

Feb. 28, 1939.

W. ROCKE

2,148,646

WASHING MACHINE

Filed Nov. 18, 1935

3 Sheets-Sheet 1

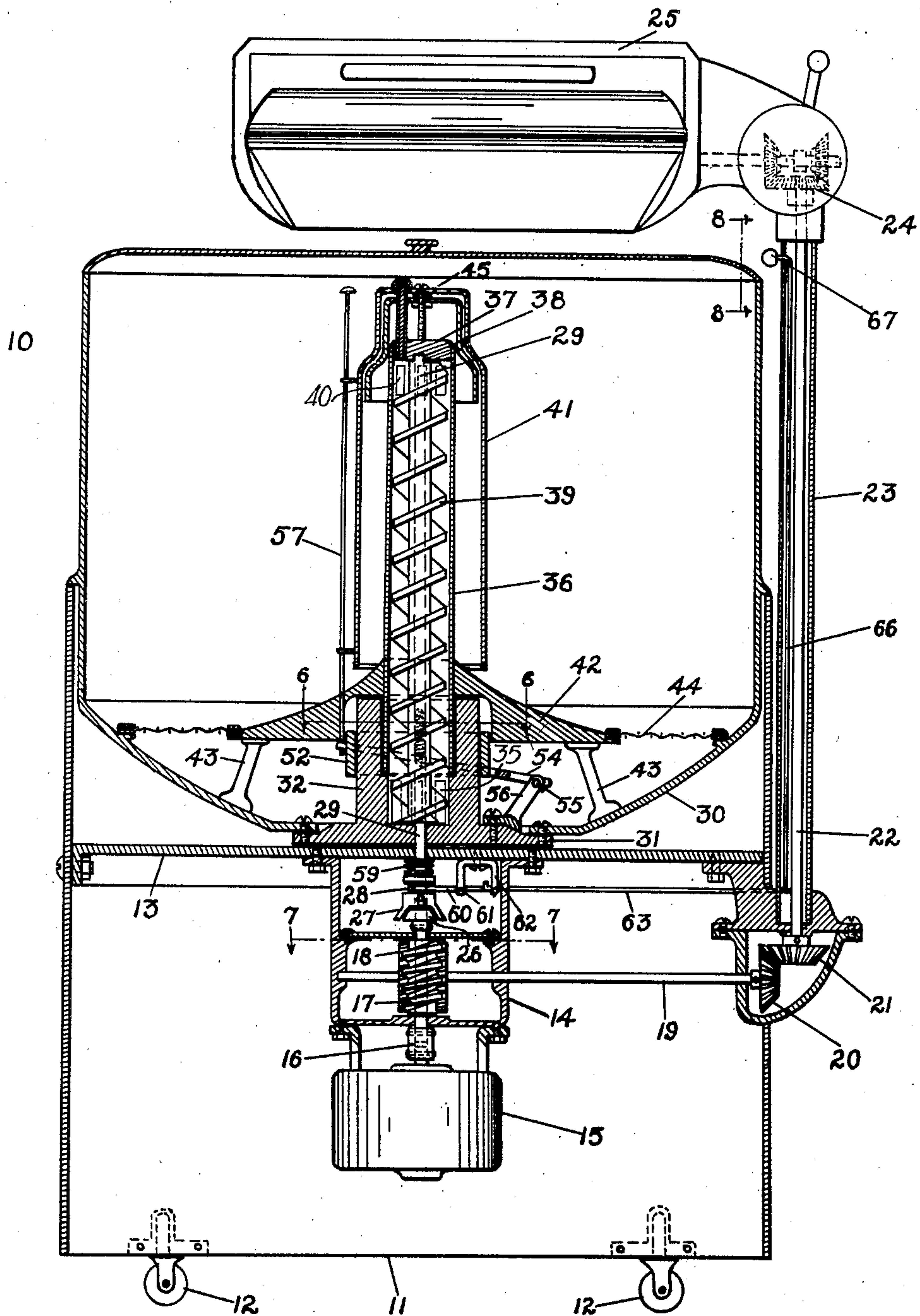


FIG - 1 -

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3 Sheets-Sheet 2

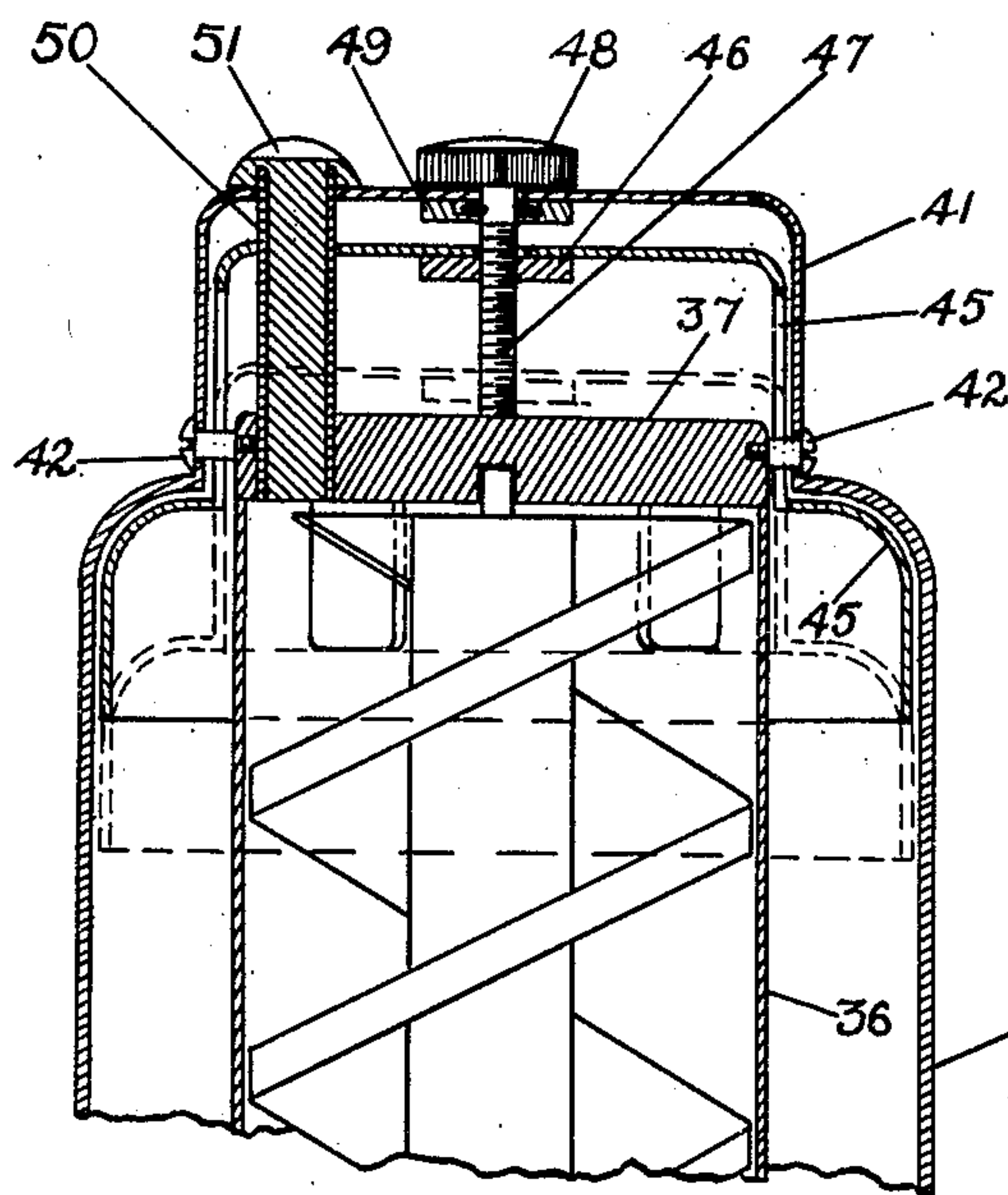


FIG. 2 -

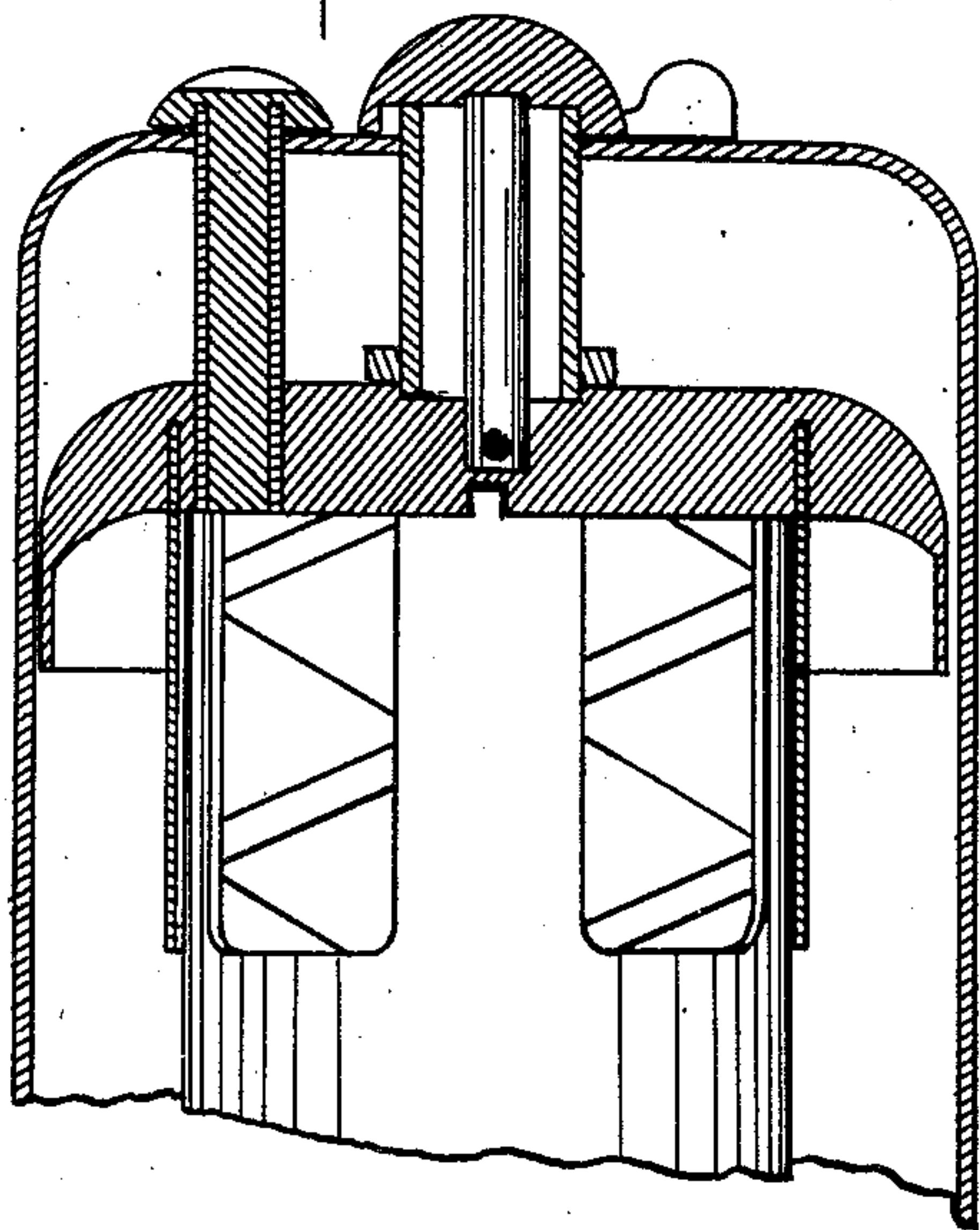


FIG. 4 -

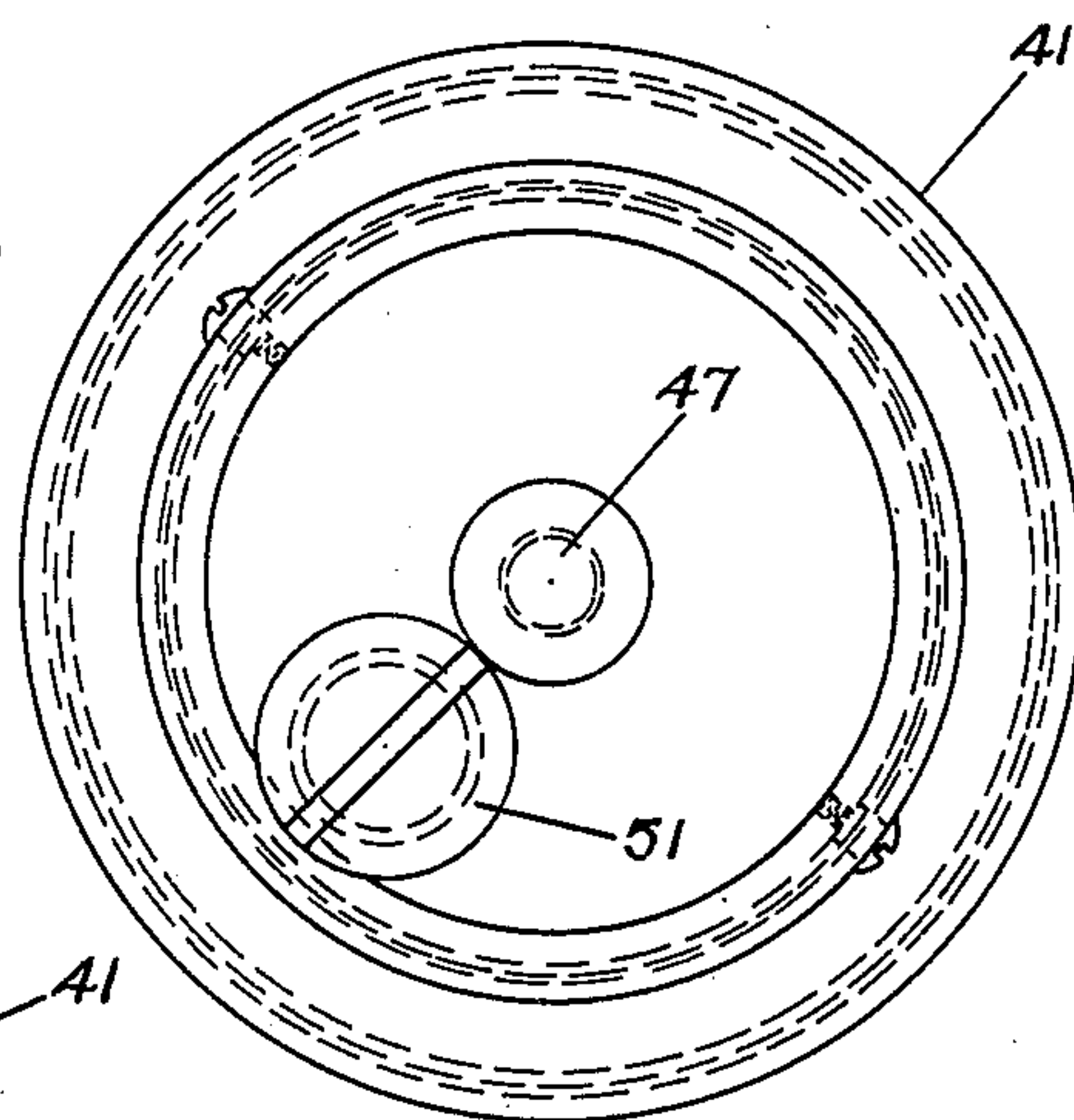


FIG. 3 -

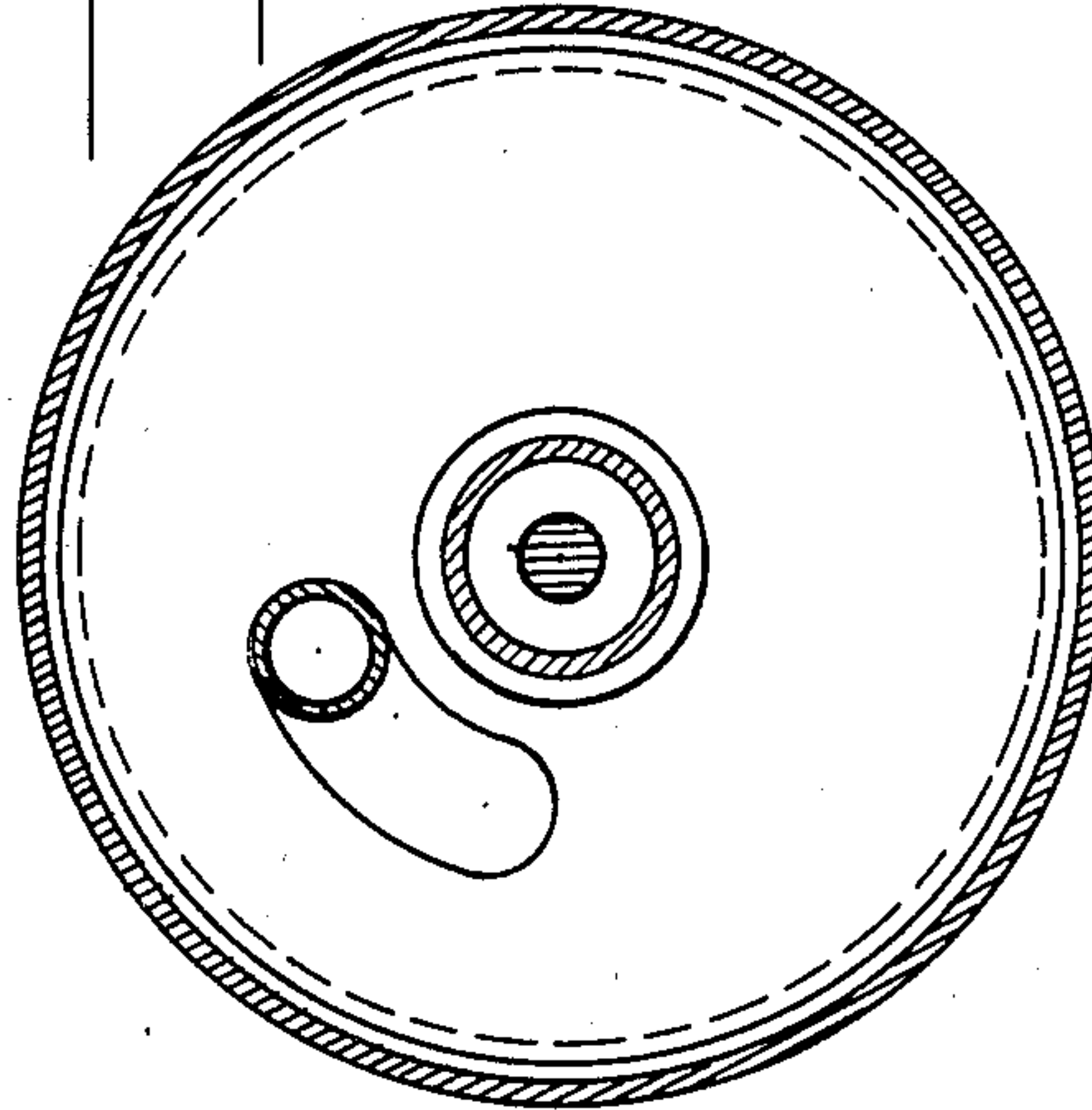


FIG. 5 -

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3 Sheets-Sheet 3

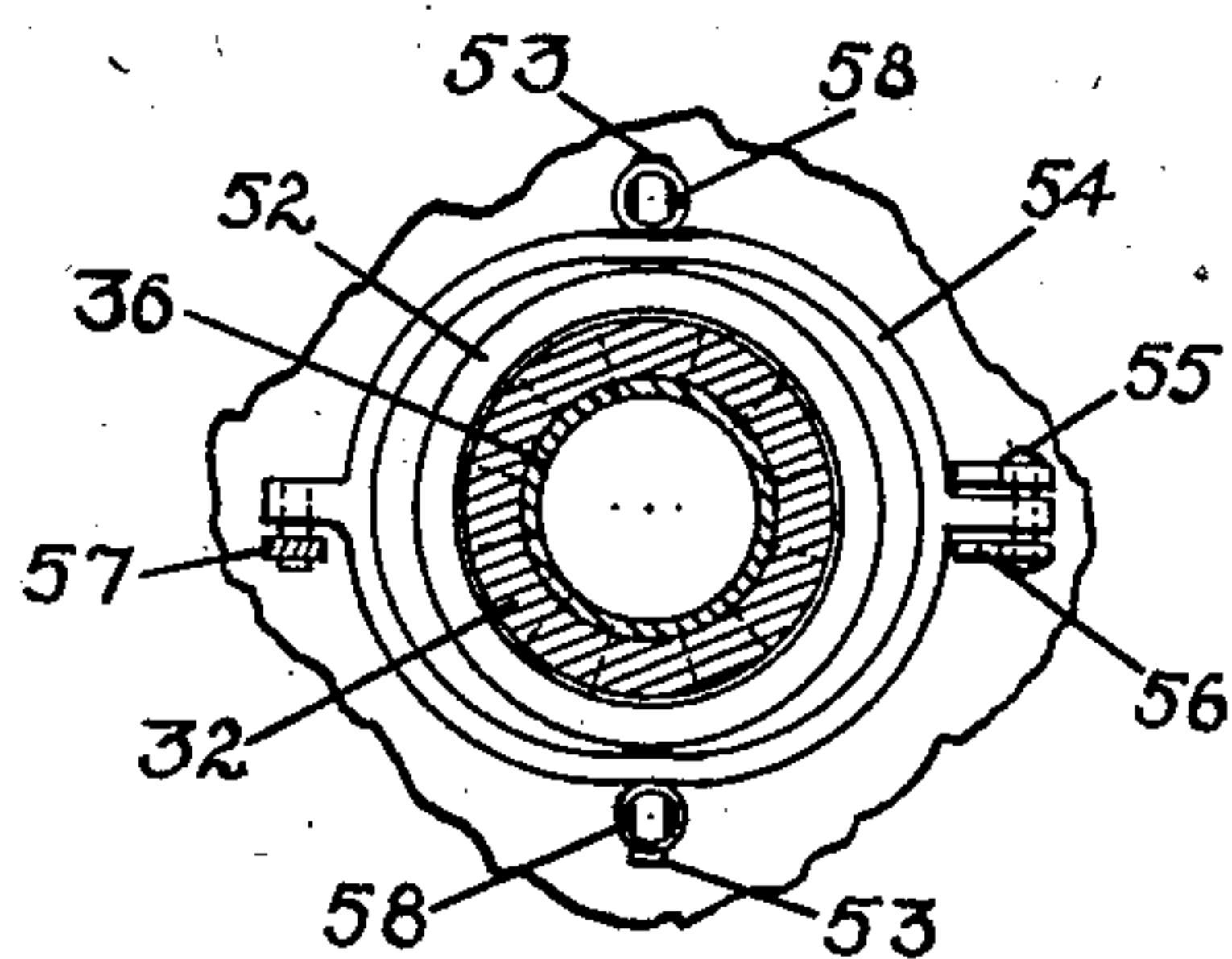


FIG - 6 -

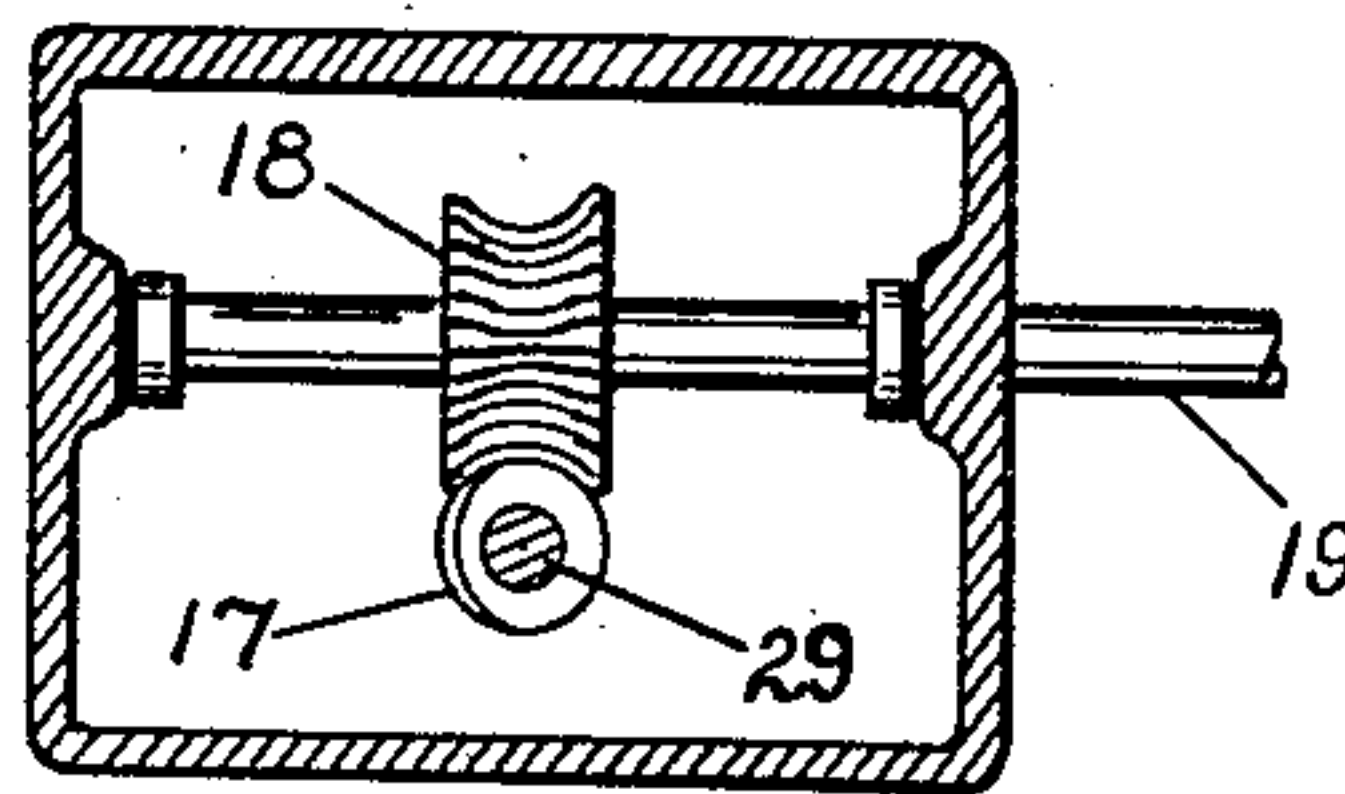


FIG - 7 -

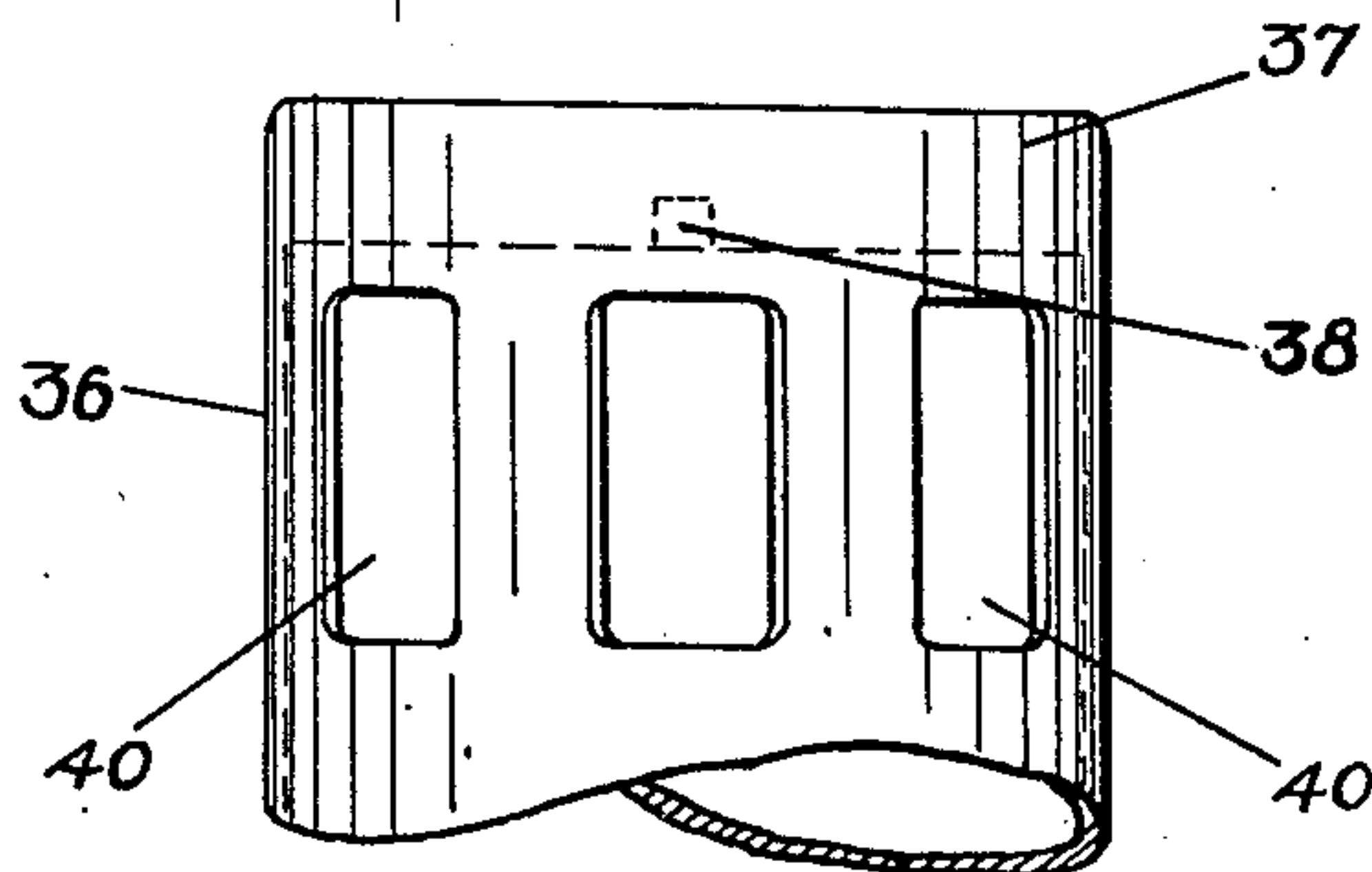
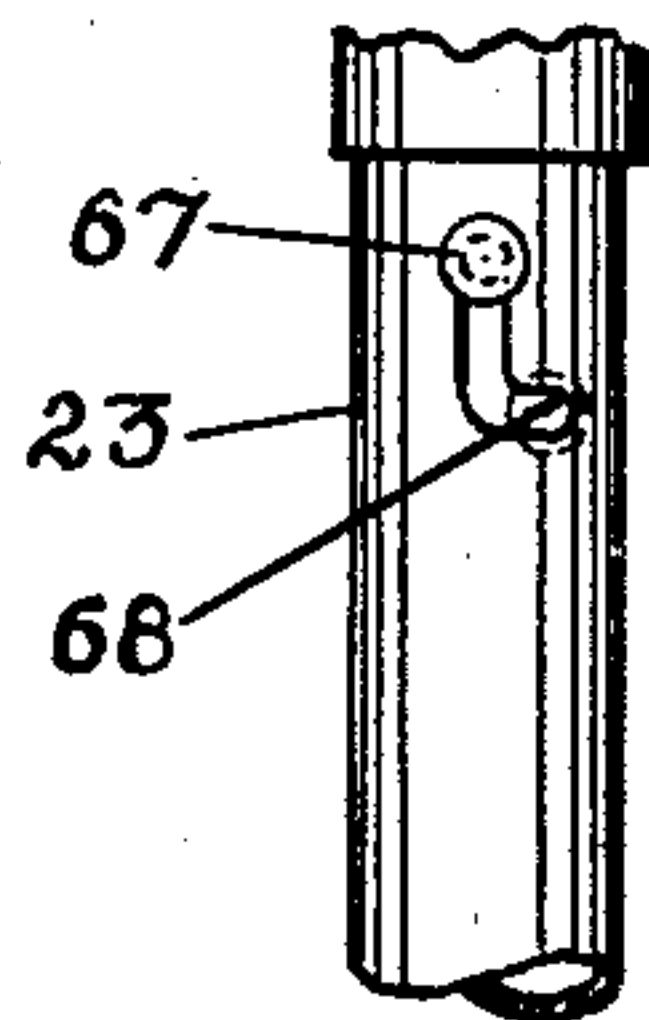


FIG - 9 -

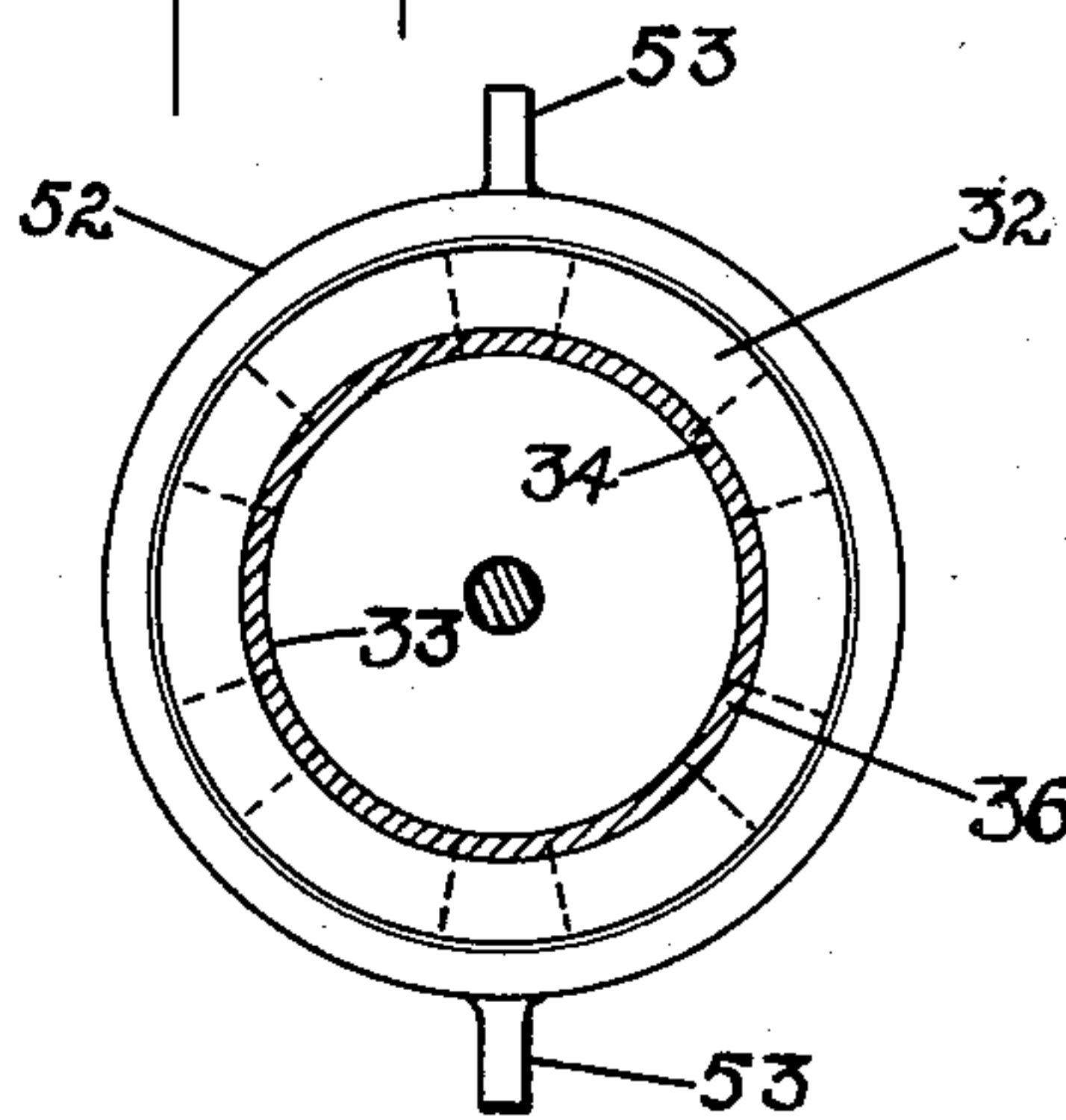
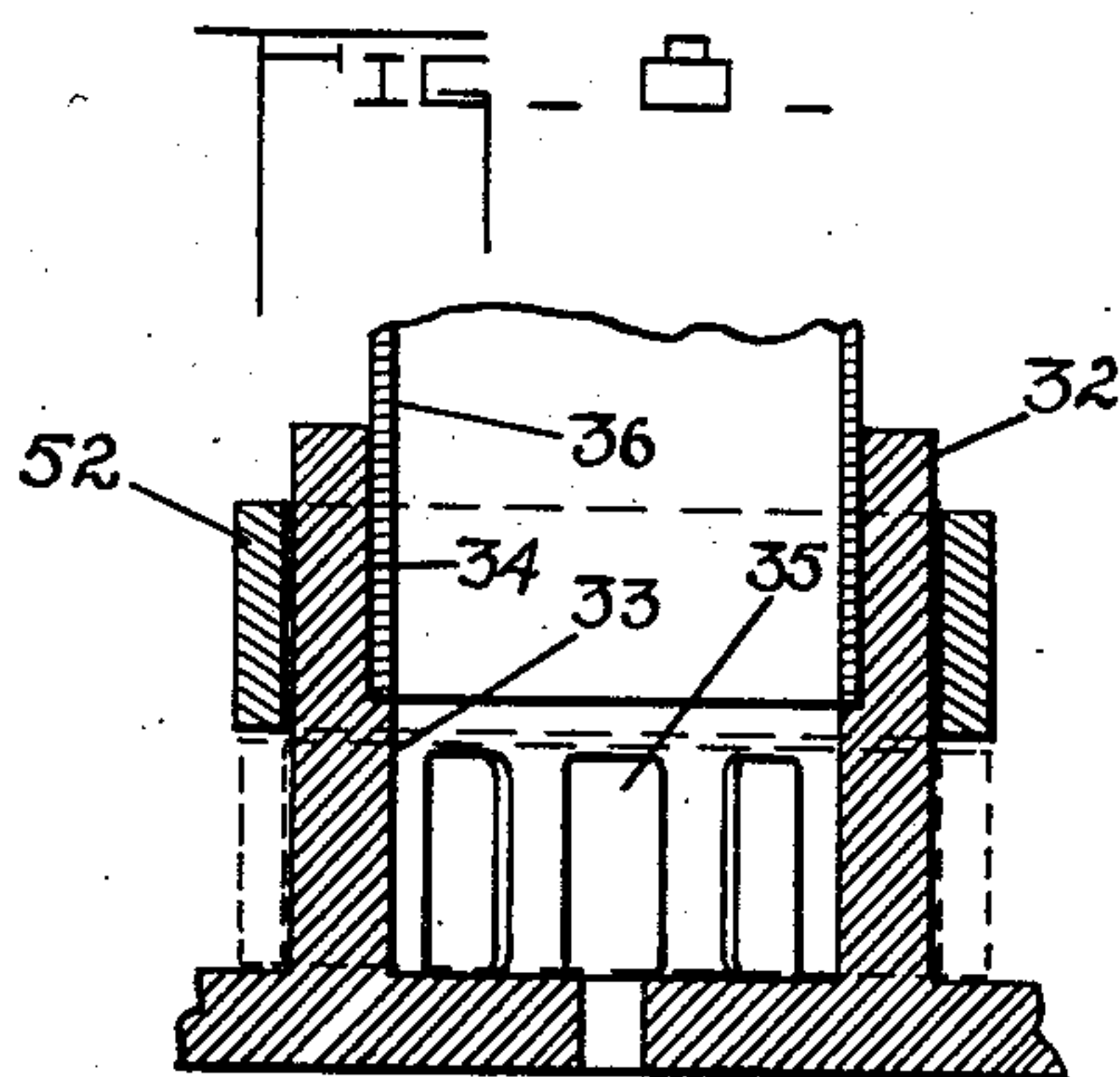


FIG - 11 -

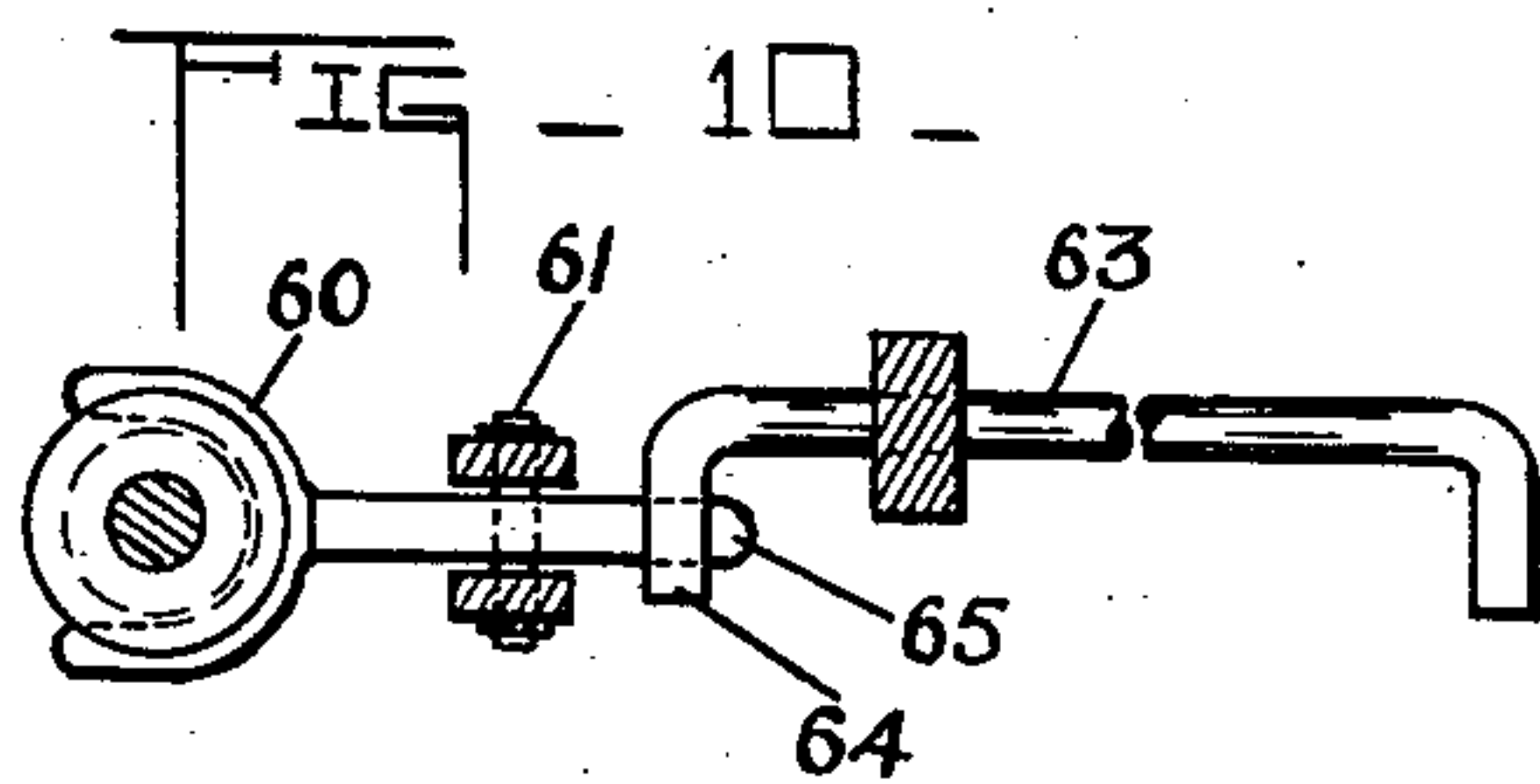


FIG - 12 -

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UNITED STATES PATENT OFFICE

2,148,646

WASHING MACHINE

William Rocke, Bloomington, Ill.

Application November 18, 1935, Serial No. 50,413

6 Claims. (Cl. 68—184)

This invention has reference to the art of washing machines, particularly to details of mechanism for operating the washing machine shown in my Patent No. 2,021,466.

5 The invention has for its principal object the provision of a mechanism for operating the washing machine as aforesaid, which includes a driving motor, driving connection between the motor and the wringer of the washing machine, a clutch
10 device for establishing driving connection between the motor and washing machine mechanism, a device for rendering the washing process ineffective under certain conditions of operation, a pump
15 mechanism adapted to circulate water in the tub, and means for adjusting the pump mechanism in such a manner that the circulating function is discontinued and the pump becomes effective to
force water out of the tub.

Other objects and advantages will appear in
20 the following description and accompanying drawings, in which:

Fig. 1 is a side elevational sectional view showing the elements of my mechanism in detailed form;

25 Fig. 2 is an elevational sectional view showing details of mechanism to be described;

Fig. 3 is a plan view showing the mechanism illustrated in Fig. 2;

30 Fig. 4 is an enlarged elevational sectional view showing a modification of the arrangement shown in Fig. 2;

Fig. 5 is a plan view of the parts shown in Fig. 4;

35 Fig. 6 is a sectional view taken on line 6—6 in Fig. 1;

Fig. 7 is a detailed view taken on line 7—7 in Fig. 1;

Fig. 8 is a fragmental detail view taken approximately from line 8—8 in Fig. 1;

40 Fig. 9 is a fragmental view showing detail of structure to be described;

Figs. 10 and 11 are sectional, elevational, and plan views, respectively, showing details of elements to be described; and,

45 Fig. 12 is a detail plan view showing arrangement of operating parts to be referred to.

In carrying out my invention I provide a washing machine tub 10 supported upon suitable leg or apron structure 11, the whole being supported
50 in a portable manner by means of casters 12.

Attached to the apron or leg portion 11 is a transverse frame structure 13, depending from which is a frame structure 14 which in turn supports a driving motor 15. The shaft of the
55 driving motor is coupled with a vertically dis-

posed shaft 16, and shaft 16 carries a worm 17 which meshes with a worm gear 18 attached to a horizontal shaft 19, which latter extends outwardly to a point adjacent the outer periphery of the tub, and carries a gear 20 which meshes with a gear 21 attached to a vertical shaft 22, which latter shaft extends upwardly within a housing member 23 and the upper end of the shaft carries a gear 24 which furnishes a driving connection with the wringer devices

10 Since the wringer devices in themselves are not a part of this invention and are very well known to those familiar with the art, they will not be described herein. The mechanism and arrangement just described obviously provides
15 means to drive the wringer 25 from the motor 15.

On the upper end of shaft 16 there is secured a friction clutch element 26 and a co-operative clutch element 27 having an annular groove 28 slidably supported on a vertical shaft 29 which
20 extends upwardly through the bottom of the tub to a point above the normal water line in a tub.

It will be noted that the bottom of the tub, designated 30, is dished so as to form a sump portion and that it has an opening in the center
25 portion in which is secured a structural member 31, the edges of the tub bottom and member 31 being securely joined so as to form a water tight joint.

Figs. 1, 10 and 11 illustrate that member 31
30 comprises an upright body portion 32 surrounded by a lower flange portion which is secured to the bottom of the tub as aforesaid. The upright portion 32 has a smooth round exterior finish and is bored out in the central portion to provide a
35 lower contracted portion 33 and an enlarged upper portion 34. In the walls of the lower portion is a series of openings 35 by means of which the open area within member 31 communicates with the area of the sump of the tub.

40 Secured in the upper portion 34 of member 31 is a tubular member 36 which extends above the water line of the tub and is fitted, as shown in detail in Fig. 9, with a cap member 37 which has a recess 38 on its underside with the upper end
45 of shaft 29 journaled in the recess.

The arrangement described obviously provides a support for the upper end of shaft 29.

Just below the cap 37 is a series of openings 40. Secured to shaft 29 and disposed within the
50 tubular member 36 is an auger member 39 which, by means of the clutch 26—27, may be connected or disconnected from the shaft of the driving motor 15 whereby water in the tub, occupying the sump area, may flow through openings 35 and be

forced upwardly through tube 36 by auger 39 and discharged at the top of the tube through openings 40.

Surrounding tube 36 is a tubular member 41 which has a contracted diameter near its upper end. Through the walls of this contracted portion there are shouldered screws 42 which are secured in the cap member 37 as clearly shown in Fig. 2. Member 41 is so dimensioned with respect to cap 37 that when attached by means of screws 42 there is a space left between member 41 and the cap. Member 41 is thus made stationary with respect to tubular member 36 and extends downwardly to a point adjacent to but separated from the outer and downwardly projecting surface of a baffle member 42, which is supported from the bottom wall of the tub by means of standards 43. A screen or perforate member 44 occupies the space between the tub wall and baffle member 42 whereby water in the tub flows into the sump. The function of baffle 42 and screen 44, in co-operation with the lower end of member 41, are completely disclosed and described in my patent above noted, and further description herein is thought unnecessary.

Disposed between the outer periphery of cap 37 and tube 36 and the outer wall of the contracted portion of member 41 is a cap member 45 having a contour similar to the upper part of member 41 and the inner surface of the upper contracted portion of member 45 is slidably, but closely fitted to the exterior surface of member 36. Slots are provided in the wall of member 45 to permit the latter to move up and down over screws 42, the lower position being shown in dotted lines in Fig. 2. At the center of the top wall of member 45 is a threaded ring 46 in which is threadedly engaged the shank of a screw 47, which is rotatably retained in the top wall of member 41 by means of a pin 48 confined by a keeper member 49. It will be obvious that manual rotation of the screw 47 will bring about a vertical movement of member 45 as described.

Secured in cap 37 and extending upwardly therefrom through the top walls of members 45 and 41 is a tube 50 which extends outwardly from the top of member 41 a small distance and has a threaded portion at its outer end suitable to receive a hose connection. The tube is normally covered by a screw cap 51.

It will be apparent that with the pump in operation water is forced upwardly out of the sump of the tub and normally out through the openings 40 to be discharged below the lower edge of member 41 against baffle 42. It will also be apparent that with the cap 51 removed from tube 50 and member 45 placed in lowered position by means of screw 47 the walls of member 45 will be placed so as to cover the openings 40, thus preventing the water from discharging from tube 36 and forcing it upwardly through tube 50 and a hose connected thereto to discharge. Continuation of this operation will obviously eventually force all of the water lying in the sump of the tub upwardly through tube 36 and out through tube 50, thus providing a convenient and easy means of emptying the tub. The intake openings 35 in portion 32 of member 31 have already been noted. Attention is directed to a band member 52 which normally surrounds the upper portion of member 31 and is slidably, though snugly, fitted thereon in such a manner that it may be slid downwardly as shown in dotted lines in Fig. 10 to cover openings 35, whereby, with the pump functioning in the regular manner and member

45 in lowered position, water from the sump portion of the tub is prevented from entering tube 36. By means of this band device, when it is desired to temporarily shut off the water action without operating clutch 27, the band may be lowered as described to render the pumping mechanism incapable of forcing water into the tub over the baffle plate.

As a convenient means of operating the band up and down on member 31 I provide a mechanism outlined in Fig. 6. The band 52 is provided with trunnion studs 53 which are engaged by opposite sides of a yoke member 54, one end of which is pivotally supported at 55 upon a bracket 56 secured in the bottom of the tub, as shown.

To the opposite end of the yoke member is attached a vertically disposed rod 57 which extends upwardly inside the tub to a point near the top of member 41 as clearly shown in Fig. 1. To each of trunnions 53 is attached a coil spring 58, the upper ends of which are anchored to the outer wall of member 31. The springs obviously urge yoke 54 to hold band 52 in elevated position, from which position the band may be moved downwardly to cover openings 35 by means of pressure on the upper end of rod 57.

Reference is now made to the clutch 27. As a means of operating this clutch I provide a mechanism outlined in Fig. 12. The annular groove 28 in clutch 27 has already been noted. The clutch member is slidably keyed to shaft 29 and a spring 59 reacts between member 13 to normally hold the clutch in driving engagement. To move the clutch upwardly, out of driving engagement, I provide a mechanism outlined in Fig. 12, which comprises a yoke member 60 having projections lying in the groove 28 and pivotally supported at 61 in a bracket member 62. Also supported in bracket 62 is a rod member 63 having a bent portion 64 engaging the free end 65 of the yoke member. Rod 63 is journaled in a portion of bracket 62 and extends outwardly to a point adjacent the wringer drive shaft 22 with its outer end supported in the housing structure. The outer end of rod 63 is bent so as to form a crank on the end thereof and to the free end of this crank is attached a rod 66 which extends upwardly within the tube 23 and has a head portion 67 disposed so as to be easily reached by an operator. The portion 63 passes through a slot in the wall of the tubular member 23. The slot has a vertical portion as shown in Fig. 8 and the lower end of the slot extends to one side so as to form a ledge 68.

It will be apparent that member 67 may be forced downwardly so as to rotate rod 63 in such a manner as to elevate the clutch 27 at which position the member 67 may be moved to one side to engage it under the ledge 68, thus locking it to hold the clutch in open position. To again place the clutch in working position it is but necessary to disengage member 67 from shoulder 68 whereupon spring 59 will force the clutch into driving engagement.

I claim:

1. In a washing machine, a tub, means defining a sump in the bottom of the tub, a water tube extending substantially vertically and centrally of the tub from the sump to a place above the normal water level in the tub, said tube having an opening at its bottom communicating with said sump and an opening at its top normally communicating with said tub above said sump, a relatively stationary baffle about said tube for

directing water from said top opening into the tub, a duct connected with said tube through said baffle for the discharge of water from the tub, a manually operable valve at the upper end of said tube controlling said top opening for diverting water flow from the tub to said discharge duct, means for forcing water up said tube, and a manually operable valve controlling the lower opening into said tube, said several valves being operable independently of each other.

2. In a washing machine, a tub, means defining a sump in the bottom of the tub, a tube extending substantially vertically and centrally of the tub from the sump to a place above the normal water level in the tub, said tube having an opening at its bottom communicating with said sump and an opening at its top communicating with the interior of the tube above the sump, a normally closed discharge duct connected with said tube, independently operable manually controlled valves for closing the top and bottom openings in said tube, means for drawing water into said tube from said sump through said bottom opening and forcing the same to the top of said tube, a baffle member enclosing the upper end of said tube and adapted to direct water discharged from the top opening into the lower portion of the tub, said discharge tube extending through the top of said baffle member, a top valve operating member projecting through the top of said baffle member, said top valve being telescopically disposed within said baffle member and having telescopic connection with said tube.

3. In a washing machine, a tub, means defining a sump in the bottom of the tub, a tube extending substantially vertically and centrally of the tub from the sump to a place above the normal water level in the tub, said tube having an opening at its bottom communicating with said sump and an opening at its top communicating with the interior of the tub above the sump, a normally closed discharge duct connected with said tube, means for closing the top opening in said tube, means for drawing water into said tube from said sump through said bottom opening and forcing the same to the top of said tube, and means for closing the bottom opening in the tube.

4. In a washing machine, a tub, means defining a sump in the bottom of the tub, a water tube extending substantially vertically and centrally of the tub from the sump to a place above the normal water level in the tub, said tube having an opening at its bottom communicating with said sump and an opening at its top normally communicating with said tub above said sump, a relatively stationary baffle about said tube for directing water from said top opening into the tub, a duct connected with said tube through said baffle for the discharge of water from the tub, a manually operable valve at the upper end of said tube controlling said top opening for diverting water flow from the tub to said discharge duct, means for forcing water up said tube, and a manually operable valve controlling the lower opening into said tube.

5. In a washing machine, a tub, means defining a sump in the bottom of the tub, a water tube extending substantially vertically and centrally of the tub from the sump to a place above the normal water level in the tub, said tube having an opening at its bottom communicating with said sump and an opening at its top normally communicating with said tub above said sump, a relatively stationary baffle about said tube for directing water from said top opening into the tub, a duct connected with said tube through said baffle for the discharge of water from the tub, means at the upper end of said tube and movable over said top opening for diverting water flow from the tub to said discharge duct, means for forcing water up said tube, and means for closing the bottom opening in said tube.

6. In a washing machine, a tub, a sump in the bottom of the tub, a perforated plate dividing the sump and main tub interior, a water impeller in the bottom of the tub in communication with the sump, means including water tubing surrounding the impeller and extending to a point above the perforated plate to direct water discharged by the impeller across the perforated plate, and a manually-operated valve mechanism located between the impeller and the sump for controlling the flow of water from the sump to the impeller.

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