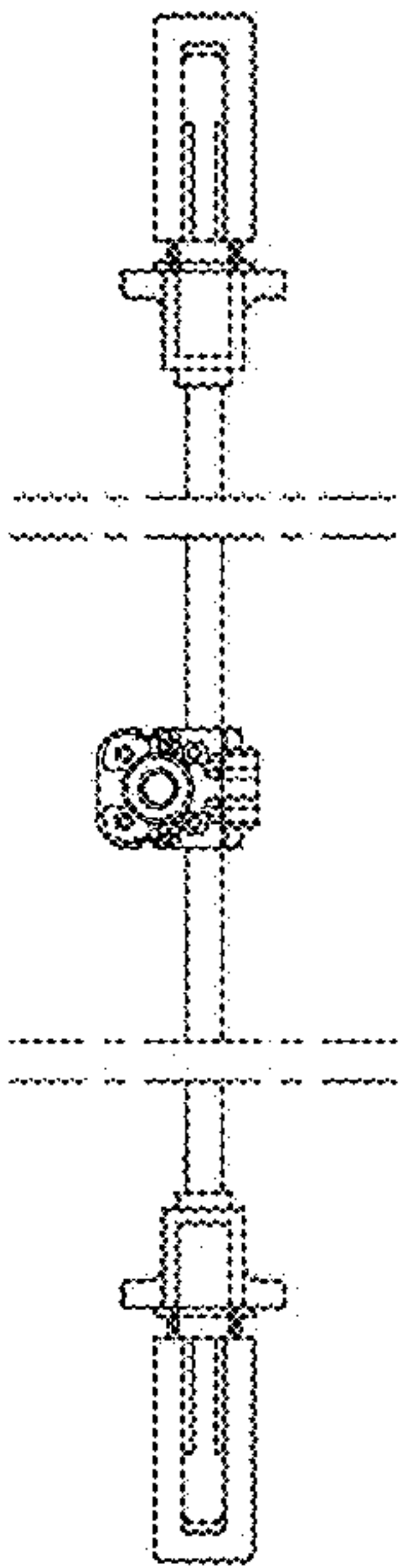


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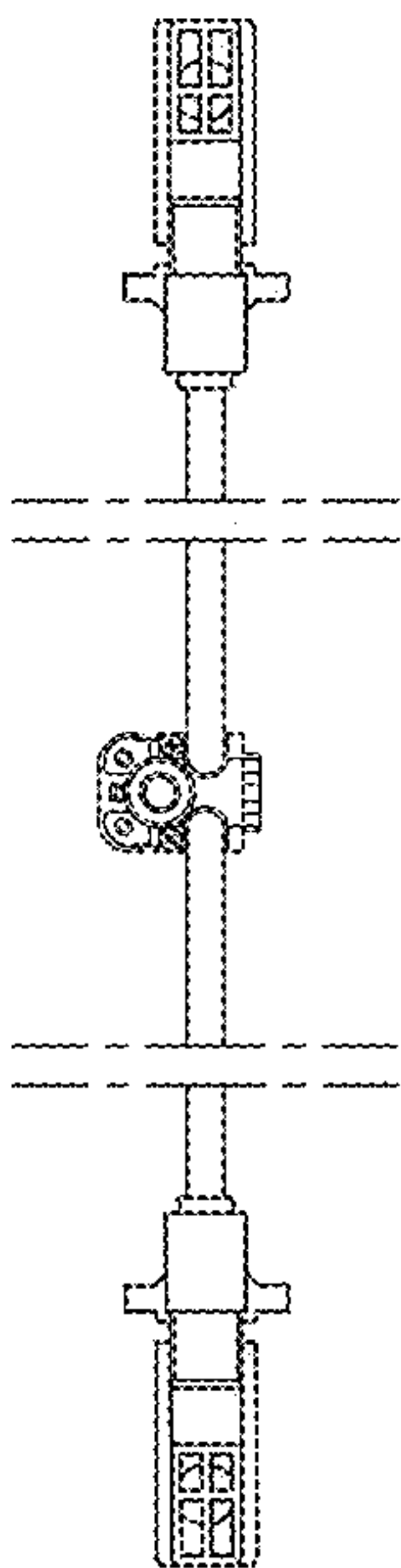


Fig. 102

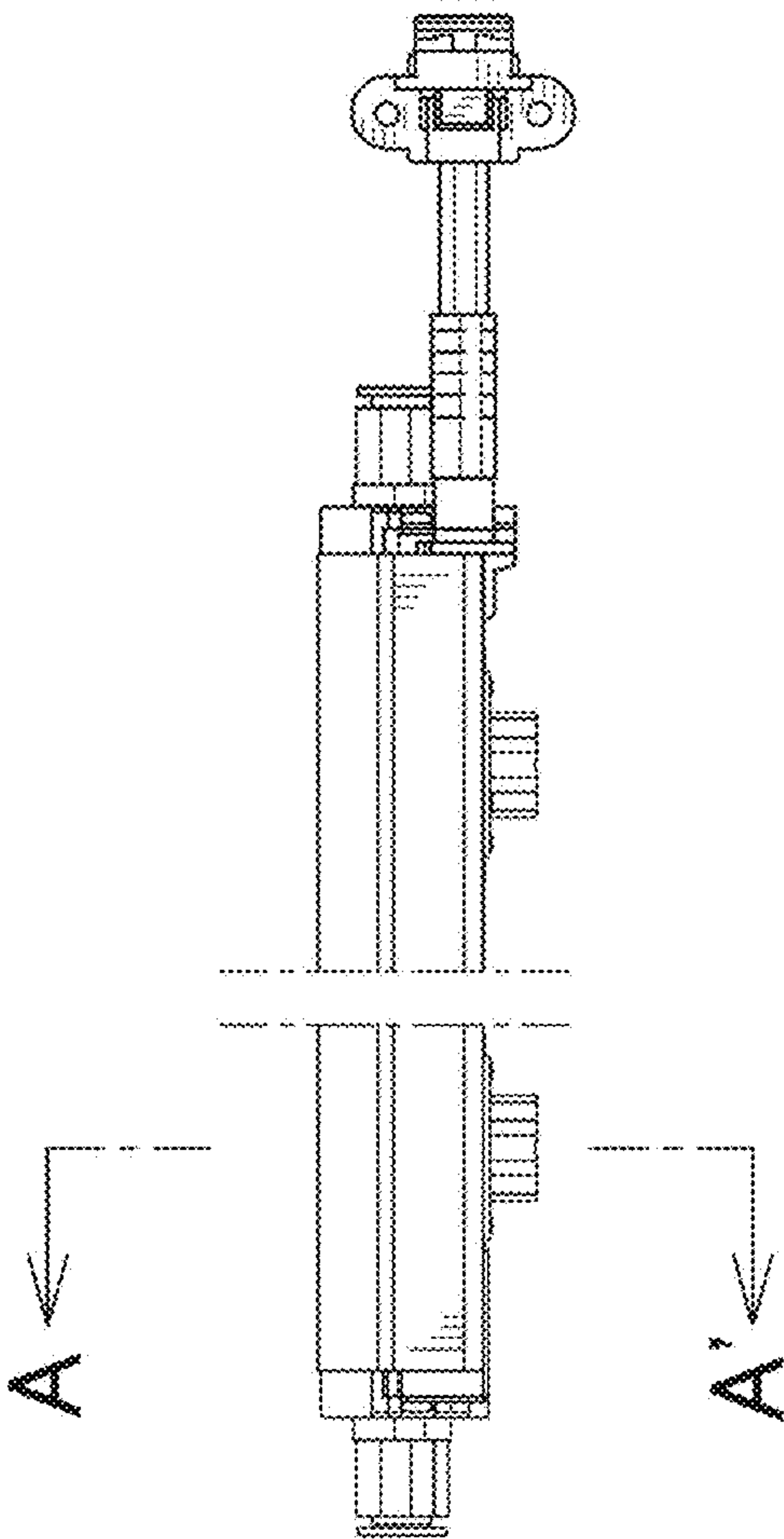


Fig. 103

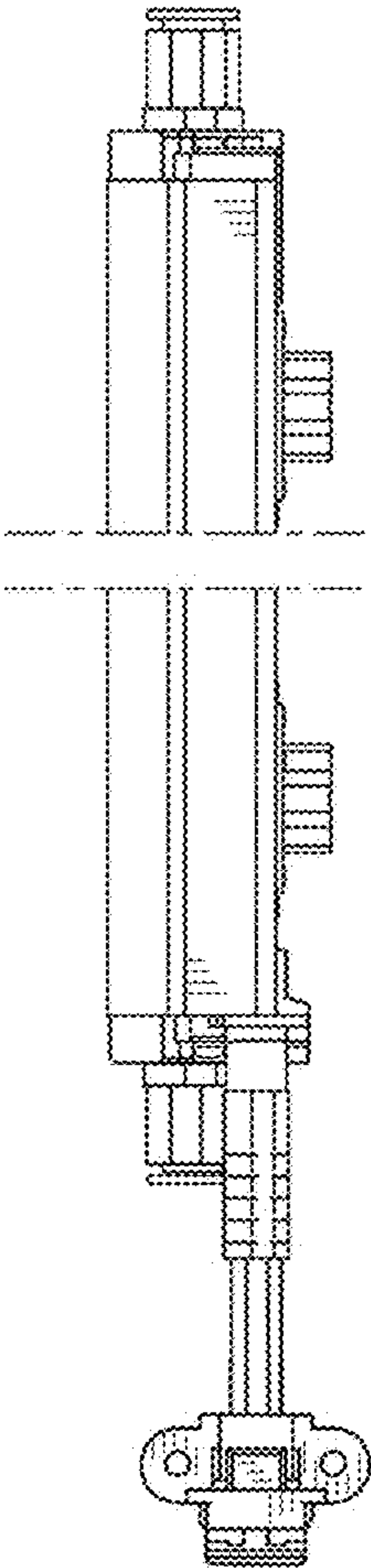


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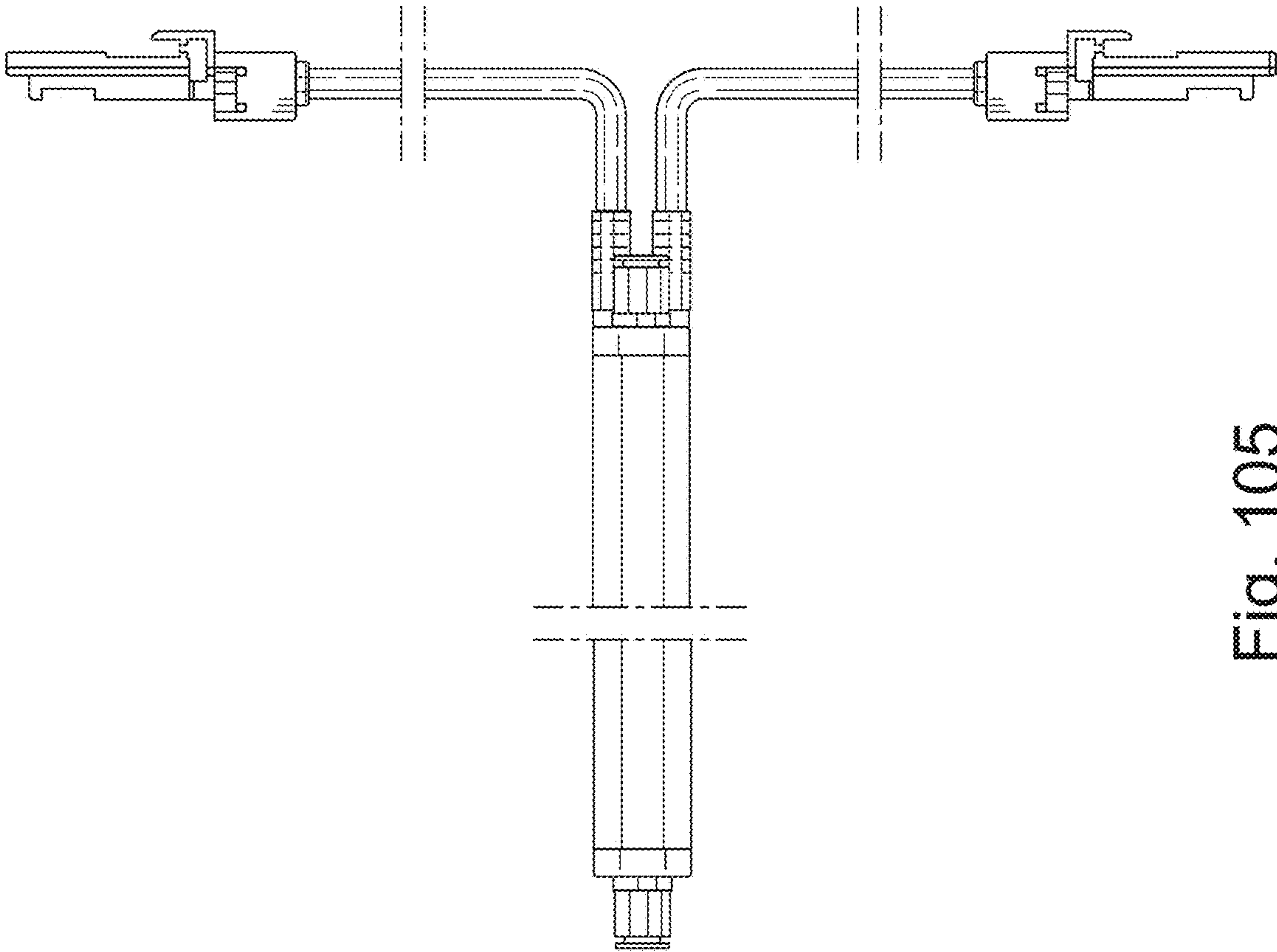


Fig. 105

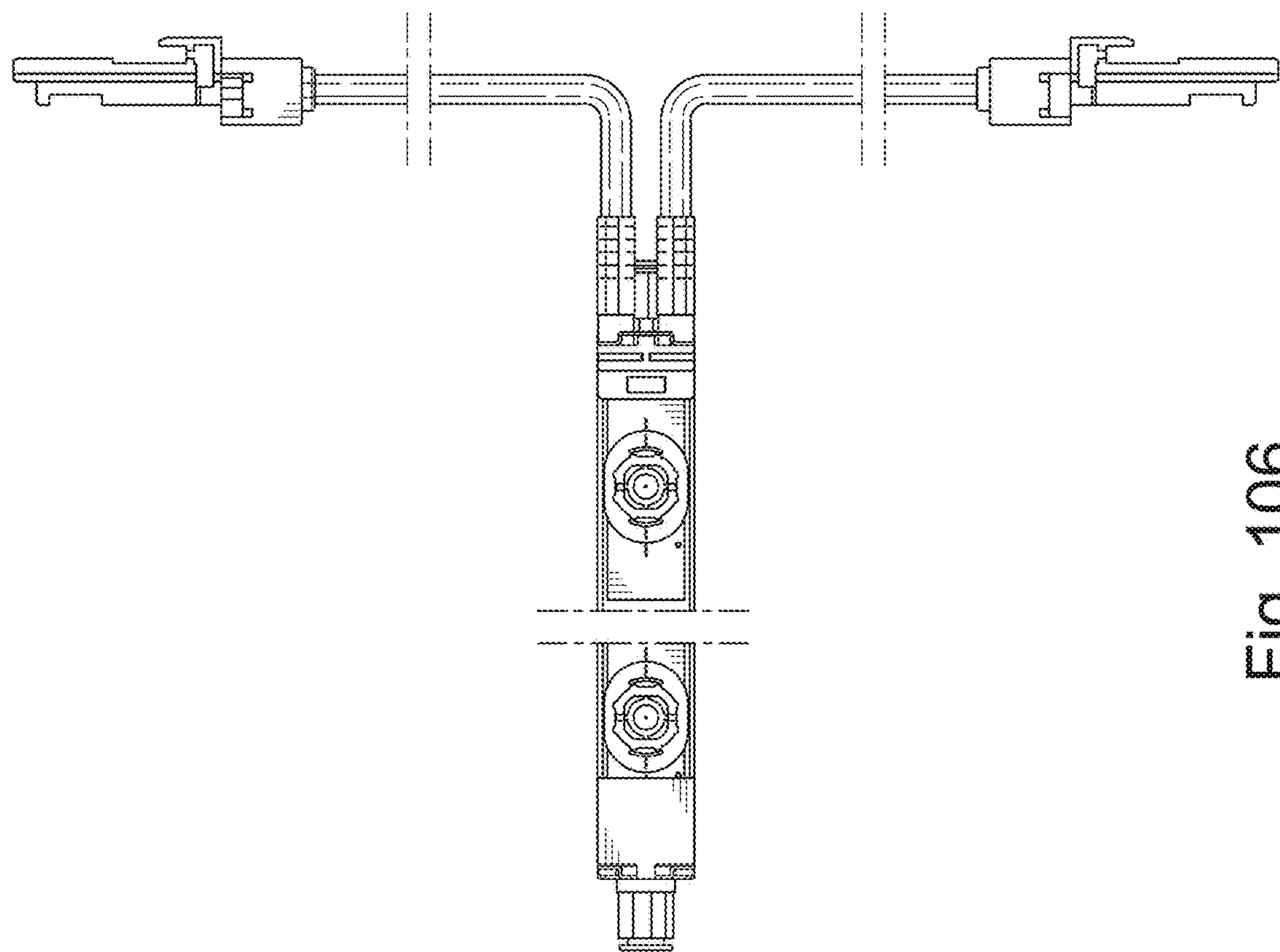
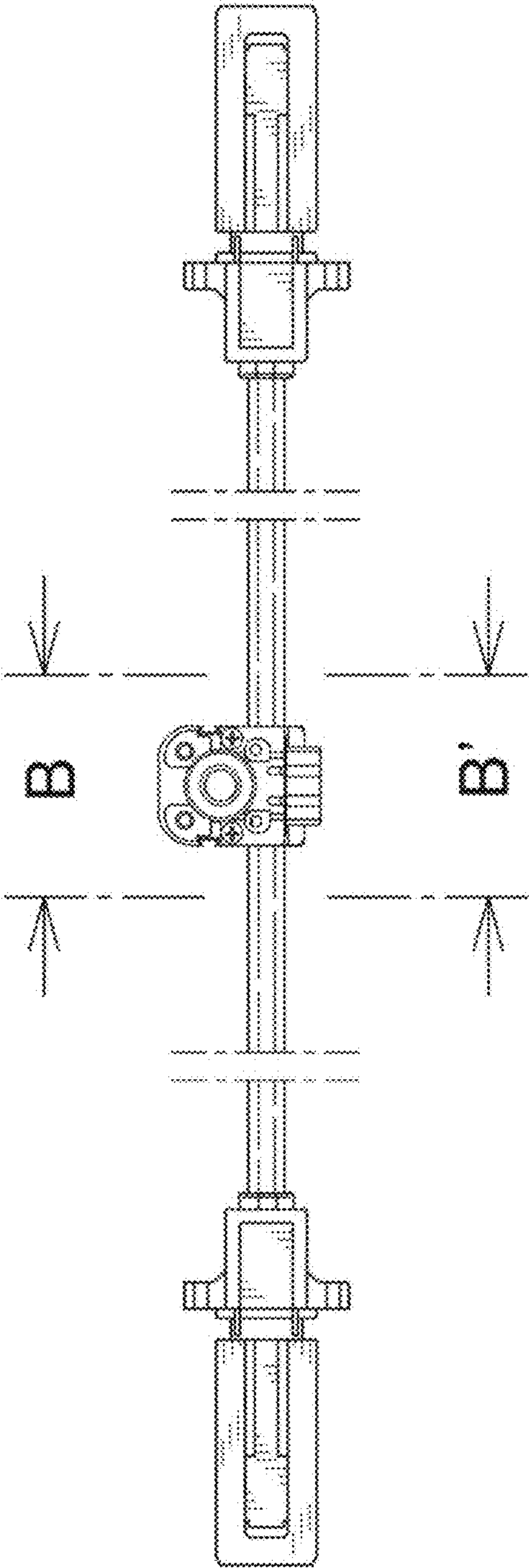


Fig. 106



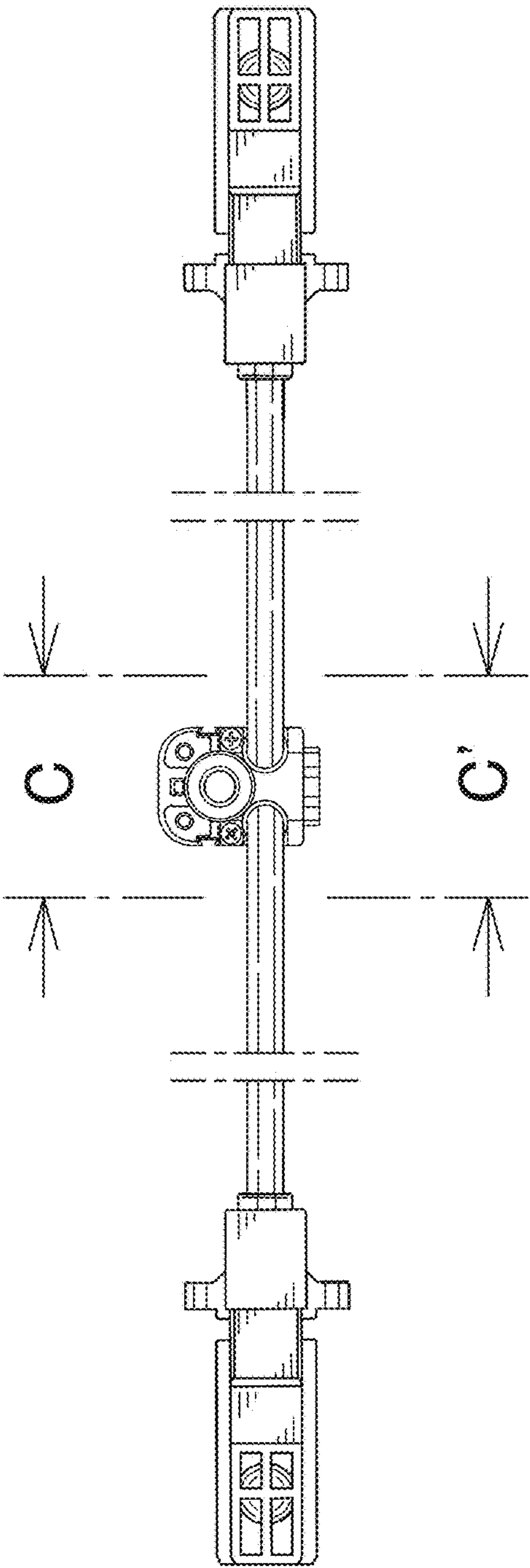


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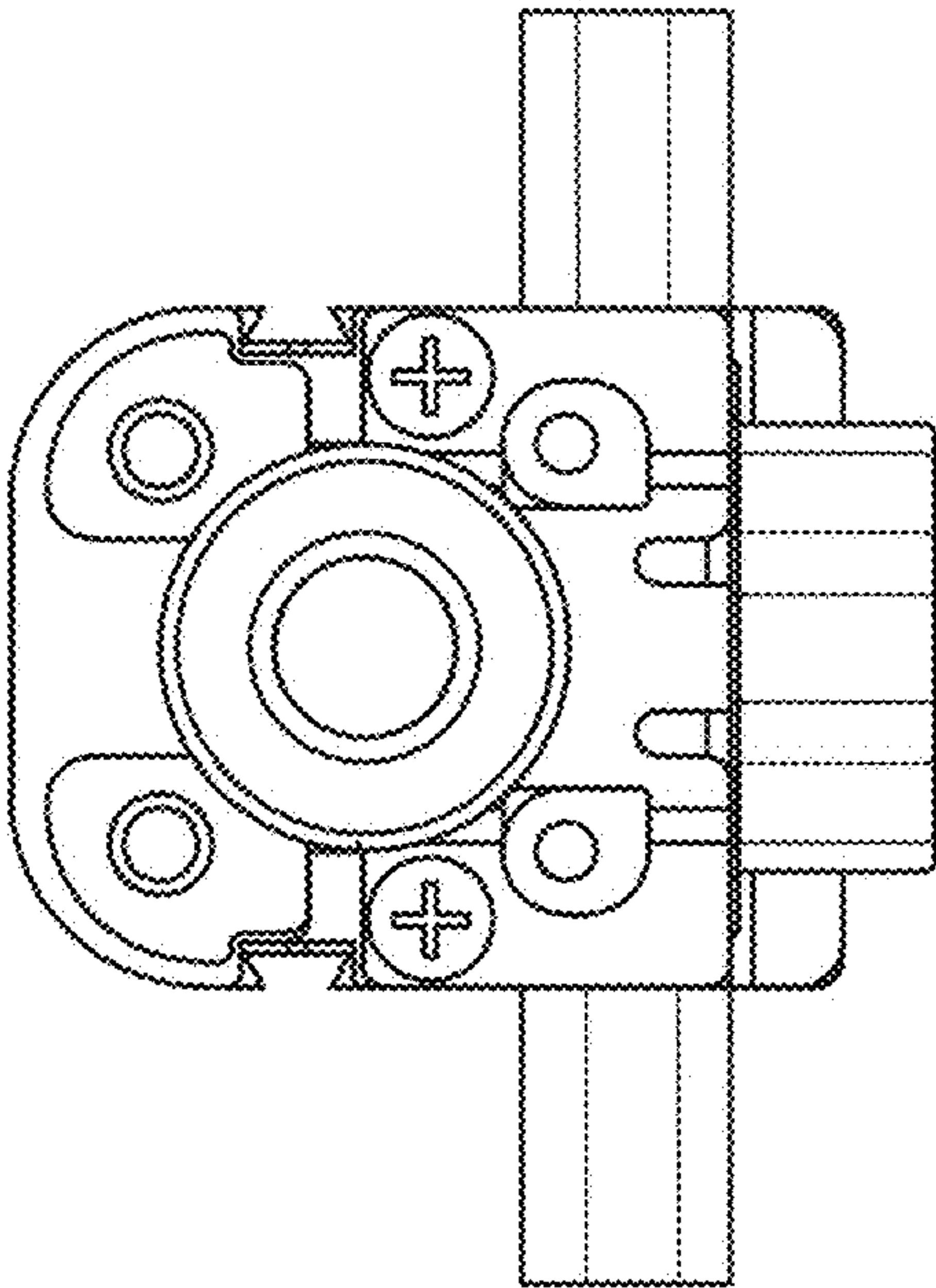


Fig. 109

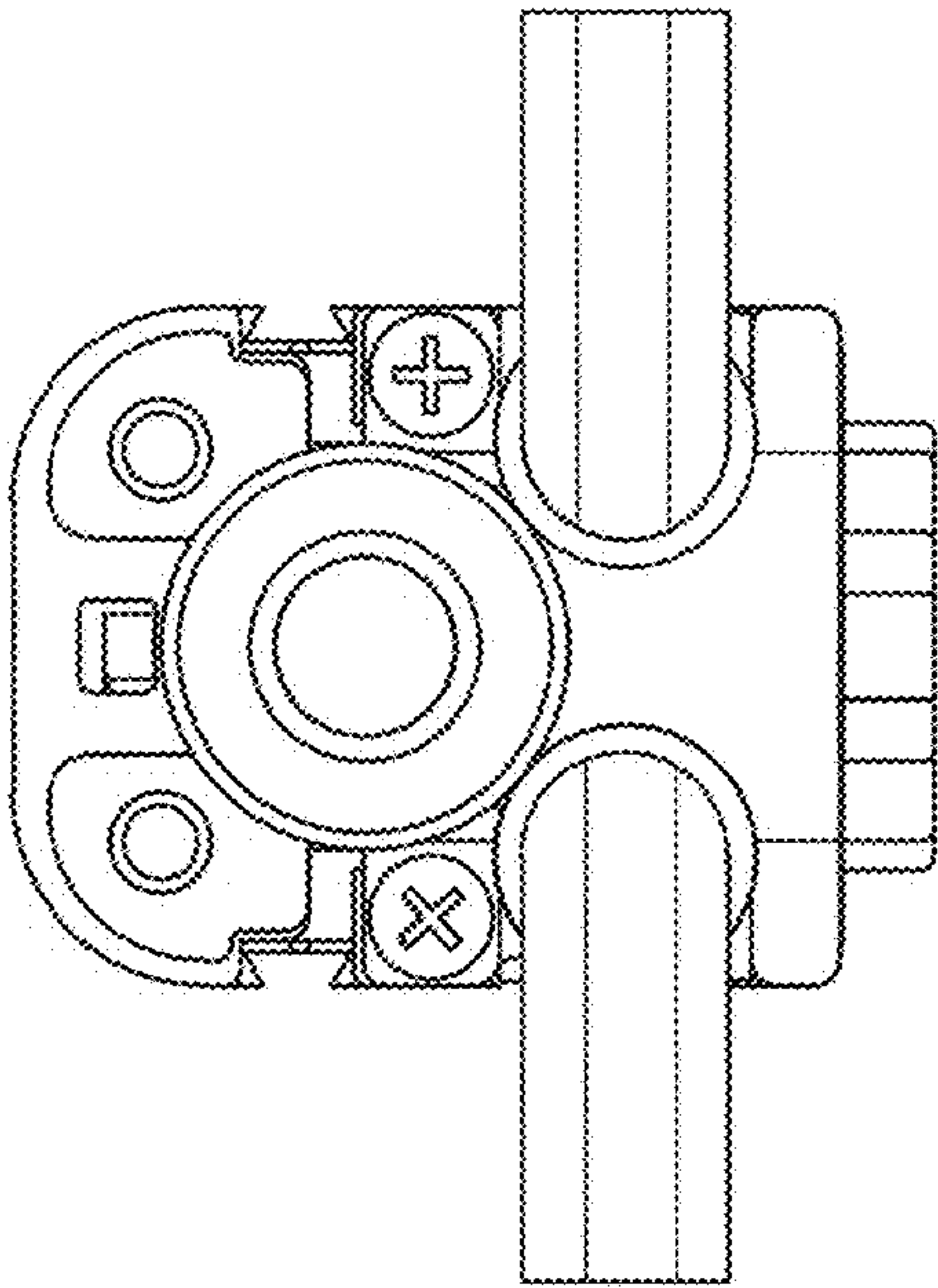


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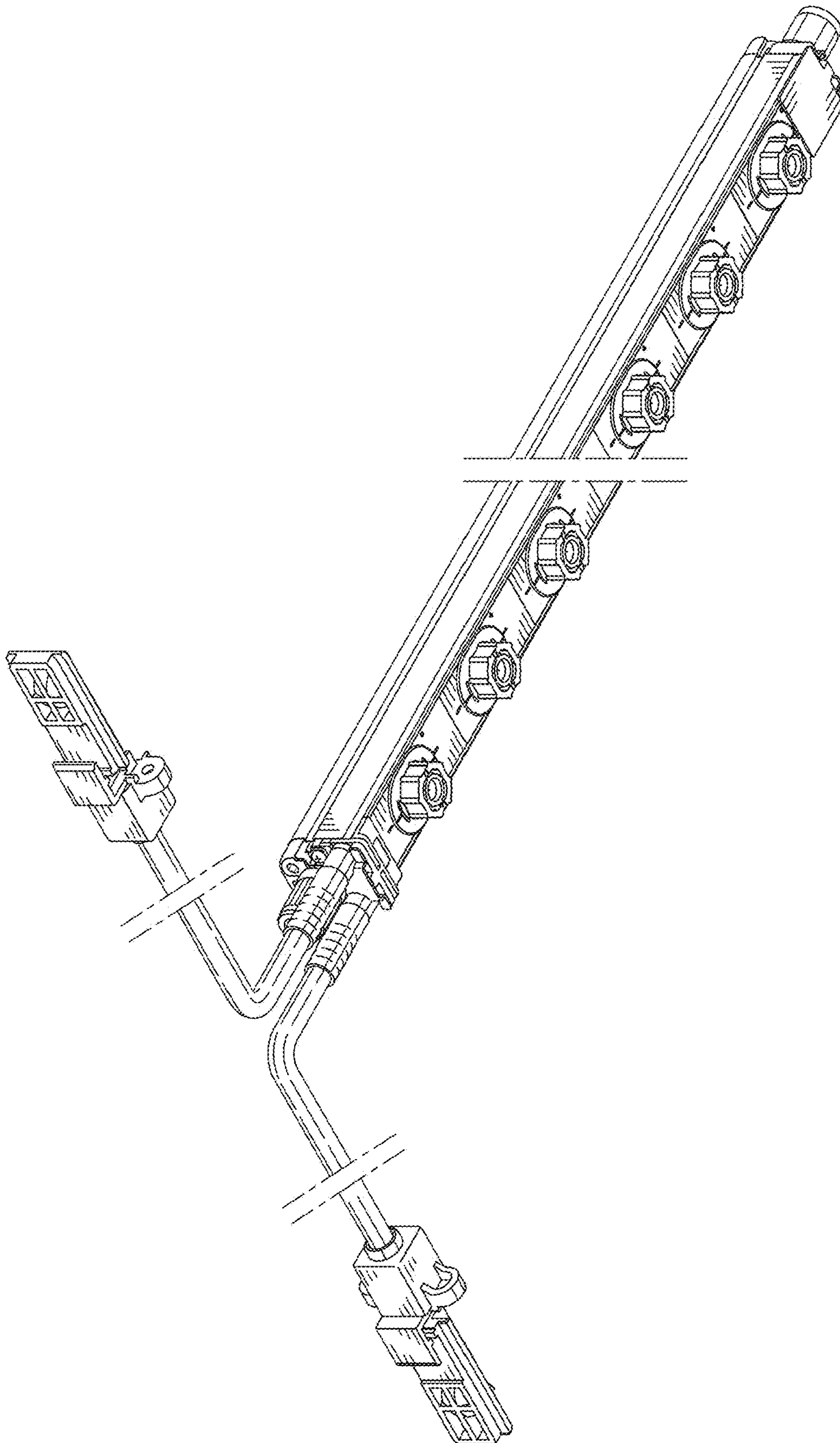


Fig. 111

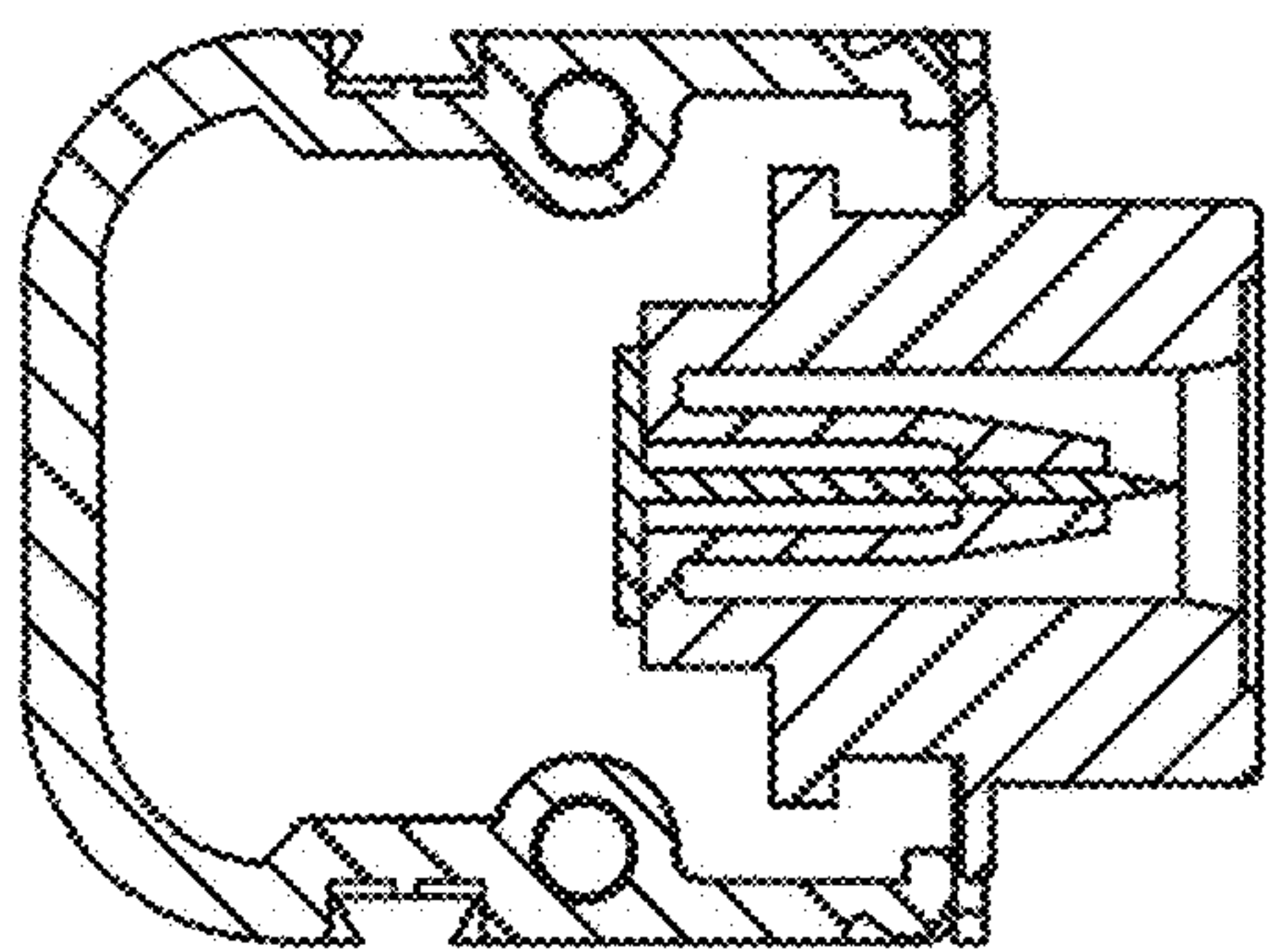


Fig. 112