Jan. 11, 1944. J. T. FLINT 2,339,162

APPARATUS FOR WASHING CLOTHES AND OTHER ARTICLES

Filed April 14, 1941

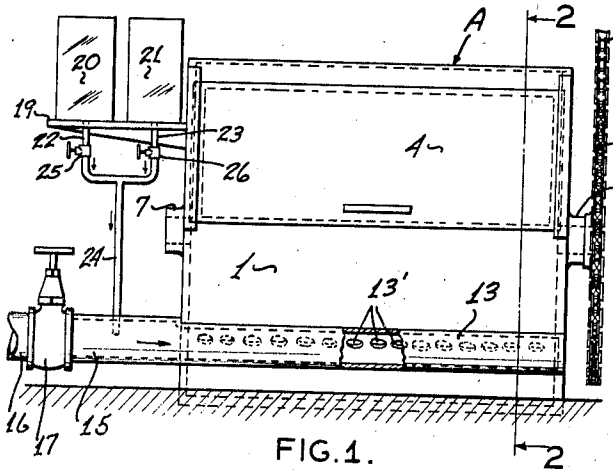

FIG. 1.

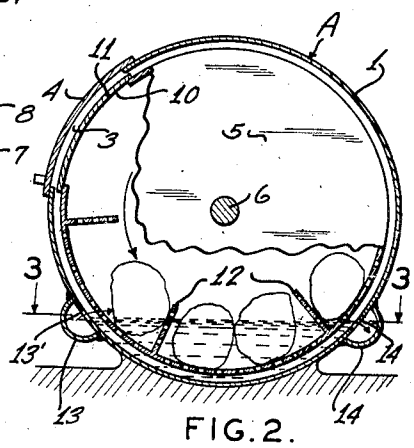

FIG. 2.

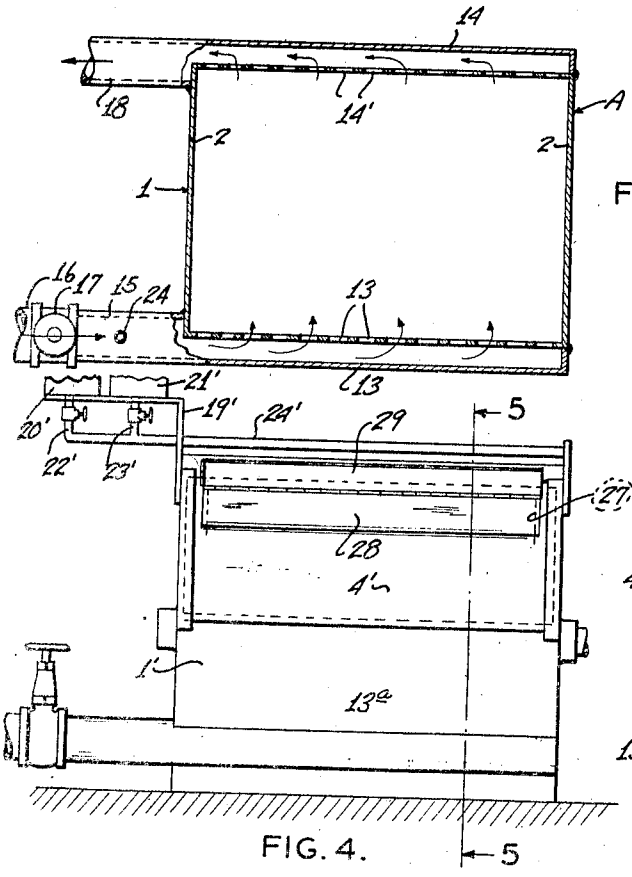

FIG. 3.

FIG. 4.

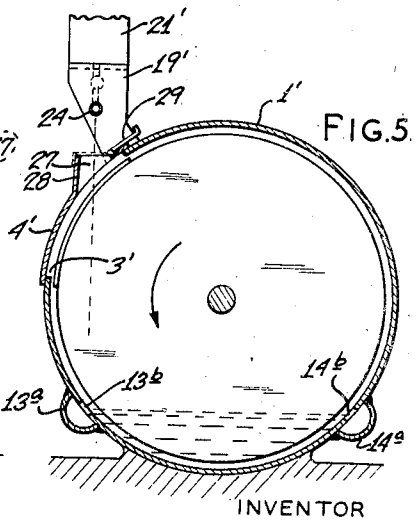

FIG. 5.

INVENTOR
JUSTIN T. FLINT
BY E. M. Harrington,
ATTORNEY

Patented Jan. 11, 1944 2,339,162

UNITED STATES PATENT OFFICE

2,339,162

APPARATUS FOR WASHING CLOTHES AND OTHER ARTICLES

Justin T. Flint, St. Louis, Mo.

Application April 14, 1941, Serial No. 388,366

1 Claim. (Cl. 68—58)

This invention relates generally to an apparatus for washing clothes and other articles, and more specifically to an improved washing machine and to the improved construction and arrangement of such washing machine, the predominant object of the invention being to provide an improved washing machine with the aid of which clothes and other articles may be washed while water and supplies are being passed continuously into, through, and out of the washing machine by which the washing operation is being performed.

Prior to this invention clothes and other articles washed, particularly in public laundries, were subjected to what is known as "batch" washing operations, this method of washing involving introducing a batch of clothes or other articles into a washing machine with the required amounts of water, soap, bleaching material, and other supplies, as and if required, and subjecting said machine to operation to wash the articles, with said articles, water and supplies confined therein. While this method has been followed for many years it is obviously faulty in that much of the washing operation is performed in water which is soiled by the soiling matter removed from the articles being washed during the early part of the washing operation. In other words, instead of performing the washing operation in clean water throughout the washing operation, as would be the ideal situation, a great portion of the washing operation is performed with the aid of dirty water which obviously interferes with the attainment of the desired maximum washing effect during the washing operation.

The objections recited above are eliminated in washing articles in accordance with the present invention and with the aid of the apparatus disclosed herein, in that the basic feature of the present invention is that fresh and clean water and the required supplies pass continuously through the washing machine during the entire washing operation. Because of this arrangement no extended portion of the washing operation is performed in soiled water, fresh, clean water passing continuously through the washing machine to replace soiled water as soon as such water has been soiled by performing its part of the washing operation.

Fig. 1 is a side view of a washing machine constructed and arranged in accordance with this invention.

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

Fig. 3 is a horizontal section taken on line 3—3 of Fig. 2, with the inner drum of the machine omitted.

Fig. 4 is a fragmentary side elevation of a modified form of the washing machine illustrated in Figs. 1, 2, and 3.

Fig. 5 is a vertical section taken on line 5—5 of Fig. 4.

In the drawing, wherein are shown for the purpose of illustration merely, two embodiments of the washing machine of the present invention, A designates in Figs. 1, 2, and 3, the improved machine generally. The washing machine A comprises an outer shell 1 of cylindrical shape which is closed at its ends by walls 2 and is provided with an inlet opening 3 formed through the circumferential wall thereof which has associated with it a cover 4 that is movable, slidingly or otherwise, to open and closed positions with respect to said inlet opening.

The outer shell of the machine A is suitably supported and has arranged therein for rotary movement an inner drum 5 (Fig. 2), said inner drum being supported by a shaft 6 which extends longitudinally of the outer shell 1 and is supported for rotation by bearings 7 associated with the end walls 2 of said outer shell. The washing machine A includes suitable means for subjecting the inner drum 5 to rotation with respect to the outer shell 1, the particular means illustrated for the purpose of this disclosure being a sprocket wheel 8 which is fixedly mounted on the shaft 6 exteriorly of the outer shell of the machine, and a sprocket chain 9 which transmits rotary motion to said sprocket wheel from a suitable source of power (not shown). The inner drum 5 is of cylindrical shape, being provided with a perforated circumferential wall and end walls, and said circumferential wall of said inner drum has an inlet opening 10 formed therethrough with which is associated a suitable closure member 11 that is movable to open and closed positions with respect to said inlet opening. Additionally, the inner drum may, if desired, be provided with perforated ribs 12 extended inwardly from the circumferential wall thereof which serve as tumblers for the articles being washed with the aid of the washing machine A.

Formed on, and extended longitudinally of, the exterior of the outer shell at one side of the lower portion thereof, is an inlet conductor 13 and formed on and extended longitudinally of said outer shell at the opposite side of the lower portion thereof is an outlet conductor 14. The inlet and outlet conductors are of semicircular formation at the outer shell, as shown to the best advantage in Fig. 2, and said inlet and outlet conductors are welded, or otherwise secured, to the outer shell and are arranged in communication with the interior of said outer shell by apertures 13' and 14', respectively. Projected from the inlet conductor 13 is an extension 15 which forms a part of the inlet pipe 16 leading to the washing machine from a source of water, there

being a suitable valve 17 associated with said inlet pipe which is operable to control passage of water to the washing machine. Also, the outlet conductor has a drain pipe 18 projected therefrom which leads to a sewer, or other place of disposition of water passing from the washing machine.

In the embodiment of the invention illustrated in Figs. 1, 2, and 3, the outer shell of the washing machine has extended from an end wall thereof a bracket 19 which supports a plurality of receptacles which are adapted to contain the supplies required for association with the water within the machine for properly performing the washing operations. In the particular embodiment illustrated two receptacles 20 and 21 are shown which contain soap and bleaching material, respectively. Leading from the receptacles 20 and 21 are pipes 22 and 23 which extend to and communicate with a pipe 24 whose lower end portion extends through an aperture formed in the extension 15 of the inlet conductor 13 into the interior of said extension. The pipes 22 and 23 have associated therewith valves 25 and 26 which may be operated to regulate pasage of soap and bleaching material through said pipes.

In washing articles in accordance with the present invention the closures 4 and 11 of the outer shell 1 and the inner drum 5, respectively, are moved to open position to permit introduction of the articles to be washed into the interior of the inner drum, after which said closures are moved to their closed positions. The valve 17 is opened to permit water to flow into the interior of the washing machine by way of the inlet pipe 16, extension 15, inlet conductor 13 and apertures 13'. Also, the valves 25 and 26 are opened to permit soap and bleaching material to flow through the pipes 22—23, and 24 into the interior of the extension 15 where said supplies commingle with the water flowing through the extension 15 and pass therewith into the interior of the washing machine. An extremely important feature of the invention is that the valves 17, 25, and 26 remain open throughout the washing operations performed by the washing machine, there being a continuous flow of fresh, clean water and fresh supplies into the washing machine at all times during operation thereof. Additionally, the outlet conductor is open at all times during operation of the machine for pasage of water and used supplies from the washing machine by way of the apertures 14', the outlet conductor 14, and the drain pipe 18.

The valves 17, 25, and 26 being open and the washing machine being in operation to rotate the inner drum 5 in the direction indicated by the arrow in Fig. 2 with respect to the outer shell 1, the articles to be washed are tumbled about within the rotating inner drum by the ribs 12, the incoming water and supplies being maintained within the washing machine to the level indicated in Fig. 2 because of the presence at that point of the discharge apertures 14' leading to the outlet conductor 14 and the drain pipe 18. Due to the fact that there is a continuous flow of fresh water and fresh supplies into the interior of the washing machine during operation thereof, substantially the entire washing operation is performed with the aid of clean water and fresh supplies, the soiled water and soiling matter removed from the articles being washed passing continuously from the washing machine through the outlet apertures 14' and by way of the outlet conductor 14 and drain pipe 18. It is important to note that because of the rotary action of the inner drum 5 the walls of said inner drum, the ribs 12 and the articles being washed, tend to wash the water within the lower portion of the washing machine toward the discharge apertures 14'. Thus, the soiling matter removed from the articles being washed is kept in a state of agitation in the water until it is discharged from the washing machine through the apertures 14' whereby said soiling matter is prevented from settling in the lower portion of the machine.

In Figs. 4 and 5 a slightly different type of washing machine is illustrated in accordance with which the closure member 4' associated with the inlet opening 3' of the outer shell 1', is provided with an elongated inlet opening 27 through which soap, bleaching material, and other supplies, are introduced into the washing machine. The inlet opening 27 is formed within an elongated upstanding structure 28 formed on the closure 4', and this structure 28 is provided with a hinged lid or cover 29. In Figs. 4 and 5 the receptacles 20' and 21', which receive soap and bleaching material, are supported by a bracket 19' extended from the washing machine, and pipes 22' and 23' lead to a pipe 24' that is supported horizontally immediately above the supply inlet opening 27, said pipes 22' and 23' being provided with controlling valves, and said pipe 24' being perforated throughout the lower portion of the part thereof located immediately above the supply inlet opening 27.

In the operation of the washing machine illustrated in Figs. 4 and 5 fresh water flows continuously by way of the inlet conductor 13*a* and inlet apertures 13*b* into the interior of the washing machine, while the supplies are introduced into the interior of the washing machine by the pipe 24' through the supply inlet opening 27, the soiled water, soiling matter, and used supplies passing from the machine by way of the outlet apertures 14*a*, outlet conductor 14*b*, and its associated drain pipe (not shown) as has already been explained herein in describing the operation of the structure illustrated in Figs. 1, 2, and 3.

I claim:

A washing machine comprising a stationary outer shell, a perforated drum supported for rotary movement within said outer shell, a hollow elongated water inlet conductor which delivers water continuously during the entire operation of the washing machine to the interiors of said outer shell and said rotary drum, and a hollow elongated water outlet conductor extended longitudinally of a portion of said outer shell and arranged in communication with the interiors of said outer shell and said rotary drum and providing for a continuous flow of water from the washing machine during the entire operation thereof, said water inlet conductor and said water outlet conductor being arranged in opposed and substantially horizontally alined relation with respect to each other and relative to said outer shell of the washing machine, and said water inlet conductor and said water outlet conductor being of substantially semi-circular shape in cross-section and being secured to said outer shell at the exterior of wall portions thereof and communicating with the interior of said outer shell through apertures formed through said wall portions of said outer shell.

JUSTIN T. FLINT.