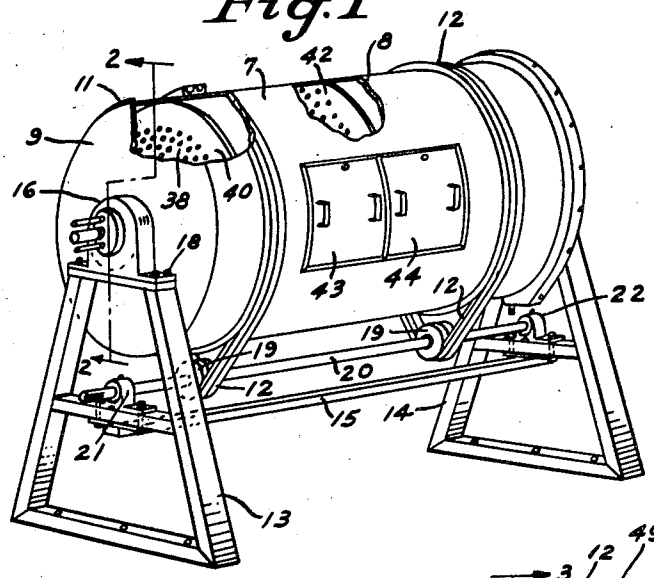
July 30, 1957 J. J. SCHANG 2,800,786

IMPROVED CHARGE AND DISCHARGE MECHANISM
FOR AN INDUSTRIAL WASHING MACHINE
Filed May 5, 1955

Fig. 1



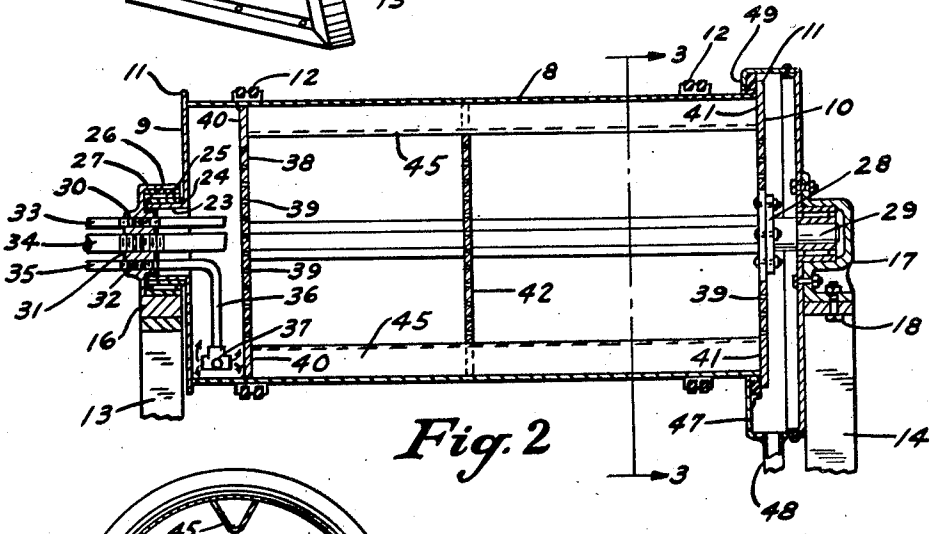


Fig. 2

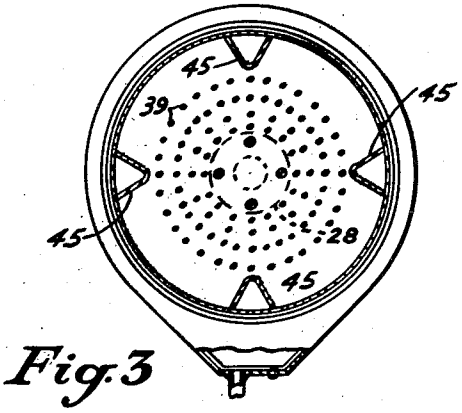


Fig. 3

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IMPROVED CHARGE AND DISCHARGE MECHANISM FOR AN INDUSTRIAL WASHING MACHINE

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Application May 5, 1955, Serial No. 506,162

4 Claims. (Cl. 68—58)

This invention relates to shelless washing machines of the type used in industry and of the type disclosed in Patent No. 2,289,515 to Mathews.

An object of this invention is to generally improve industrial washing machines of the type indicated and to provide a machine which is simple in construction, has a minimum of working parts, and is highly effective in operation.

Another object of the invention is to provide a washing machine structure which enables me to introduce live steam to the water and washing solution and to keep the discharge end of the steam line submerged at all times, whereby the super heating of the water and solution may be accomplished without interruption and may continue uniformly during the washing operation.

Another object of the invention is to provide a simple support for the rotatable cylinder, through which, water, detergents and steam may be introduced to the interior of the cylinder with a minimum of conduits, connections and controls, whereby a properly heated liquid level may be maintained in the cylinder at all times.

Another object of the invention is to provide a washing machine which is constructed and arranged so that all the supplies and water must come in contact with and pass through the clothes.

Another object of the invention is to provide a washing machine which is constructed and arranged so that the discharge is regulated and controlled by the size and type of load in the machine without mechanical adjustments.

Another object of the invention is to provide a washing machine which is constructed and arranged so that there is a delayed, continuous flow of liquid through the machine during the washing and rinsing cycles, whereby the apertured end wall at the discharge side cannot become clogged.

Another object of the invention is to provide a washing machine in which there is a mixing chamber formed between one end wall of the cylinder and an apertured plate which has a solid marginal weir portion thereon.

In the Mathews Patent No. 2,289,515, the steam pipes terminated inside the apertured baffles and rotated with the cylinder, so that when a baffle moved into a position above low dead center, the water therein would start to run out and by the time the baffle reached upper dead center, it would have no water in it and the steam entering the baffle would have no effect on the liquid which was doing the washing. It is therefore one of the objects of this invention to discharge the steam into the mixing chamber at the end of the cylinder at all times below the liquid level, so it can agitate and heat the liquid constantly, while at the same time maintaining a minimum liquid level in the cylinder.

The foregoing and other objects and advantages of my invention will become more apparent as the description proceeds, reference being made from time to time to the accompanying drawing forming part of the within disclosure, in which drawing:

Fig. 1 is a perspective view with parts broken away, of a device embodying the invention.

Fig.. 2 is a section taken substantially on the line 2—2 of Fig. 1.

Fig. 3 is a section taken substantially on the line 3—3 of Fig. 2.

Referring now more particularly to the drawing, it will be understood that in the embodiment herein disclosed, the reference character 7 indicates a barrel, which is formed of an outer-wall 8, and end walls 9 and 10, which are preferably secured together by welding. The end walls 9 and 10 are formed with overhanging lips 11, which prevent any water which might leak from the ends, from running along the barrel to the drive belts 12, hereinafter described.

The barrel 7 is supported at either end for rotation, on supports 13 and 14, which are tied together by means of a tie bar 15 (Fig. 1). The supports 13 and 14 carry bearing members 16 and 17 to which they are connected by bolts 18 or other suitable means, whereby the barrel may rotate under the influence of the belts 12, and pulleys 19 which are carried on a shaft 20, which in turn rotates in bearings 21 and 22. The shaft may be driven by a motor (not shown).

The end member 9 has an inturned collar 23 which carries the inner race 24 of the bearing, the rollers 25 of which ride on an outer race 26 which is positioned inside the flange 27 of the bearing member 16.

The end member 10, has bolted to it the flange 28 of a spindle 29 which engages the bearing 17. The bearing member 16 is provided near the center with three threaded passage-ways 30, 31 and 32, into which are threaded the chemical pipe 33, the water pipe 34 and the steam pipe 35. The steam pipe 35 has an extension 36 which terminates as at 37 in a distributor head, which is always located below the water level in the barrel, so that the water and chemical solution are always kept uniformly agitated and property heated as the barrel is rotated.

In order to maintain a proper liquid level in the barrel, I provide a plate 38 in spaced relation with the end wall 9 of the barrel. This plate 38 and end plate 10 are perforated as at 39 throughout their areas except along the outer peripheral area as at 40. This unperforated area 40, together with a similar area 41 in the end plate 10 serve as weirs or dams to insure a liquid depth of at least 6½ inches in the barrel at all times, yet permits the liquid to flow in a delayed manner through the device. The barrel is preferably divided into two sections by means of an apertured partition 42. Each section is provided with a loading door 43 and 44.

The barrel is provided with spaced longitudinal baffles or ribs 45, which serve to agitate and move the contents of the barrel during rotation. These ribs 45 are not perforated as taught by the patent to Mathews cited above, and are of such height as to always remain below the liquid level in the barrel when at low dead center.

The space between the end wall 9 and the plate 38 defines a mixing chamber in which there is always a predetermined depth of liquid, into which the steam pipe 35, 36 and 37 discharges its steam as previously described.

Liquid passing through the apertured end plate 10 is collected in a collector 47 and drained off through a pipe 48. The collector 47 encircles the end of the barrel 8 and has an inturned edge 49 which overrides the lip 11 formed on the plate 10.

It is believed that the operation of the device is obvious from the foregoing description.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A washing machine of the character described com-

prising a frame structure and a barrel mounted for rotation thereon about a horizontal axis, one end wall of said barrel having a central opening, fixed means for delivering material into said barrel through the opening in said end wall, the opposite end wall of said barrel, having a circular perforated area and a surrounding annular unperforated area, a similarly perforated plate in said barrel, spaced from said first named end wall and parallel thereto defining a mixing chamber between said first named end wall and the unperforated area of said plate.

2. The structure defined in claim 7, including a steam conduit which extends through said first named end wall, and has its discharge end positioned in said mixing chamber below the outward limit of the perforated area of said perforated plate.

3. In a washing machine of the character described, including a barrel rotatable about a horizontal axis, an apertured plate in said barrel in spaced parallel relation with one end wall of said barrel, said plate having a solid weir portion along its outer marginal edge, said weir portion and said end wall defining an inlet mixing chamber in said barrel, the opposite end wall of said barrel having an apertured area and a solid weir portion, similar to the weir portion of said apertured plate.

4. In a washing machine of the character described, including a barrel rotatable about a horizontal axis, an apertured plate in said barrel in spaced parallel relation with one end wall of said barrel, said plate having a solid weir portion along its outer marginal edge, said weir portion and said end wall defining an inlet mixing chamber in said barrel, said first named end wall having a central opening for receiving conduits, there being a steam conduit received in said opening and terminating at a point in said mixing chamber below the upper edge of the weir portion of said apertured plate.

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