



US00D58994S

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

(10) **Patent No.:** **US D589,994 S**
(45) **Date of Patent:** **** Apr. 7, 2009**

(54) **DIRECT-DRIVE TORQUE MOTOR**

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Chih-Hsien Chao, Taichung (TW)

(73) Assignee: **Hiwin Mikrosystem Corp.**, Taichung (TW)

(**) Term: **14 Years**

(21) Appl. No.: **29/282,125**

(22) Filed: **Jul. 12, 2007**

(51) **LOC (9) Cl.** **15-99**

(52) **U.S. Cl.** **D15/199**

(58) **Field of Classification Search** D15/1-5,
D15/148, 199; 310/51, 67 R, 90; 384/619,
384/620

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,853,567	A *	8/1989	Muramatsu et al.	310/67 R
5,008,572	A *	4/1991	Marshall et al.	310/45
5,049,770	A *	9/1991	Gaeth et al.	310/89
5,382,853	A *	1/1995	von der Heide et al. ...	310/67 R
D355,244	S *	2/1995	Doragrip et al.	D15/5
D410,659	S *	6/1999	Lannoch	D15/148
D416,922	S *	11/1999	Lannoch	D15/148
D437,334	S *	2/2001	Song	D15/148
6,215,214	B1 *	4/2001	Fisher et al.	310/89
6,847,142	B2 *	1/2005	Ritterhoff	310/113

7,215,050	B2 *	5/2007	Anschicks et al.	310/71
7,273,357	B2 *	9/2007	Hattori et al.	417/313
7,285,889	B2 *	10/2007	Shkondin	310/148
D564,552	S *	3/2008	Chang et al.	D15/148
7,342,331	B2 *	3/2008	Down et al.	310/51

* cited by examiner

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(57) **CLAIM**

The ornamental design for a direct-drive torque motor, as shown and described.

DESCRIPTION

FIG. 1 is a perspective view of a direct-drive torque motor 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;

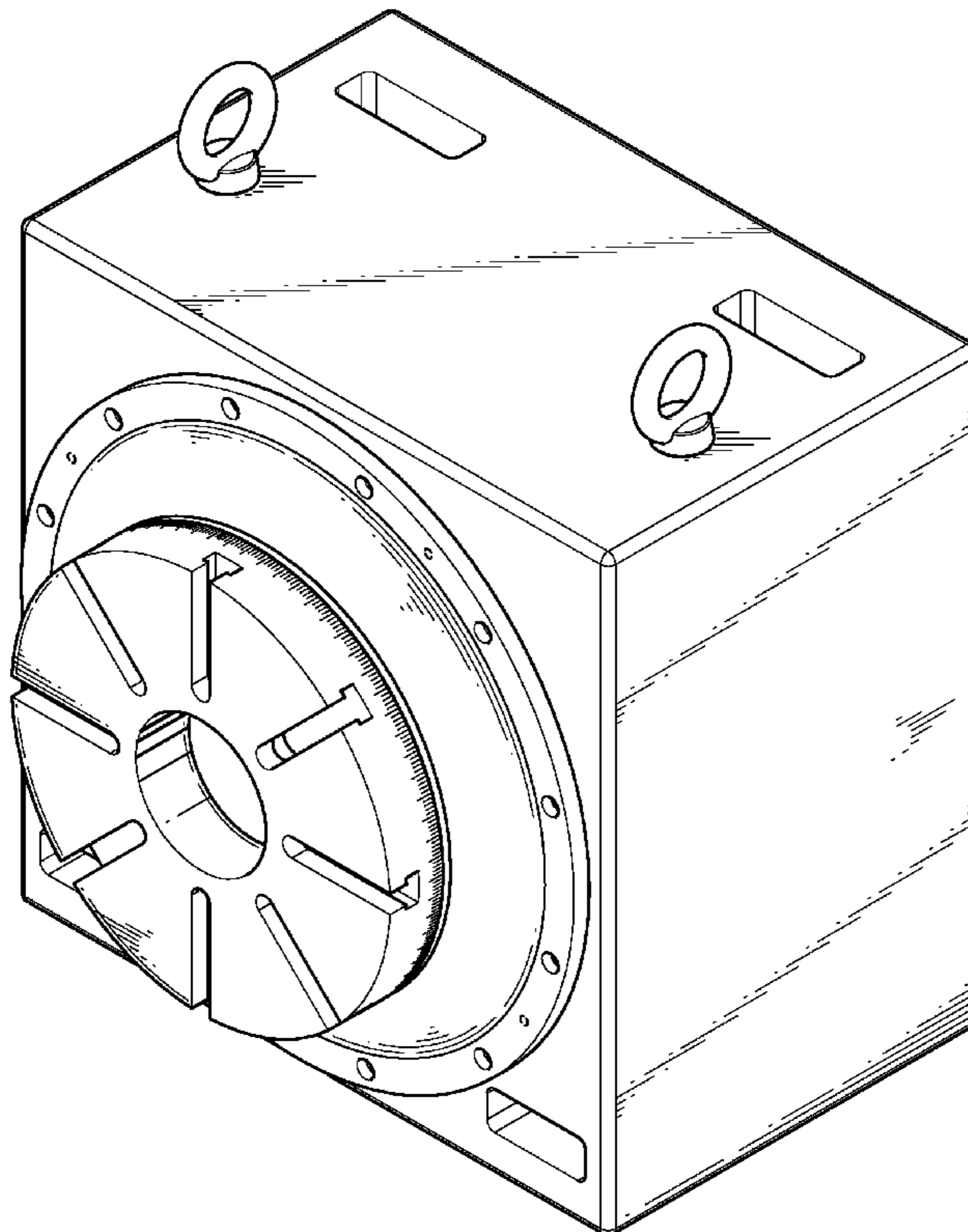
FIG. 5 is a right side elevational view thereof;

FIG. 6 is a top plan view thereof; and,

FIG. 7 is a bottom plan view to that shown.

The broken line showing of the direct-drive torque motor is included for the purpose of illustrating portions of the direct-drive torque motor and forms no part of the claimed design.

1 Claim, 7 Drawing Sheets



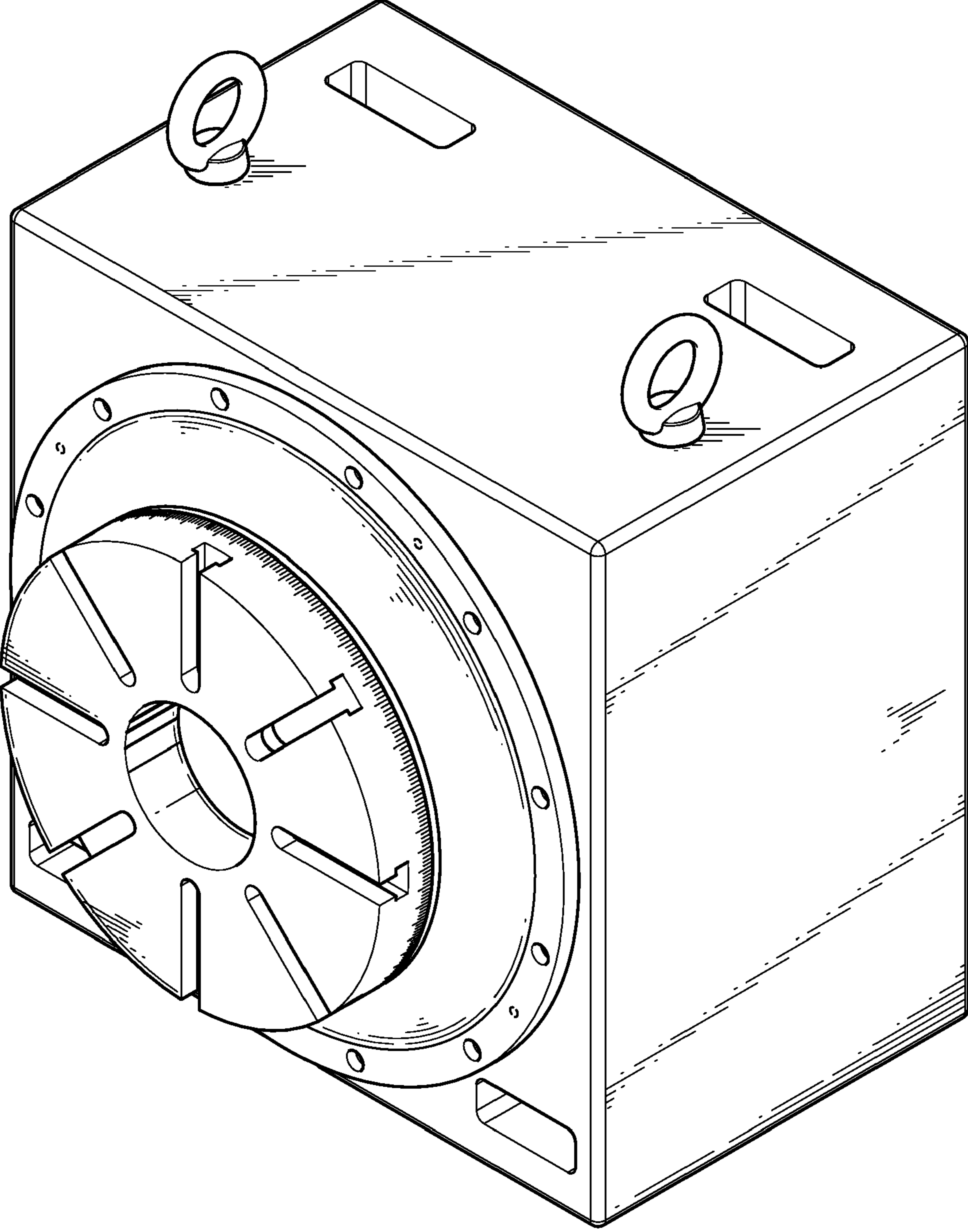


FIG. 1

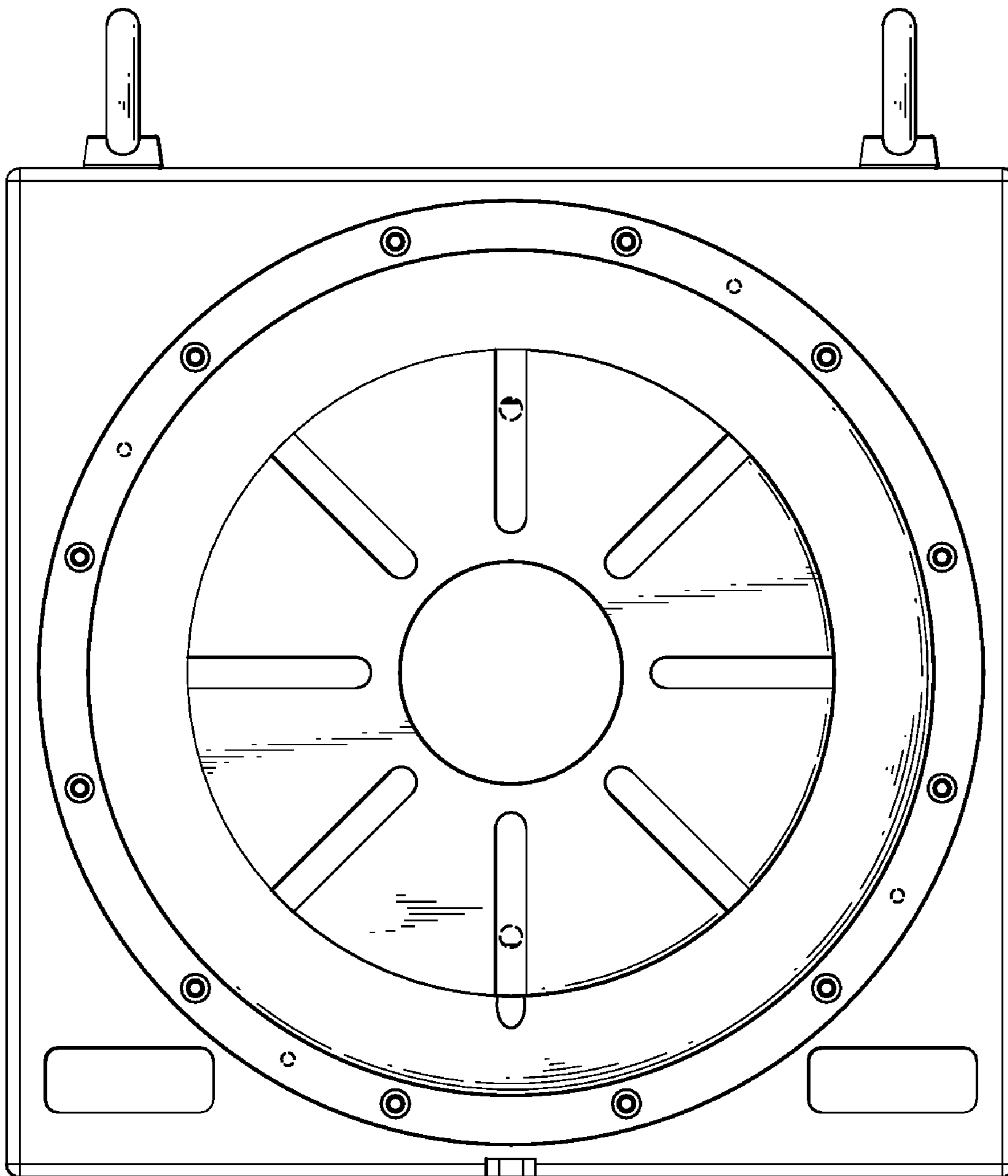


FIG. 2

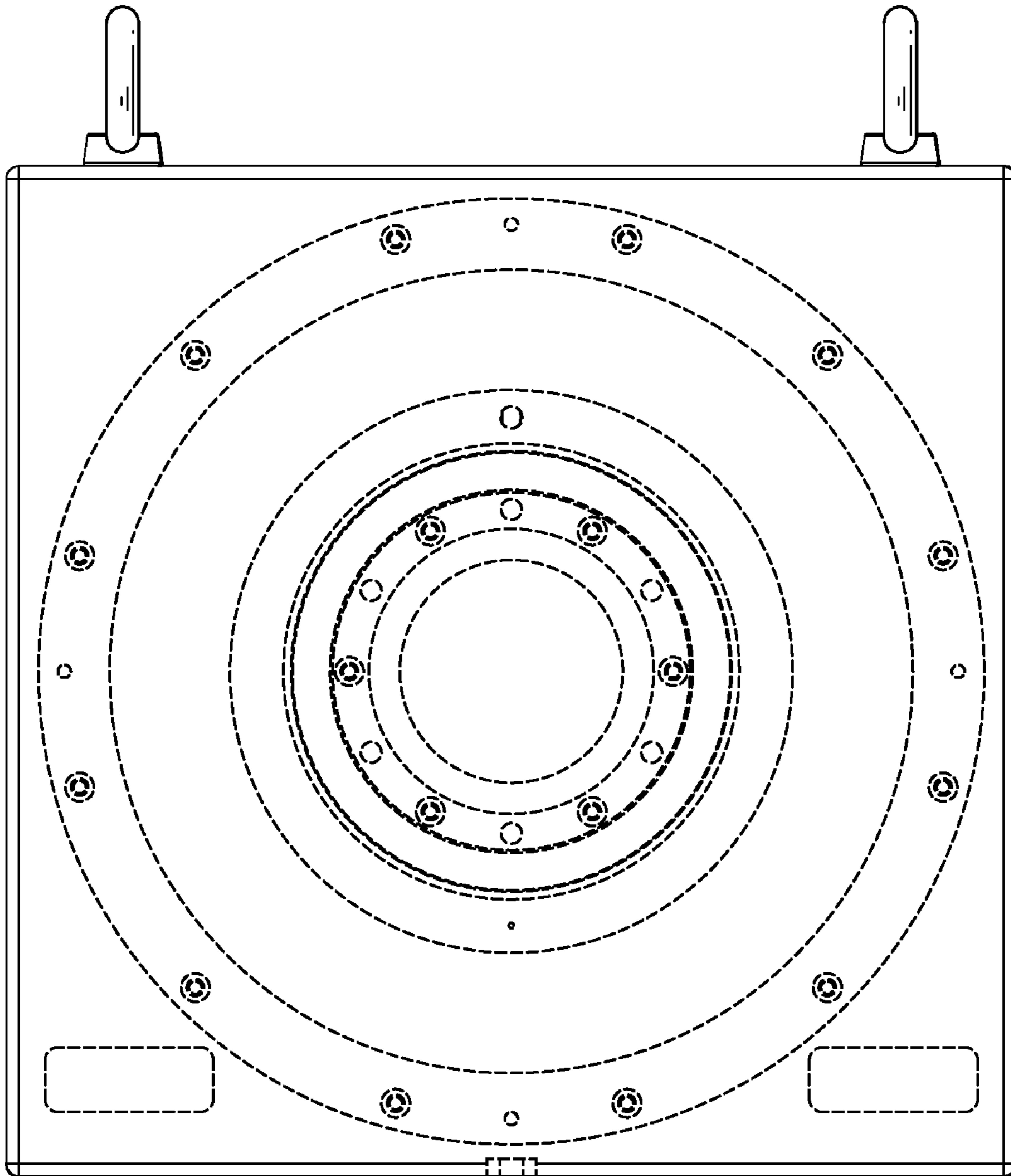


FIG. 3

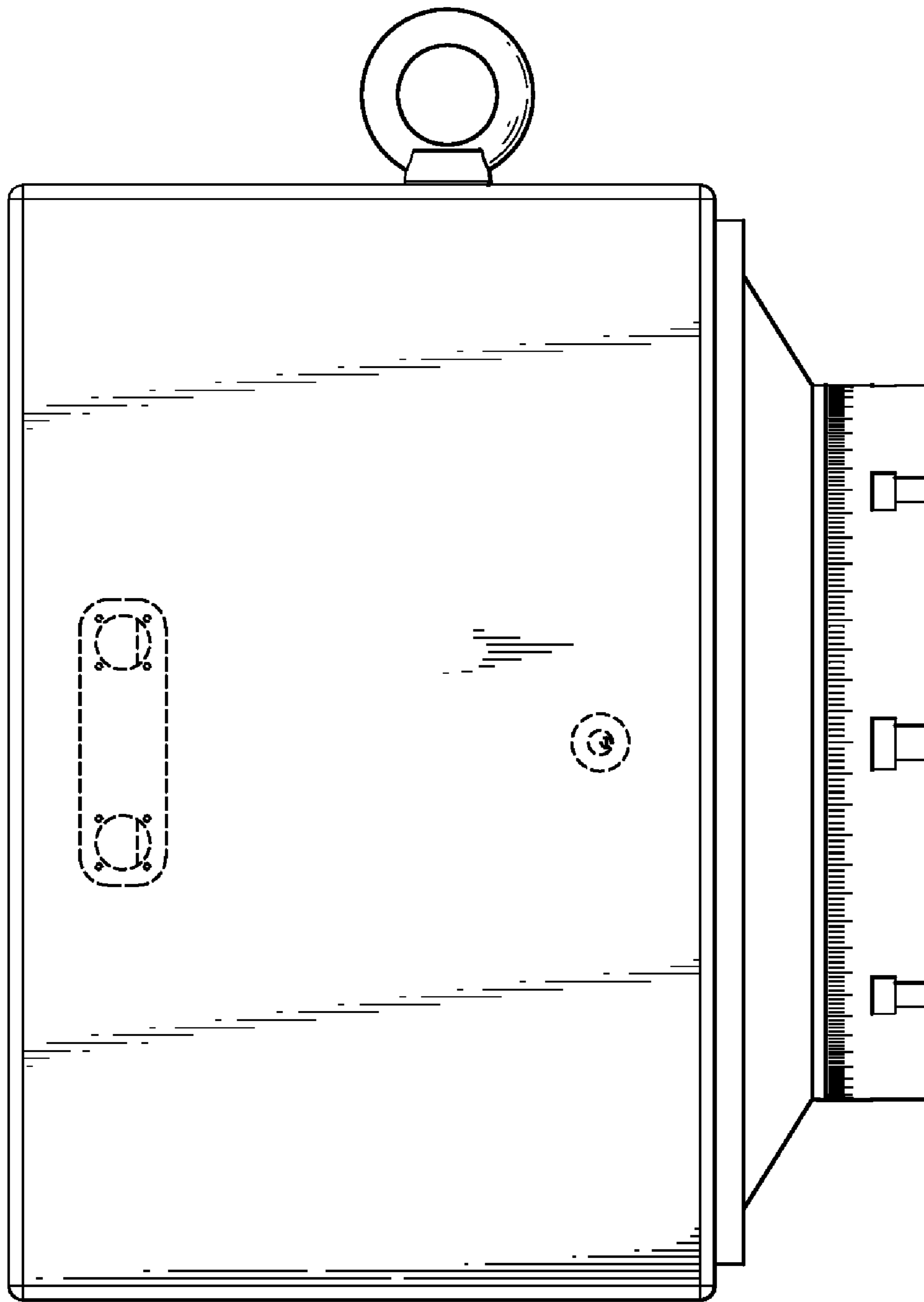


FIG. 4

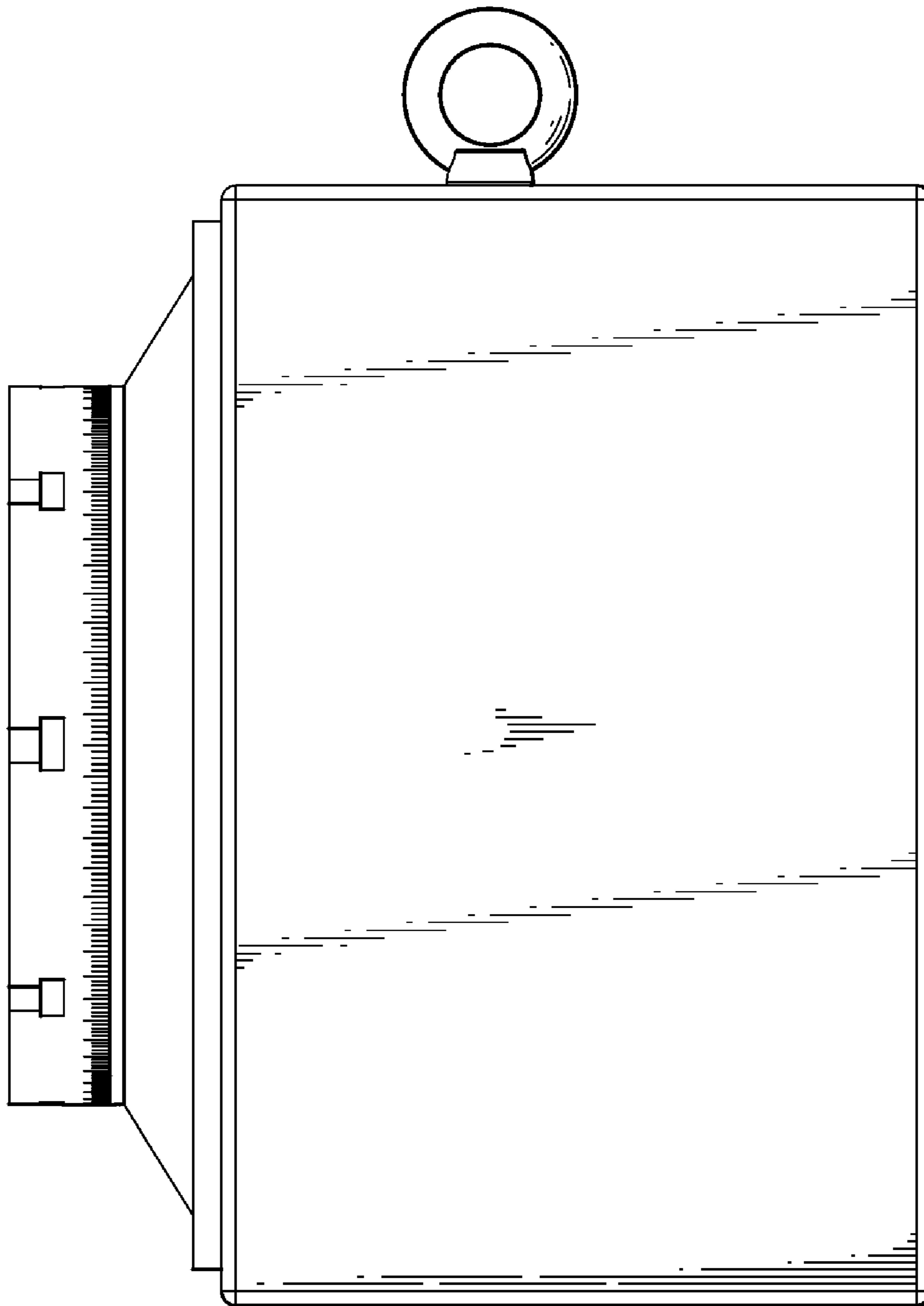


FIG. 5

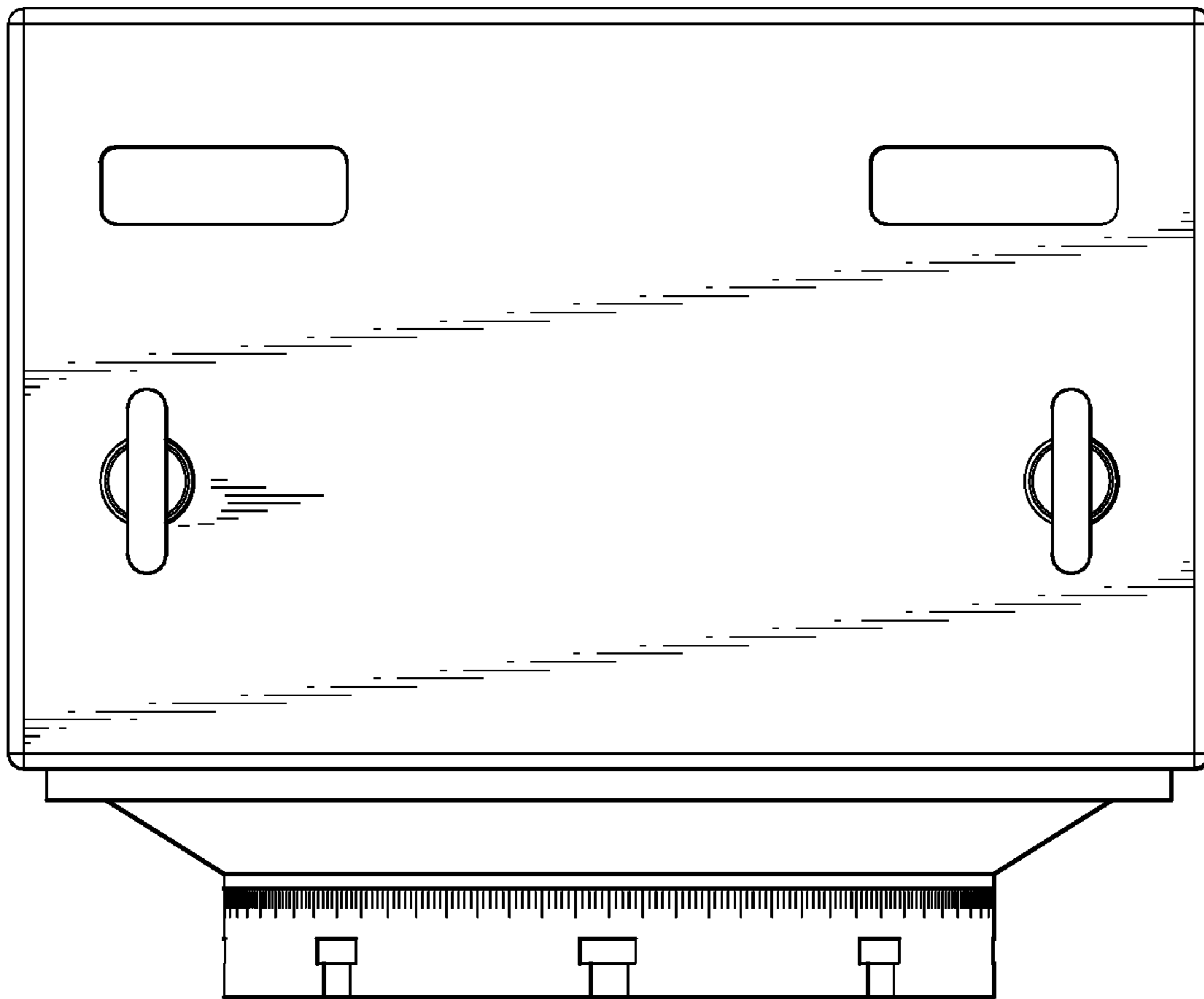


FIG. 6

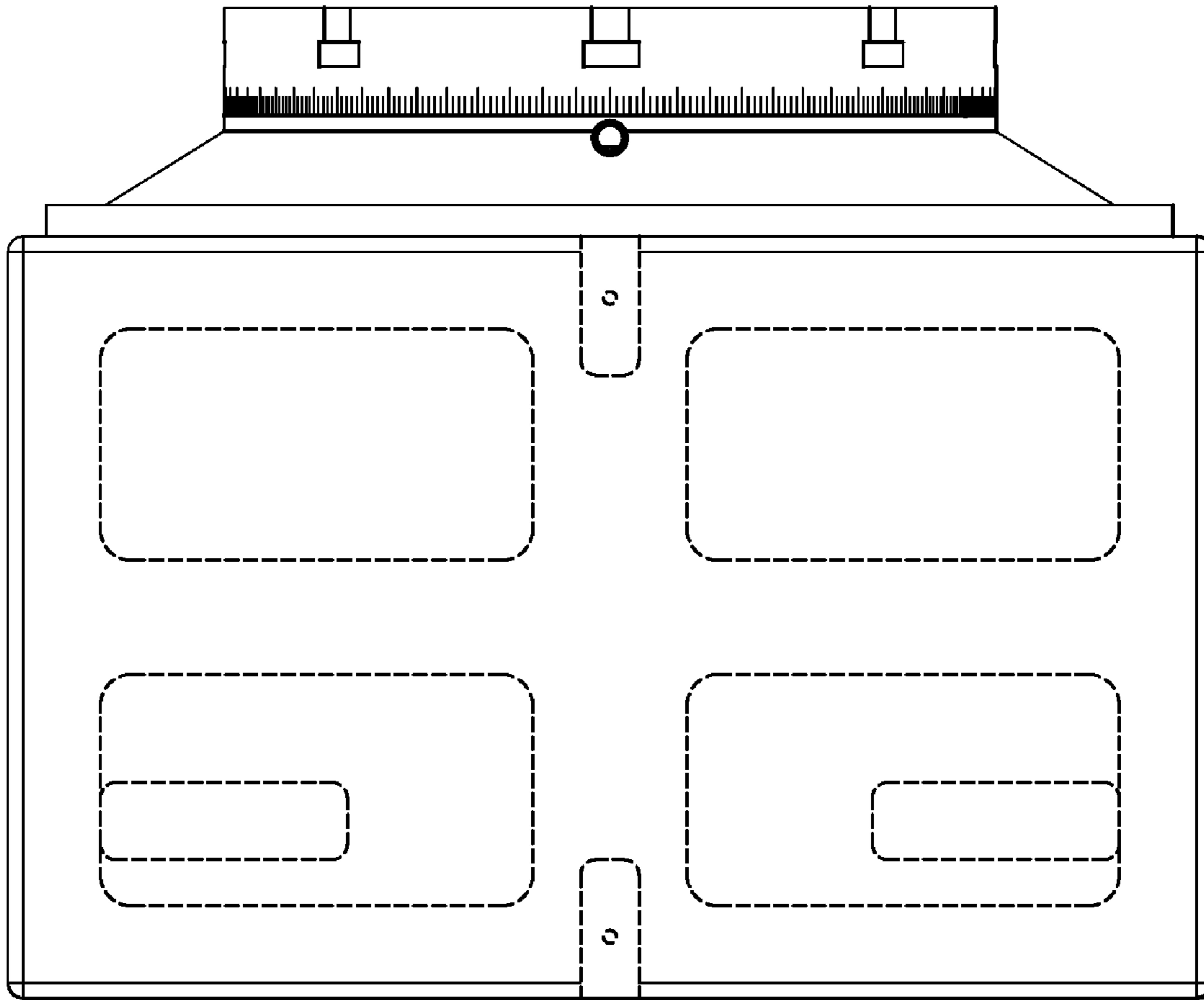


FIG. 7