



US00D939001S

(12) **United States Design Patent** (10) **Patent No.:** **US D939,001 S**
Hidaka (45) **Date of Patent:** **** Dec. 21, 2021**

(54) **LOWER ELECTRODE STRUCTURE FOR WELDING**

(71) Applicant: **SMK Co., Ltd.**, Sagamihara (JP)

(72) Inventor: **Masato Hidaka**, Sagamihara (JP)

(73) Assignee: **SMK CO., LTD.**, Sagamihara (JP)

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

(21) Appl. No.: **29/714,197**

(22) Filed: **Nov. 21, 2019**

(51) **LOC (13) Cl.** **15-09**

(52) **U.S. Cl.**
USPC **D15/144**

(58) **Field of Classification Search**
USPC D8/387, 393; D13/133, 182; D15/144,
D15/144.1, 144.2
CPC B23K 11/30; B23K 11/31
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 2,494,847 A * 1/1950 Welch B23K 11/31
219/86.41
- 3,215,811 A * 11/1965 Kroy B23K 11/31
219/120
- D295,361 S * 4/1988 Grant D8/30
- 4,940,875 A * 7/1990 Hill B23K 11/31
219/86.61
- 4,958,056 A * 9/1990 Tomac B23K 11/31
219/120
- D362,860 S * 10/1995 Carkhuff D15/144
- D365,345 S * 12/1995 Carkhuff D15/144
- 5,541,382 A * 7/1996 Taylor B23K 11/12
219/117.1
- 6,355,901 B1 * 3/2002 Nippert B23K 11/3018
219/119

- D496,376 S * 9/2004 Colson, Jr. D15/144
- D517,577 S * 3/2006 Conway D15/144
- D522,026 S * 5/2006 Colson, Jr. D15/144
- D527,401 S * 8/2006 Mizuno D15/144
- D551,182 S * 9/2007 Furukawa B23K 11/3018
D10/101
- D647,547 S * 10/2011 Hidaka B23K 11/31
D15/144

(Continued)

FOREIGN PATENT DOCUMENTS

- DE 102013216167 A1 * 3/2015 B23K 11/31
- JP 1644279 S 10/2019

(Continued)

Primary Examiner — Patricia A Palasik

(74) *Attorney, Agent, or Firm* — United IP Counselors, LLC

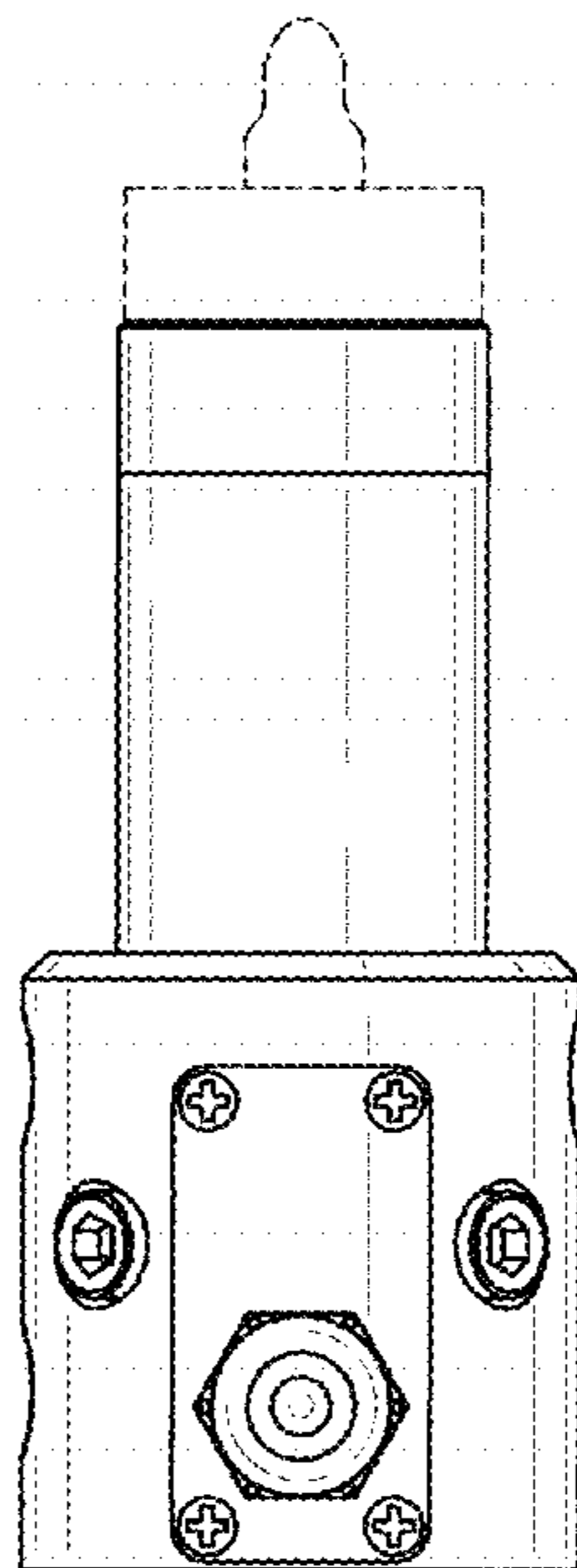
(57) **CLAIM**

The ornamental design for a lower electrode structure for welding, as shown and described.

DESCRIPTION

FIG. 1 is a front elevational view of the lower electrode structure, illustrating my new design;
 FIG. 2 is a rear elevational view of the lower electrode structure;
 FIG. 3 is a right elevational view of the lower electrode structure;
 FIG. 4 is a left elevational view of the lower electrode structure;
 FIG. 5 is a top plan view of the lower electrode structure;
 FIG. 6 is a bottom plan view of the lower electrode structure;
 and,
 FIG. 7 is a perspective view of the lower electrode structure.
 The broken lines in the figures illustrate environmental structure that forms no part of the claimed invention.

1 Claim, 4 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D692,402 S * 10/2013 Dalton B23K 11/31
D13/182
D776,177 S * 1/2017 Namburu B23K 11/12
D15/144
D776,935 S * 1/2017 White B23K 11/318
D4/100
D777,812 S * 1/2017 Namburu B23K 11/31
D15/144
D784,432 S * 4/2017 Yamaguchi B23K 11/115
D15/144
9,730,307 B2 * 8/2017 Namburu H05H 1/28
D861,758 S * 10/2019 Severance, Jr. D15/144
2007/0175868 A1 * 8/2007 Christensen B23K 11/115
219/86.25
2015/0336199 A1 * 11/2015 Prucher B23K 11/3054
219/119
2021/0213558 A1 * 7/2021 Hidaka B23K 11/318

FOREIGN PATENT DOCUMENTS

WO WO-03011512 A1 * 2/2003 B23K 11/31
WO WO-2008148762 A1 * 12/2008 B23K 11/3018
WO WO-2020263813 A1 * 12/2020 B23K 35/0261

* cited by examiner

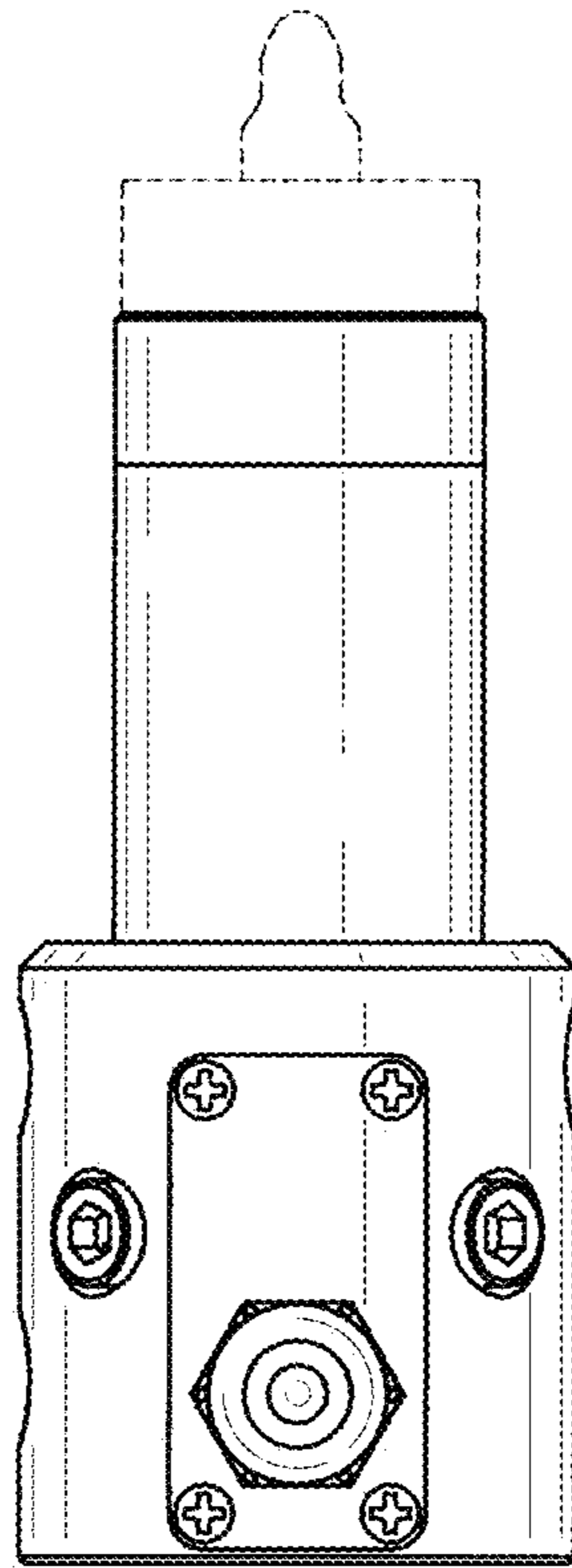


FIG. 1

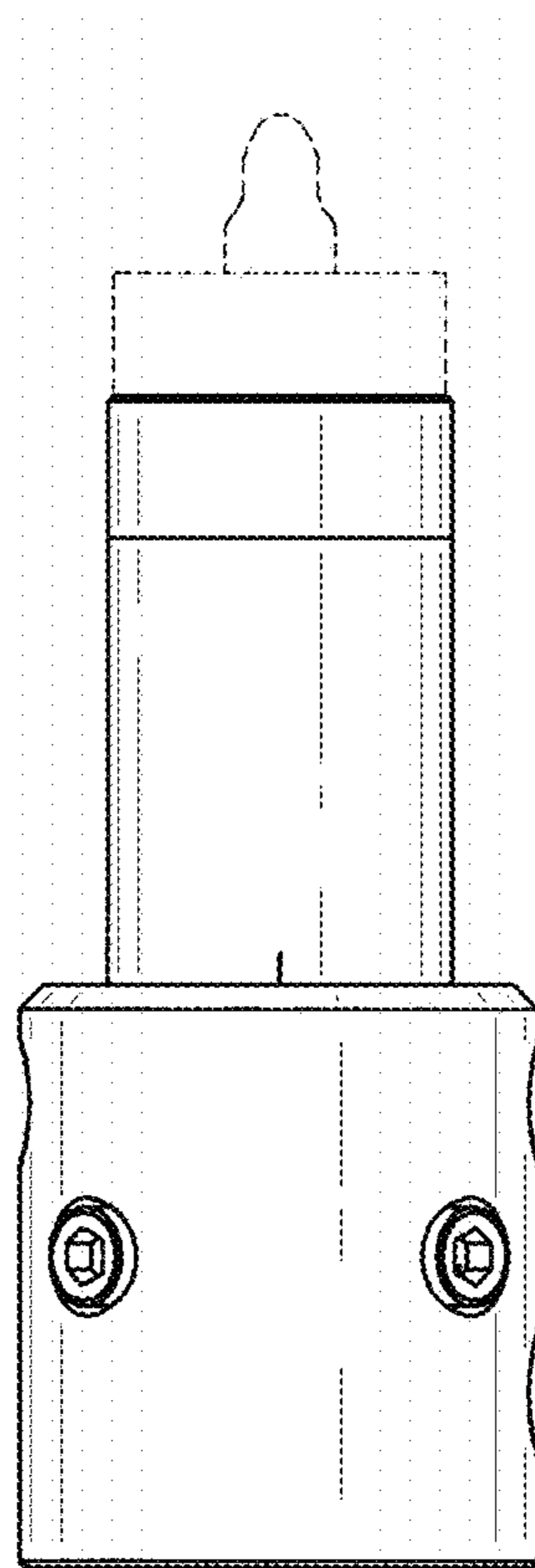


FIG. 2

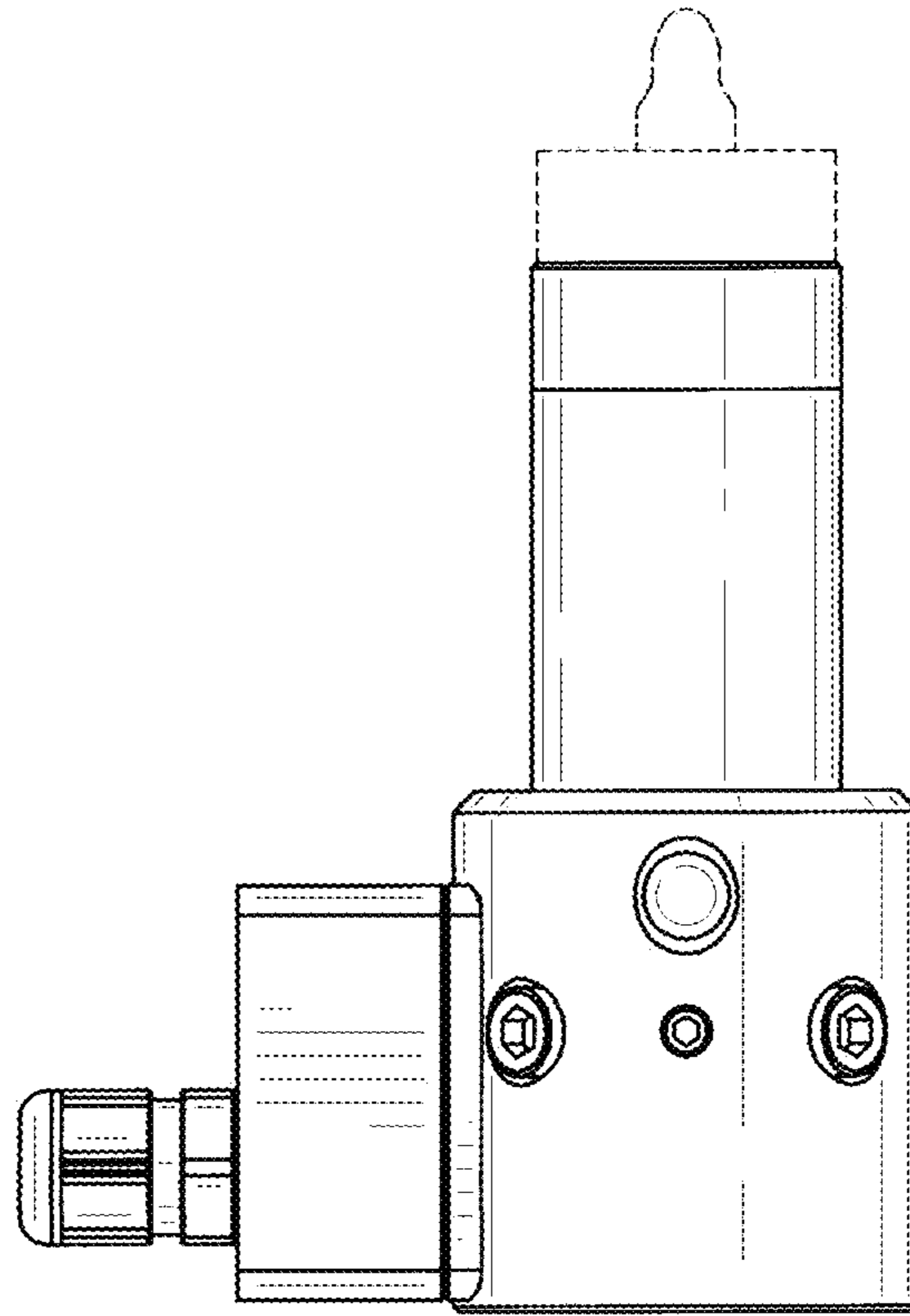


FIG. 3

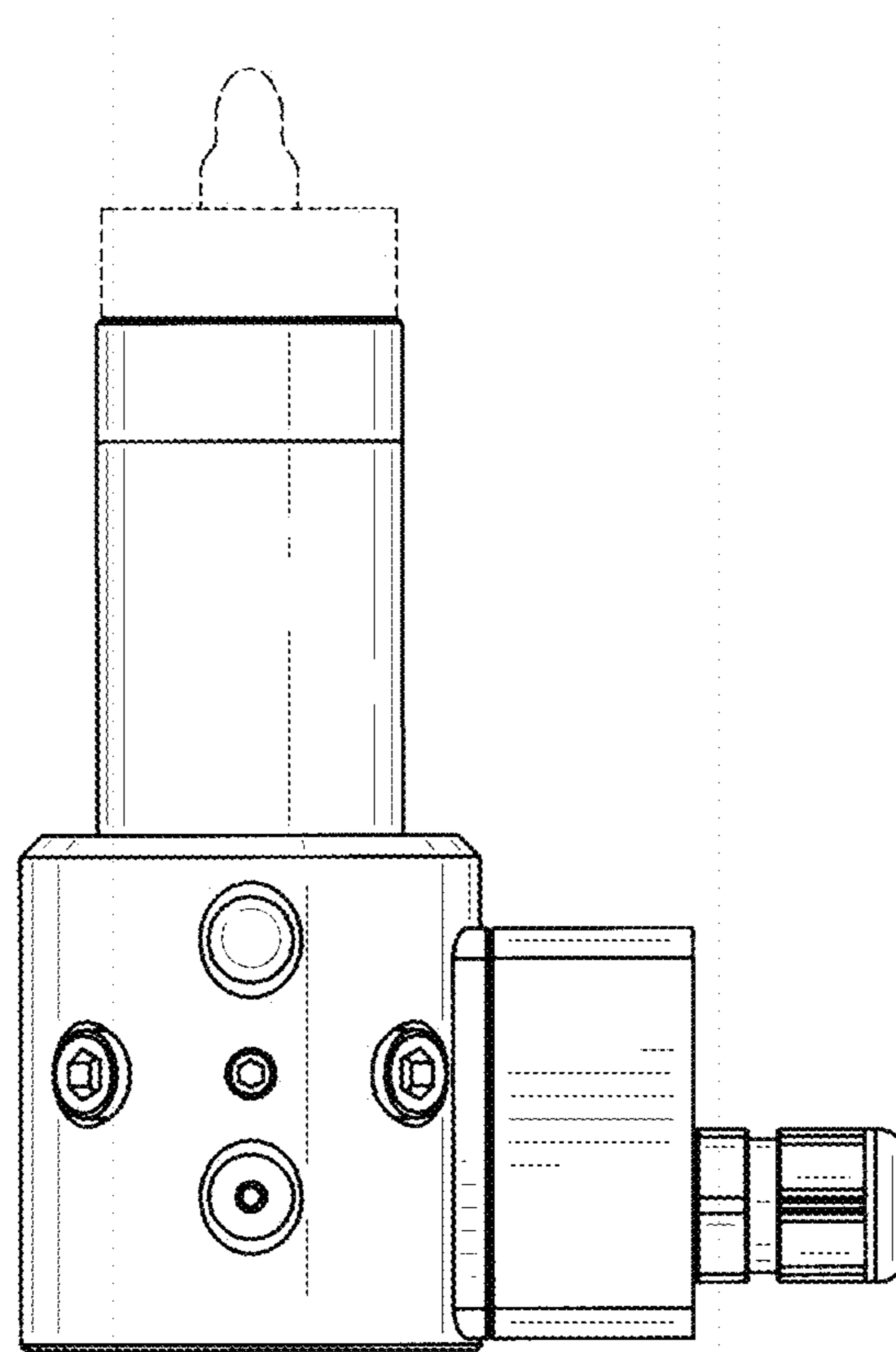


FIG. 4

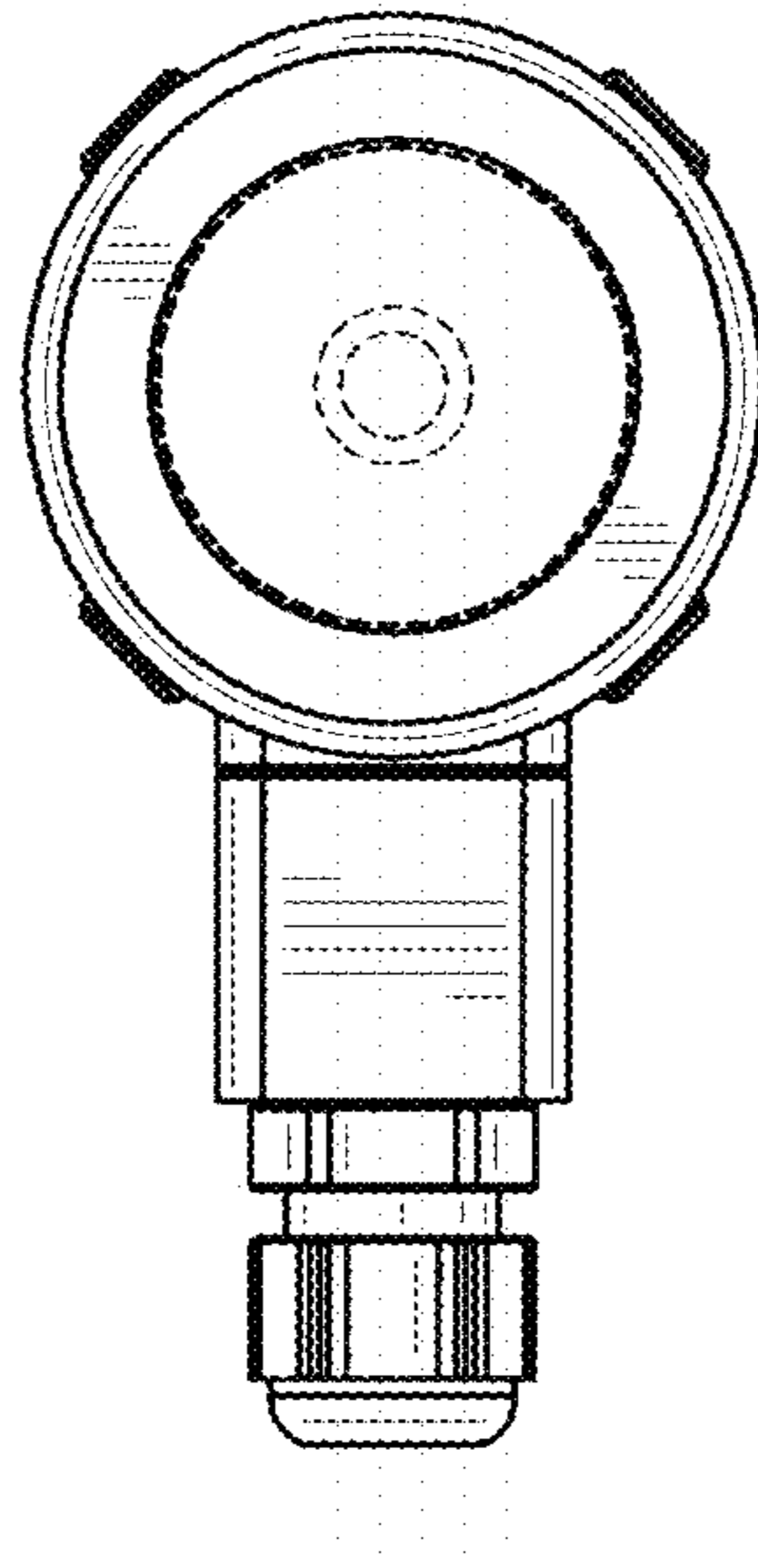


FIG. 5

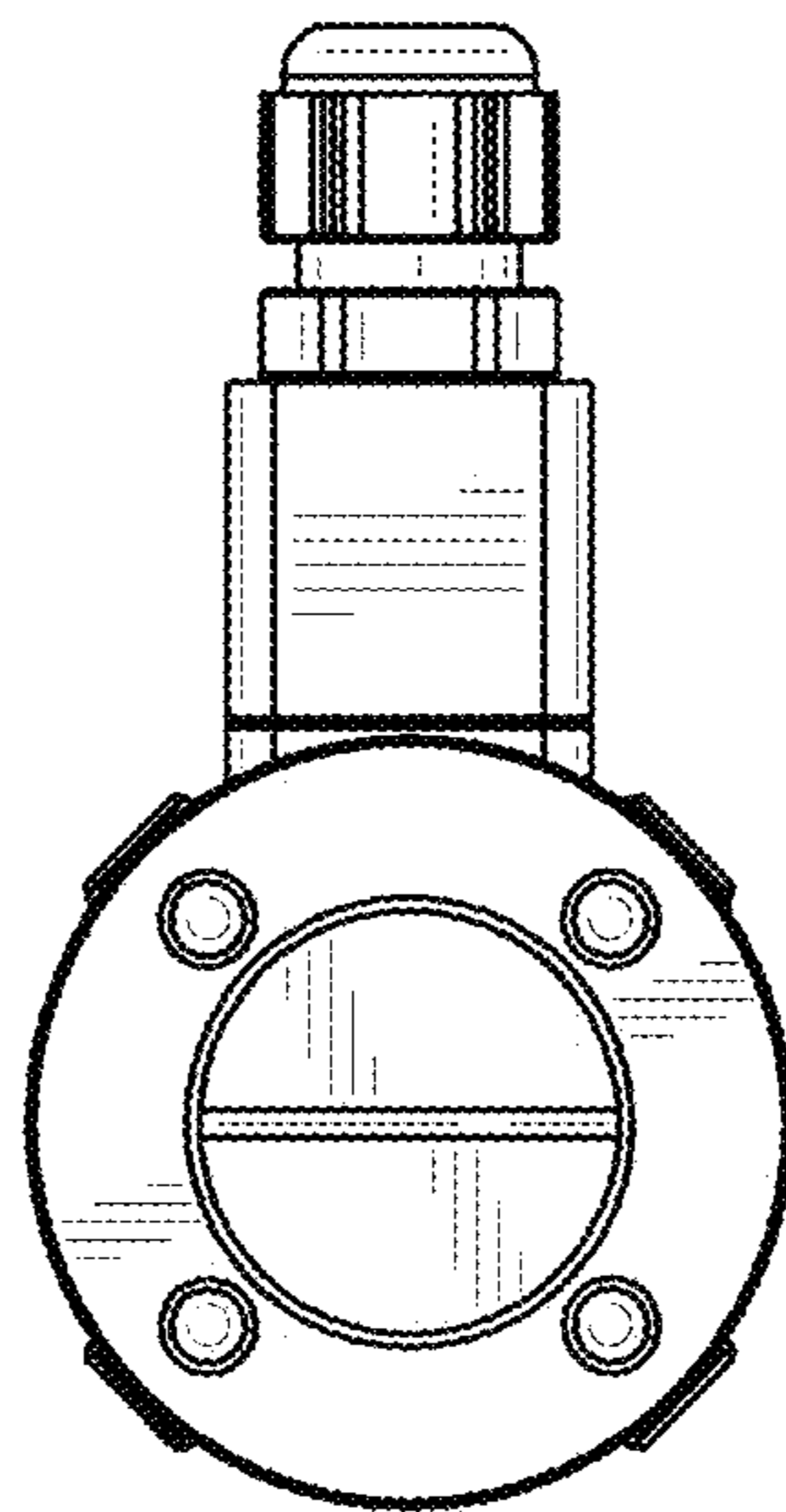


FIG. 6

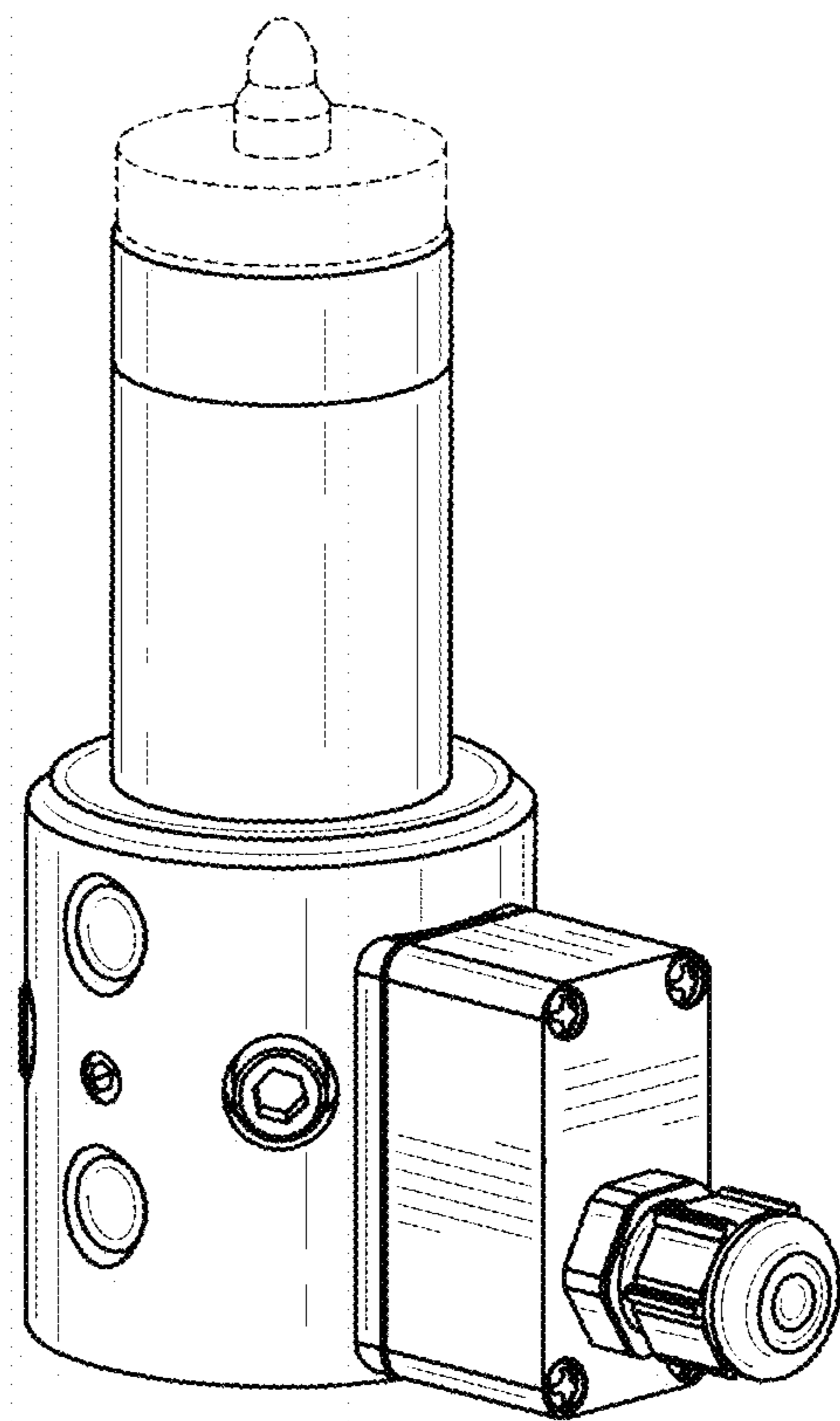


FIG. 7