

Sept. 30, 1947.

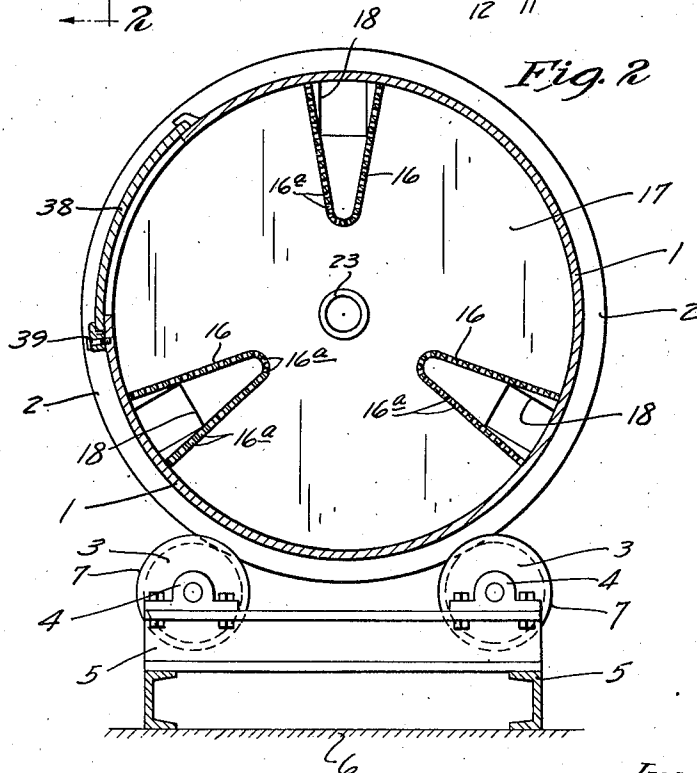
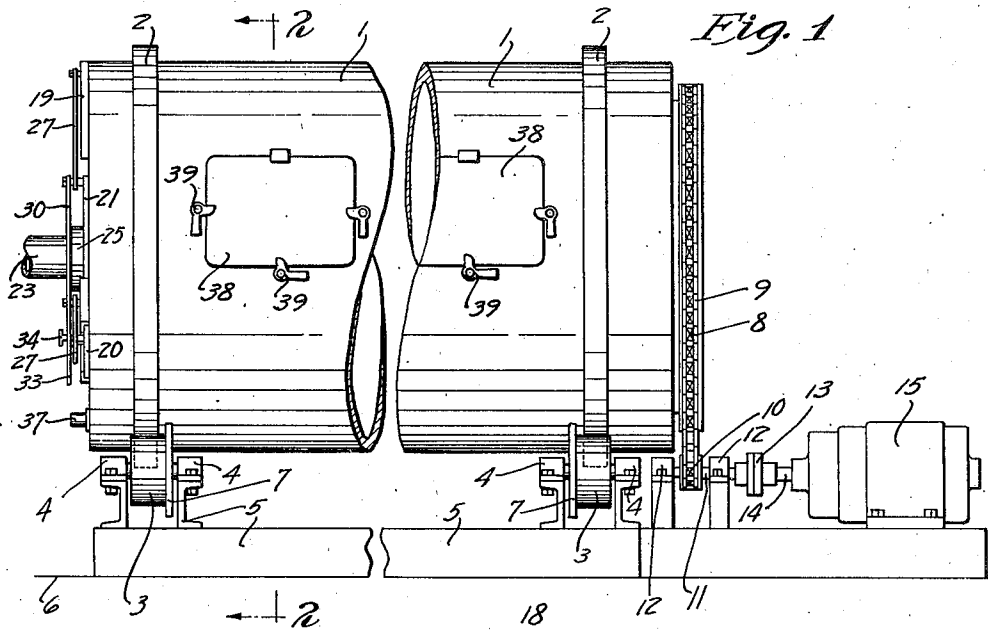
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2,428,286

CLOTHES WASHING MACHINE HAVING TUMBLER END WALL DRAIN

Filed May 6, 1946

2 Sheets-Sheet 1



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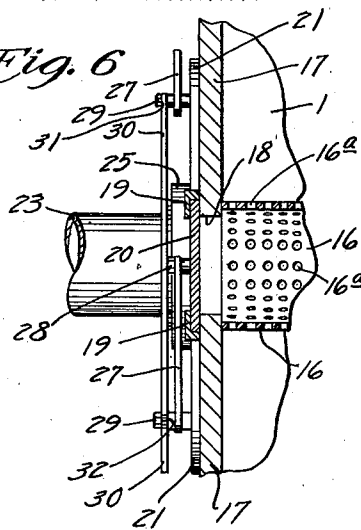
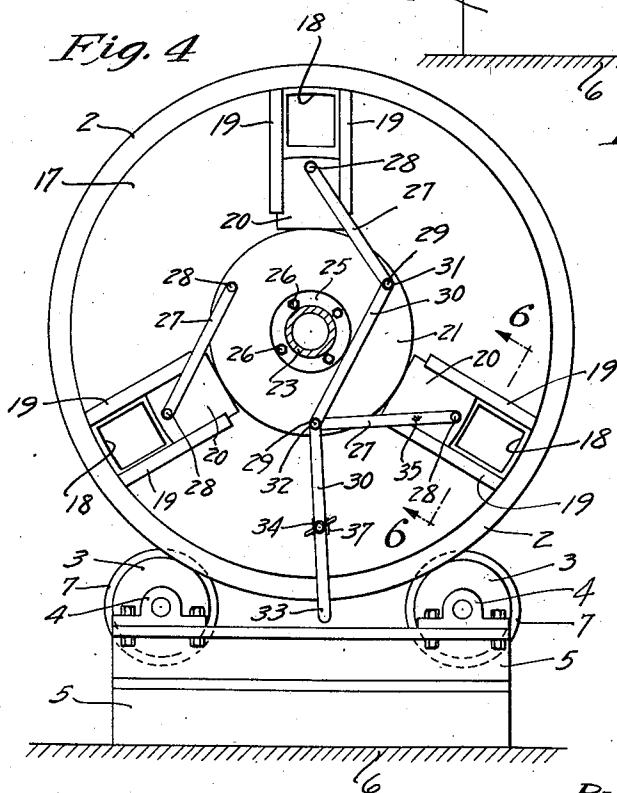
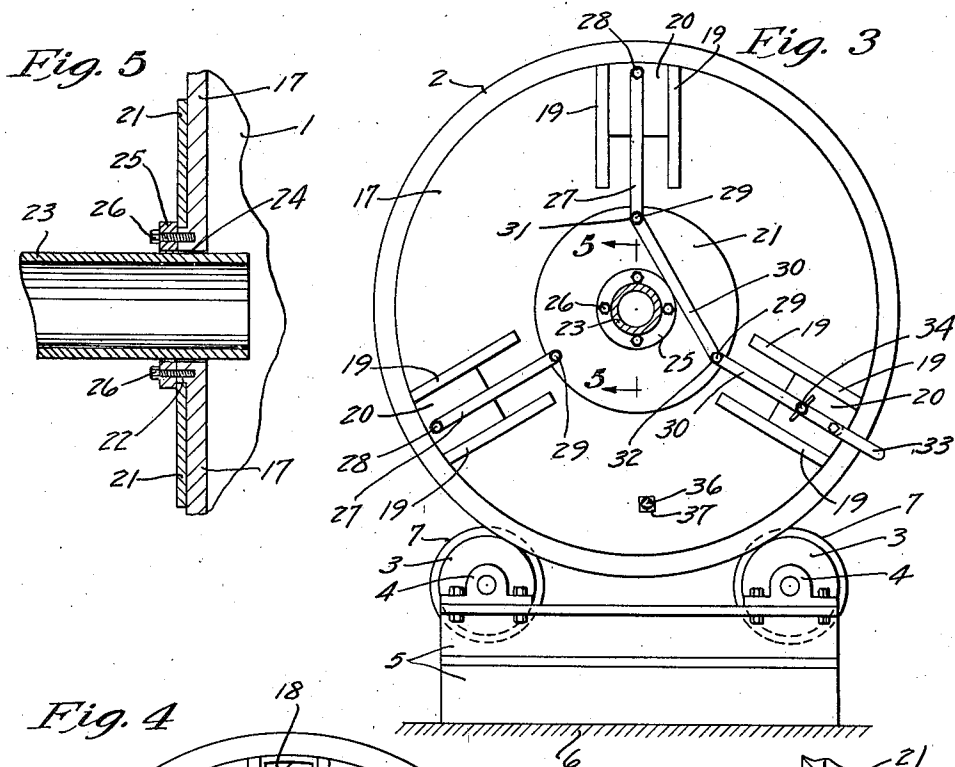
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UNITED STATES PATENT OFFICE

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CLOTHES WASHING MACHINE HAVING
TUMBLER END WALL DRAIN

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3 Claims. (Cl. 68-144)

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My invention relates to washing machines of the type incorporating a horizontally-disposed rotary drum in which the clothes or other items to be washed are agitated, and has for its object the provision of novel means for facilitating the removal of the wash or rinse fluids therefrom prior to the removal of the clothes or the like.

Another object of my invention is the provision of means whereby the rotating drum may be drained of washing and rinsing fluids while the same is still in motion.

The above and still further objects of my invention will become apparent from the following detailed specification, appended claims, and attached drawings.

Referring to the drawings wherein like characters indicate like parts throughout the several views:

Fig. 1 is a side elevational view, some parts being broken away;

Fig. 2 is a transverse section taken on the line 2-2 of Fig. 1;

Fig. 3 is an end elevation;

Fig. 4 is a view corresponding to Fig. 3 showing a different position in some of the parts;

Fig. 5 is an enlarged fragmentary section taken on the line 5-5 of Fig. 3; and

Fig. 6 is an enlarged fragmentary section taken on the line 6-6 of Fig. 4.

The drum of this machine is marked with the numeral 1 and is shown as provided with circumferentially-extended external rail flanges 2 arranged to run on supporting rollers 3 journaled in bearings 4 of a heavy metallic frame 5, which, as shown, rests on a floor or the like 6. Rollers 3 are shown as having opposed circumferential ribs 7 which prevent axial movements of the drum during rotation.

The drum, of course, can be supported and driven in various different ways but, as shown, is provided at one end with a large sprocket 8. A chain 9 runs over sprocket 8 and over a much smaller sprocket 10 on a shaft 11 journaled in suitable bearings 12 of the frame 5. Shaft 11 is shown as coupled at 13 to the rotor shaft 14 of an electric motor 15, also mounted on the frame 5 so that the complete machine may be, if desired, mounted as a self-contained unit on a common base.

Shown as secured to the inside peripheral surface of the drum 1 and projecting radially inwardly therefrom are a plurality of spaced clothes-lifting vanes or ribs 16, which extend substantially the length of the drum 1. As shown, ribs 16 contain numerous perforations identified

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by the numeral 16a, are made of sheet metal and are hollow their entire length.

The peripheral surface of drum 1 and the end to which the driving mechanism is secured are imperforate. However, the opposite end of the drum 1, identified by the numeral 17, is provided with a plurality of circumferentially-spaced openings 18 which communicate with the interior of the hollow ribs or vanes 16.

On each side of the several openings 18 and on the outside of endplate 17, I provide cooperating guideways 19, shown in Fig. 6 as being in the form of opposed angle irons, welded or otherwise secured to the endplate 17. Slidably mounted in the guideways for radial movement with respect to the drum 1 are gates 20.

Referring now particularly to Figs. 3, 4 and 5, it will be observed that a disc-like plate 21 is rotatably mounted on an annular boss 22 which projects outwardly from the axis of the plate 17. An inlet pipe 23 projects through the axial opening 24 in the endplate 17. Pipe 23 leads to a source of fluid, not shown. A retaining collar 25 fits loosely around the pipe 23 and is clamped to the boss 22 by means of headed bolts 26. As will be seen, particularly with reference to Fig. 5, retaining collar 25 is of a maximum diameter greater than the minimum diameter of the disc 21 so as to retain the disc against outward axial movements, but at the same time permitting rotary movements thereof.

A plurality of links 27 have their outer ends pivoted to the transverse central portions of gates 20 at 28, and have their inner ends pivoted to the disc 21 adjacent its periphery as indicated at 29. As shown by reference to Figs. 3, 4 and 6, disc 21 and gates 20 are provided with an angular operating arm 30 which has its inner end pivoted to one of the pivotal connections 29 as indicated at 31 and has its intermediate portion connected to another of the pivotal connections 29 as indicated at 32. The extreme outer end of the lever 30 preferably extends outwardly of the periphery of the drum in the form of a handle, as indicated at 33. A locking screw 34, carried by the arm 30, is adapted to have threaded engagement with a hole 35 in one of the links 27 to retain the gates 20 in closed position as shown in Fig. 3, and also with a threaded hole 36 in a lug 37 on the endplate 17 to retain the gates 20 in an open position as shown by Fig. 4.

As shown in Fig. 1, drum 1 is provided with a pair of removable cover plates 38, which are secured by latches 39.

Operation

With my novel arrangement, clothes or other articles to be washed are placed in the drum by removing the cover plates 38. Thereafter plates 38 are secured in position. Water or other fluid is introduced into the drum 1 through a feed pipe 23. Upon rotation of the drum 1, the perforate ribs 16 continue to lift the clothes or other objects in the drum and drop them into the fluid until they are thoroughly cleaned. At this point it may be desirable to drain off the washing fluids prior to introducing a rinsing fluid. To accomplish this, the drum 1 is temporarily stopped, the locking screw 34 is loosened, and the operating lever 30 is moved to the position shown in Fig. 4, at which point the gates 20 will be moved to the position also shown in Fig. 4, through the driving connections including links 27 and the rotatable disc 21. The operating lever 30 is locked in gate-opening position by means of the screw 34 making engagement with the opening 36 in the lug 37. The drum is once again rotated and the water or other washing fluid is drained from the tank by means of ports 16a in the vanes 16 and out through the openings 18. In this manner it will be obvious that none of the clothes or other objects will interfere with the passage of the water from the drum.

Rinse water may be introduced into the drum through the pipe 23 during rotation of the drum, irrespective of whether the gates 20 are open or closed.

My invention has been thoroughly tested and found to be completely successful for accomplishing the above objects.

While I have disclosed a preferred embodiment of my invention as provided by sec. 4883 of the U. S. Statutes, it should be understood that the same is subject to modification without departing from the scope of the appended claims.

What I claim is:

1. In a clothes washing machine, a horizontally-disposed rotary washing drum, a hollow perforate clothes-lifting rib on the inside peripheral

surface of said drum and extending substantially the length thereof, an opening in the end of said drum communicating with the interior of said hollow rib, generally radially-extending parallel guide channels on each side of said opening, a gate slidably mounted in said guide channels, and lever means on the end of said drum for opening and closing said gate.

2. In a washing machine, a horizontally-disposed rotary washing drum, a plurality of circumferentially-spaced hollow perforate clothes-lifting ribs on the inside peripheral surface of said drum, said ribs extending longitudinally substantially the length of said drum, circumferentially-spaced openings in the end of said drum communicating with the interior of said hollow ribs, generally radially-extending parallel guide channels on each side of said openings, a gate slidably mounted in each of said guide channels, and lever means carried by the end of said drum for simultaneously opening and closing said gates.

3. The structure defined in claim 2 in which said lever mechanism comprises a plate axially journaled to the end of said drum, links having their outer ends pivoted to the central portion of said gates and having their inner ends pivoted to said rotary plate, and handle means on said plate facilitating rotation thereof whereby to impart radial movements to said gates.

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