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(12) United States Design Patent

Takewaki et al.

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(54) **HEATER OF SUBSTRATE PROCESSING APPARATUS**

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

(72) Inventors: **Motoya Takewaki**, Toyami (JP); **Tetsuya Kosugi**, Toyami (JP)

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

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

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(30) **Foreign Application Priority Data**

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

(52) **U.S. Cl.**
USPC **D15/144.1**

(58) **Field of Classification Search**
USPC D13/123–132, 110, 101, 162, 164, 184, D13/199; D15/144.1
CPC H01L 21/67248; C23C 14/541
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

D310,816	S *	9/1990	Sawato	D13/112
5,872,410	A *	2/1999	Sudoff	H02K 5/225 310/68 R
D414,503	S *	9/1999	Katoh	D10/75
D522,456	S *	6/2006	Matsumoto	D13/125

(Continued)

FOREIGN PATENT DOCUMENTS

IN	226478-0001	*	2/2011

OTHER PUBLICATIONS

MIT News. <URL: http://news.mit.edu/2015/manufacture-continuous-rolls-graphene-0521.> May 21, 2015. Manufacturing Apparatus for continuous rolls.*

Primary Examiner — Thomas Johannes
Assistant Examiner — Lauren McVey
(74) *Attorney, Agent, or Firm* — Fitch, Even, Tabin & Flannery LLP

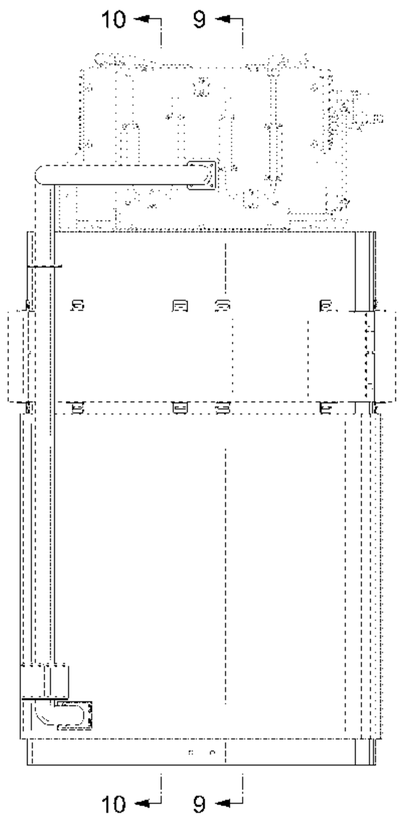
(57) **CLAIM**

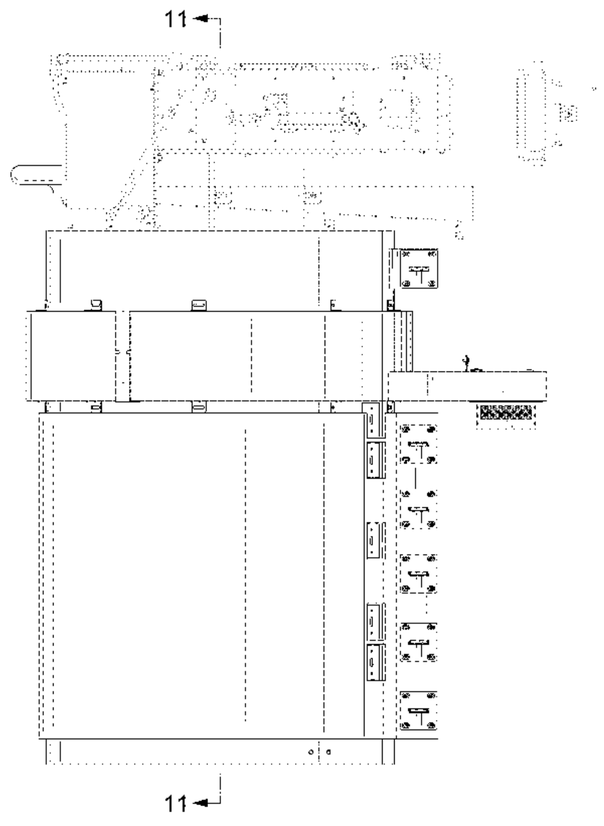
We claim the ornamental design for a heater of substrate processing apparatus, as shown and described.

DESCRIPTION

FIG. **1** is a front, top and right side perspective view of a heater of substrate processing apparatus showing our new design;
FIG. **2** is a rear, top and right side perspective view thereof;
FIG. **3** is a front elevational view thereof;
FIG. **4** is a rear elevational view thereof;
FIG. **5** is a left side elevational view thereof;
FIG. **6** is a right side elevational view thereof;
FIG. **7** is a top plan view thereof;
FIG. **8** is a bottom plan view thereof;
FIG. **9** is a cross-sectional view thereof taken in the direction of line **9-9** in FIG. **3**;
FIG. **10** is an exploded cross-sectional view thereof taken in the direction of line **10-10** in FIG. **3** in order to show aspects of the design not otherwise apparent; and,
FIG. **11** is a cross-sectional view thereof taken in the direction of line **11-11** in FIG. **6**.
The broken lines are included for the purpose of illustrating portions of the article that form no part of the claimed design. The dot-dash broken line arrows in the FIGS. **3** and **6** views are used to identify the cross section views, are for reference purposes only, and form no part of the claimed design.

1 Claim, 11 Drawing Sheets





(56) **References Cited**

U.S. PATENT DOCUMENTS

D528,573	S	*	9/2006	Aoki	D15/144.1
D529,058	S	*	9/2006	Aoki	D15/144.1
D553,569	S	*	10/2007	Ciancanelli	D13/134
D578,476	S	*	10/2008	Takahashi	D13/125
D587,648	S	*	3/2009	Lannoch	D13/112
D633,044	S	*	2/2011	Bigler	D13/125
D694,710	S	*	12/2013	Unetich	D13/125

* cited by examiner

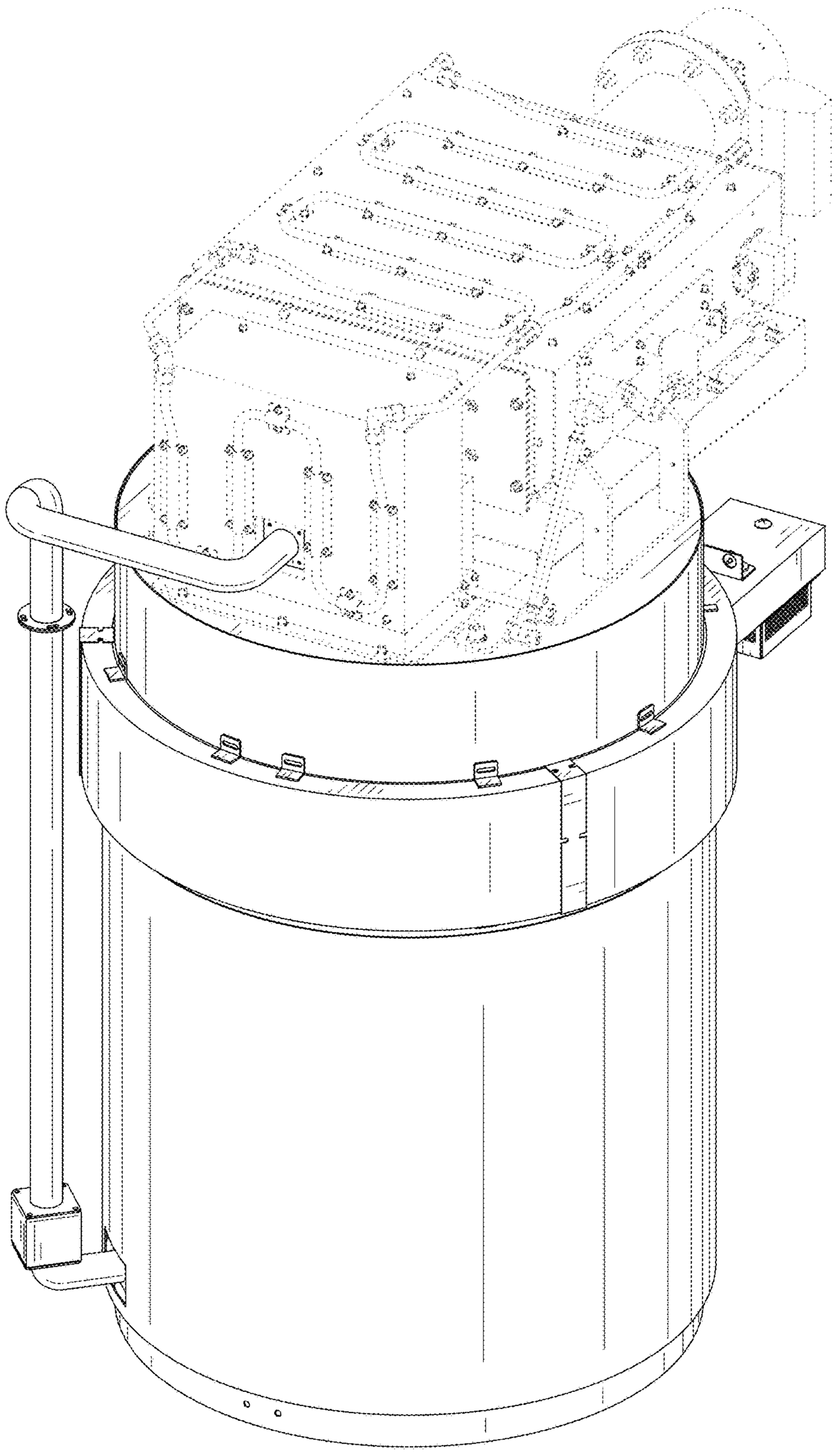


FIG. 1

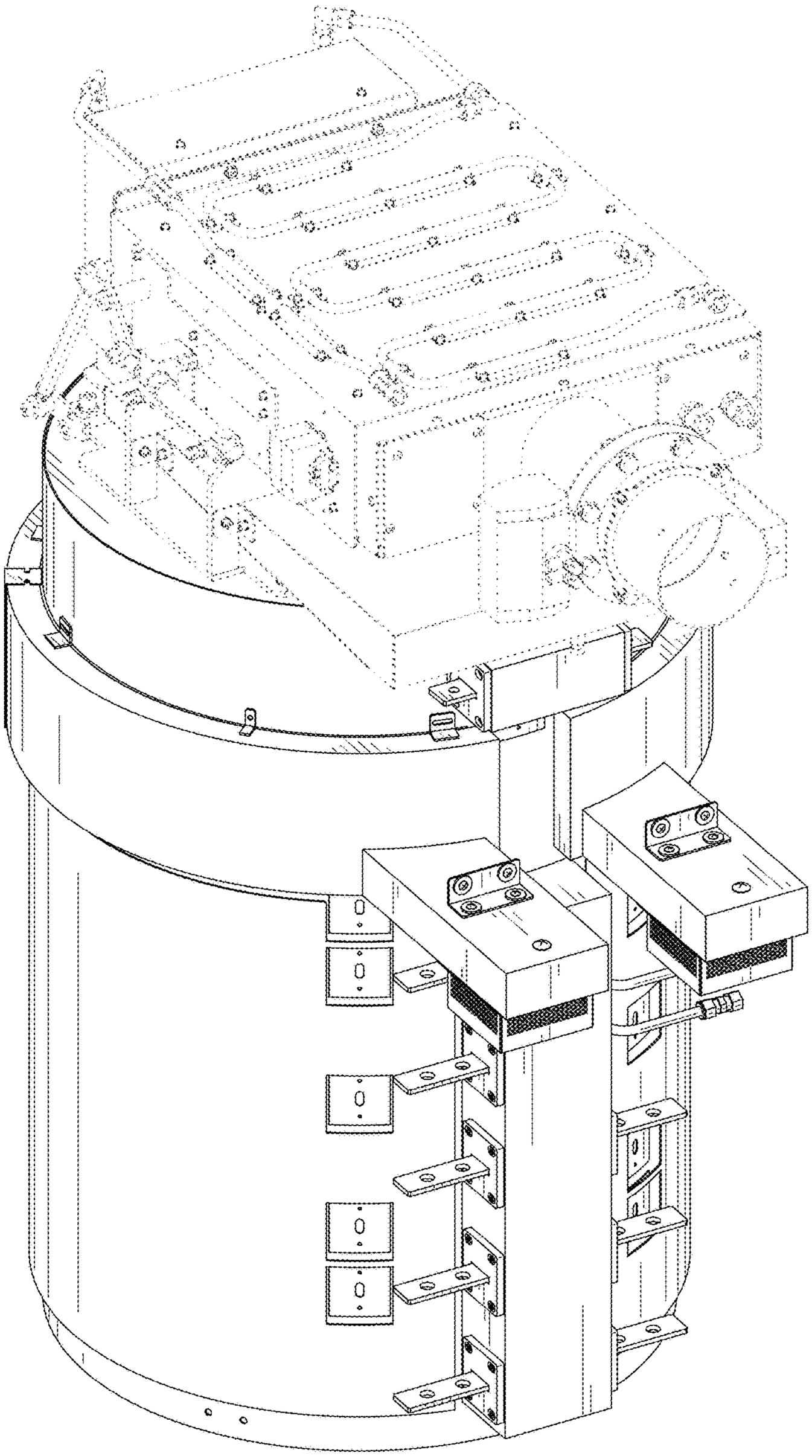


FIG. 2

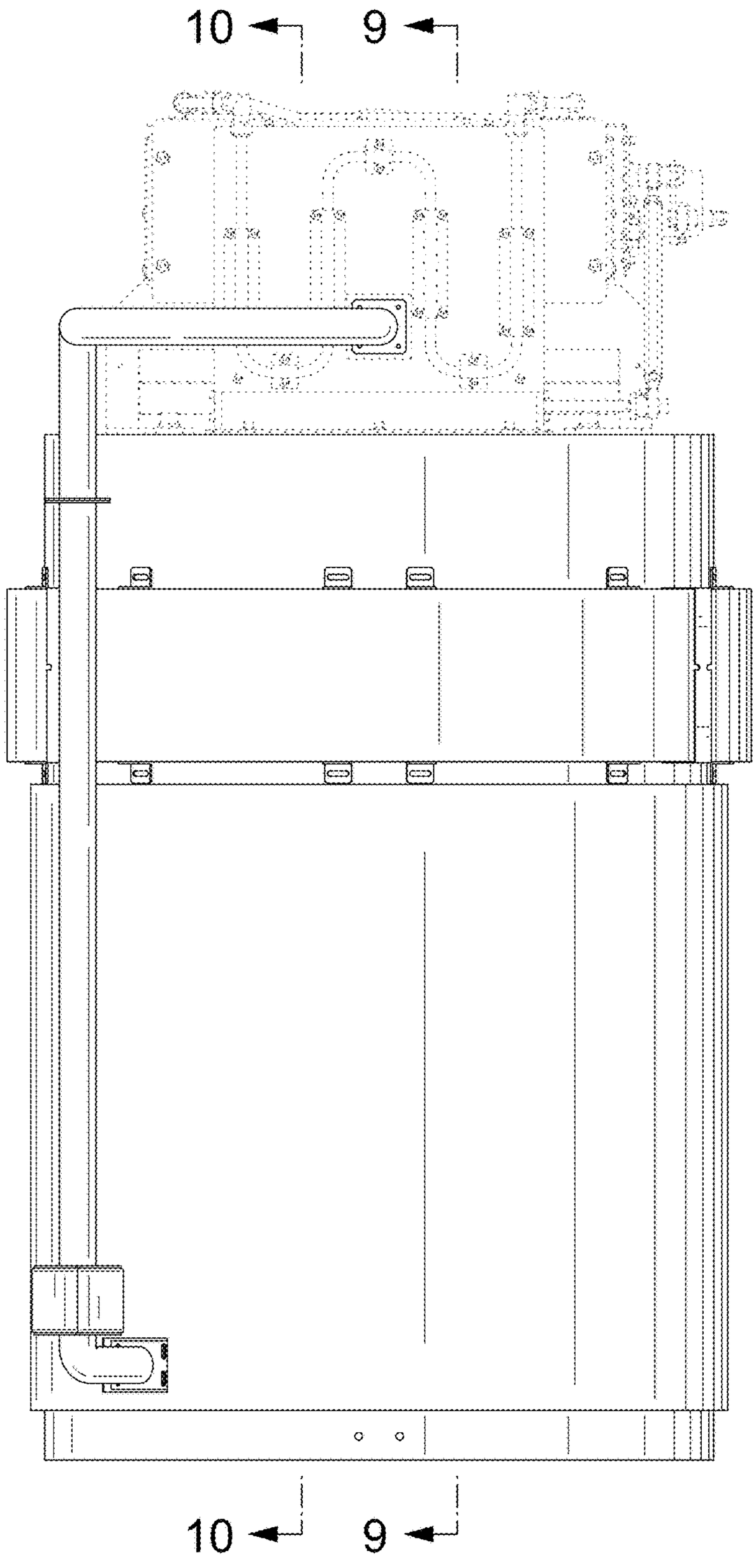


FIG. 3

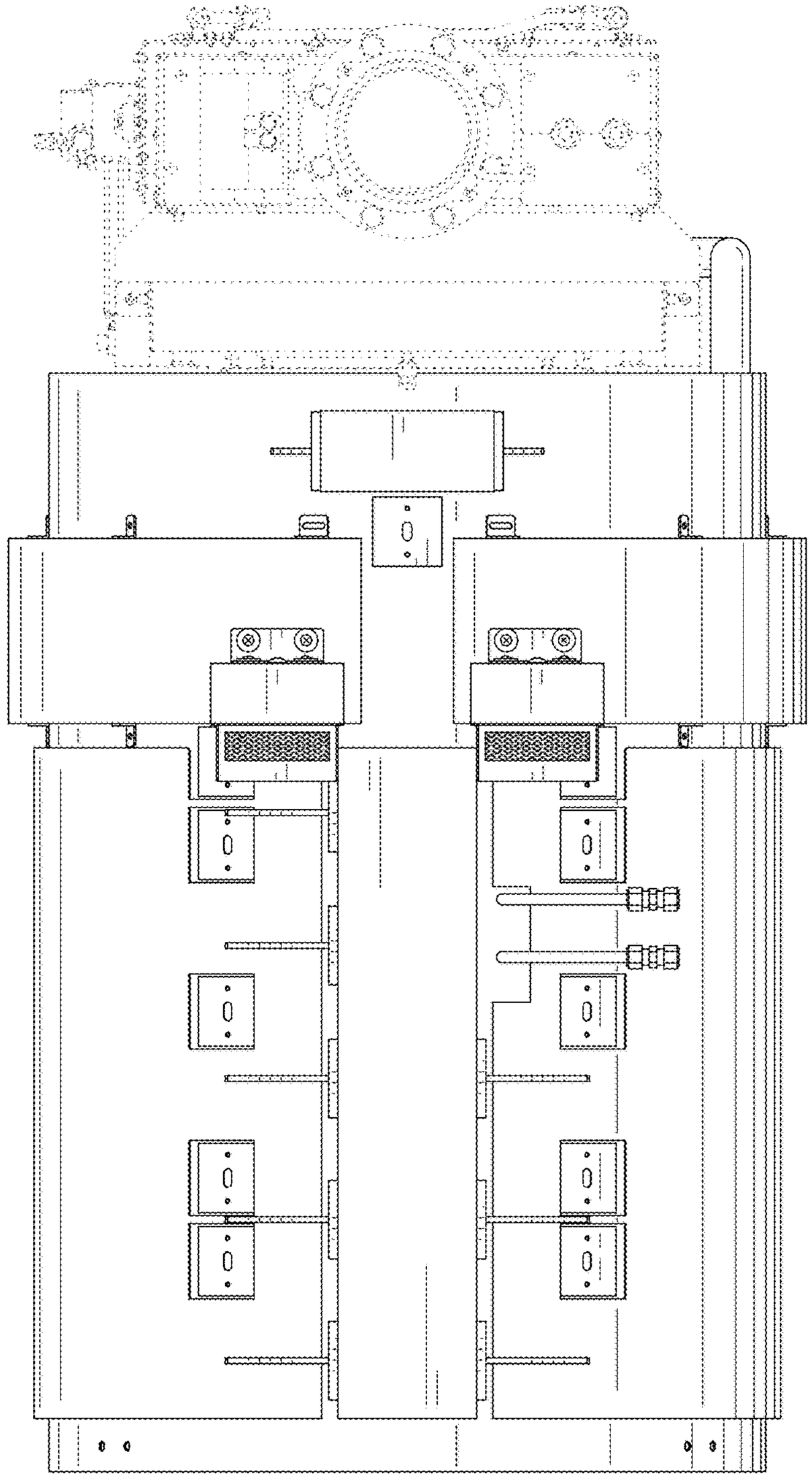


FIG. 4

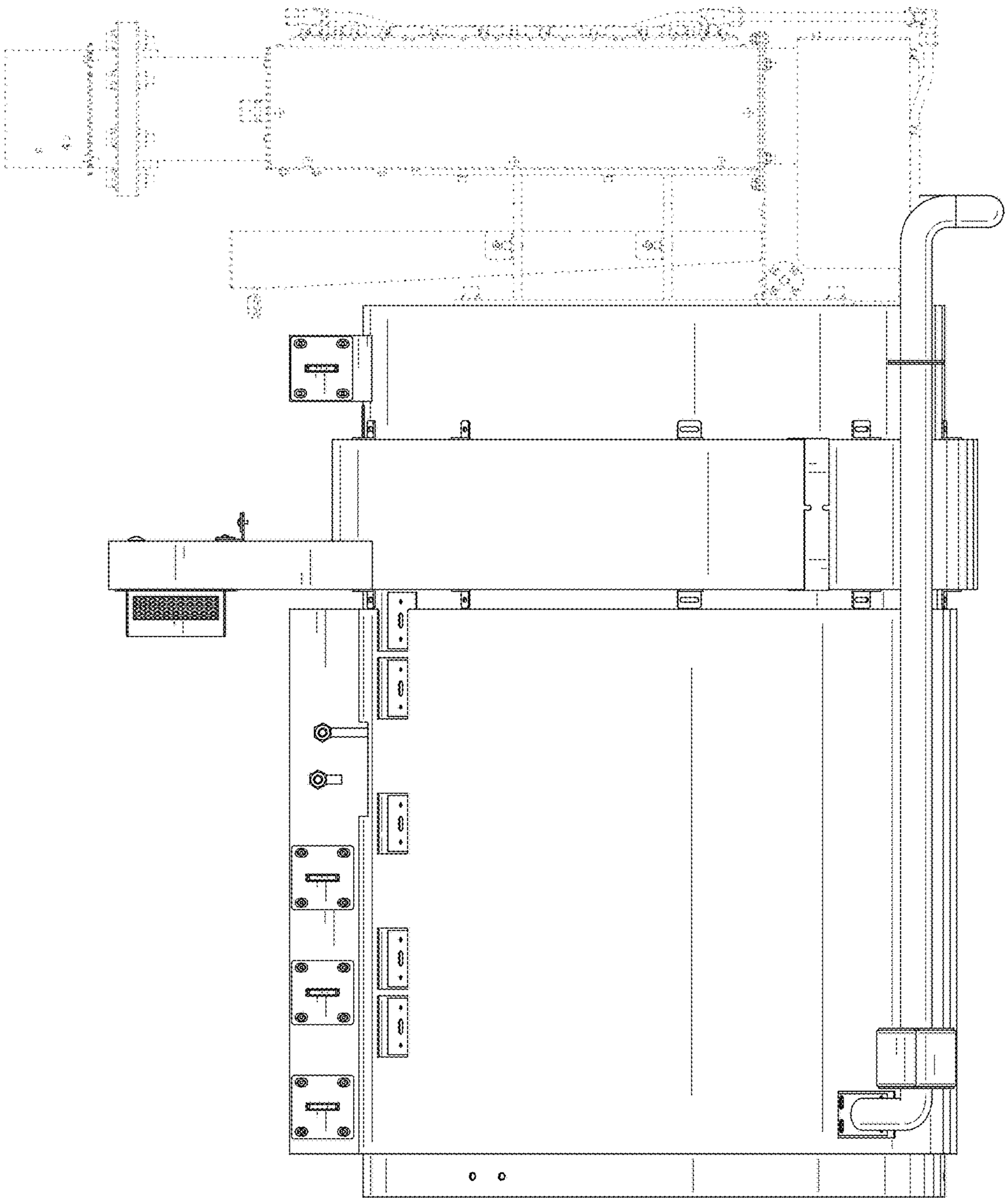


FIG. 5

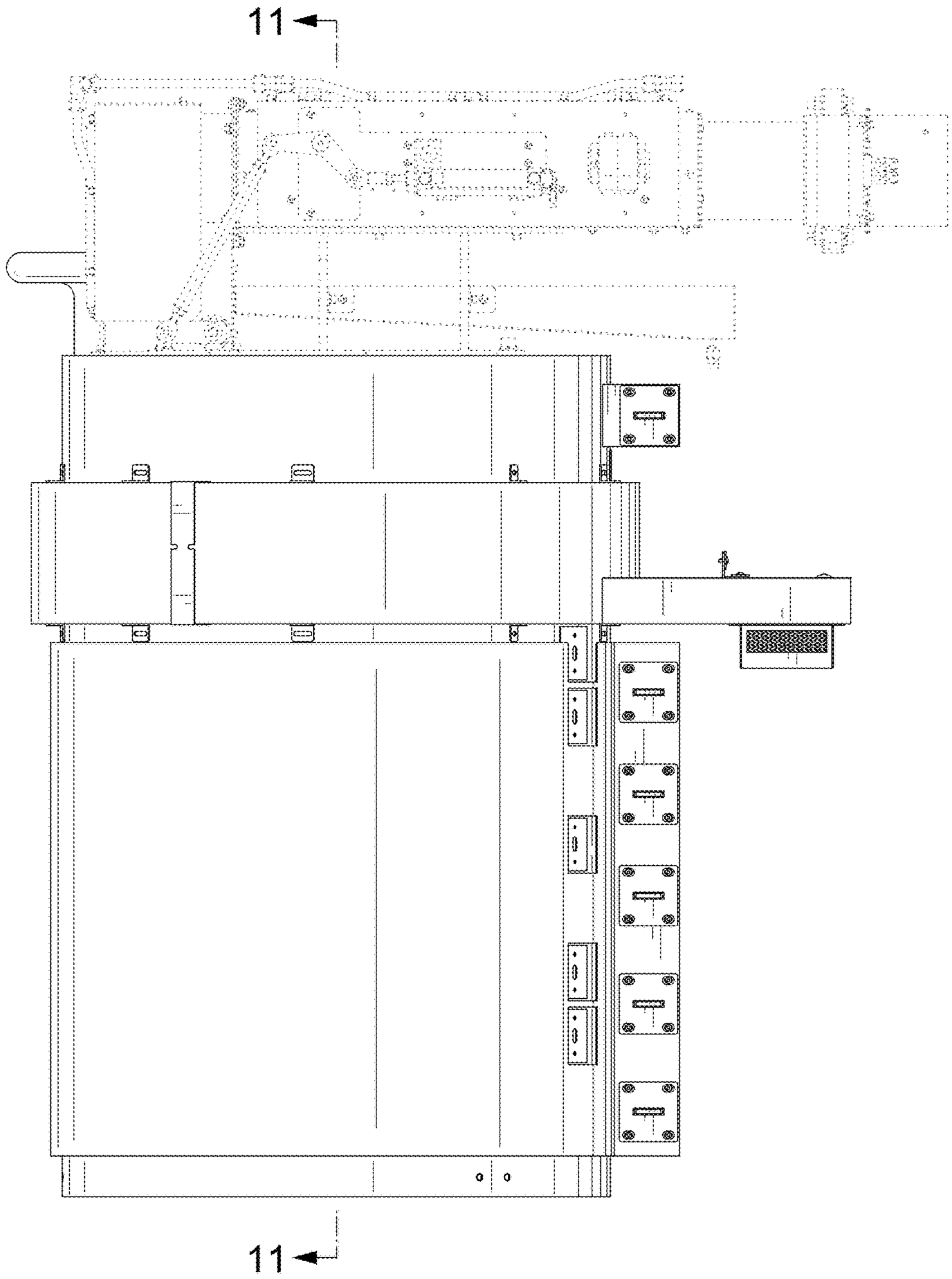


FIG. 6

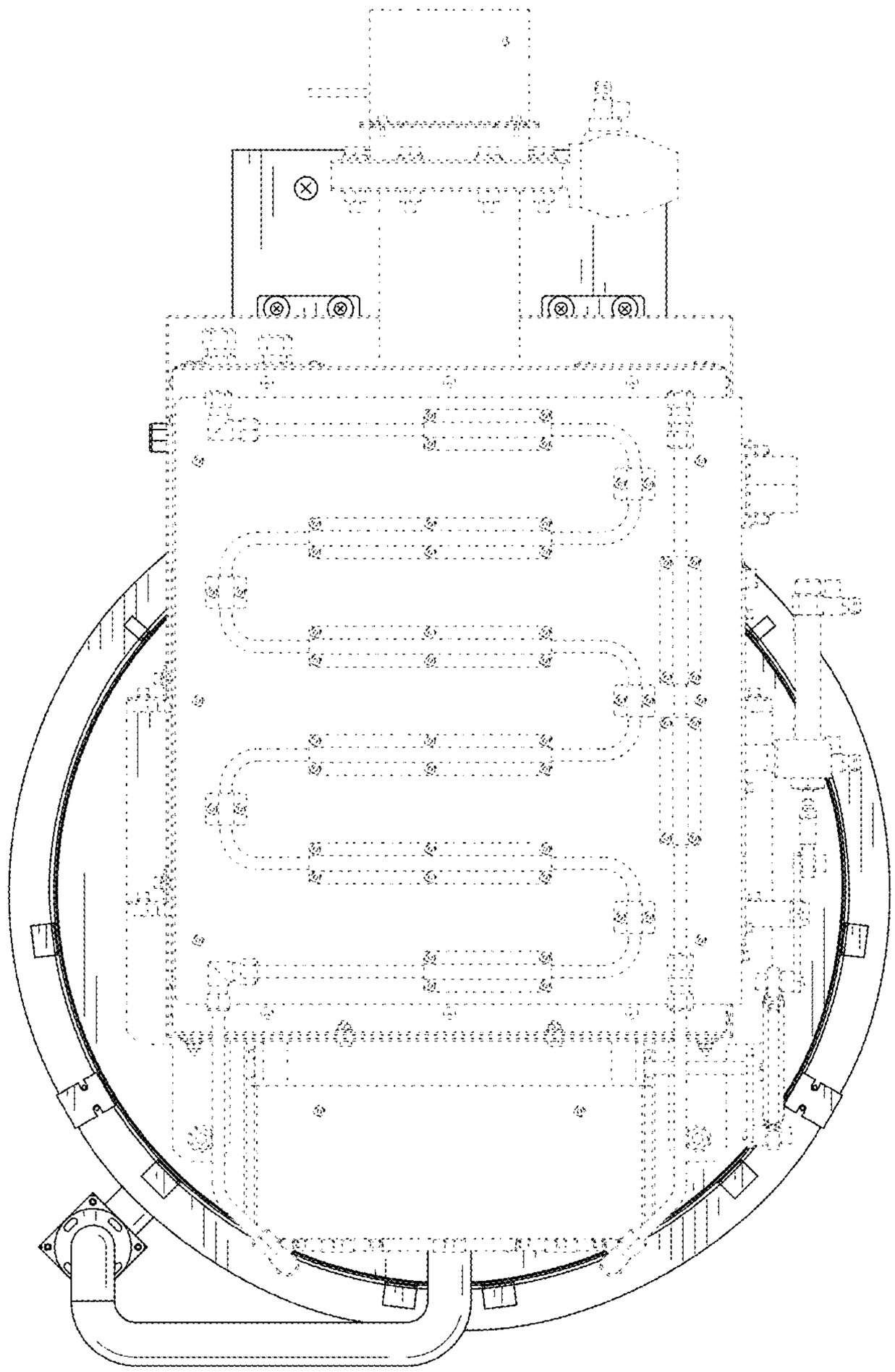


FIG. 7

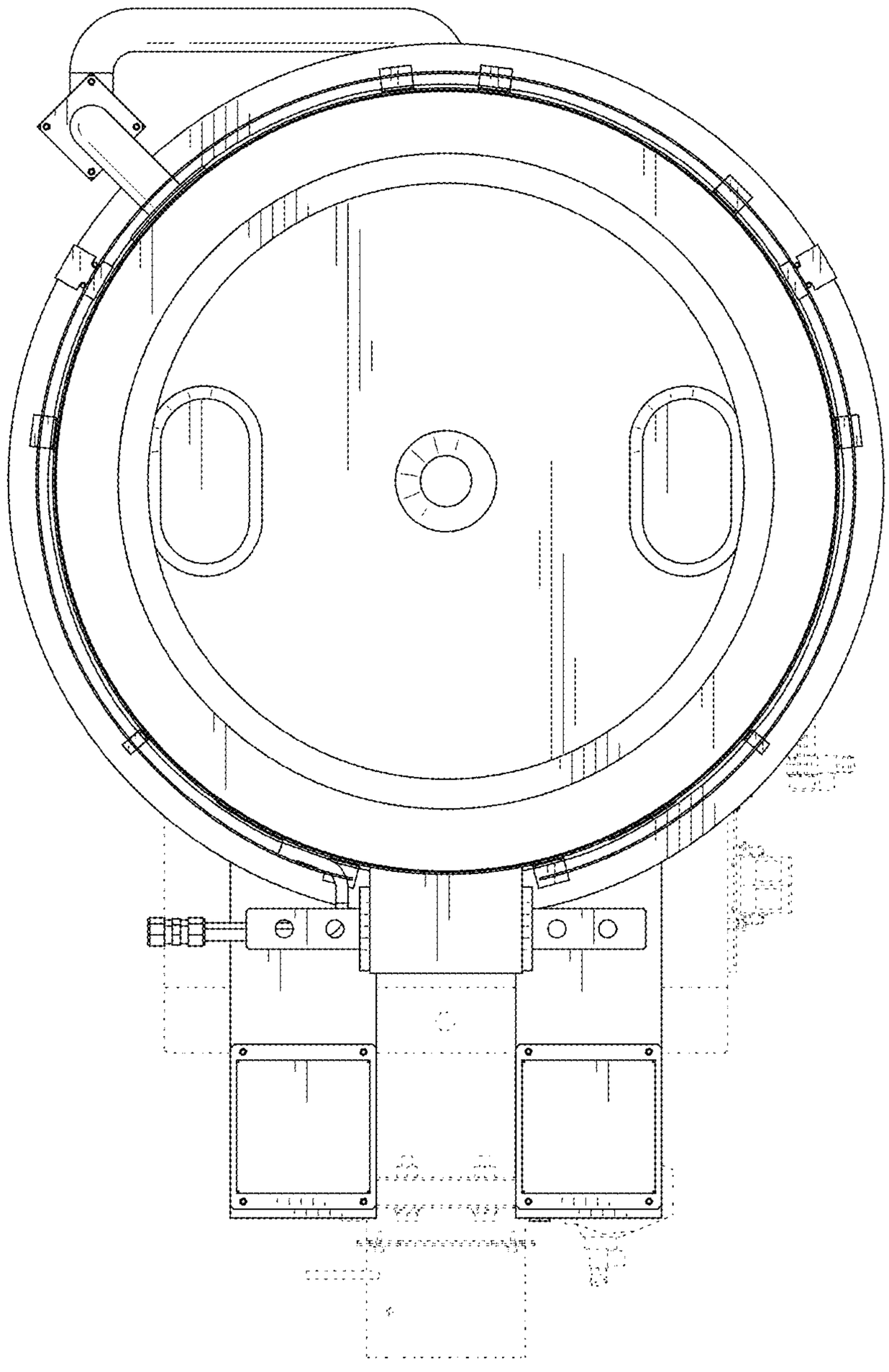


FIG. 8

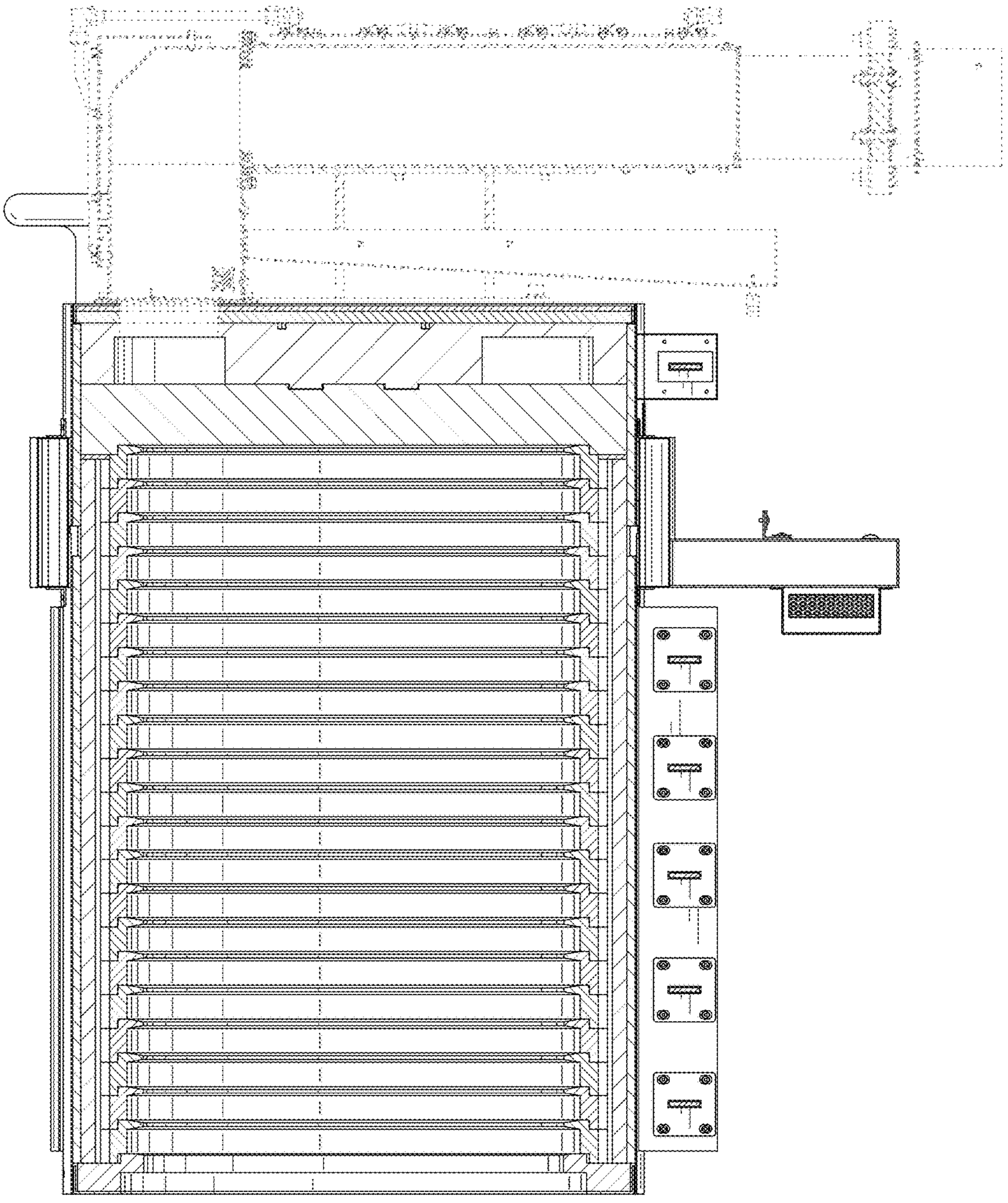


FIG. 9

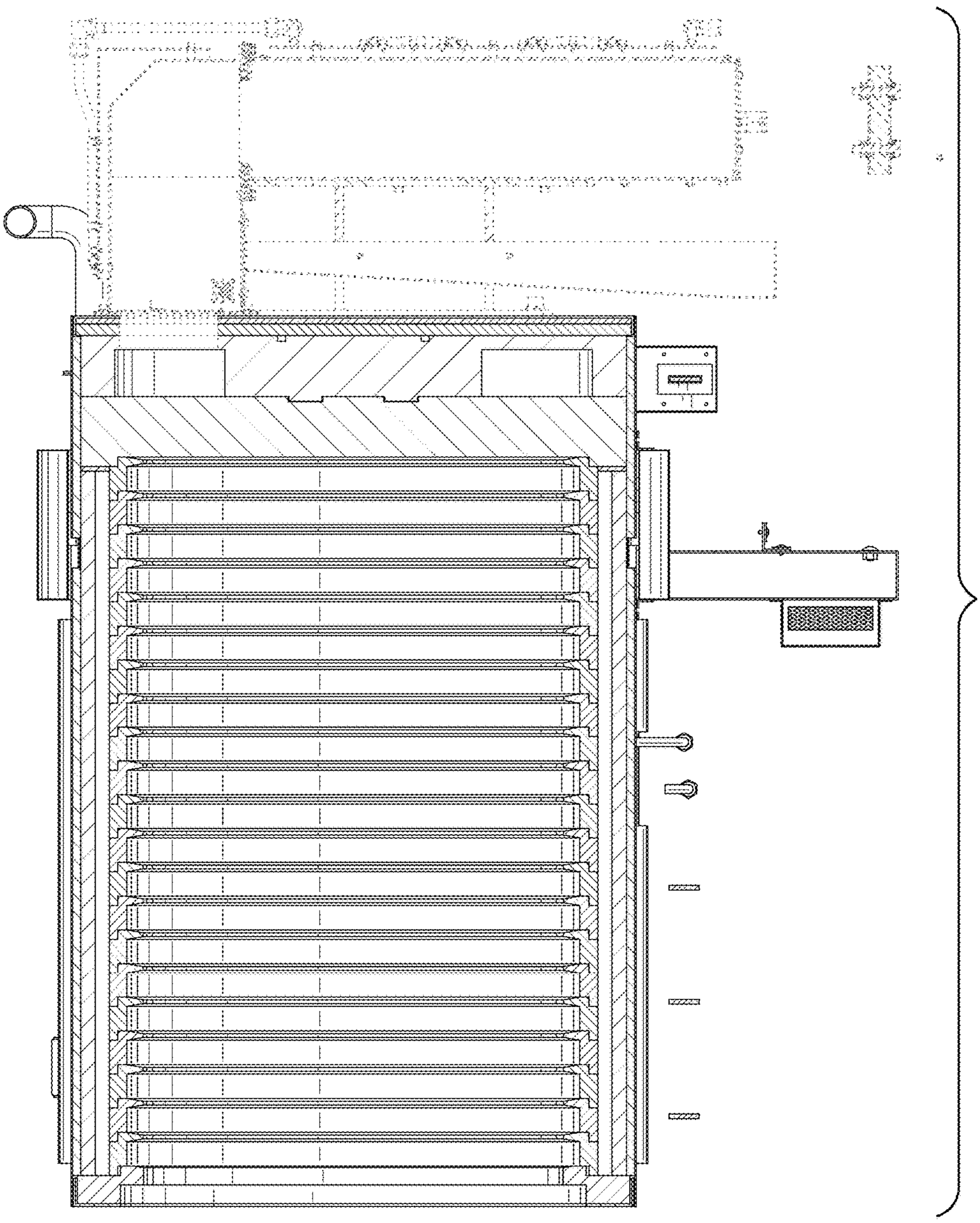


FIG. 10

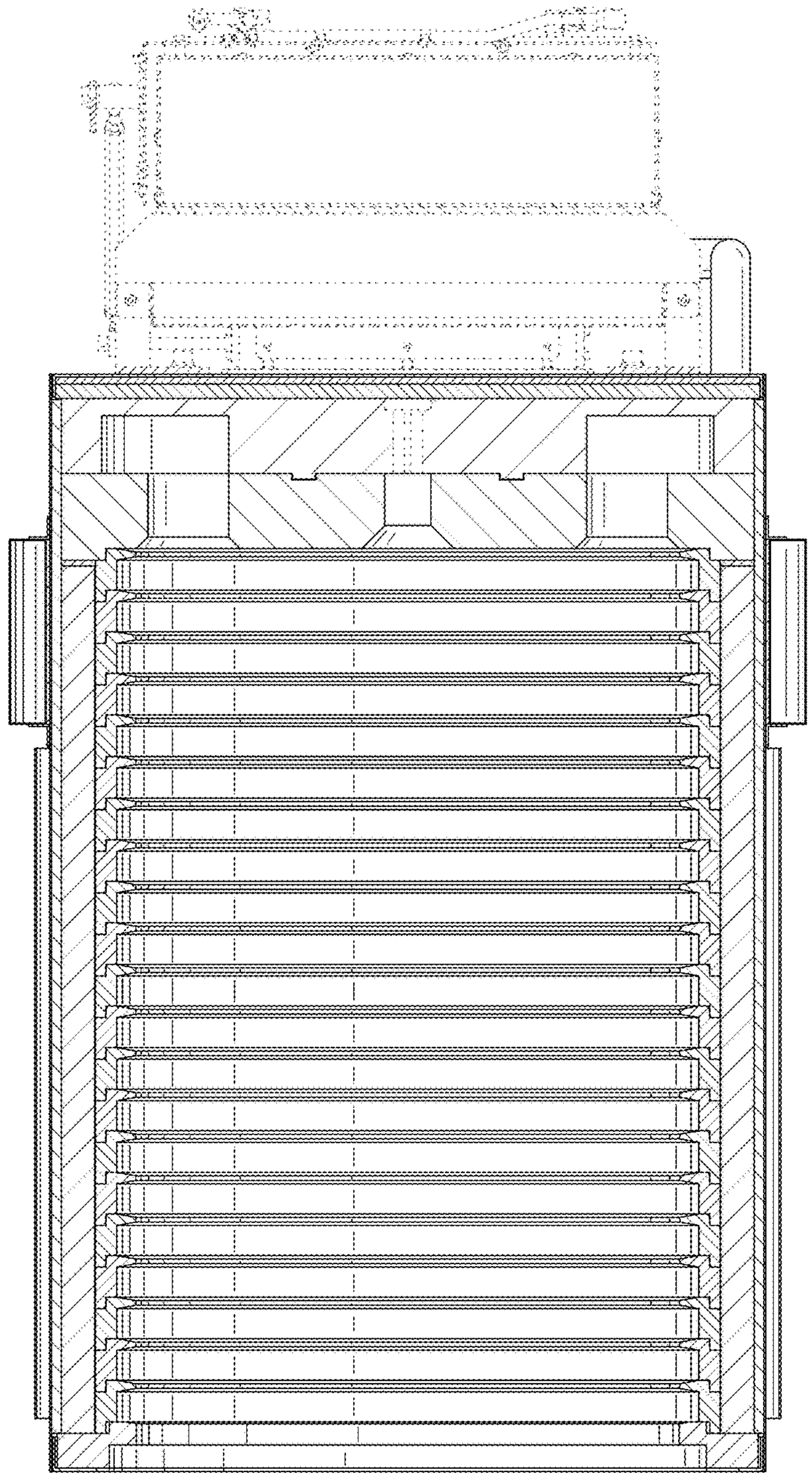


FIG. 11