

[54] DIRECT CURRENT ELECTRIC MOTORS

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[73] Assignee: Penn Engineering & Manufacturing Corp., Danboro, Pa.

[\*\*] Term: 14 Years

[21] Appl. No.: 485,318

[22] Filed: Apr. 15, 1983

[52] U.S. Cl. .... D13/1

[58] Field of Search ..... D13/1; 310/89, 90, 91

[56] References Cited

U.S. PATENT DOCUMENTS

D. 191,982	12/1961	Eisenhart	.....	D13/1
D. 267,869	2/1983	Lenz et al.	.....	D13/1
4,384,226	5/1983	Sato et al.	.....	310/89
4,426,163	1/1984	Schuluchter et al.	.....	310/91

OTHER PUBLICATIONS

Porter Peerless Elec. Motors Gen'l Catalog 1977, Cover-Motor Designs w/Fins.

Primary Examiner—Catherine E. Kemper

[57] CLAIM

The ornamental design for direct current electric motor, as shown and described.

DESCRIPTION

FIG. 1 is a top, front and right side perspective view of a direct current electric motor showing our new design; FIG. 2 is a right side elevational view thereof; FIG. 3 is a back elevational view thereof; FIG. 4 is a left side elevational view thereof; FIG. 5 is a front elevational view thereof; FIG. 6 is a top plan view thereof; FIG. 7 is a bottom plan view thereof; FIG. 8 is a top plan view thereof with a portion of the top end plate cut away to better show the cross-sectional shape of the longitudinal grooves; FIG. 9 is a top, front and right side perspective view of a second embodiment of our new design, the top and bottom views thereof being the same as is shown in FIGS. 6 and 7, respectively, in the previous embodi-

ment, the back view being the same as shown in FIG. 5 of the previous embodiment except that the longitudinal dimensions of the housing is shorter;

FIG. 10 is a back elevational view of the embodiment shown in FIG. 9;

FIG. 11 is a left side elevational view of the embodiment shown in FIG. 9, the right side being a mirror image;

FIG. 12 is a top, front and right side perspective view of a third embodiment of our new design, the top and bottom views thereof being the same as is shown in FIGS. 6 and 7, respectively, for the embodiment of FIGS. 1 and 8, the back view being the same as is shown in FIG. 5 of the first embodiment except that the longitudinal dimension of the housing is shorter;

FIG. 13 is a back elevational view of the embodiment shown in FIG. 12;

FIG. 14 is a left side elevational view of the embodiment shown in FIG. 12, the right side being a mirror image;

FIG. 15 is a top, front and right side perspective view of a fourth embodiment of our new design;

FIG. 16 is a right side elevational view of the embodiment shown in FIG. 15;

FIG. 17 is a back elevational view of the embodiment shown in FIG. 15;

FIG. 18 is a left side elevational view of the embodiment shown in FIG. 15;

FIG. 19 is a front elevational view of the embodiment shown in FIG. 15;

FIG. 20 is a top plan view of the embodiment shown in FIG. 15;

FIG. 21 is a bottom plan view of the embodiment shown in FIG. 15;

FIG. 22 is a top plan view similar to FIG. 20 but with a portion of the top end plate cut away to better show the cross-sectional shape of the longitudinal grooves;

FIG. 23 is a top, front and right side perspective view of a fifth embodiment of our new design, the top and bottom view being the same as shown in FIGS. 20 and 21 for the previous embodiment, the front being the same as is shown in FIG. 19 for the previous embodiment except that the longitudinal dimension of the housing is shorter;

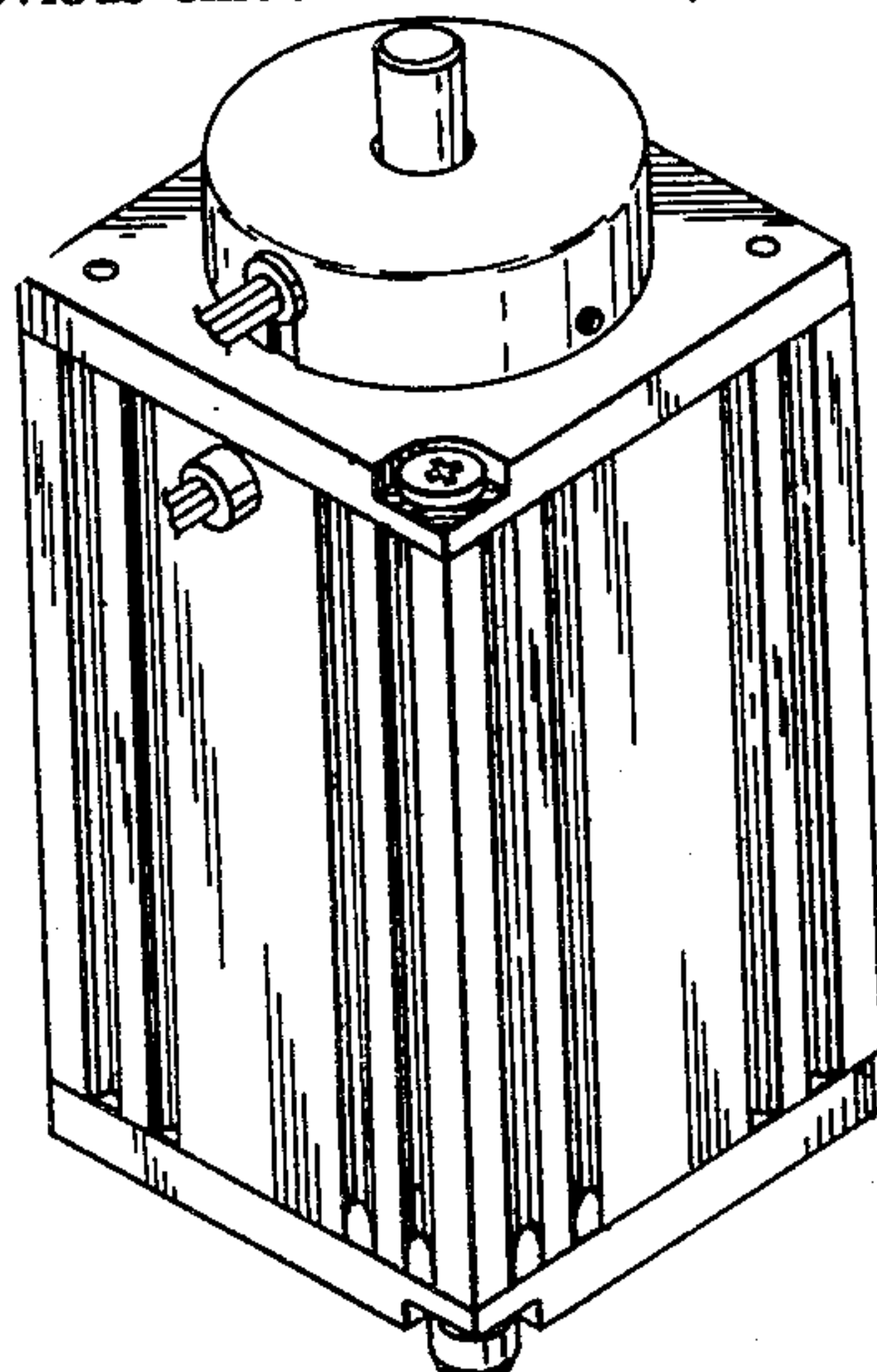


FIG. 24 is a back elevational view of the embodiment shown in FIG. 23;

FIG. 25 is a left side elevational view of the embodiment shown in FIG. 23, the right side being a mirror image;

FIG. 26 is a top, front and right side perspective view of a sixth embodiment of our new design, the top and bottom views being the same as shown in FIGS. 20 and 21, the front being the same as is shown in FIG. 19 except that the longitudinal dimension of the housing is shorter;

FIG. 27 is a back elevational view of the embodiment shown in FIG. 26;

FIG. 28 is a left side elevational view of the embodiment shown in FIG. 26, the right side being a mirror image;

FIG. 29 is a top, front and right side perspective view of a seventh embodiment of our new design;

FIG. 30 is a right side elevational view of the embodiment shown in FIG. 29;

FIG. 31 is a back elevational view of the embodiment shown in FIG. 29;

FIG. 32 is a left side elevational view of the embodiment shown in FIG. 29;

FIG. 33 is a front view of the embodiment shown in FIG. 29;

FIG. 34 is a top plan view of the embodiment shown in FIG. 29;

FIG. 35 is a bottom plan view of the embodiment shown in FIG. 29;

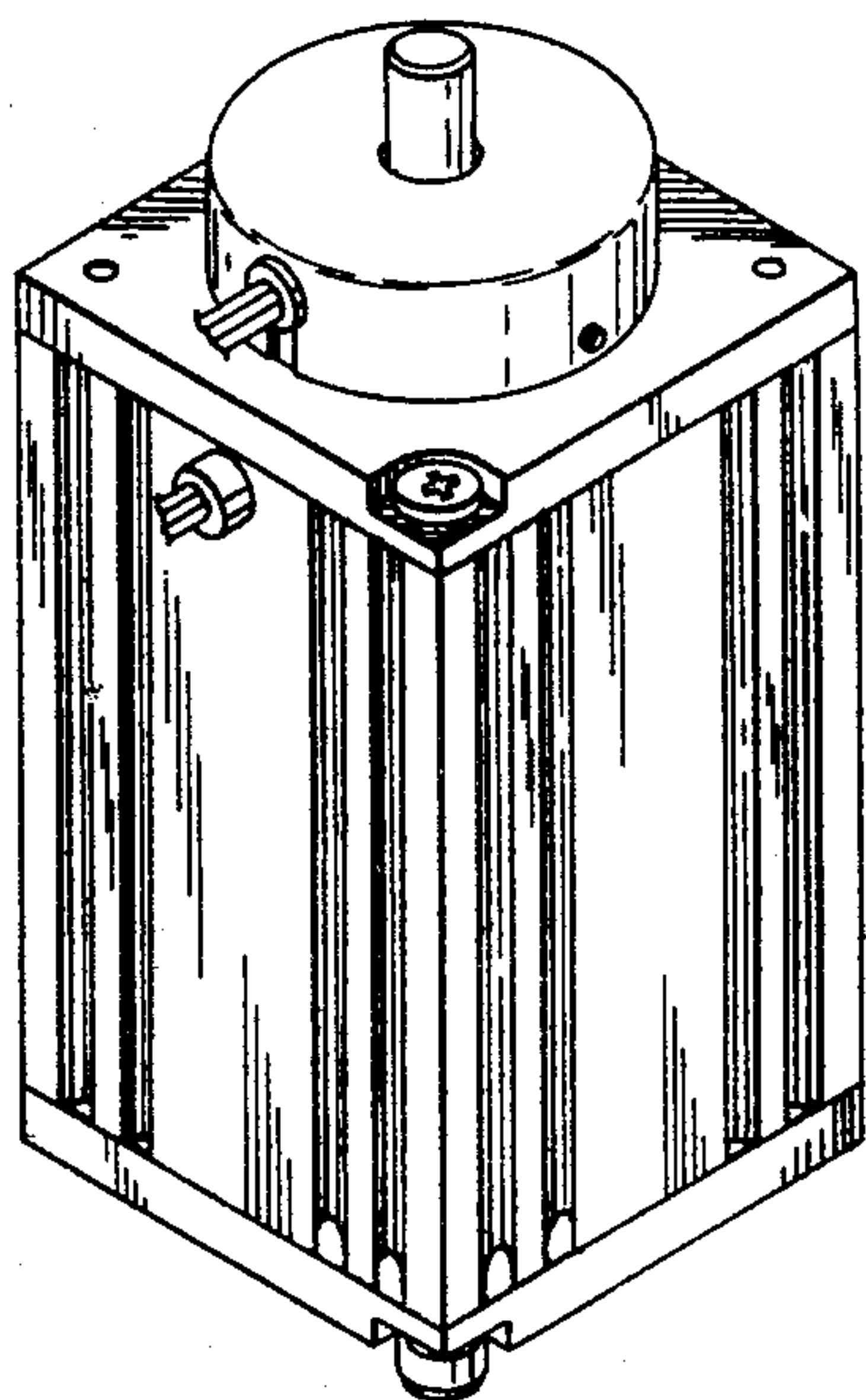
FIG. 36 is a top, front and right side perspective view of an eighth embodiment of our new design, the top and bottom views thereof being the same as shown in FIGS. 34 and 35 of the previous embodiment, the front being the same as is shown in FIG. 33 of the previous embodiment except that the longitudinal dimension of the housing is shorter;

FIG. 37 is a back elevational view of the embodiment shown in FIG. 36; and

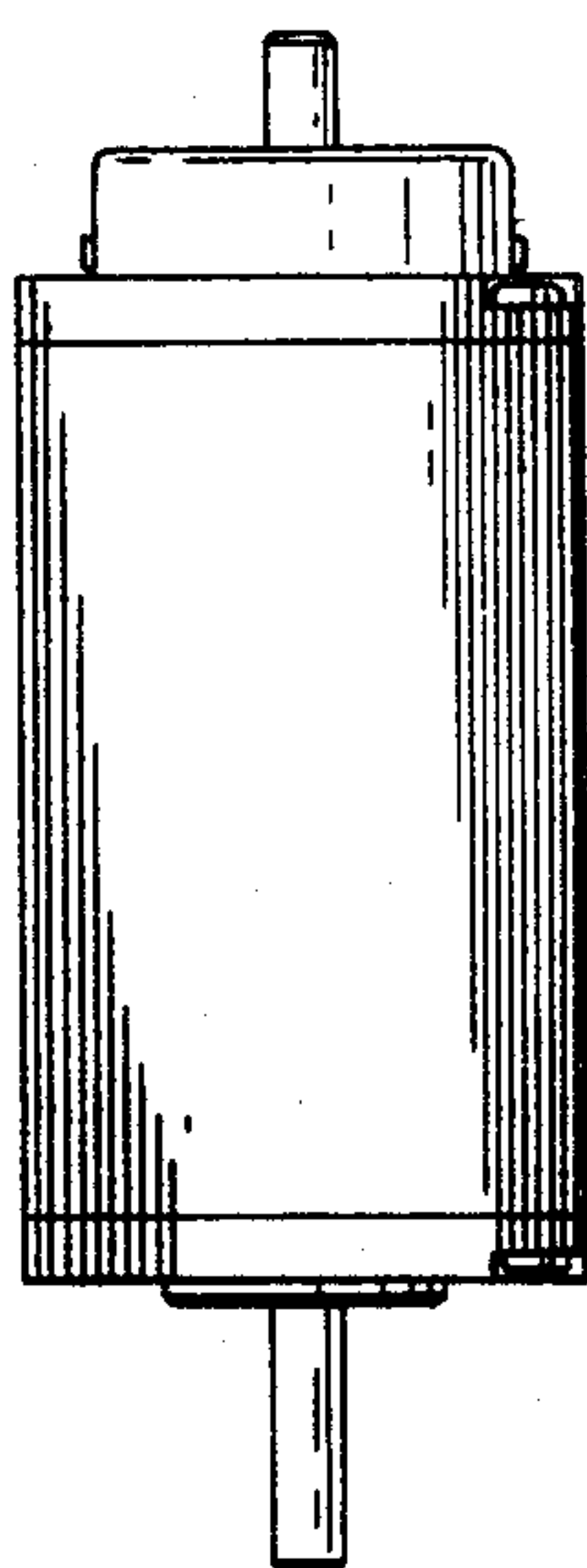
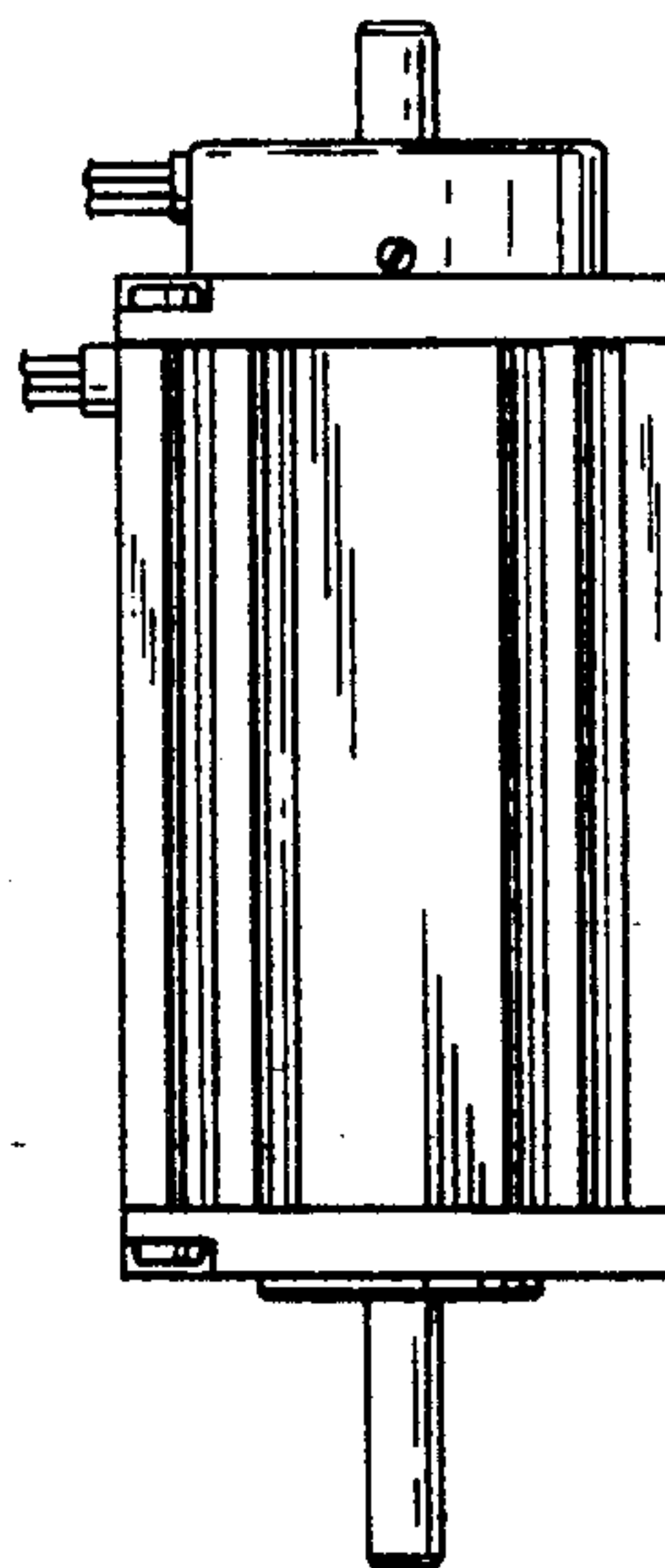
FIG. 38 is a left side elevational view of the embodiment shown in FIG. 36, the right side being a mirror image.



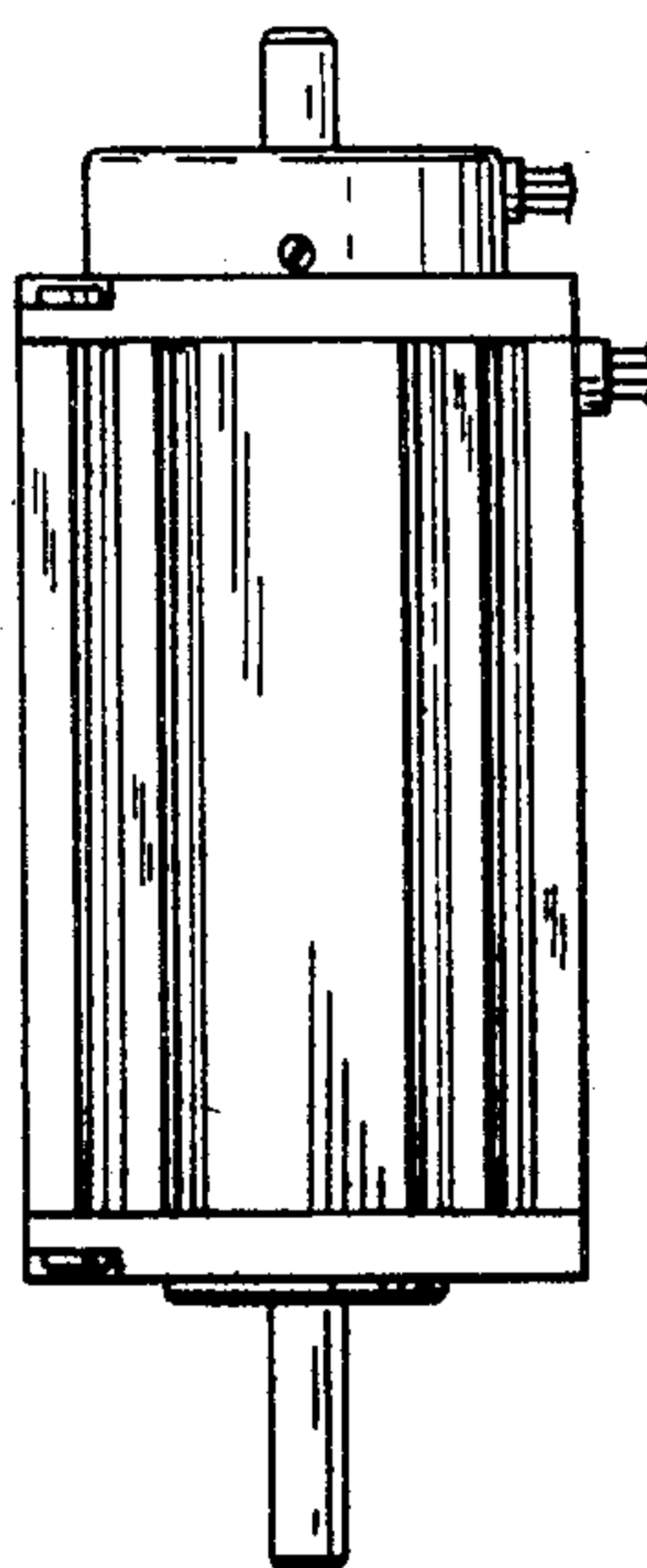
*FIG. 1*



*FIG. 2*



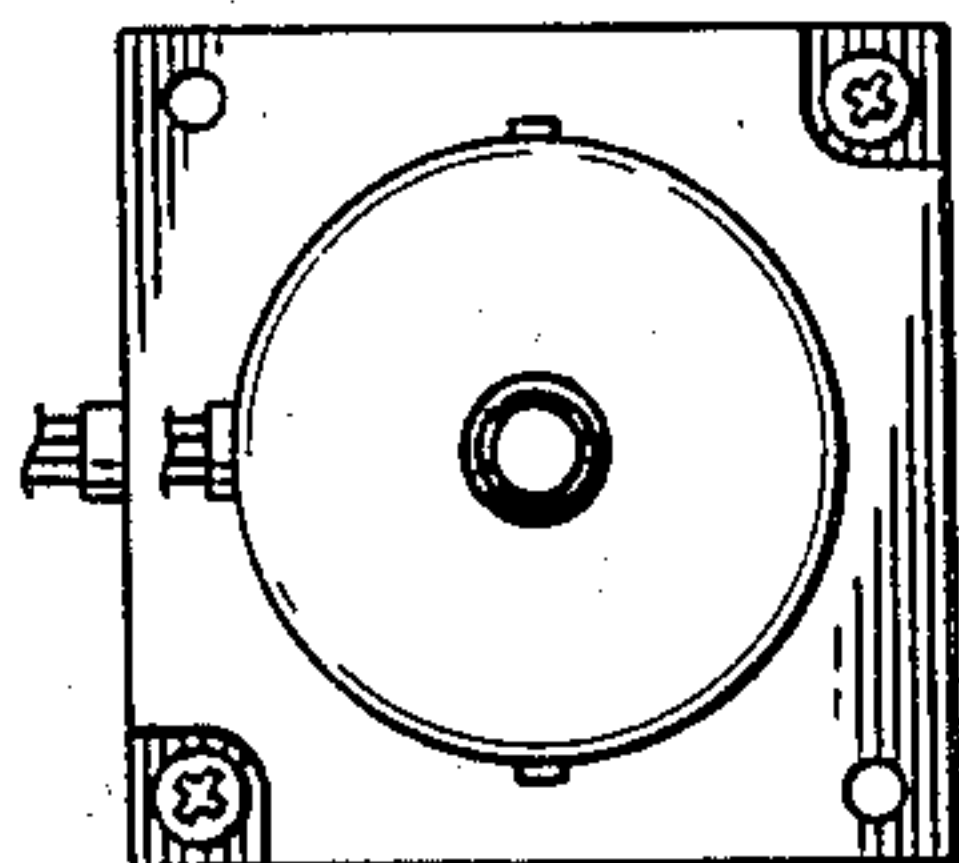
*FIG. 3*



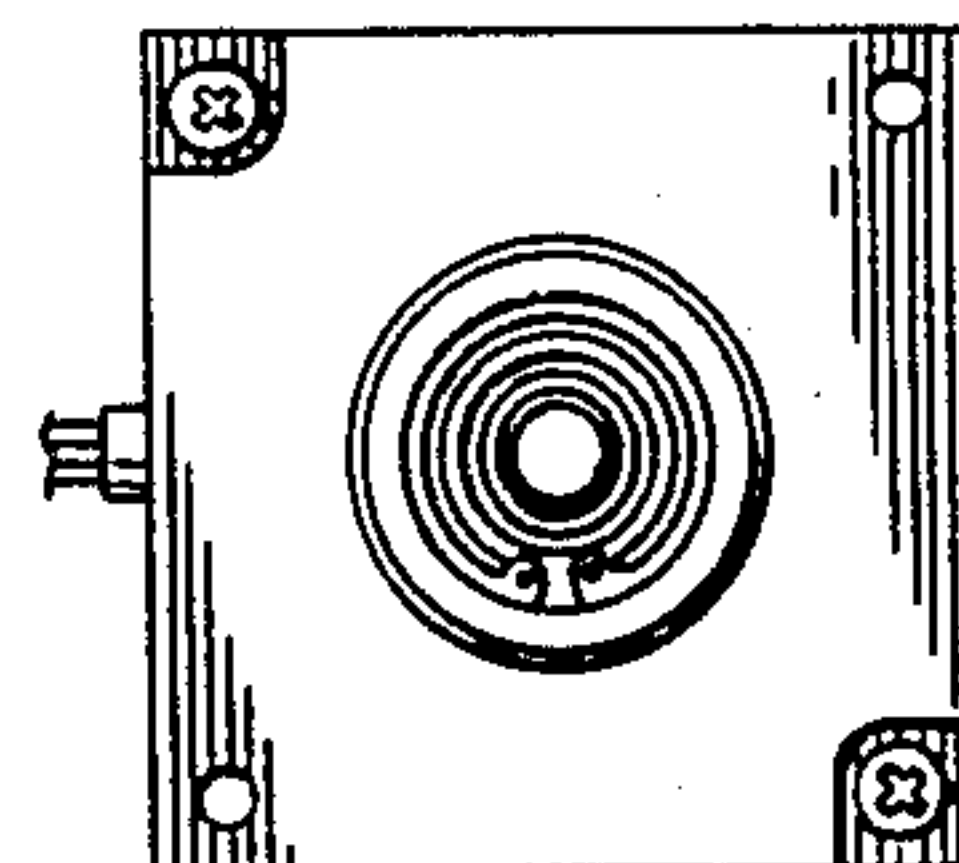
*FIG. 4*



*FIG. 5*

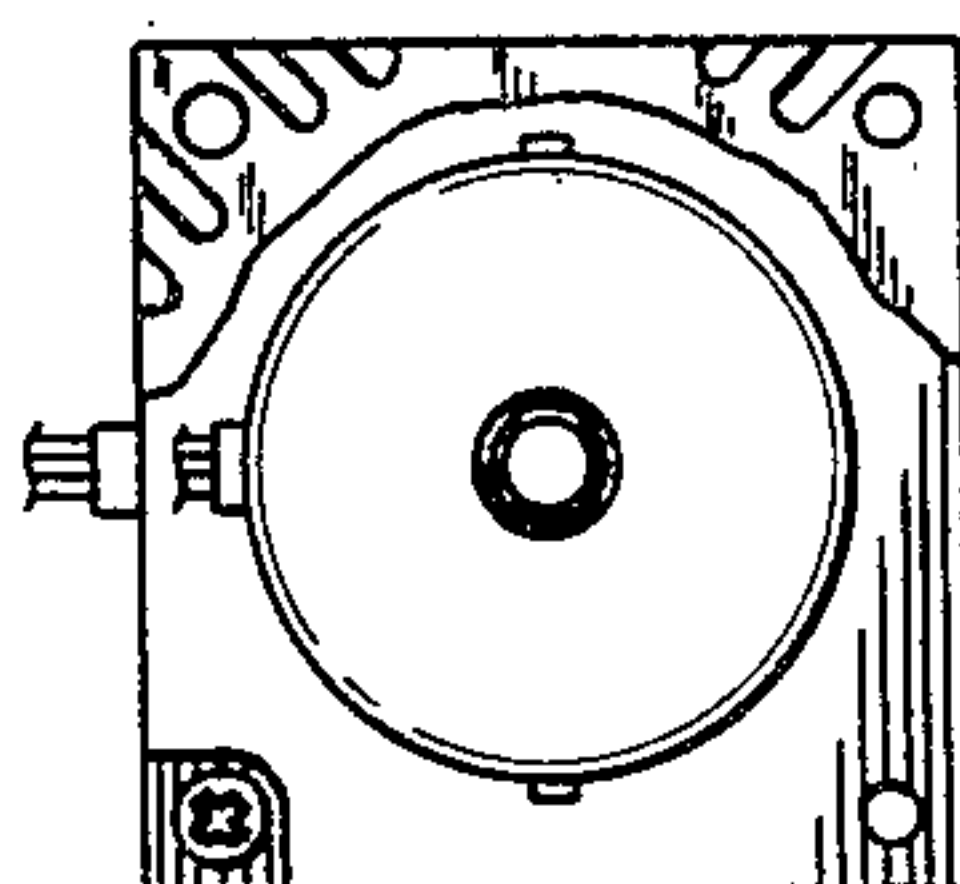


*FIG. 6*

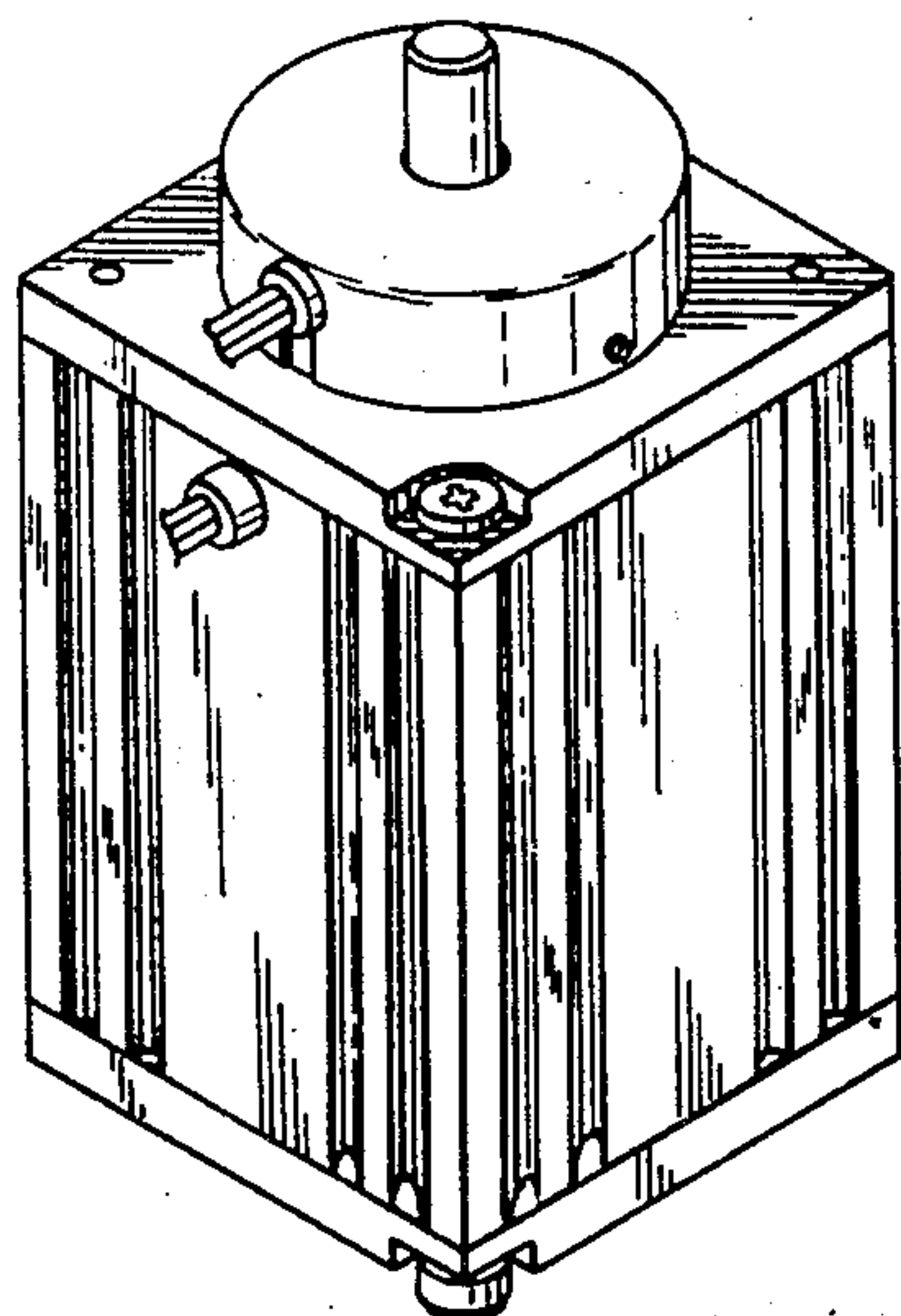


*FIG. 7*

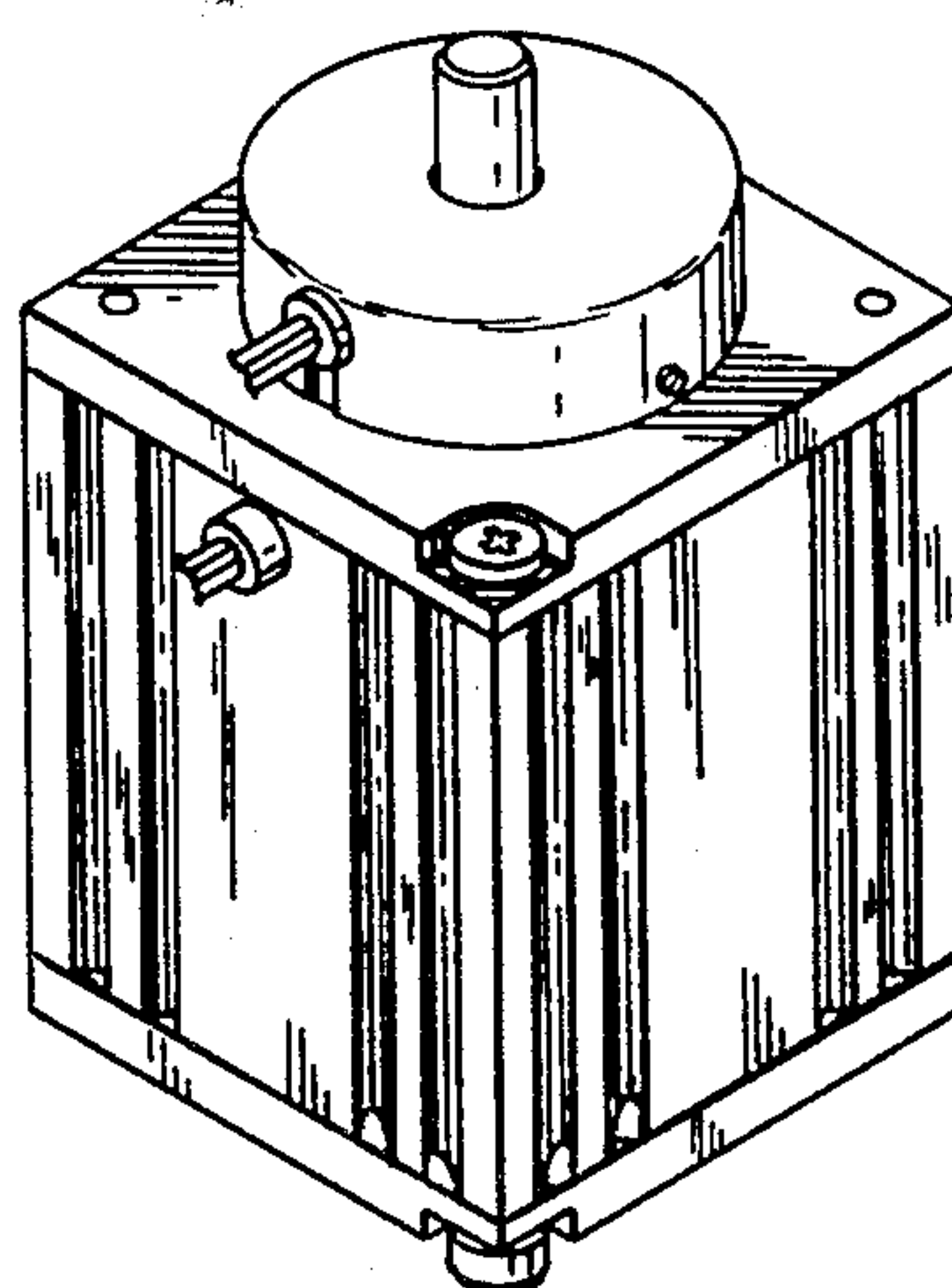
*FIG. 8*



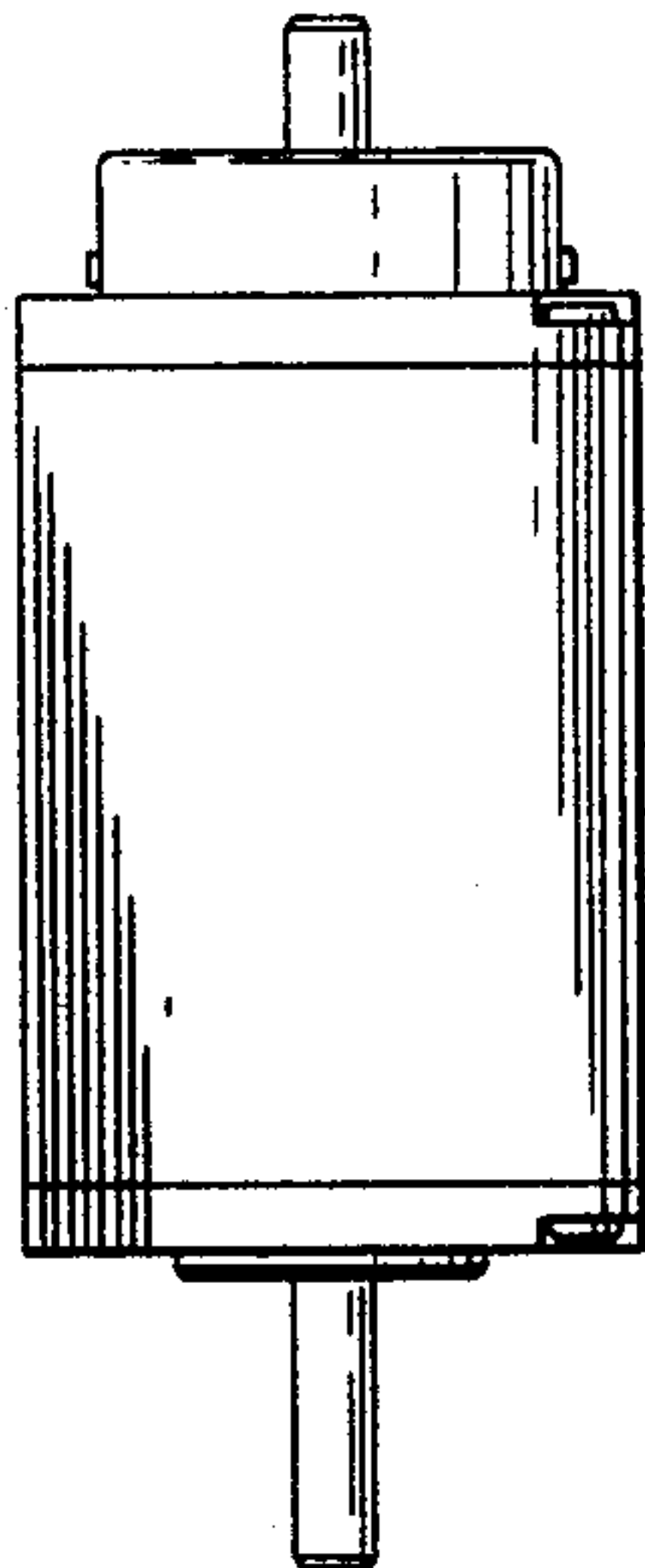
*FIG. 9*



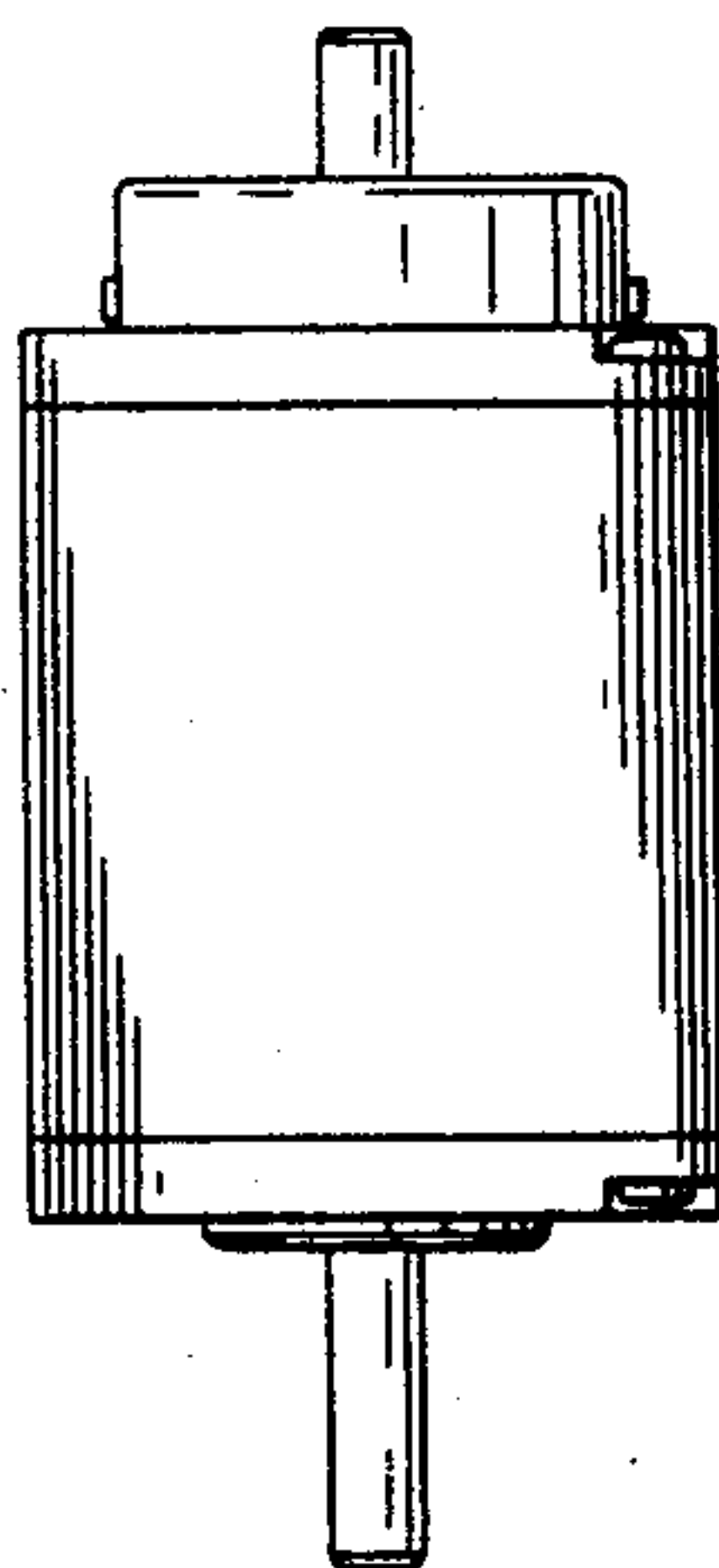
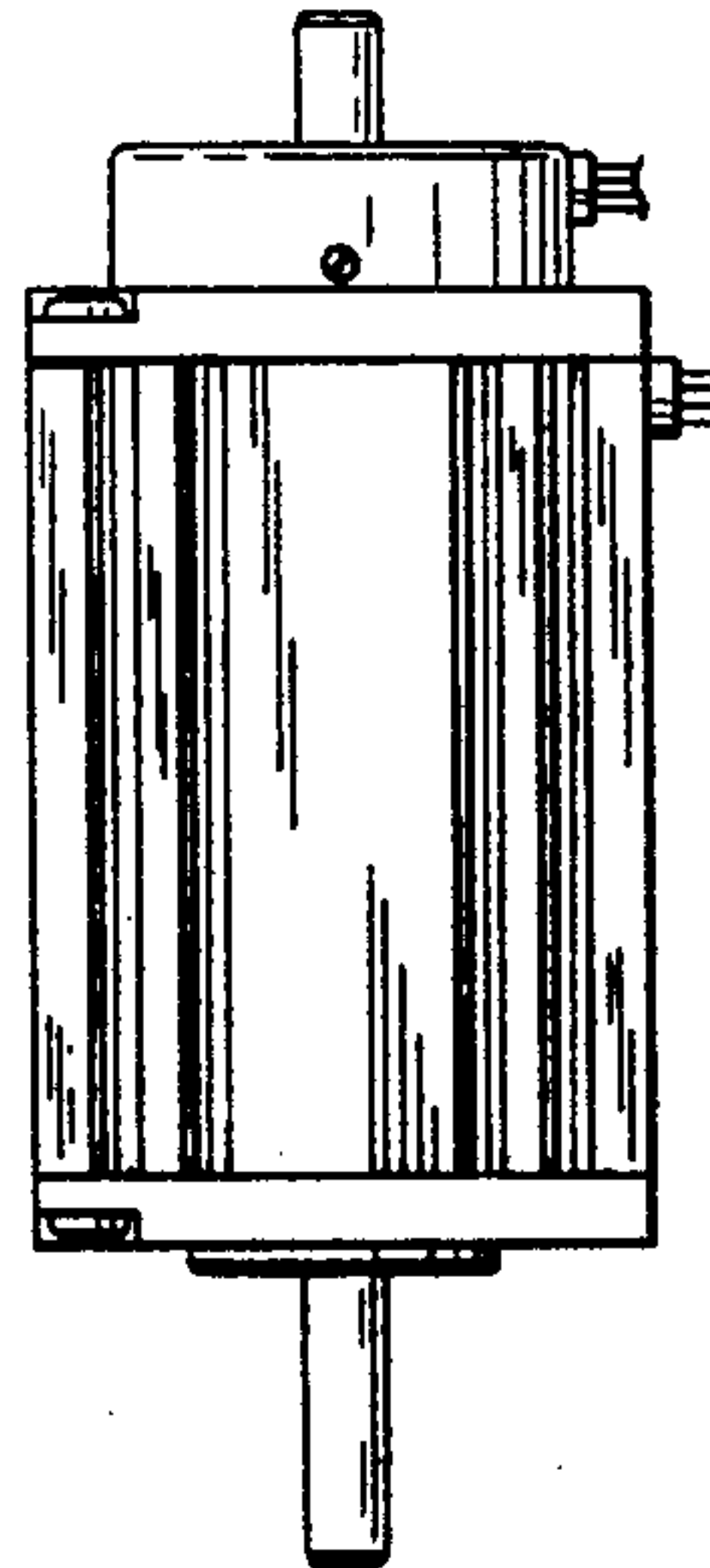
*FIG. 12*



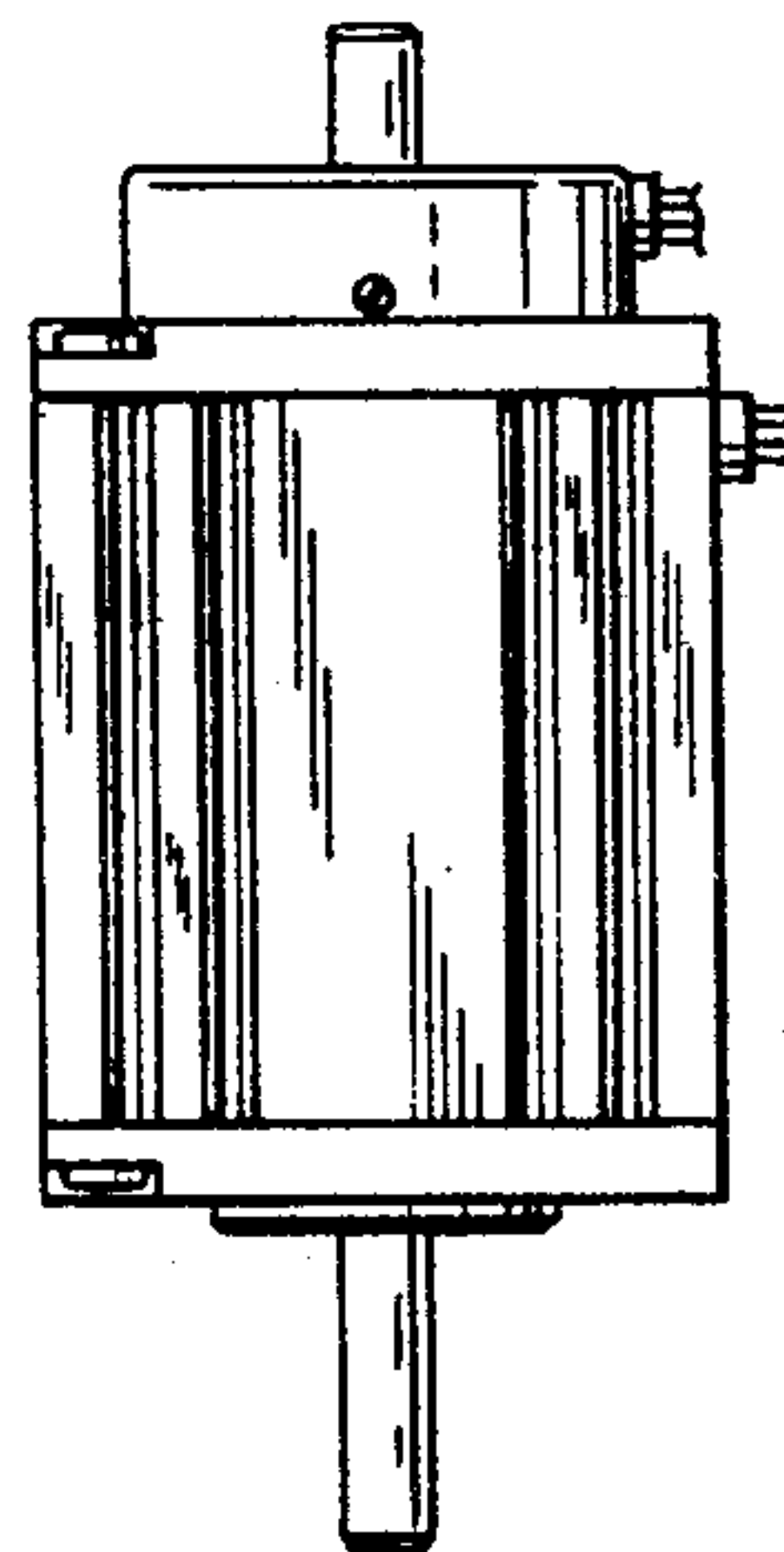
*FIG. 10*



*FIG. 11*

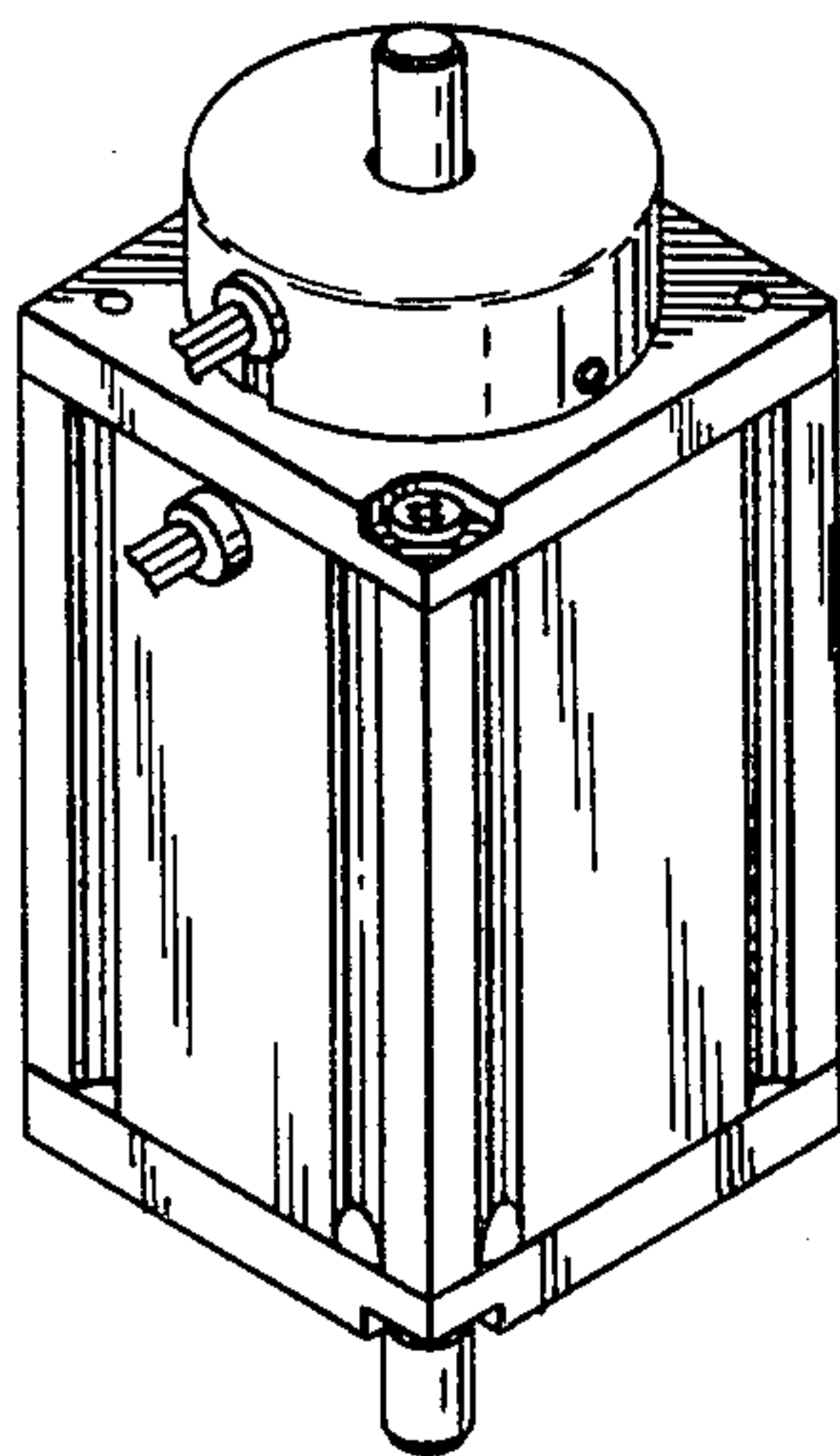


*FIG. 13*

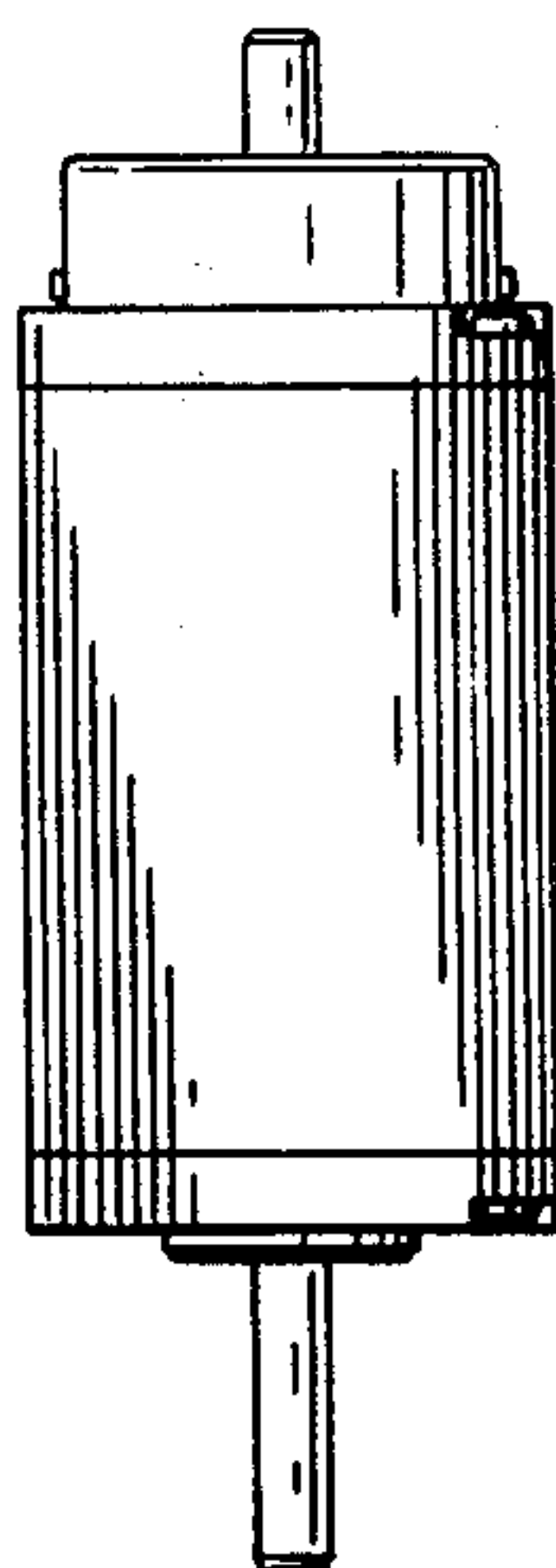


*FIG. 14*

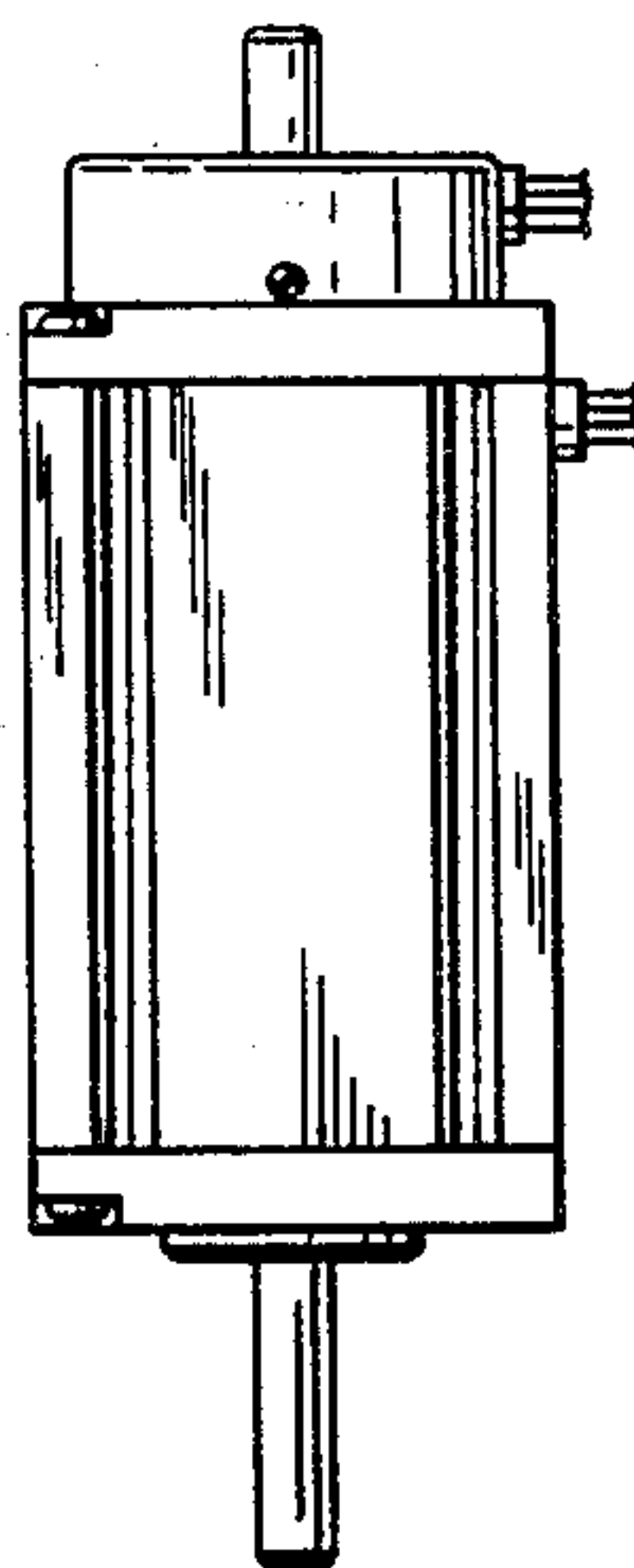
*FIG. 15*



*FIG. 16*



*FIG. 17*

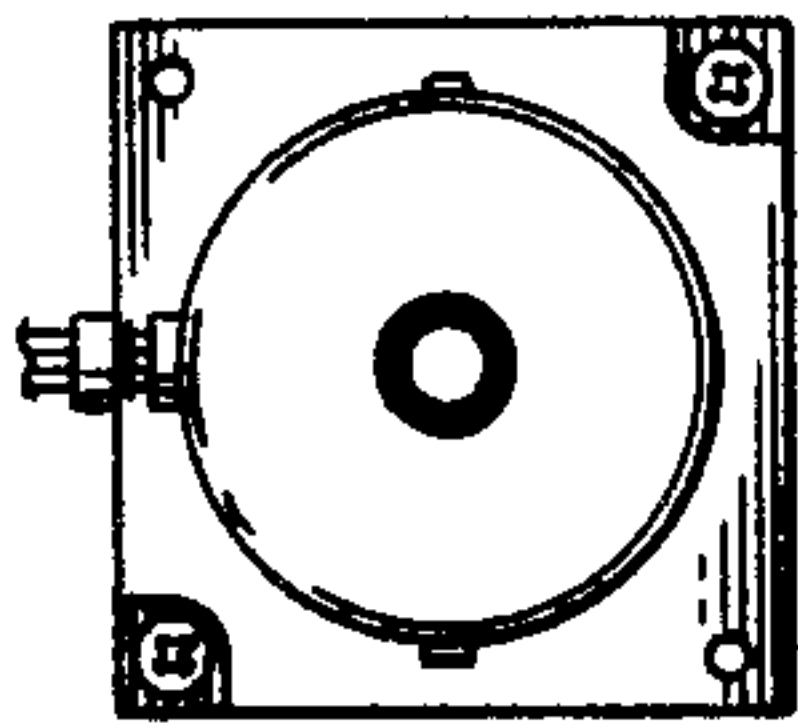


*FIG. 18*

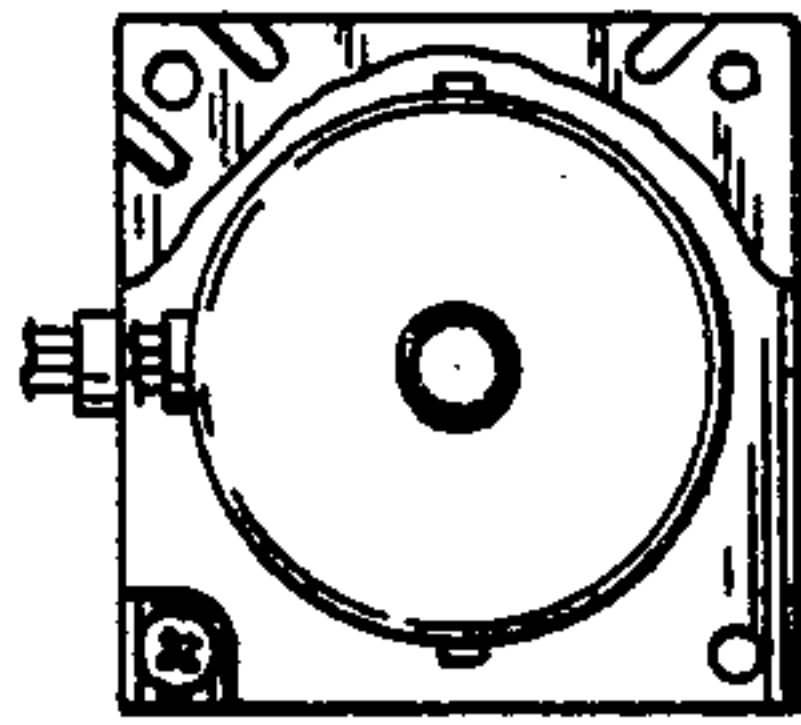


*FIG. 19*

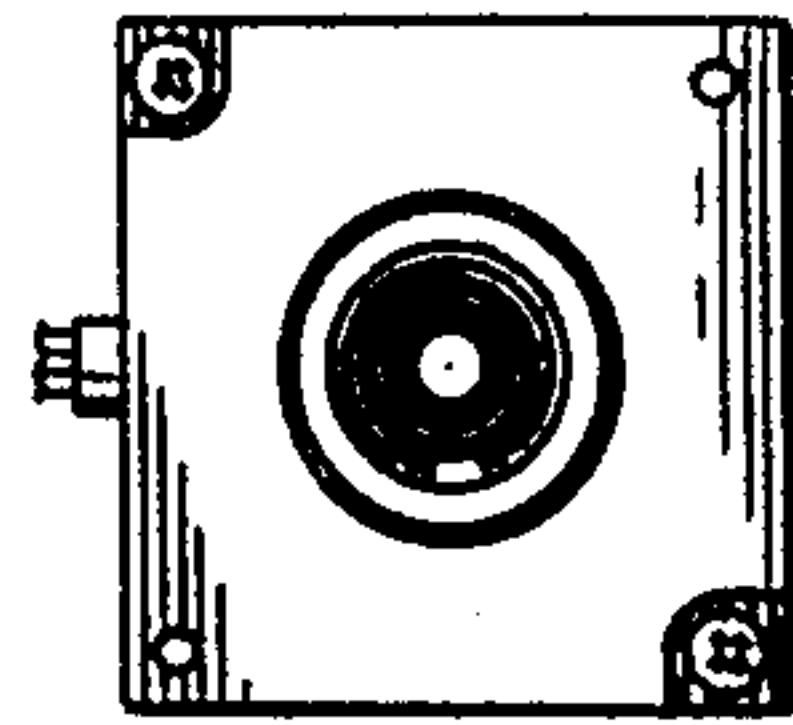
*FIG. 20*



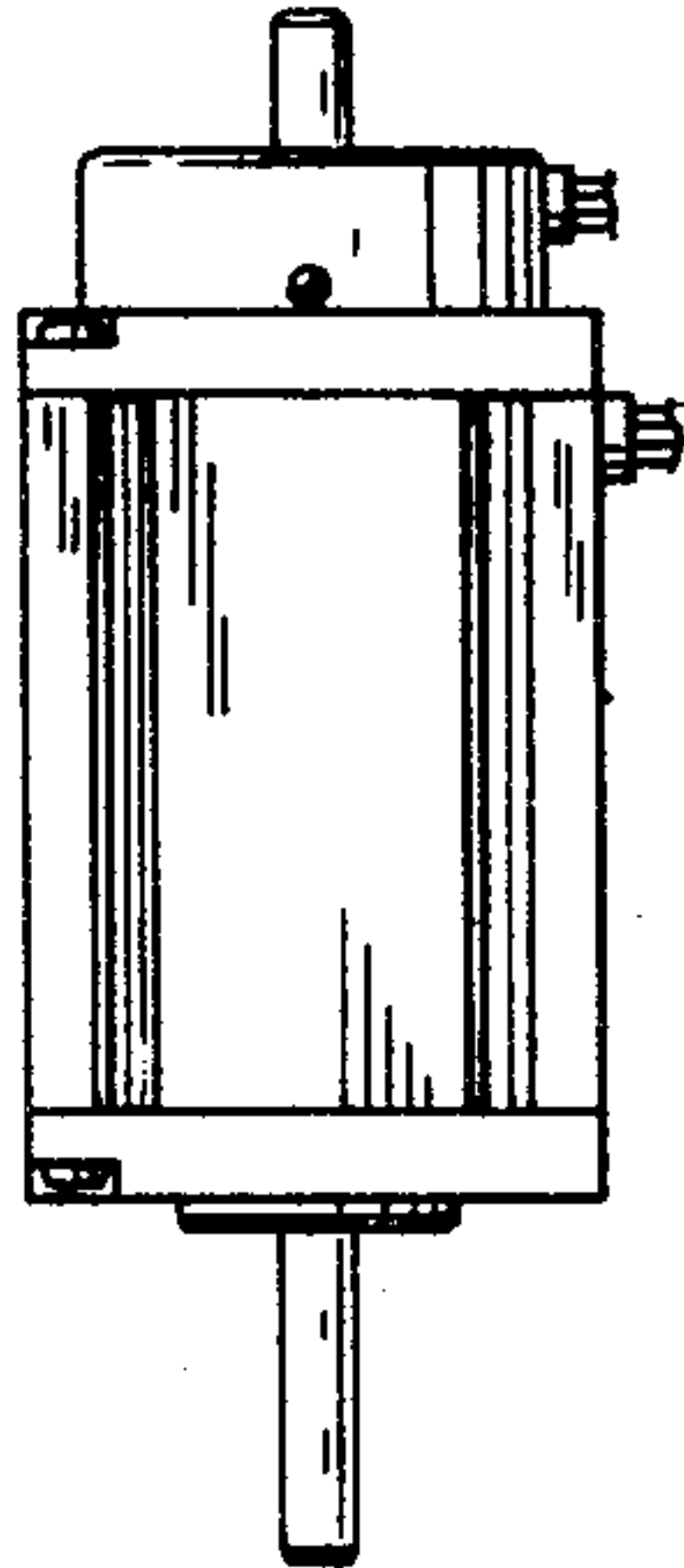
*FIG. 22*



*FIG. 21*



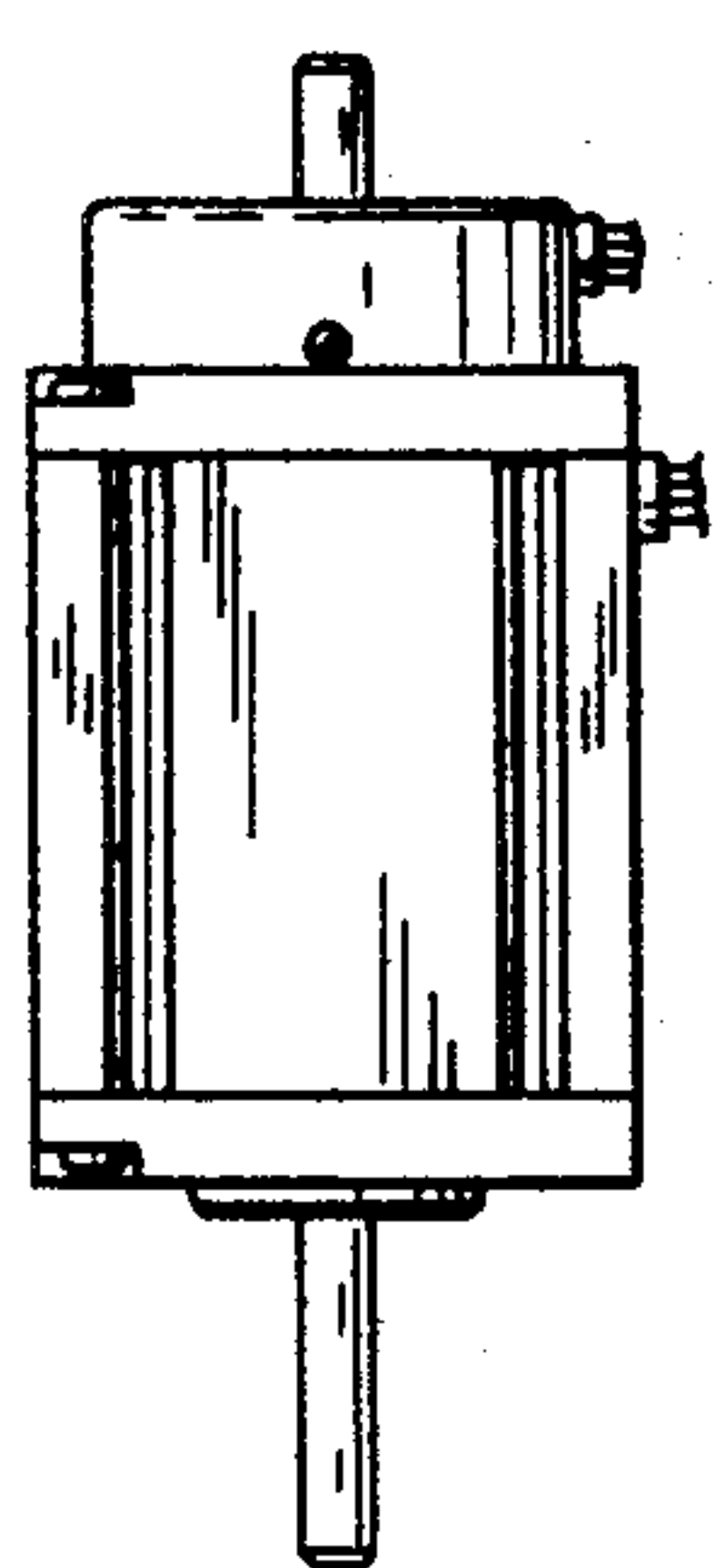
*FIG. 24*



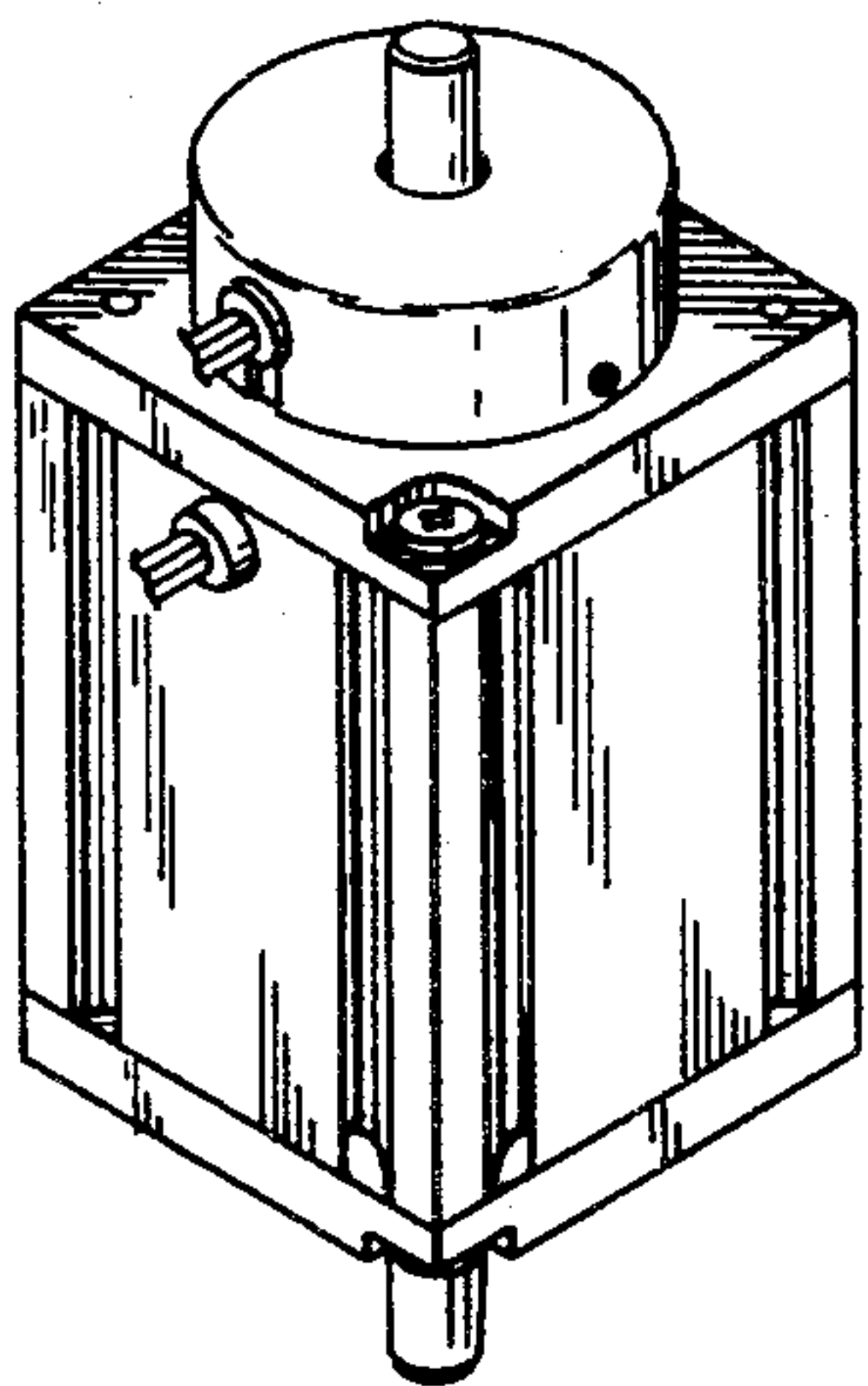
*FIG. 25*



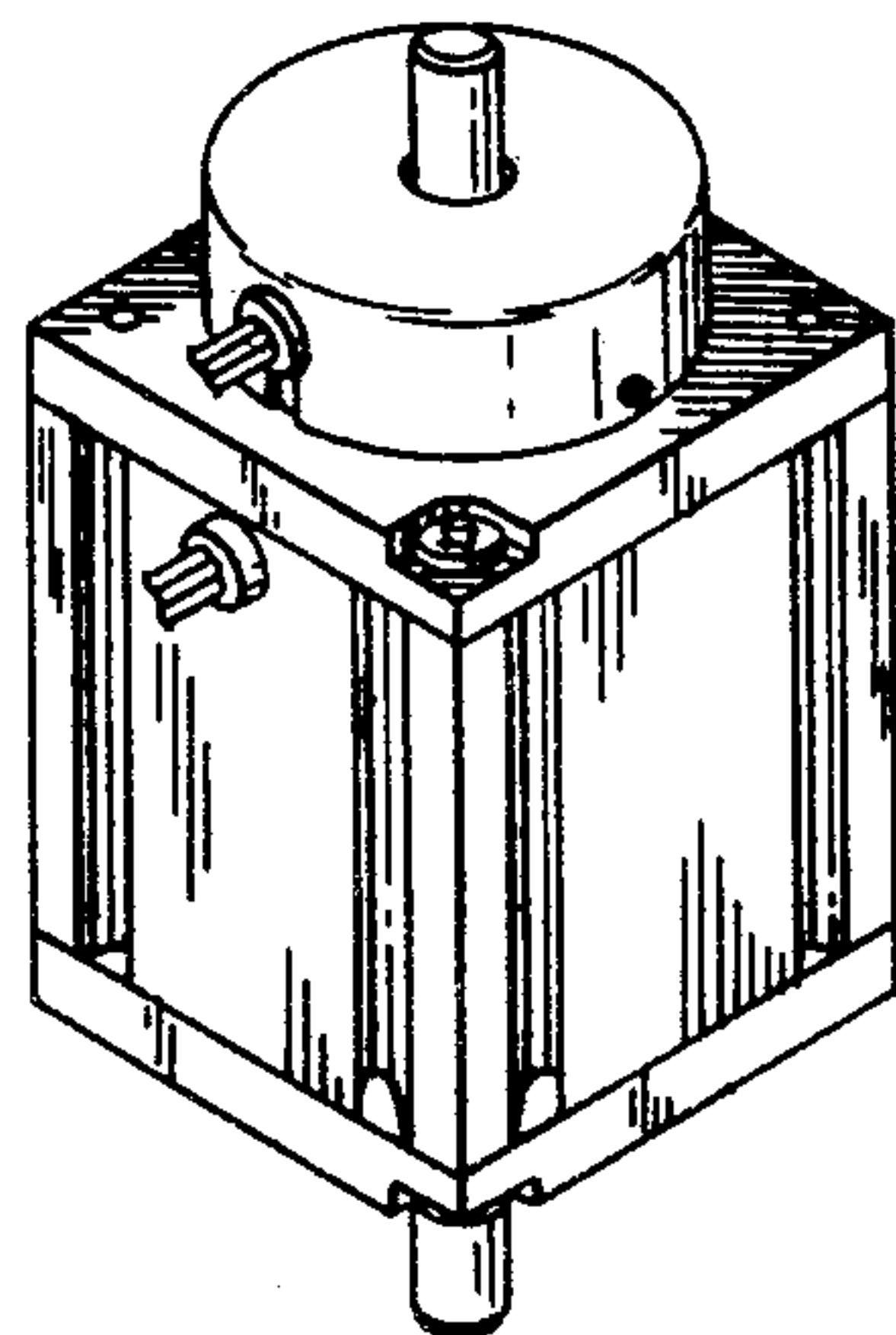
*FIG. 27*



*FIG. 28*



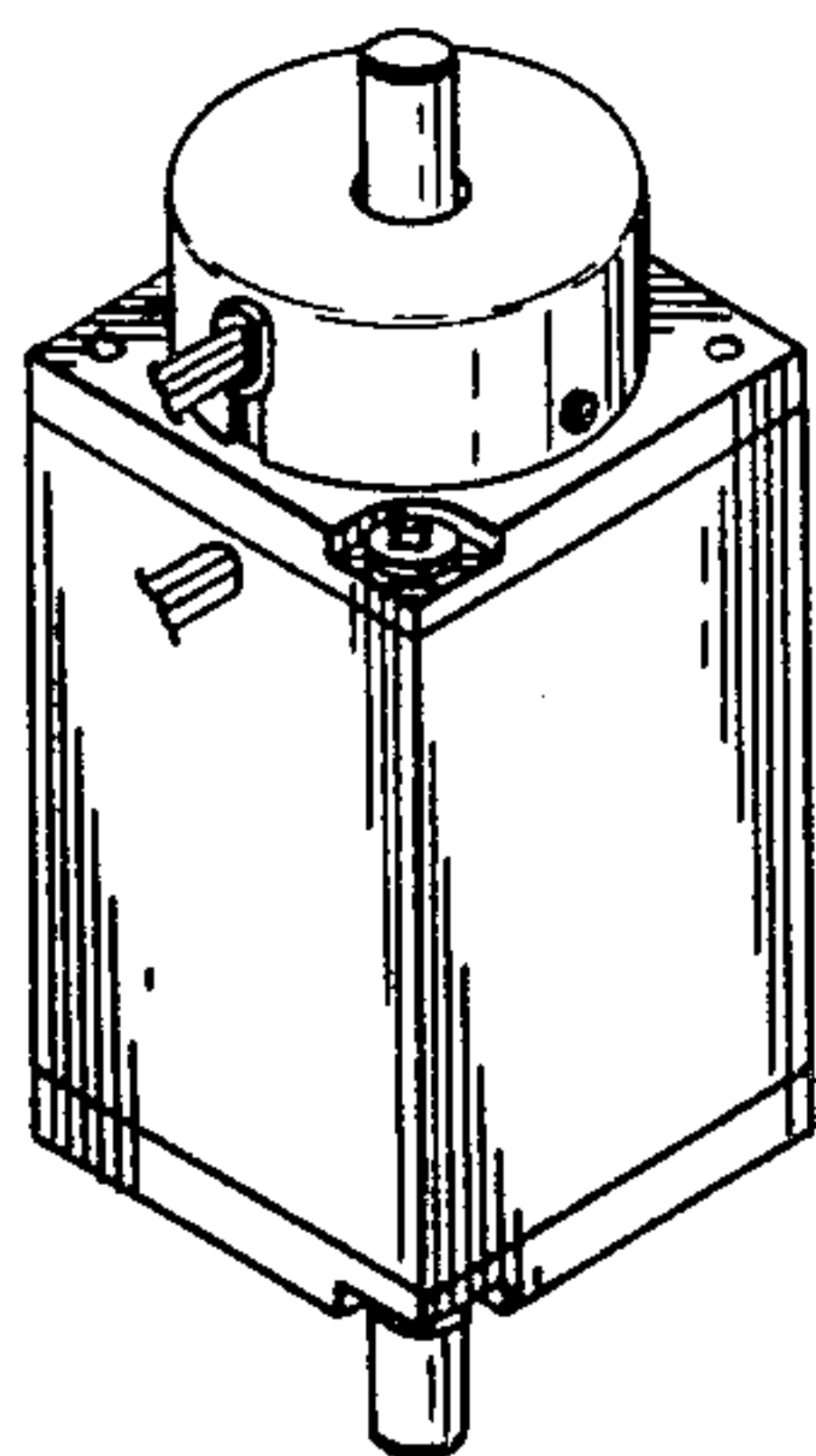
*FIG. 23*



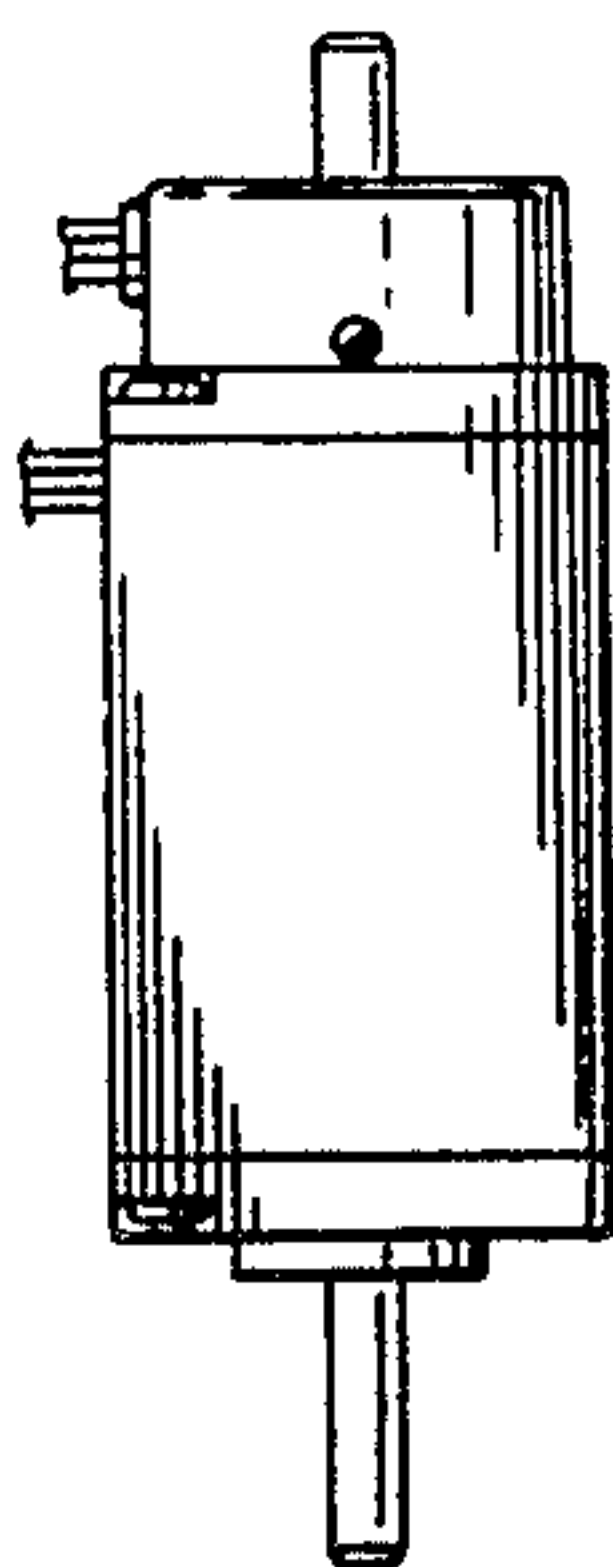
*FIG. 26*



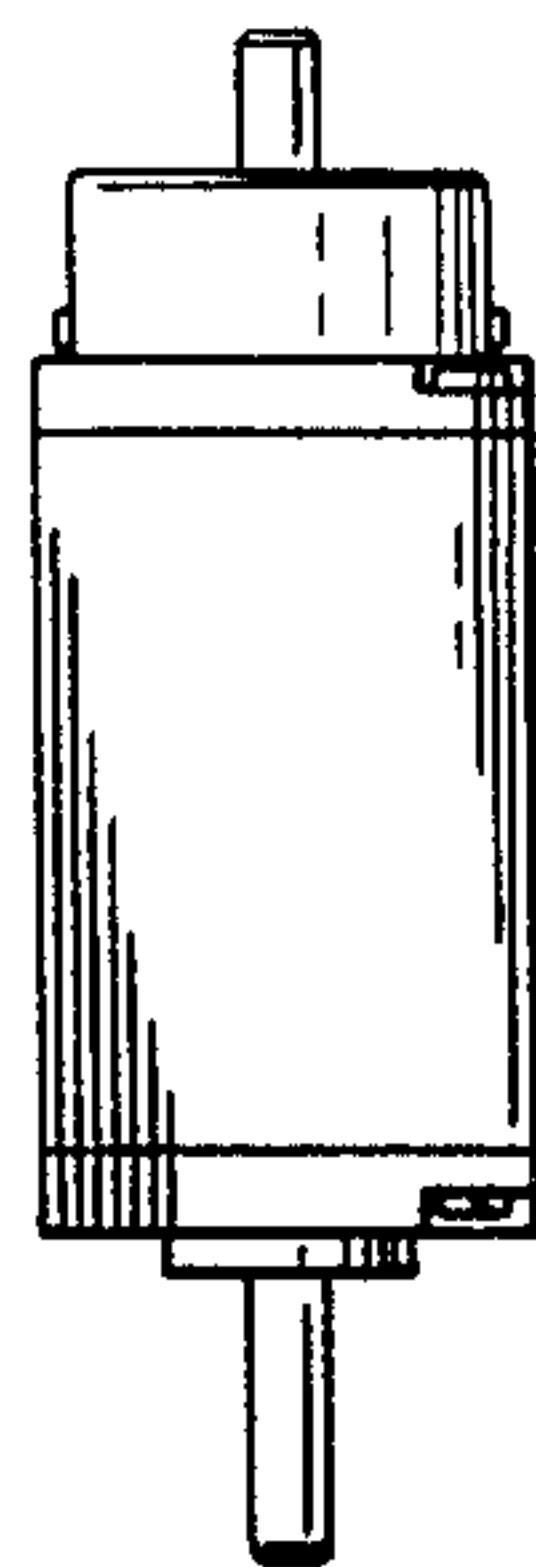
**FIG. 29**



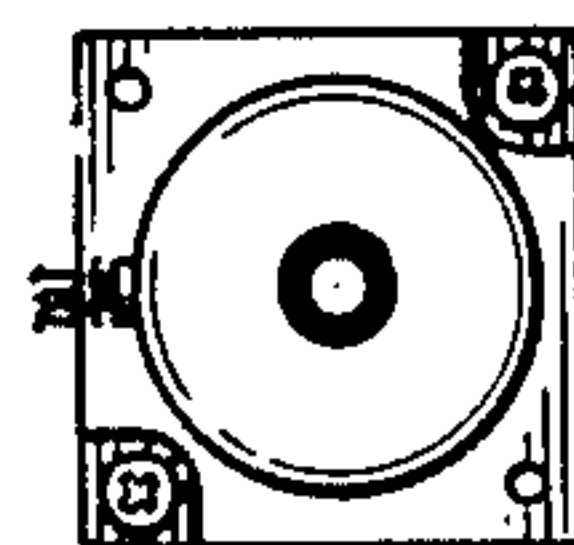
**FIG. 30**



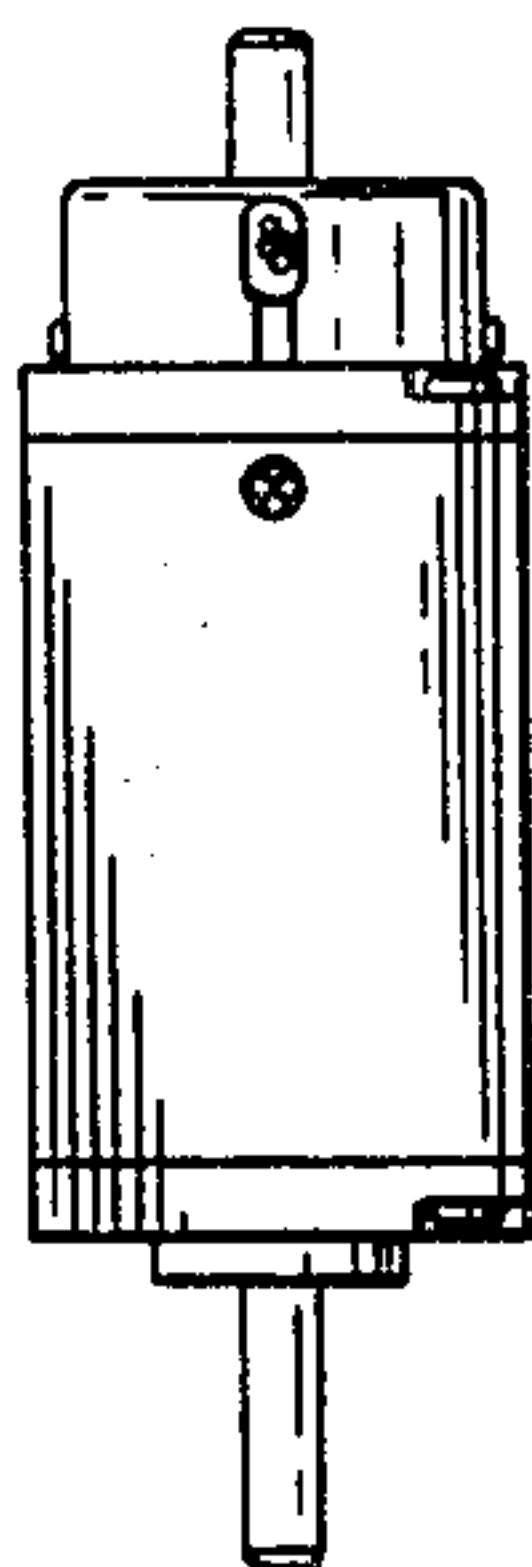
**FIG. 31**



**FIG. 34**

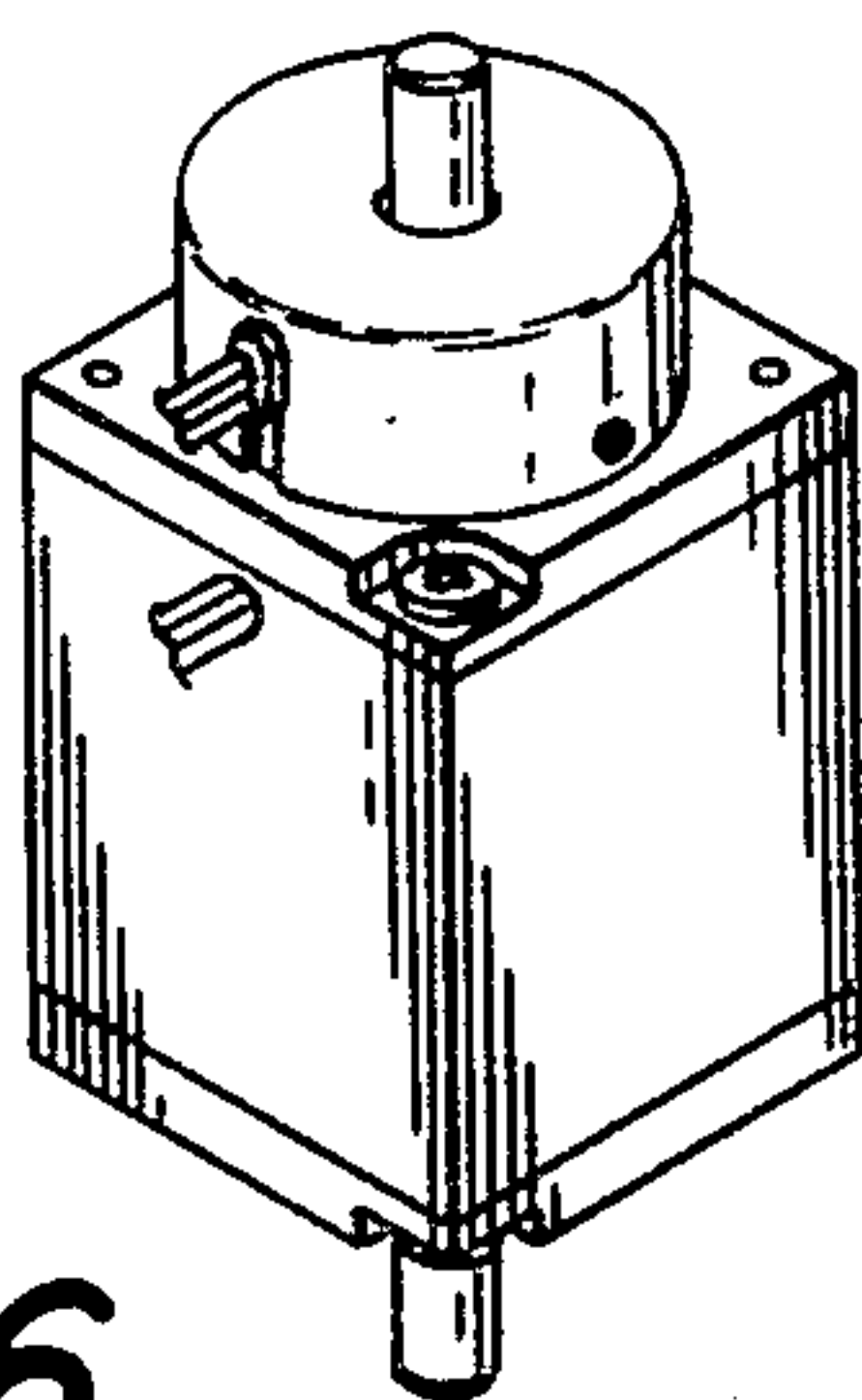
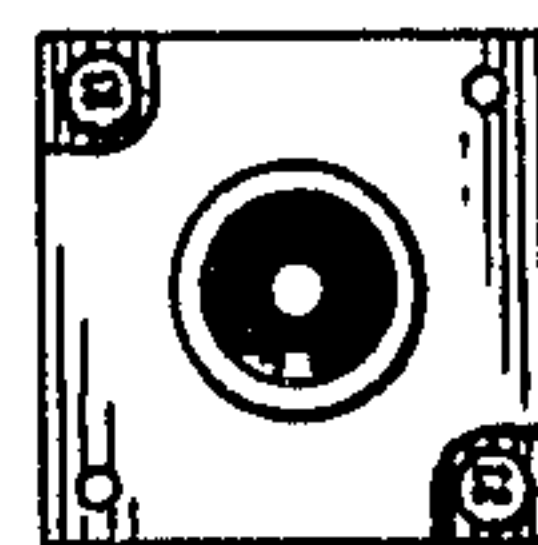


**FIG. 32**



**FIG. 33**

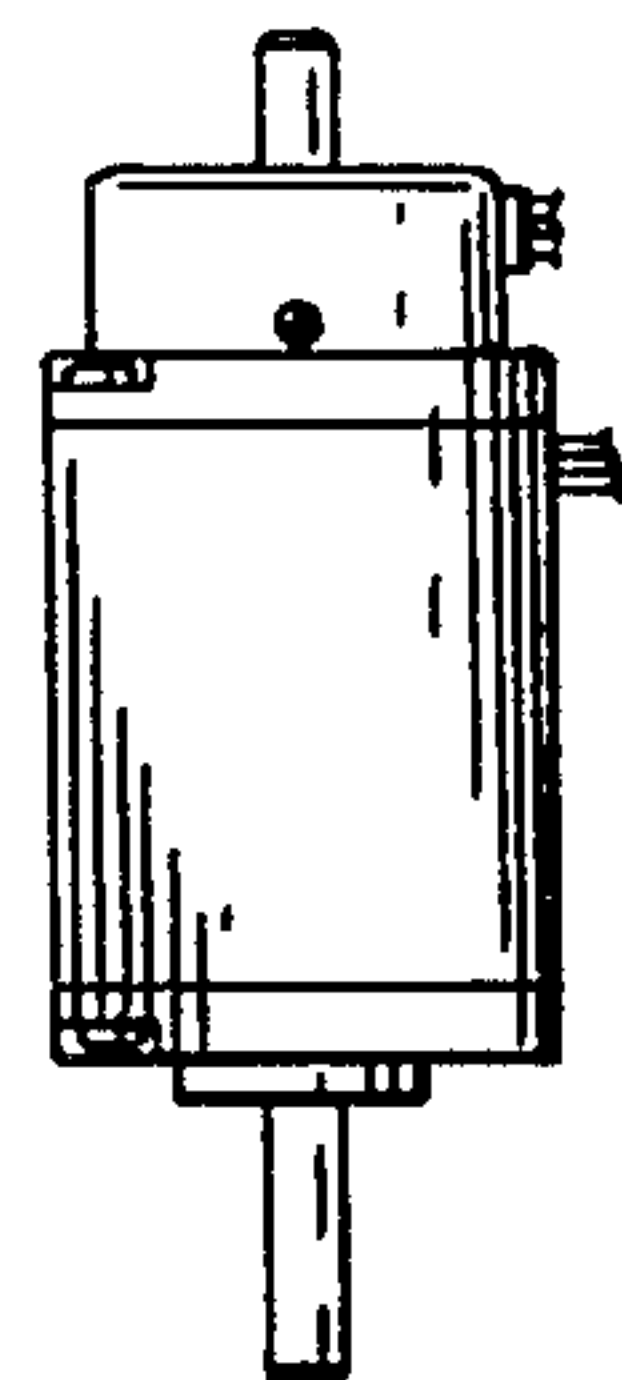
**FIG. 35**



**FIG. 36**



**FIG. 37**



**FIG. 38**