



US00D822081S

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

(10) **Patent No.:** **US D822,081 S**
(45) **Date of Patent:** **** Jul. 3, 2018**

(54) **ROTARY TOOL FOR BOAT OF SEMICONDUCTOR MANUFACTURING APPARATUS**

D507,280 S * 7/2005 Chu D15/9
D555,174 S * 11/2007 Hwang D15/9
D560,109 S * 1/2008 Huang D8/70
7,569,186 B2 * 8/2009 Bedingham B01L 3/50851
219/428
D617,346 S * 6/2010 Chu D15/9
D652,845 S * 1/2012 Nam D15/9
D656,161 S * 3/2012 Nam D15/9

(71) Applicant: **Hitachi Kokusai Electric Inc.**, Tokyo (JP)

(72) Inventors: **Takatomo Yamaguchi**, Toyama (JP);
Takashi Nogami, Toyama (JP)

(73) Assignee: **HITACHI KOKUSAI ELECTRIC INC.**, Tokyo (JP)

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

(21) Appl. No.: **29/572,541**

(22) Filed: **Jul. 28, 2016**

(30) **Foreign Application Priority Data**

Feb. 10, 2016 (JP) 2016-002832

(51) **LOC (11) Cl.** **15-09**

(52) **U.S. Cl.**
USPC **D15/140**; D8/349; D8/396

(58) **Field of Classification Search**
USPC D8/8, 14, 36, 61, 89, 130, 142, 337, 349,
D8/352, 373, 499; D13/8; D15/4, 5, 9,
D15/29, 77, 102, 130, 140, 199, 230,
D15/230.12, 230.14, 230.16; D18/10,
D18/34.2, 34.8, 40, 46, 58; D24/219,
D24/232; D32/1, 3, 5, 7, 13, 14, 19, 21,
D32/23, 25, 27, 29, 32, 33, 35
CPC B23Q 5/043; B24D 5/16; H01L 27/1021
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D293,798 S * 1/1988 Johnson D15/140
D342,957 S * 1/1994 George D15/199
D471,563 S * 3/2003 Selic D15/7
D506,210 S * 6/2005 Selic D15/7

FOREIGN PATENT DOCUMENTS

CA 2769926 A1 * 2/2011 B23D 45/12

Primary Examiner — Melanie H Tung

Assistant Examiner — Fritzgerald L Butac

(74) *Attorney, Agent, or Firm* — Fitch, Even, Tabin & Flannery

(57) **CLAIM**

We claim the ornamental design for a rotary tool for boat of semiconductor manufacturing apparatus, as shown (and described).

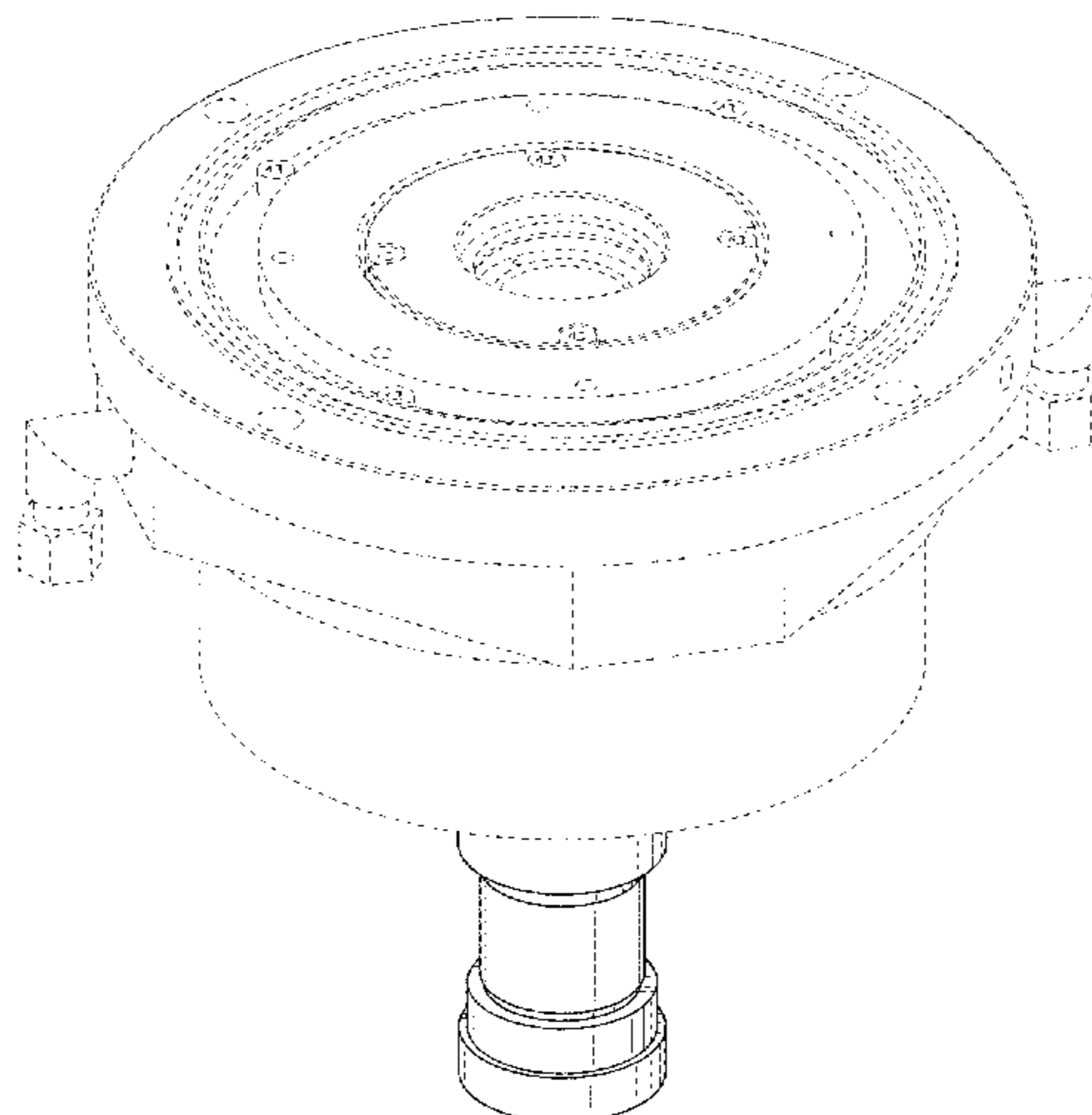
DESCRIPTION

FIG. 1 is a perspective view of a rotary tool for boat of semiconductor manufacturing apparatus showing my new design;
FIG. 2 is a front elevational view thereof;
FIG. 3 is a rear elevational view thereof;
FIG. 4 is a left side elevational view thereof;
FIG. 5 is a right side elevational view thereof;
FIG. 6 is a top plan view thereof;
FIG. 7 is a bottom plan view thereof; and,
FIG. 8 is a cross-sectional view taken along line 8-8 in FIG. 6 thereof.

The broken lines show portions of a rotary tool for boat of semiconductor manufacturing apparatus which form no part of the claimed design.

The “dash-dot” broken lines define the bounds of the claim and form no part thereof.

1 Claim, 8 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

D673,584 S * 1/2013 Nam D15/7
D678,344 S * 3/2013 Chu D15/9
D690,336 S * 9/2013 Gjertsen D15/144
D700,628 S * 3/2014 Chu D15/9
D724,624 S * 3/2015 Schlenker D15/7
D735,427 S * 7/2015 Ishibashi D32/25
D738,935 S * 9/2015 Chu D15/9
D775,248 S * 12/2016 Avellaneda D15/140
D784,101 S * 4/2017 Keller D8/51
D786,875 S * 5/2017 Kaminaga D14/433
2016/0243671 A1 * 8/2016 Holiness-Stalling B24D 5/16

* cited by examiner

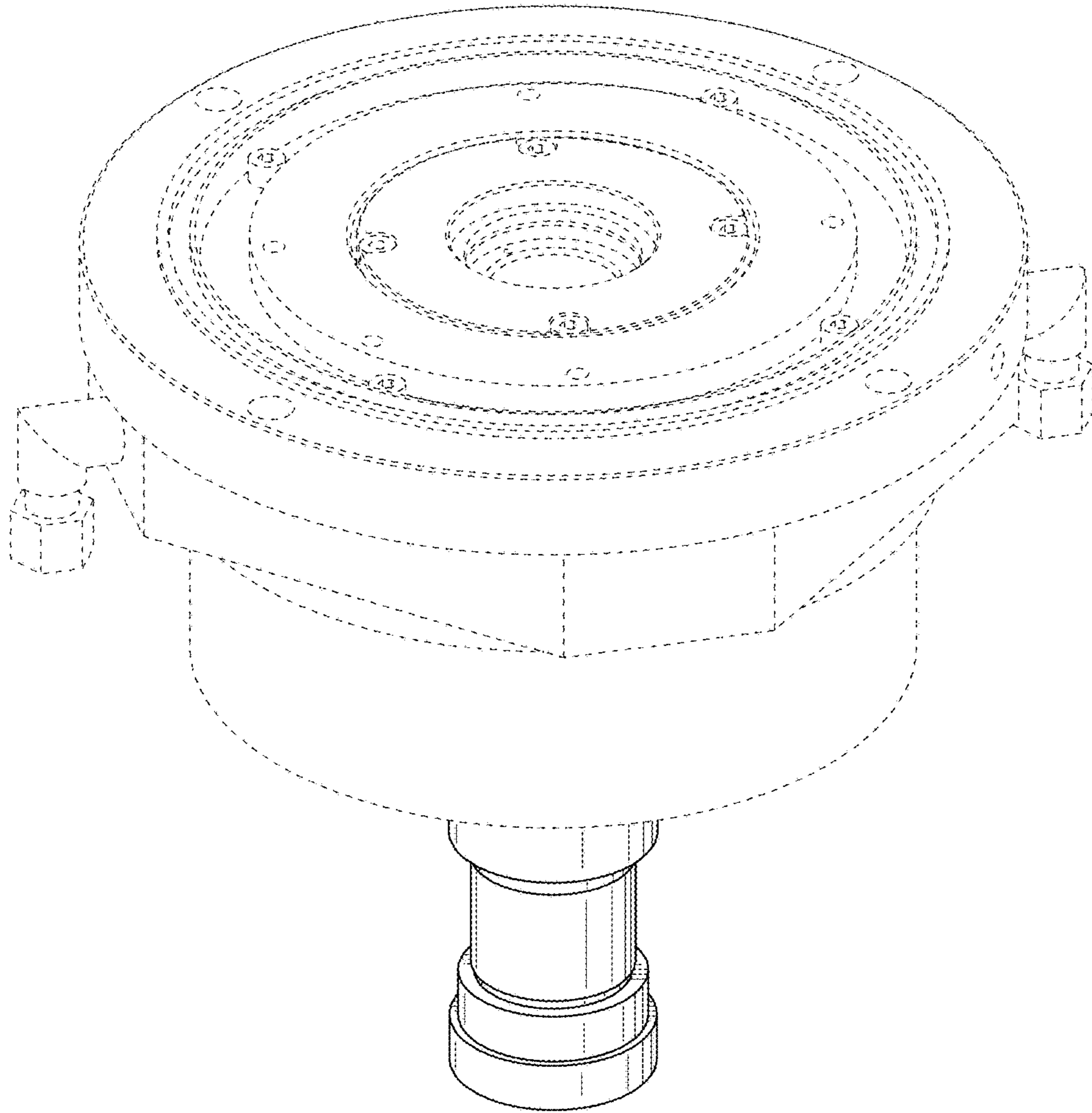


FIG. 1

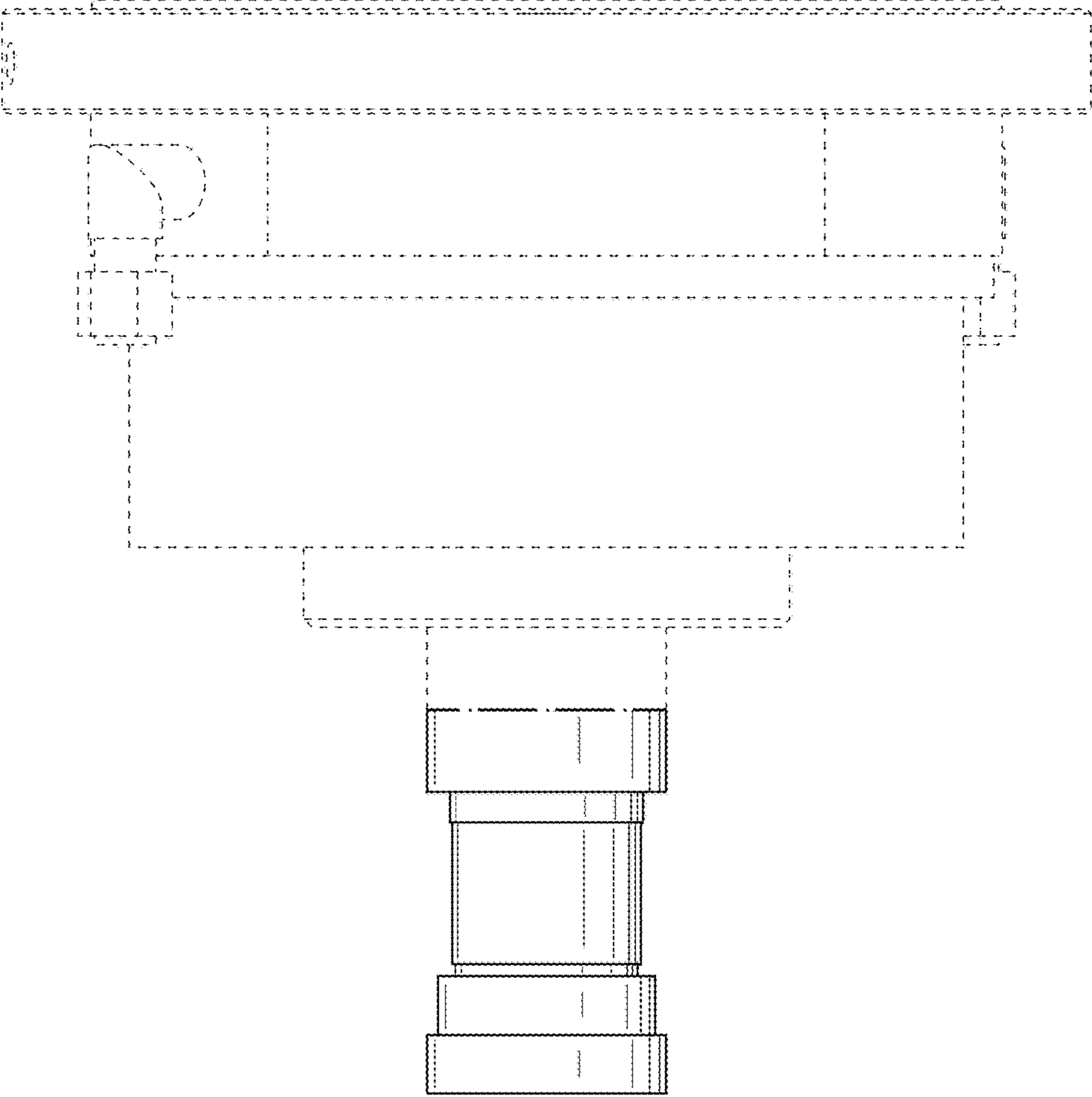


FIG. 2

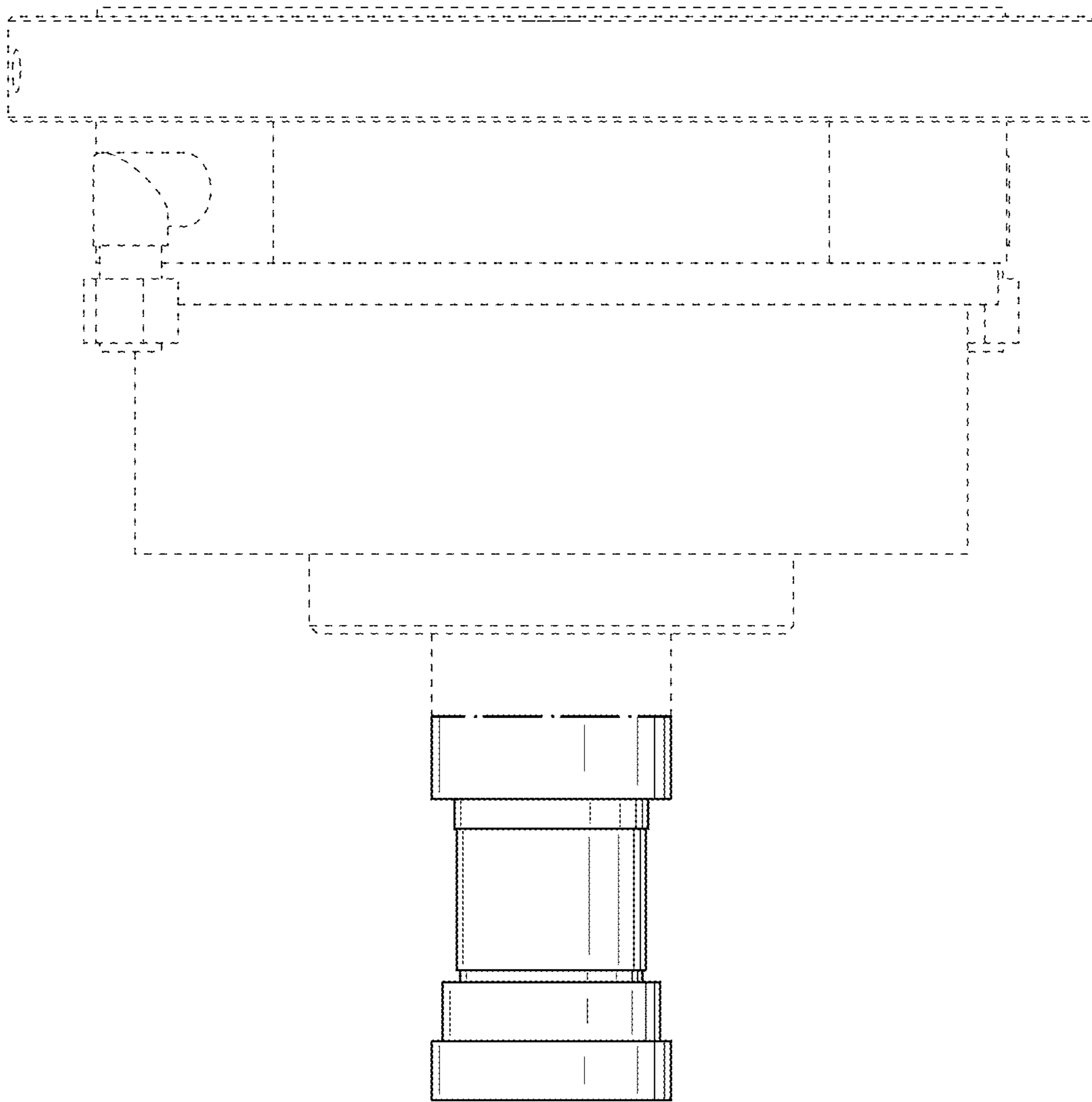


FIG. 3

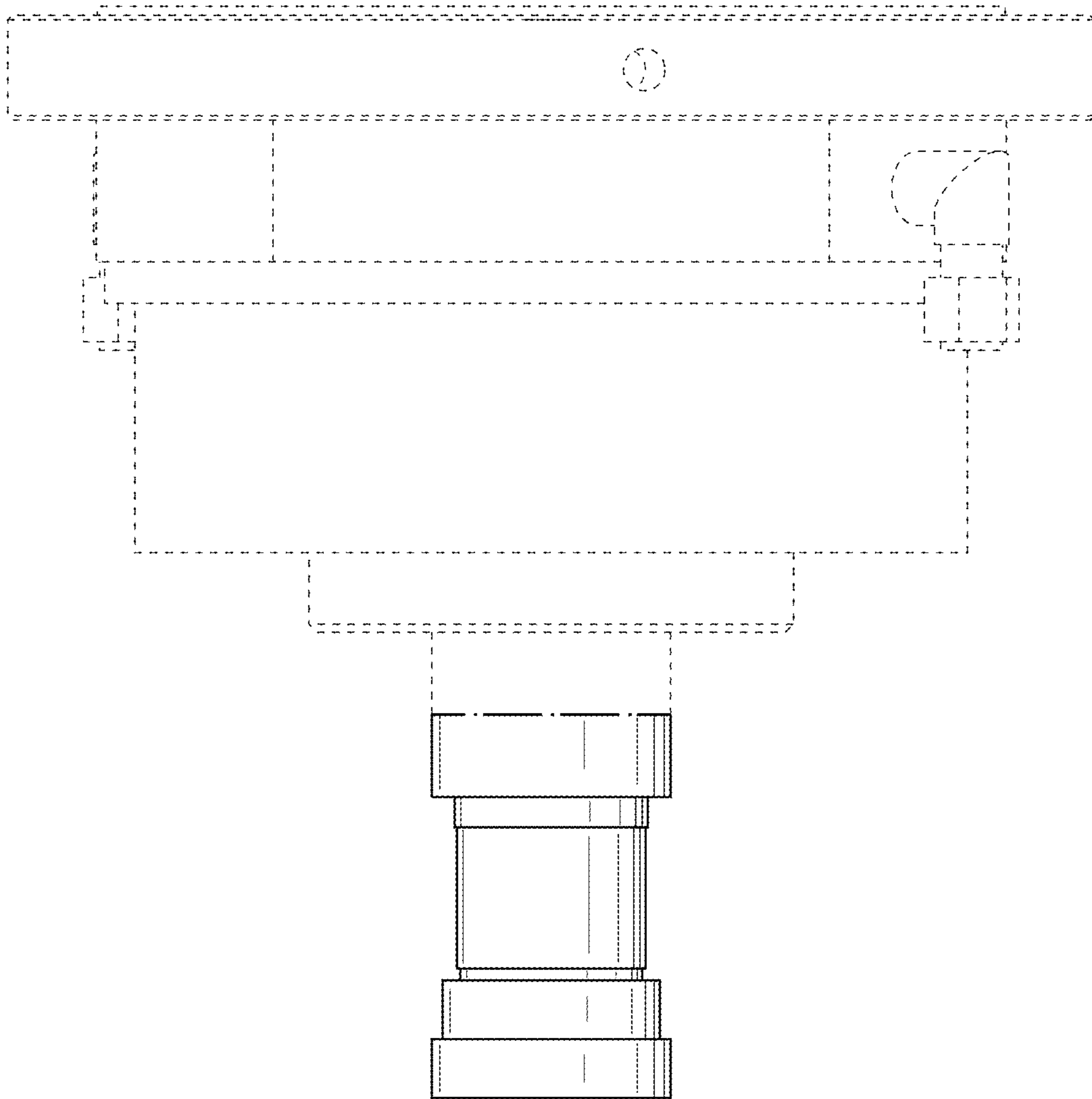


FIG. 4

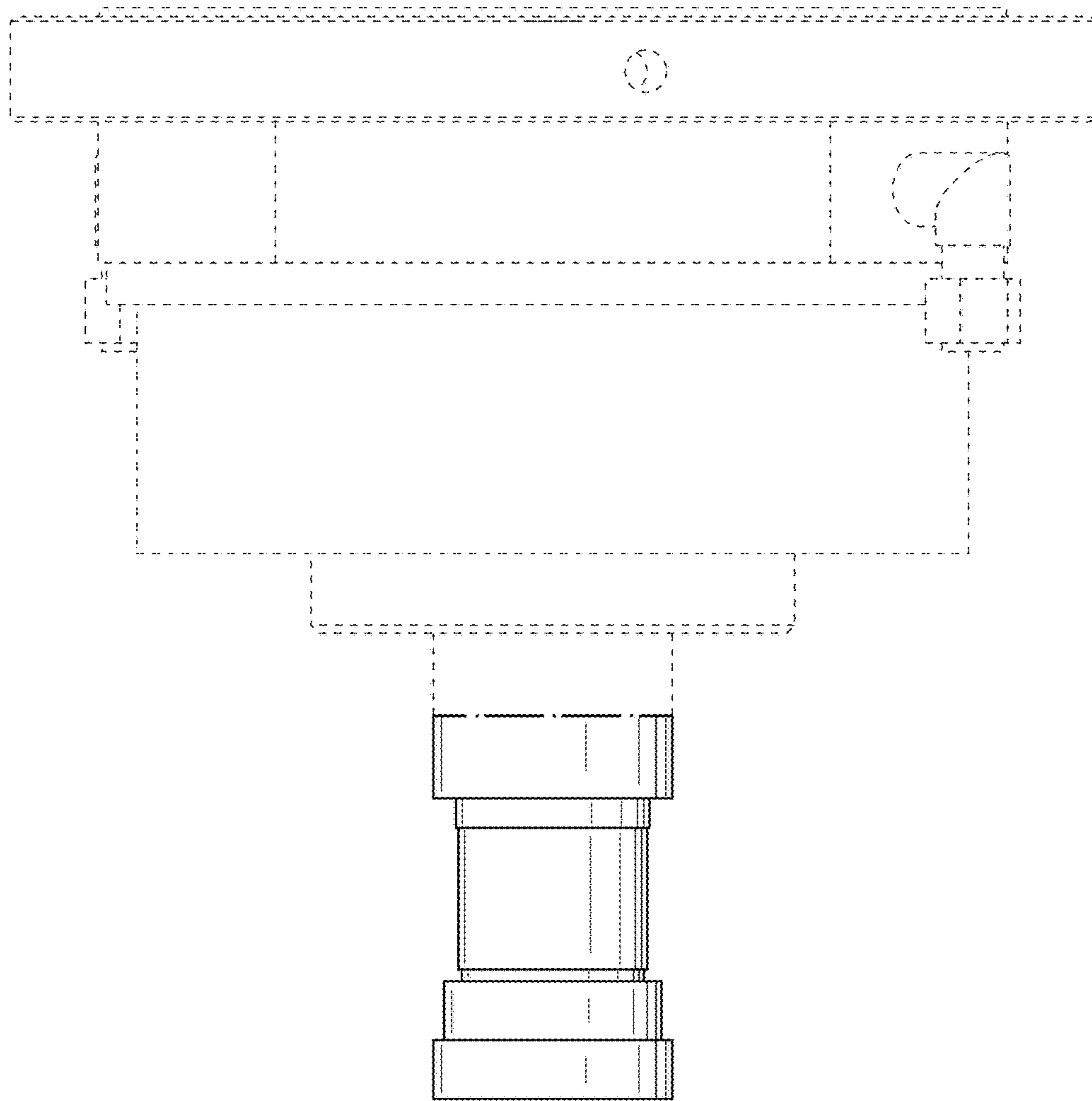


FIG. 5

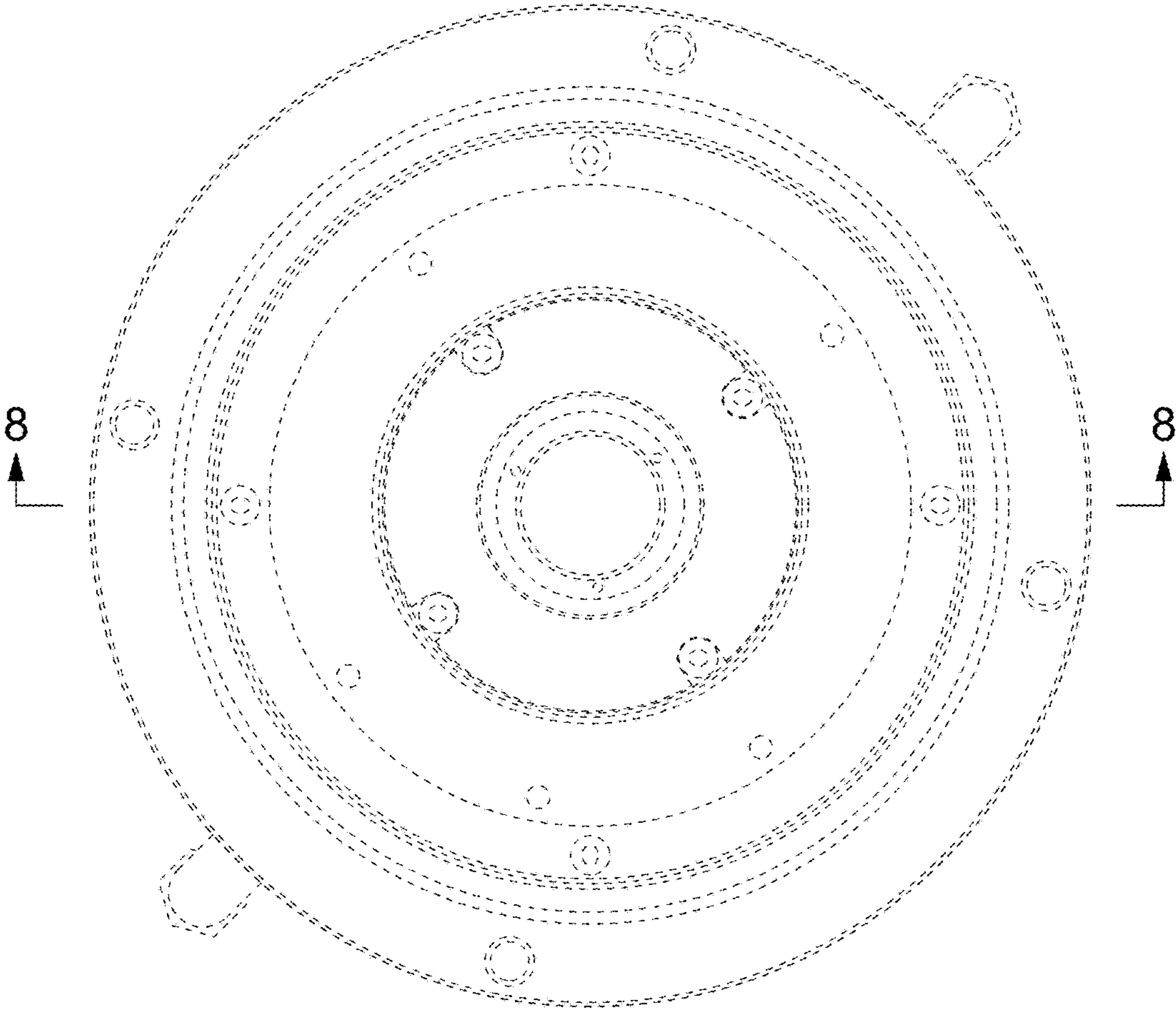


FIG. 6

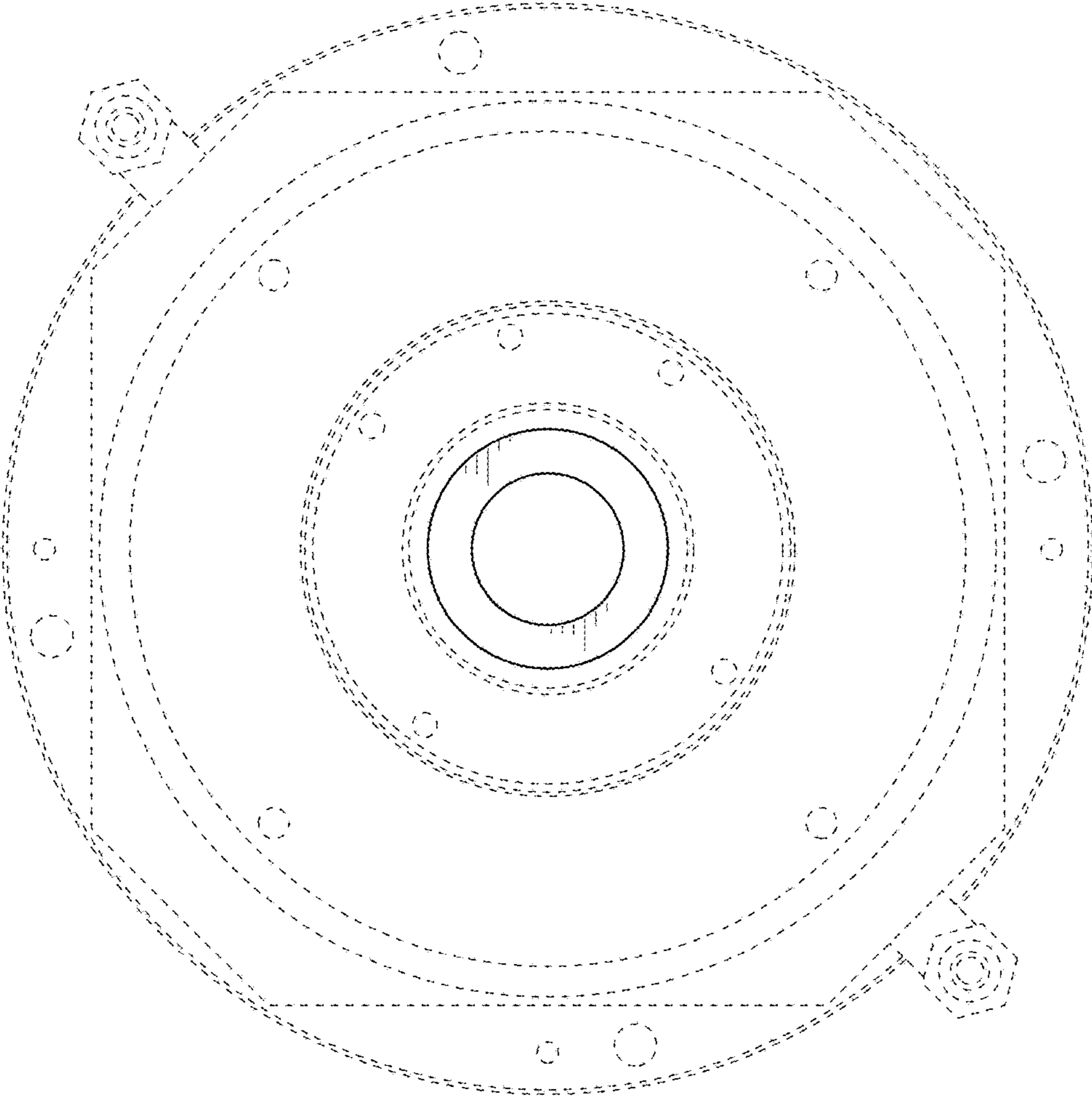


FIG. 7

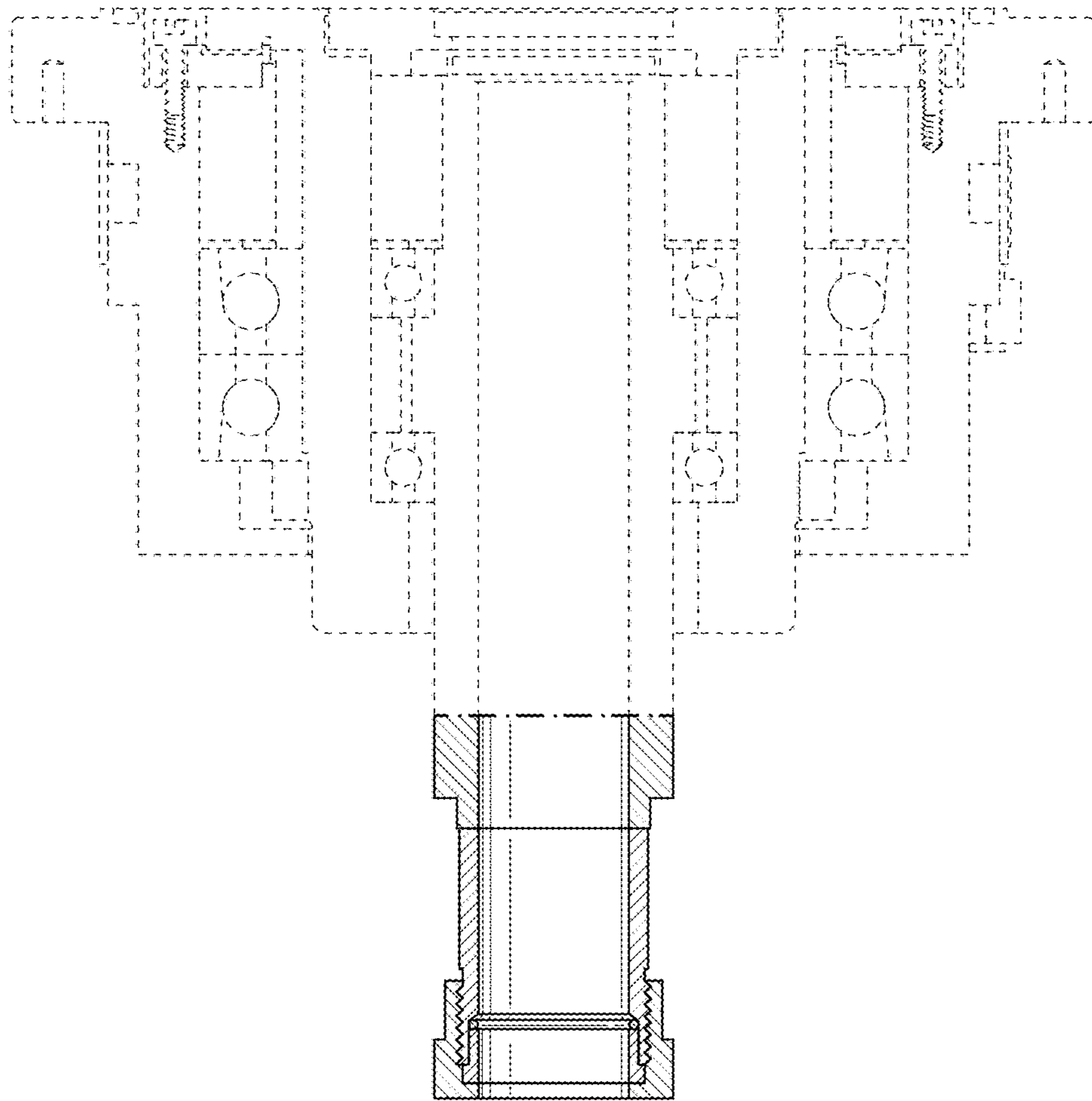


FIG. 8