

Feb. 24, 1953

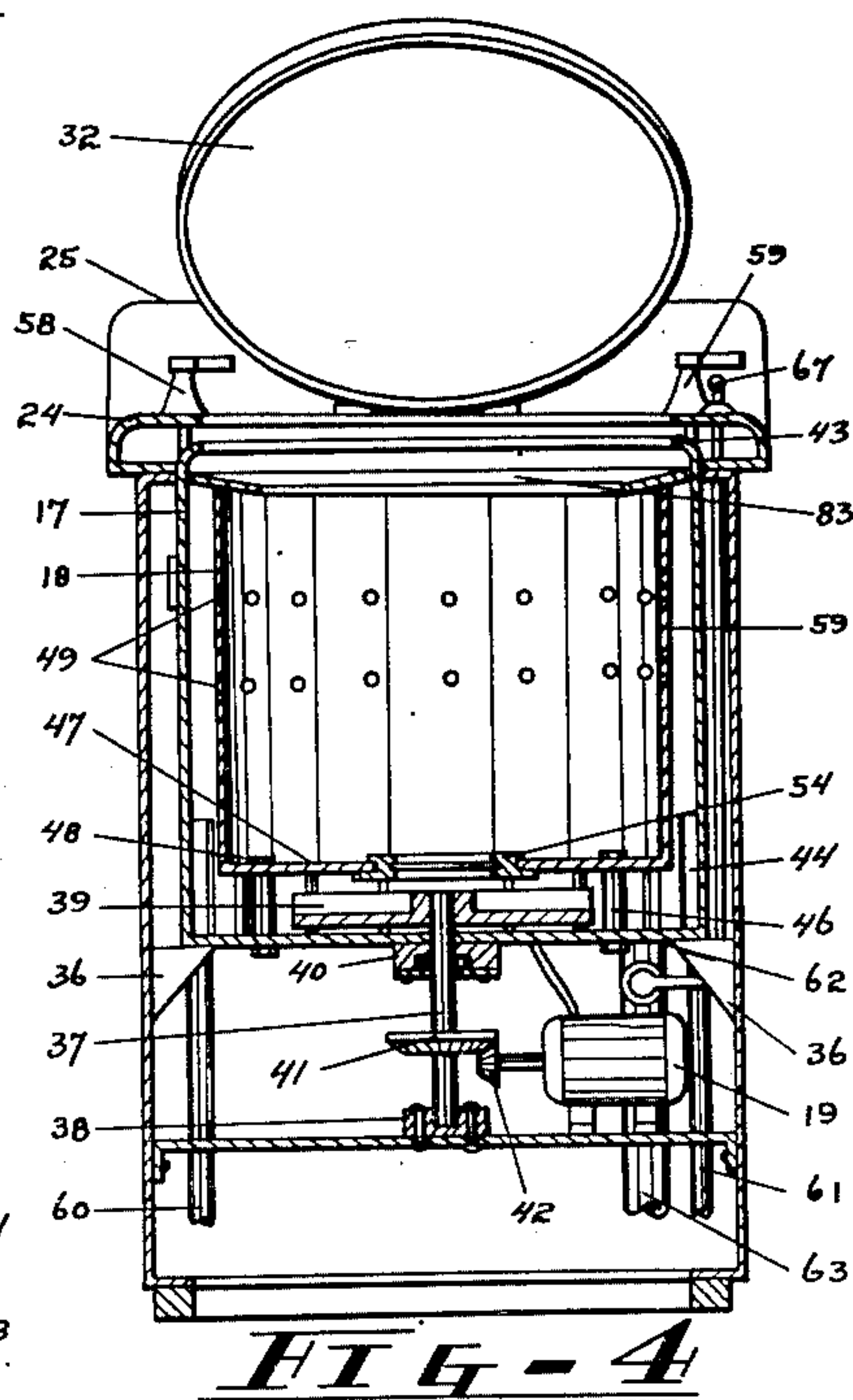
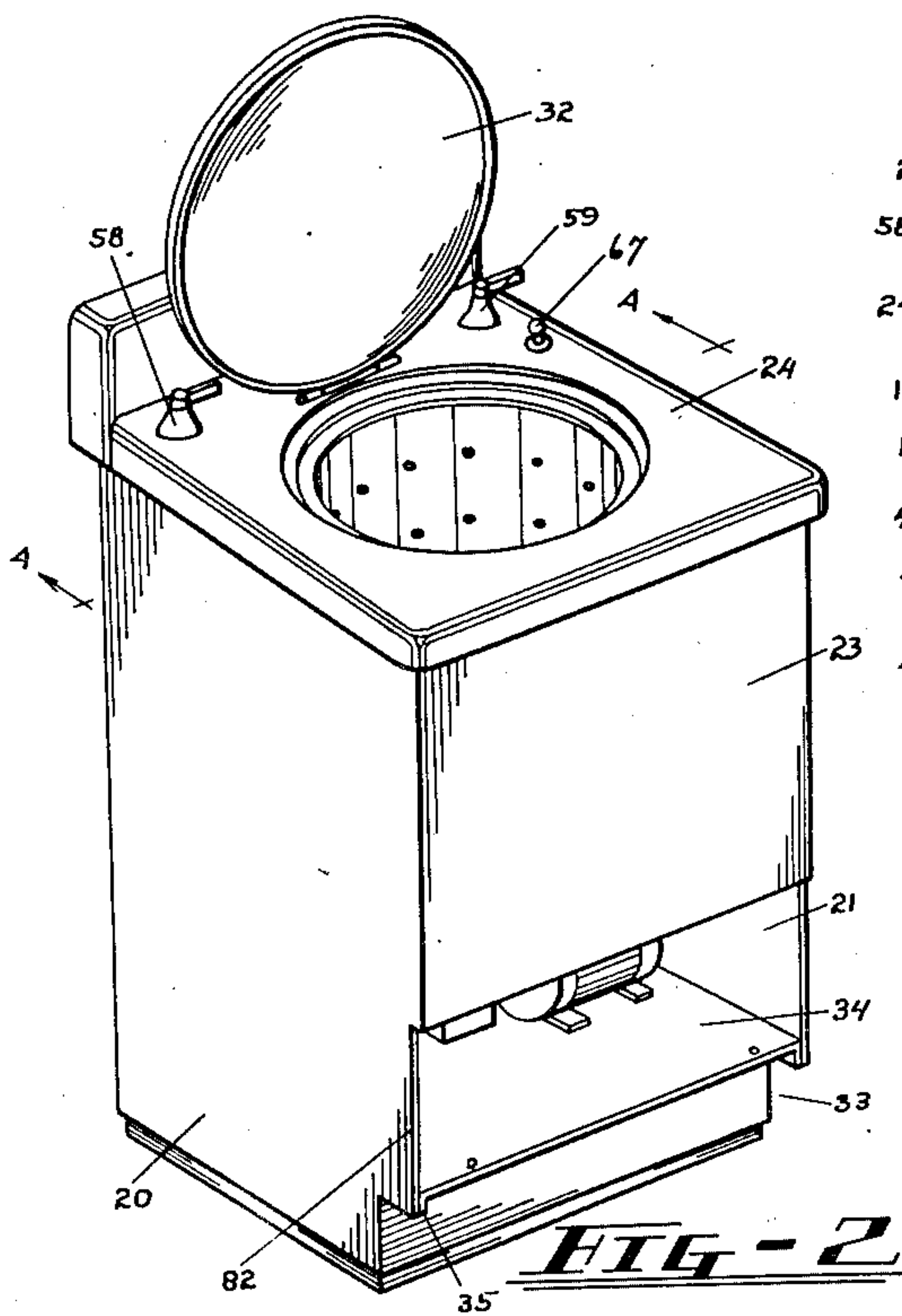
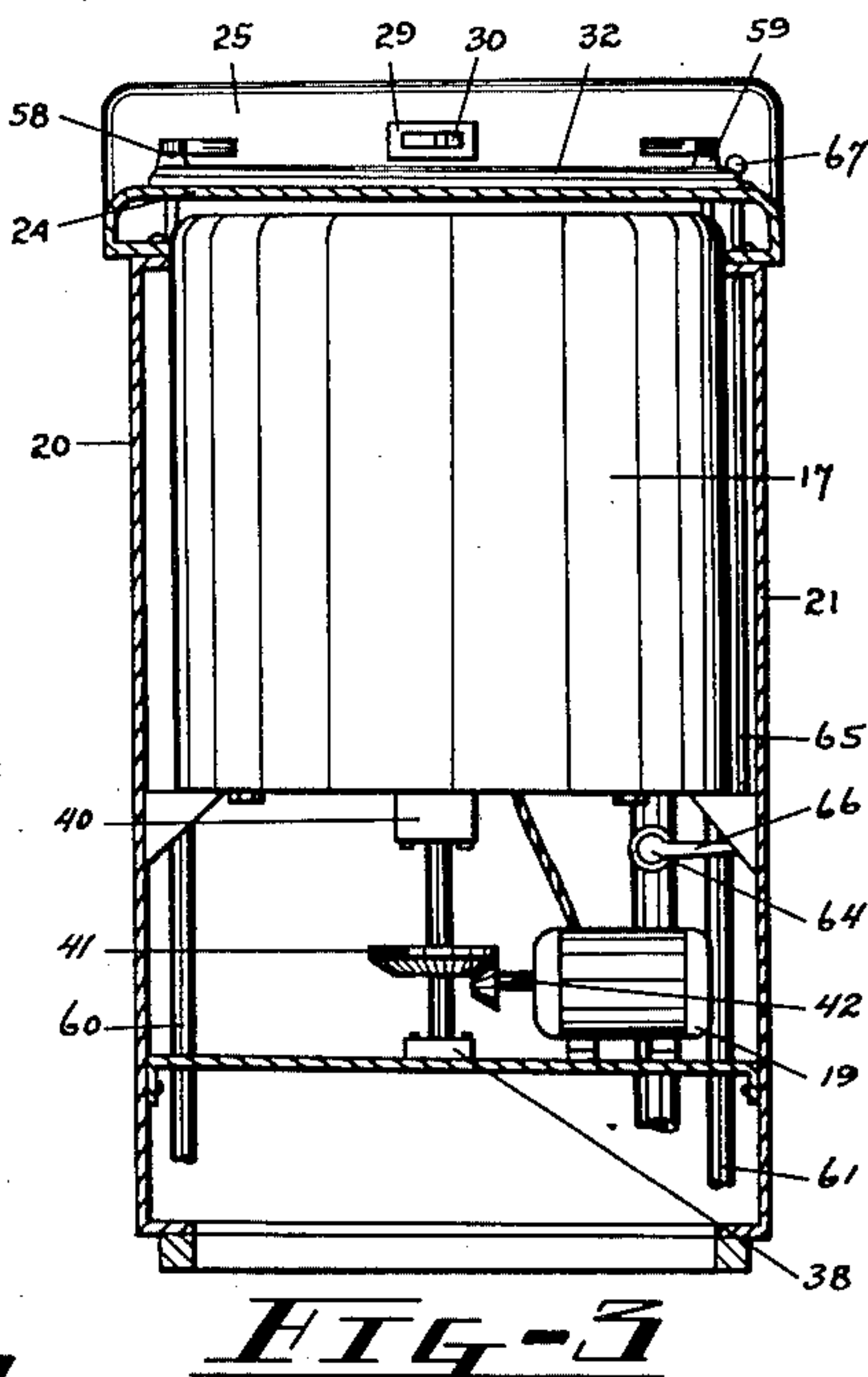
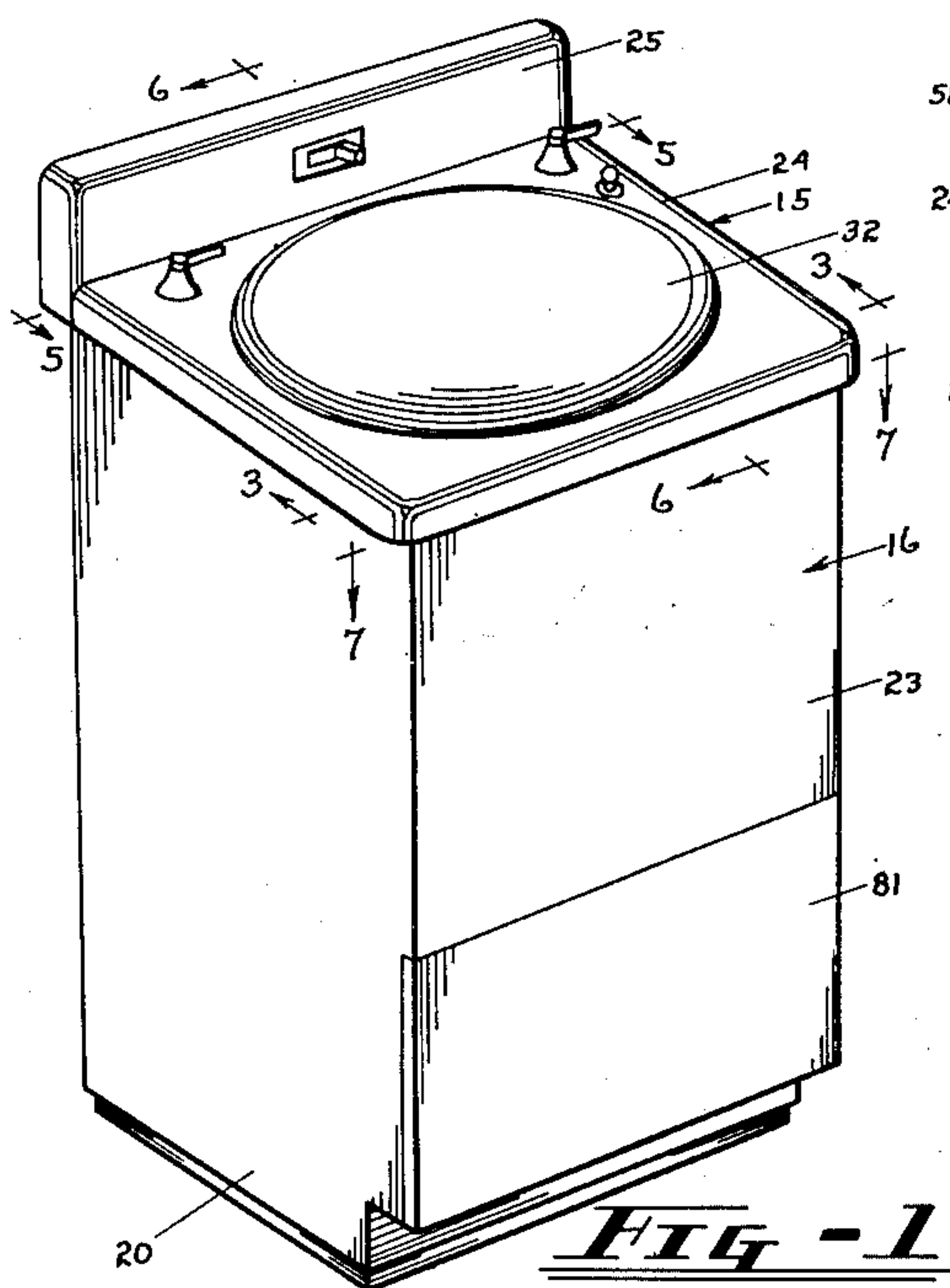
L. A. DAVIS

2,629,392

DISHWASHER WITH A REMOVABLE AND SPLIT WATER DEFLECTOR

Filed Oct. 18, 1948

2 SHEETS--SHEET 1



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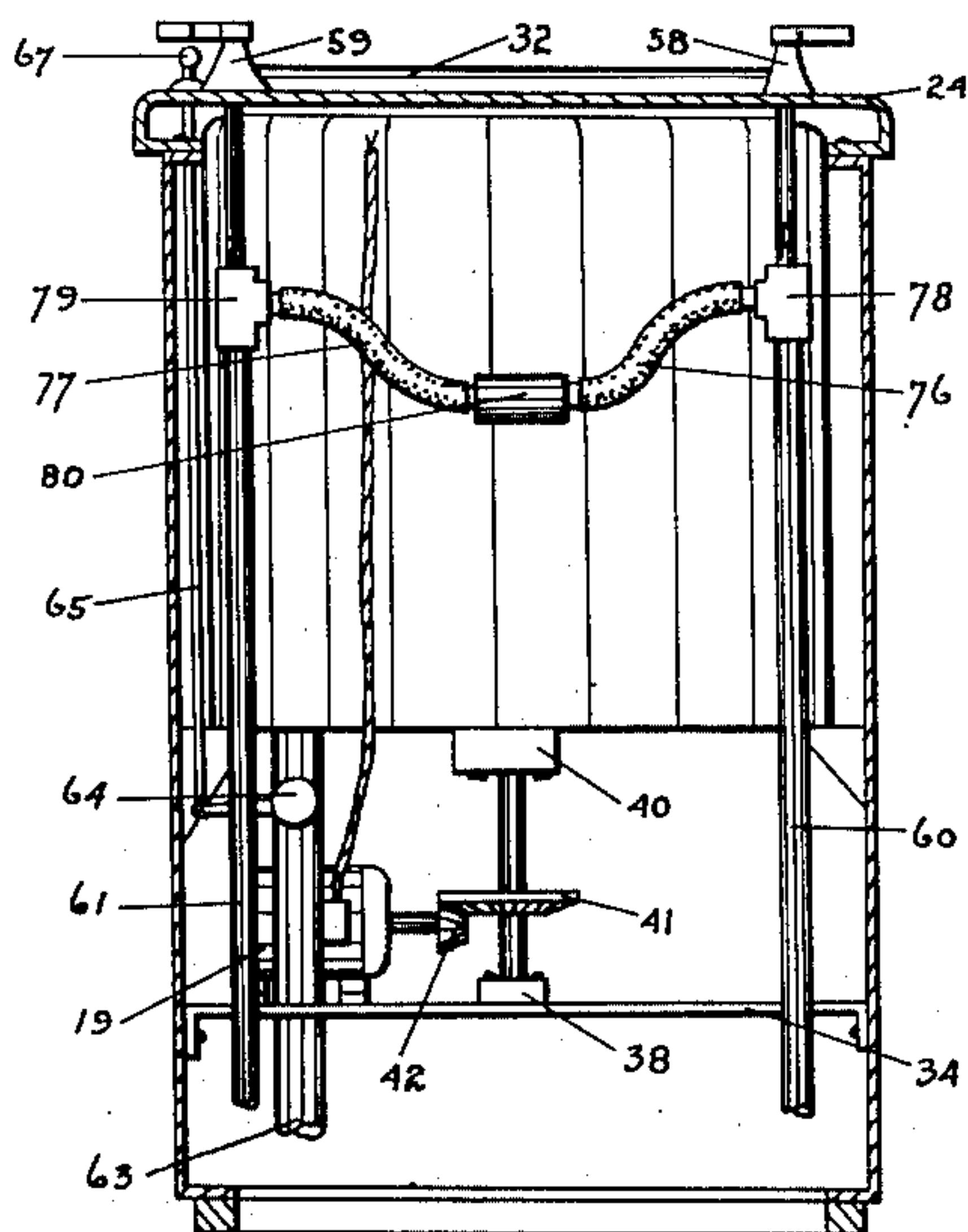
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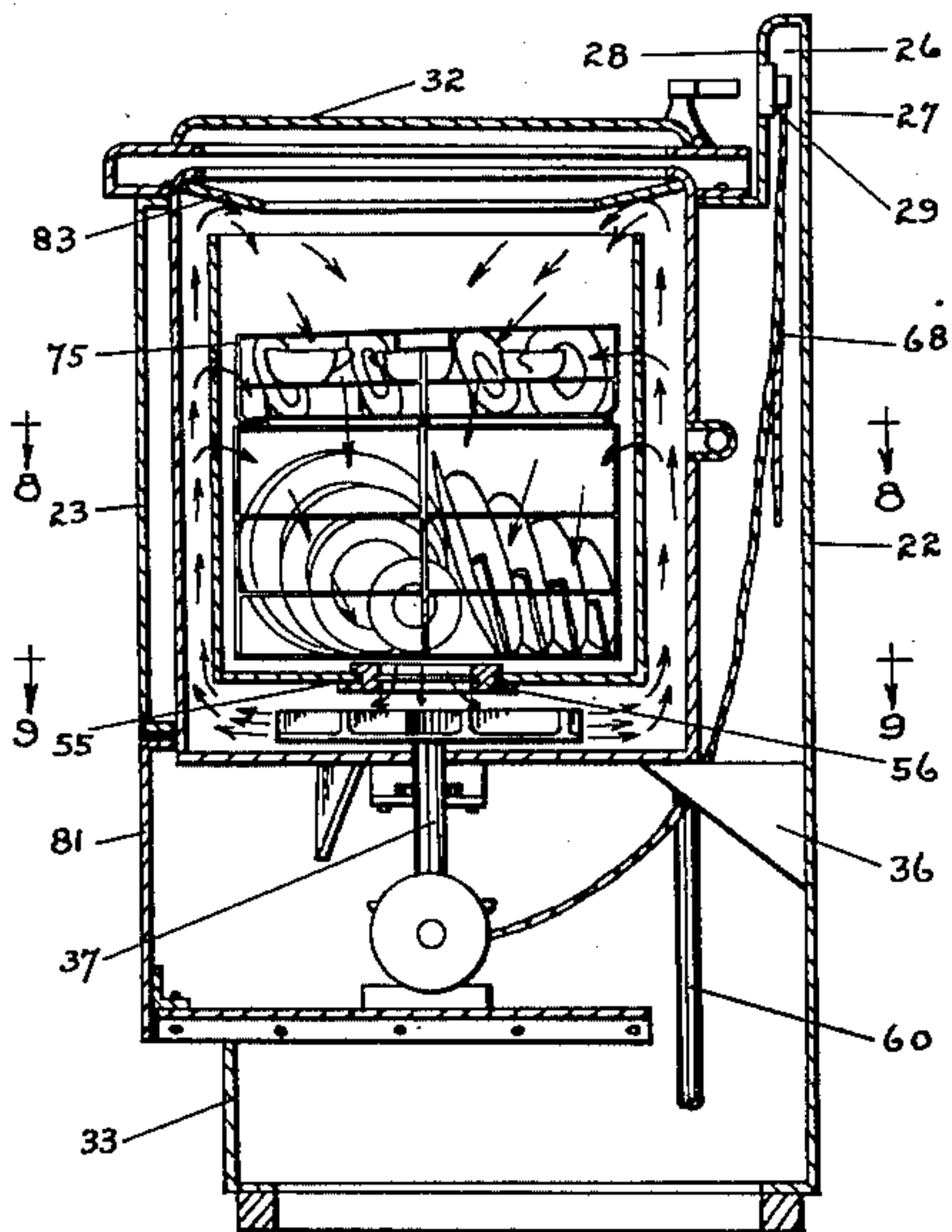
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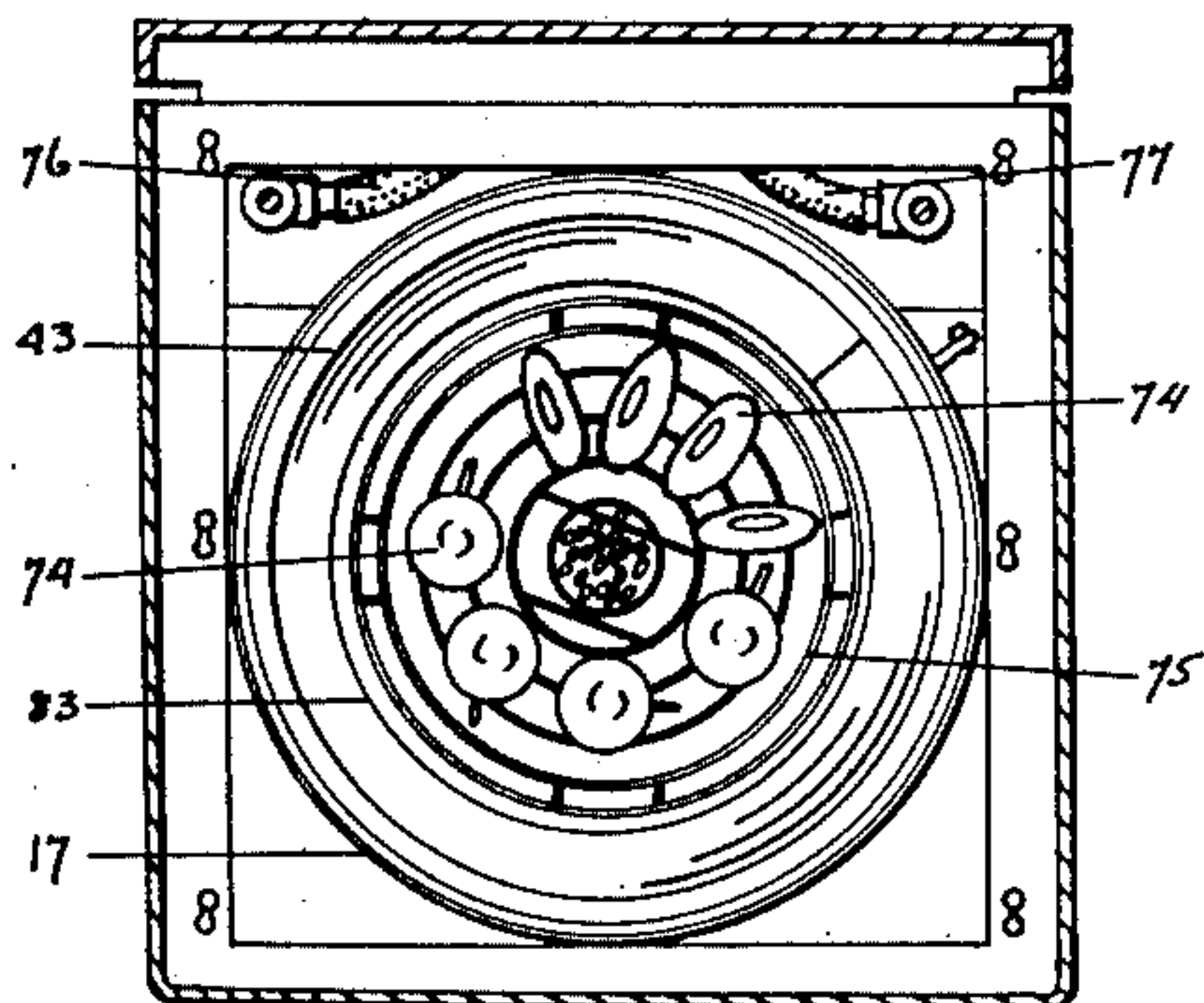
2 SHEETS—SHEET 2



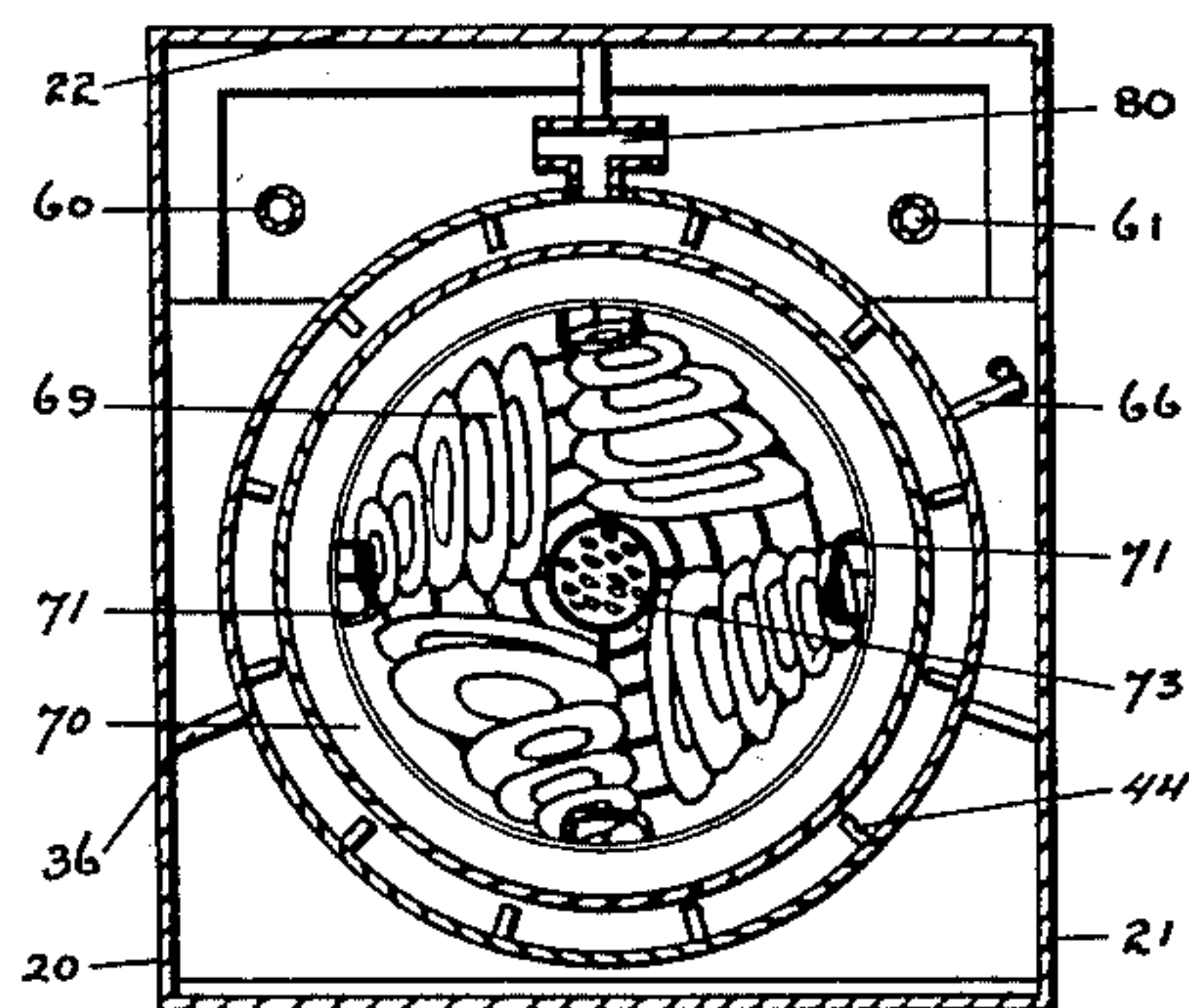
**FIG - 5**



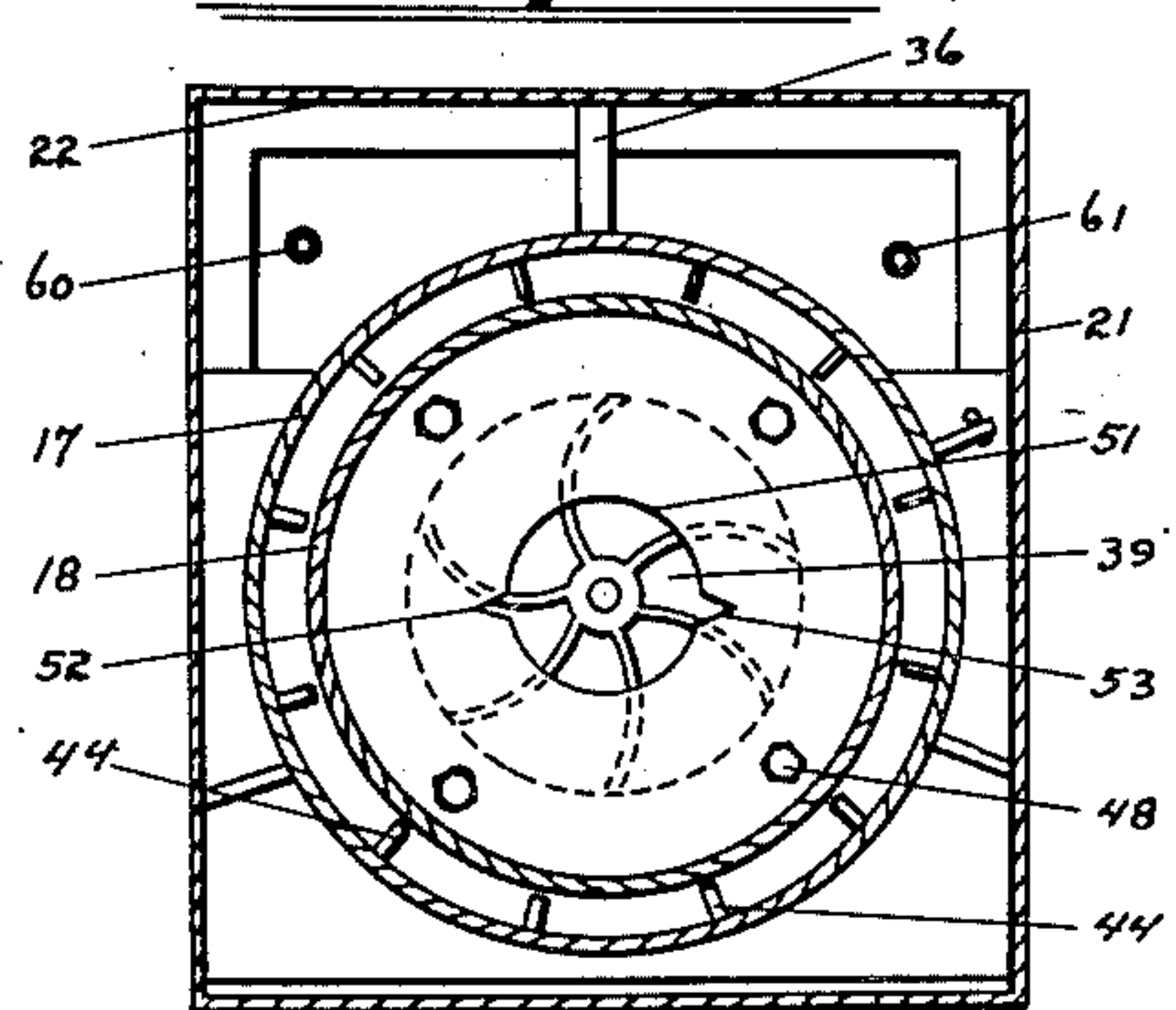
**FIG - 6**



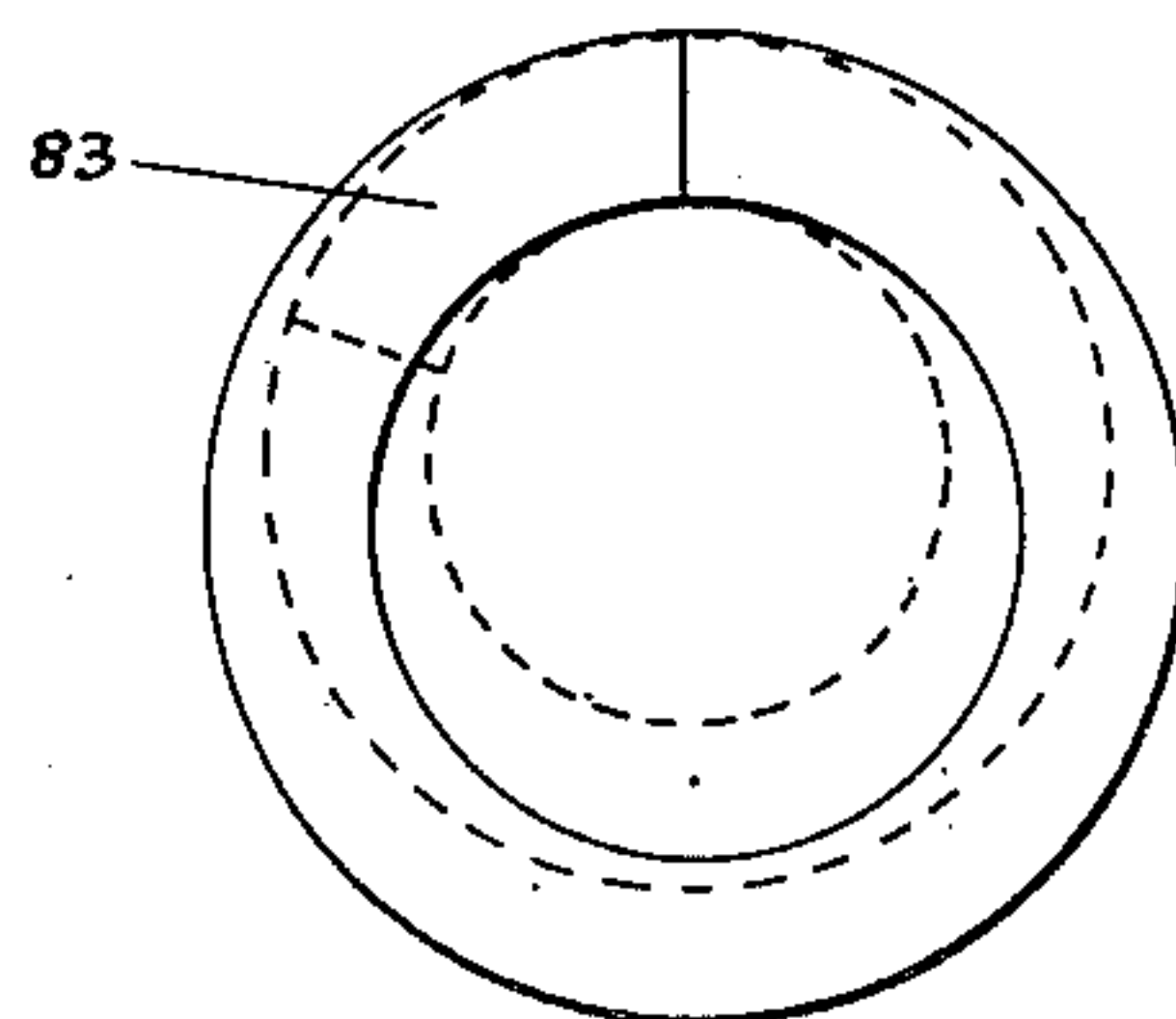
**FIG - 7**



**FIG - 8**



**FIG - 9**



**FIG - 10**

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## UNITED STATES PATENT OFFICE

2,629,392

DISHWASHER WITH A REMOVABLE AND  
SPLIT WATER DEFLECTOR

Leland A. Davis, Montreal, Quebec, Canada

Application October 18, 1948, Serial No. 55,177  
In Canada July 26, 1948

2 Claims. (Cl. 134—183)

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The invention relates to improvements in dishwashers as described in the present specification and illustrated in the accompanying drawings that form a part of the same.

The invention consists essentially of the novel features of construction as pointed out broadly and specifically in the claims for novelty following a description containing an explanation in detail of an acceptable form of the invention.

The objects of the invention are to devise a power operated dishwasher in the form of a self-contained unit adapted for use in homes, institutions, hotels and the like; to furnish a cabinet-type dishwasher that thoroughly and efficiently cleans and washes dishes, cups, glasses, etc.; to facilitate the washing and cleaning of large numbers of dishes, etc.; to construct an electric dishwasher having few and simple parts, easy and economical to manufacture; and generally to provide a dishwasher that is easily operated and efficient for its purpose.

In the drawings:

Figure 1 is a perspective view of the dishwasher showing its top closed.

Figure 2 is a perspective view of the dishwasher showing its top open and the lower panel removed.

Figure 3 is a sectional view as taken on the line 3—3 in Figure 1.

Figure 4 is a cross-sectional view as taken on the line 4—4 in Figure 2.

Figure 5 is a sectional view as taken on the line 5—5 in Figure 1.

Figure 6 is a cross-sectional view as taken on the line 6—6 in Figure 1.

Figure 7 is a cross-sectional view as taken on the line 7—7 in Figure 1.

Figure 8 is a sectional plan view as taken on the line 8—8 in Figure 6.

Figure 9 is a sectional view as taken on the line 9—9 in Figure 6.

Figure 10 is a plan view of the deflector ring in its normal or contracted position as removed from the dishwasher.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings, the dishwasher, as indicated by the numeral 15, consists of a somewhat rectangular shaped cabinet 16, preferably of metal and suitably finished, and housing the outer and inner dish washing tubs 17 and 18 respectively, the power plant 19 and the various other operating mechanisms of the washer together with the necessary water piping.

The cabinet 16 is made up of the side walls

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20 and 21, back wall 22, front wall 23, and having the top 24 suitably secured in position. The back wall 22 extends upward beyond the top level of the side walls 20 and 21 and the top 24 of the cabinet, and is formed with its top edge turned inward and continuing downward for a predetermined distance, or to the approximate level of the top edge of the side walls, and providing a back 25 extending across the rear of the cabinet. The formation of this back 25 provides a space between the rear face 27 and the front face 28 of the back, into which space an electric switch is positioned approximately half-way therealong and suitably secured to the front face 28, the switch button 30 of this switch 29 projecting through an aperture in the front face 28 of the back 25.

The top 24 of the cabinet is provided with apertures, one adjacent to each side at the rear thereof and in alignment with one another, and with a large and approximately circular aperture or opening centrally located therein. This central opening 31 is provided with a cover or lid 32, hingedly secured thereto and adapted to open upward therefrom.

The front wall 23 of the cabinet extends downward a predetermined distance terminating short of the bottom of the side walls, providing an opening into the cabinet across the lower portion thereof.

The front of the casing or cabinet 15 is recessed across the lower end thereof, this recessed portion 33 being of predetermined height and depth. A flooring or shelf 34, preferably having turned down edges forming flanges 35, is suitably and permanently secured within the casing between the side walls thereof, such as by being riveted, and is positioned therein at approximately the top level of the recessed portion 33, extending from the front edge back into the cabinet a predetermined distance and terminating short of the back wall 22 of same. This shelf 34 forms a mounting for the motor 19 which is fixedly secured thereon.

The outer tub 17 is, in this instance, circular in shape, of a predetermined circumference and of a depth approximating half that of the cabinet 16 into which it is placed, being permanently mounted on the support brackets 36, or any other suitable support means, spaced around the inside of the side walls and back wall of the cabinet above the top level of the motor 19.

A shaft 37 is rotatably mounted in the bracket 38 fixedly secured to the shelf 34 and extends ver-



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tically upward and into the outer tub 17 through a centrally located aperture in the bottom of same, the top end of the shaft having the impeller 39 fixedly secured thereto. The impeller shaft 37 extends through a packing-box 40 suitably secured to the under side of the bottom of the outer tub 17 around the aperture therein. A gear 41 is fixedly secured to the shaft 37 and rotatable therewith, and engages with the pinion 42 rotatably mounted to the motor 19.

The top circumferential edge of the outer tub 17 is turned in, forming a circumferential lip 43 therearound. A plurality of vertically positioned fins or deflectors 44 are spaced at intervals around the inside circumference of the outer tub and suitably secured to the inside of the circumferential wall, or they may be made integral therewith, and extend laterally therefrom.

The inner tub or container 18 fits inside the outer tub 17, being mounted on a plurality of spacers or studs, 46, fixedly secured to the bottom of the outer tub by any suitable means and extending upwards therefrom to slightly beyond the top level of the impeller 39, which impeller is rotatably mounted clear of the bottom of the tub. This inner tub 18 is preferably detachably mounted on the studs, having apertures in its bottom wall 47 positioning the tub over the top end of the studs 46 and to the same, being held thereto by suitably shaped nuts or other fastening members 48.

The inner tub 18, as mounted inside the outer tub 17, extends upward to terminate just short of the circumferential lip 43 of the outer tub 17. The inner tub is provided with a plurality of suitably positioned and spaced apertures 49 in its side wall 59, and with a centrally located aperture or water outlet 51 in its bottom wall 47, this central aperture 51 being larger than the apertures 49 in the side wall, and having cut-outs 52 and 53 formed therein. A screen 54 is detachably fitted over this aperture 51, the frame of the screen, which is a mesh screen, having lugs 55 and 56 adapted to engage the cut-outs 52 and 53.

The inner tub is of a sufficiently smaller size than the outer tub so as to form a circumferential space or passage between it and the outer tub.

The taps 53 and 59 are suitably fixed to the top 24 of the cabinet and having the water pipes 60 and 61 respectively, leading therefrom through the interior of the cabinet to the main water pipe or source of supply. The bottom wall of the outer tub has an aperture 62 suitably positioned therein to which a drainage pipe 63 is secured leading downward therefrom through the cabinet and connecting to a water pipe in the piping system of the building. A valve 64 attached to the drain pipe 63 below the bottom of the outer tub has a connecting rod 63 pivotally connected to the valve arm 66 and leading therefrom upwards between the outside of the outer tub and the inside face of the cabinet to a knob 67 positioned on the top 24 of the cabinet, the top having an aperture therein permitting the knob to be removably secured to the top end of the connecting rod.

An electrical connection or wire 68 leads from the motor 19 to the switch 29 and from the switch to the electric power supply source.

Plates 69 are placed in the container or holder 70, this plate holder consisting of a heavy wire framework or rack, preferably circular in shape and of predetermined height or depth, adapted to rest on the bottom of the inner tub 18 and being removable therefrom by means of handles or

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grips 71 formed on the top edge of the rack and extending inwards therefrom. A plurality of upwardly extending plate supports 72 are formed or secured to the bottom of the plate rack for suitably positioning the plates thereon. A smaller wire mesh container 73 is suitably and removably secured to the bottom of the plate rack 70 and adapted to have pieces of cutlery vertically placed therein.

Cups and saucers, 74, are placed in a top or upper wire rack 75 adapted to fit and rest on the top of the lower plate rack 70, this rack 75 having suitable handles on the top edge of same.

A hose connection, 76 and 77, leads from a valve 78 and 79, on each of the pipes 60 and 61 to the tee 80 which is accommodated in an aperture in the rear of the outer tub 17 and provides a water inlet therefor.

A panel 81 is provided for the opening 82 in the lower portion of the cabinet and is removable therefrom.

In the operation of the dishwasher, the plates, cups and saucers and cutlery are placed in their respective racks or receptacles, which may first be removed from the washer, or the lower container or plate rack 70 may be left in the inner tub and the plates positioned therein, the cutlery being placed in its container and the cups and saucers being placed in their holder or upper rack 75 which is then positioned on top of the rack 70, the racks being placed in the dishwasher through the top of the cabinet. After placing the racks 70 and 75 in position, the person places a deflector ring 83 on the top edge of the inner tub 18. This deflector ring consists of a split ring made of any suitable material and adapted to be compressed sufficiently to allow it to be placed in position, being freely mounted on top of the inner tub between the top edge of the tub and the circumferential lip 43 of the outer tub 17. The split ring is formed to slope downwardly towards the centre.

In this connection, the circumferential lip 43 around the top edge of the outer tub is of comparatively shallow depth, permitting the inner tub to be placed in the outer tub and to be lifted up past the same and out of the outer tub. The deflector ring, as positioned on top of the inner tub when same is inside the outer tub, forms a means by which uprushing water is deflected down into the inner tub, the circumferential lip being of a size only to act as a stop for the deflector ring as it is lifted upward off the inner tub by the upward pressure of the water against the ring, the deflector ring being of a slightly greater circumference than the outside circumference of the lip 43.

After positioning the racks and the deflector ring in the dishwasher, the water is turned on to fill the outer tub to a desired level and then turned off, at which time the motor may be turned on, the impeller 39 agitating the water in the outer tub and forcing same upward in the circumferential space between the two tubs where it strikes against the deflector ring 83, lifting it clear of the top of the inner tub, the water being deflected to pour into the inner tub and over the dishes, etc., therein. The deflector ring is lifted against the circumferential lip 43 by the upward pressure of the water forced up the passage between the tubs.

The water pouring into the inner tub over the dishes, is carried off partly through the apertures 49 and down the screen in the bottom of the inner tub into the outer tub 17 where it is



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circulated back up into the inner tub as long as the impeller is operated.

Upon the dirty dishes, etc., being thoroughly washed, the motor is turned off, the holders or racks removed, after first compressing the deflector ring and removing same from the washer, and the clean dishes removed from their holders. The dirty water being emptied by the knob 67 on the top of the cabinet being pulled up to operate and open the valve 64 on the drain pipe 63. The inner tub 18 may be removed for cleaning etc., by a person undoing the fastening members 48 and simply lifting the tub off the studs 46 on which it is mounted.

It is of course understood that modifications and ramifications may be made without in any way departing from the spirit of the invention as hereinabove described and illustrated.

What I claim is:

1. In a dishwasher, a rectangular shaped cabinet having a circular aperture in the top thereof, a hinged cover for the circular aperture, an outer tub adapted to be permanently mounted in said cabinet and terminating short of the bottom thereof, a circular inner tub adapted to be detachably mounted in said outer tub and having its top edge located below the top edge of the outer tub, said outer and inner tubs forming a circumferential space therebetween, the side wall of said inner tub having a plurality of apertures therein and the bottom wall of same having an aperture therethrough, an inwardly turned lip formed on the top edge of said outer tub extending therearound, piping in said cabinet for introducing water into said outer tub, which tub is provided with an outlet, an impeller located and rotatably secured in the space between said tubs and beneath said inner tub, an electric motor being mounted in the lower portion of said cabinet and suitably connected to said impeller to rotate the same, said motor having suitable connections connectable to an electric power source, racks adapted to be fitted into said inner tub and to be removable therefrom for holding dishes and cutlery within said inner tub, and a split deflector ring being freely mounted on the top edge of said inner tub between the same and the said lip of said outer tub and being movable therebetween, the said deflector ring being adapted to deflect the impeller agitated water rising upward in the space between the said tubs down into said inner tub over the contents of said racks.

2. In a dishwasher, a rectangular shaped cabinet having an opening extending across the lower portion of the front face of same, a panel adapted to form a closure for the opening, the top of said cabinet having a centrally located circular aperture, a hinged cover for the aforesaid circular aperture adapted to hinge upwardly therefrom, a back extending across the top of said cabinet and formed by the rear wall of the cabinet being extended above the top of the cabinet and inwardly turned down to form a space between

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the rear and front face of same, an electric switch accommodated in the space between the front and rear face of said back, an electric motor fixedly mounted in the lower portion of said cabinet, an outer tub having a centrally located aperture in the bottom thereof and being fixedly secured within said cabinet above the said motor, a plurality of studs fixedly secured to the bottom of said outer tub and extending upwardly therefrom, said inner tub being adapted to be detachably mounted on said studs within said outer tub, said inner tub having spaced apart apertures in the side wall thereof and being provided with a centrally located aperture in the bottom thereof, filtering means being fitted over the aperture in the bottom of said inner tub to be removable therefrom, an inwardly turned circumferential lip on the top edge of said outer tub, the said inner tub terminating short of said circumferential lip on said outer tub when positioned therein, a split deflector ring being freely mounted on the top edge of said inner tub between the same and said circumferential lip of the outer tub and being flexible enough to be sufficiently compressed in order to secure it in position under the said lip and on top of said inner tub and for removal therefrom, piping in said cabinet adapted to introduce water into said outer tub, an impeller rotatably mounted within said outer tub between the bottom of same and the bottom of said inner tub and being suitably connected to said electric motor to be driven thereby, said outer tub and said inner tub forming a circumferential space therebetween, the said impeller beneath said inner tub agitating the water in said outer tub and forcing the same against fins projecting inwardly from the inside face of the wall of said outer tub, the water thus being directed upwardly in the space between the said tubs, said deflector ring being contacted by the rising water to be lifted upward against said lip, said deflector directing the water downward into said inner tub, and holders for dishes, etc., consisting of a pair of racks adapted to be placed in said inner tub one on top of the other, and suitable drainage connections leading from said outer tub to a drain pipe.

LELAND A. DAVIS.

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