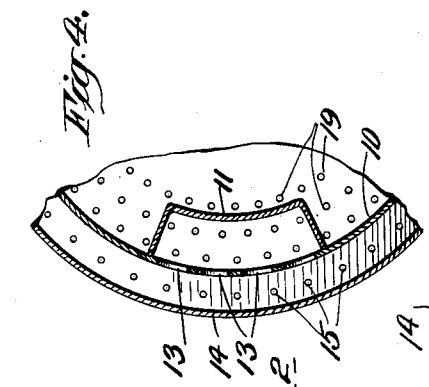
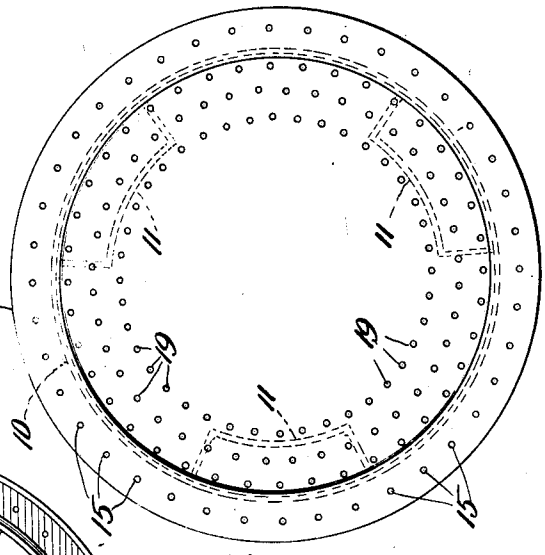
Aug. 23, 1927. 1,640,319

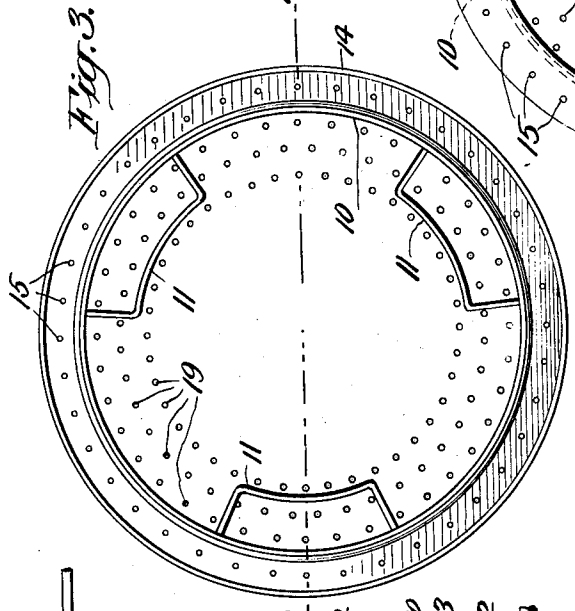
N. W. HALSEY

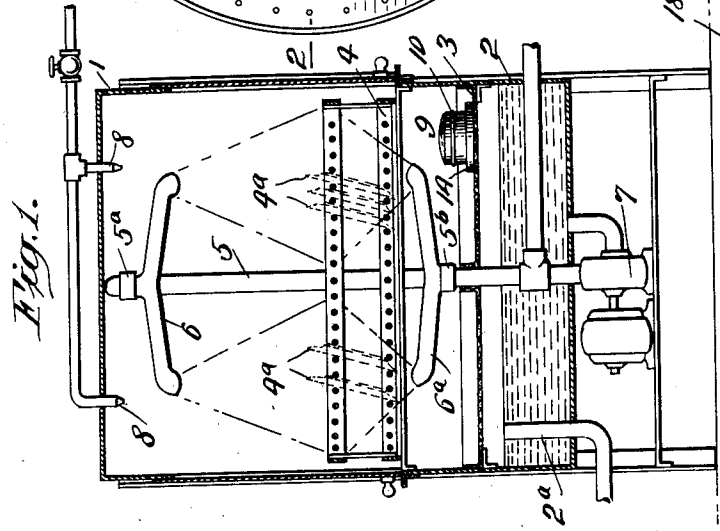
CLEANING MATERIAL FEEDER FOR WASHING MACHINES

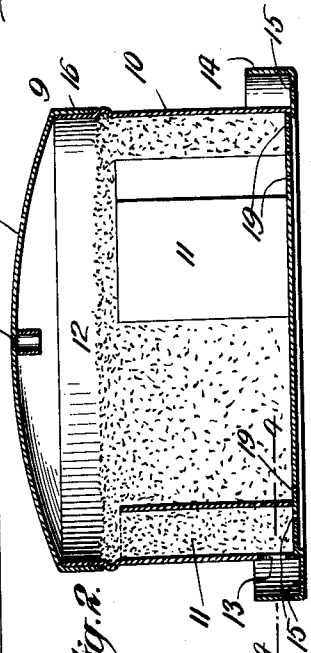
Filed Feb. 19. 1924











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Patented Aug. 23, 1927. 1,640,319

UNITED STATES PATENT OFFICE.

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CLEANING-MATERIAL FEEDER FOR WASHING MACHINES.

Application filed February 19, 1924. Serial No. 693,791.

This invention relates to improvements in cleaning-material feeder for washing machines, and is an improvement upon my copending application Serial No. 606,770, filed December 14th, 1922.

My said co-pending application discloses a slow-feed device operable by a portion of the water distributed or sprayed by the spraying nozzles to automatically charge accordingly as the work progresses the wash water with a predetermined amount of cleaning material, in order to compensate for the loss of cleaning strength of previously charged wash water, and thus to keep such water at the most efficient cleaning strength and thus avoiding the guessing and waste incident to manual feeding of cleaning material. With said device, it is necessary when starting in the morning with clear or completely renewed water in the tank to initially charge such tank water with cleaning material.

The object of my present invention is to provide automatic quick-feeding means for immediately and quickly, at the start, feeding an initial supply of cleaning material of sufficient strength to charge the tank or wash water with cleaning material of an efficient strength and automatic slow-feeding means for slowly and as the work progresses charging the wash water to compensate for the loss of strength due to the work performed and keep the initially charged water at efficient strength, thus avoiding waste and guessing in the initial charging operation as well as in the compensating charging.

Another object of my invention is to produce a device which will embody said automatic quick-feeding means and the automatic slow-feeding means in a single compact efficient unit.

Another object of my invention is to produce a device which will require but a single filling and which when filled with cleaning material and placed in position beneath water sprayed from the nozzles will thereupon function to initially charge the clear tank water and will furthermore continue during the progress of the work to compensate for the amount of cleaning material utilized in the dish-washing operation. Thus, while the device of my former application eliminates the necessity of manually feeding loose cleaning material into the tank at varying times during the day, my present invention does away with the necessity of manually feeding any loose cleaning material whatsoever, as it is merely necessary to fill the container usually once a day in the morning and to insert it in the machine. The uncharged water of the tank will then be initially and quickly charged almost immediately upon starting and an additional compensating amount of cleaning material will be added by the slow feed charging means to compensate, as aforesaid, for the cleaning strength used up in the work.

With these and other objects in view, the invention comprises the combination of members and arrangement of parts so combined as to co-act and cooperate with each other in the performance of the functions and the accomplishment of the results herein contemplated, and comprises in one of its adaptations the species or preferred form illustrated in the accompanying drawings, in which:—

Fig. 1 is a cross-section of a cleaning machine of the spray type embodying my automatic tank water charger and slow-feed compensating device;

Fig. 2 is a vertical section of the feeding device shown in Fig. 1, the section being taken substantially on the line 2—2 of Fig. 3;

Fig. 3 is a plan view of the device shown in Figs. 1 and 2 with the cover removed;

Fig. 4 is a fragmentary cross-section on the line 4—4 of Fig. 2; and

Fig. 5 is a view in plan of the bottom of my improved feeding container.

Referring now to these drawings, which illustrate a preferred embodiment of my invention, 1 indicates the outer casing of a dish-washing machine of the spray type which is provided at its lower end with a wash tank 2, above which is supported a strainer 3 and a dish-rack 4, in which rack dishes are suitably stacked for washing.

Within the casing 1 is provided an upright supply pipe 5 which is provided with the usual laterally extending arms 5^a—5^b, on both of which are revolvably mounted upper and lower wash nozzles 6—6^a respectively, which nozzles are designed to spray water on, against and between dishes 4^a in the rack 4. This sprayed water finally falls down through the strainer pan 3 and into the tank 2, after which such water is pumped by pumps 7 upwardly through the pipe 5 and

nozzles 6ª, so as to form a continuous circulation and distribution or spraying in contact with the dishes of such wash water. After washing of the dishes by such pumped wash water the dishes are usually sprayed by rinsing nozzles 8. The addition of the rinsing water to the wash water in the tank maintains the wash water in the tank at the proper level and conditions for use—the surplus water and grease passing out of the tank through the overflow pipe 2ª.

The foregoing is a description of one form of washing machine of the spray type and standing by itself alone constitutes no part of my invention, which consists, however, in providing a machine of this type with an automatic double feeder 9 adapted to feed varying quantities for different requirements and having quick-feeding means for initially charging the tank-water and slow-feeding means for progressively feeding such material, and this device preferably utilizes a portion of the water distributed or sprayed by the spraying nozzles for its actuation. By my present invention I am enabled to produce a single compact unit which embodies (1) quick-feeding means which quickly and immediately upon the operation of spraying water, feeds or releases a relatively large supply of cleaning material sufficient to charge clear wash-water in the tank with cleaning solution, and (2) slow-feeding means which progressively and slowly feeds a relatively small supply of cleaning material to such water for the purpose of keeping the wash water at the proper cleaning strength by compensating for that portion of the material passed out or utilized in the work of cleaning dishes accomplished by the wash water.

In the preferred embodiment of my invention, my automatic double feeder feeds powdered cleaning material and comprises a unit preferably independent of the other parts of the machine which is portable and may be inserted or supported in place within the area of distribution or spraying of water by the spraying nozzles and, as shown, is mounted on the strainer pan 3 of the machine. My double feeder preferably consists of a cylindrical container 10 which is preferably formed of non-corrosive metal and is divided into quick-feed and slow-feed compartments. Thus a series of three relatively small quick-feed compartments 11 are provided within the container, and these quick-feed compartments are preferably arranged adjacent to the cylindrical wall thereof, while the balance of the container provides or constitutes a slow-feed compartment 12. Each of the quick-feed compartments has quick delivery or release means and each preferably communicates at its lower end by means of relatively large discharge apertures 13 with an annular water-collecting channel member or gutter 14, within and by which a sufficient amount of the sprayed water is collected to almost immediately dissolve the contents of the quick-feed compartments. The powdered cleaning material in such quick-feed compartments is, immediately upon the starting of the machine and the spraying of water thereby, thus dissolved and added to the water in the tank for the purpose of charging such tank water initially to a proper efficient cleaning strength, the size and capacity of these quick feed compartments being in proper proportion to the size of the tank or to the body of clear water usually carried thereby.

In the embodiment shown in these drawings, a part of the dissolved solution flows or splashes over the side walls of the annular channel member or gutter and a part leaks through small holes 15 in the bottom of said compartments and gutter. In practice, I find that the quick-feed compartments and channel are emptied into the tank within a very few minutes, while the powdered material in the slow-feed compartment is automatically fed to the wash water with an extreme degree of slowness and lasts all day or during the entire running period of the machine. In order to provide means for feeding the same in this slow manner the cover 16 is provided with a water-shedding surface 17 having a relatively small centrally disposed aperture 18 so as to allow but a very small amount of water into the slow-feed compartment 12 at one time. When the water is fed through these small apertures it falls upon the cleaning material within the compartment and a solution is formed therewith which passes to the bottom of the container and through apertures 19 in the bottom of said compartment, the action of this latter compartment being substantially similar to that described in my former application.

Having described my invention, I claim:—

1. A cleaning material feeder for washing machines adapted to operate within a stream or shower of water, comprising a container having water shedding walls for confining powdered soluble cleaning material, said container comprising means for feeding a portion of the water from the stream to the powdered cleaning material therein to form a solution therewith, and means for discharging a relatively small continuing charge of the solution into the stream, said feeder also comprising means for discharging a relatively large initial charge of cleaning material into said stream.

2. A cleaning material feeder for washing machines adapted to operate within a stream or shower of water, comprising a plurality of compartments for confining a solid soluble cleaning material, means for feeding a portion of the water from said stream to one of

said compartments to form a solution with the material therein, means for feeding a relatively large initial charge of solution therefrom into the stream, means for feeding a portion of the water from said stream to another one of said compartments to form a solution with the material therein, and means for feeding a relatively small continuing charge of solution therefrom into the stream.

3. A cleaning material feeder for washing machines adapted to operate within a stream or shower of water, comprising a container having water shedding walls for confining powdered soluble cleaning material said container having a compartment for feeding a relatively large initial charge of cleaning material into the stream of water and also having a compartment for feeding a relatively small continuing charge of cleaning material into the stream of water, said first-mentioned compartment having means associated therewith for collecting and feeding thereto a relatively large portion of the water impinging upon the container and said second-mentioned compartment having means associated therewith for collecting and feeding thereto a relatively small portion of the water impinging upon the container.

4. A cleaning material feeder for washing machines adapted to operate within a stream or shower of water, comprising a container for confining a solid soluble material, said container having walls adapted to shed the major portion of the water impinging thereagainst and provided with separated compartments, said container being provided with apertures for feeding water to each of said compartments and passing solution therefrom, and a gutter on said container adjacent certain of said feeding apertures for collecting and feeding water to one of said compartments.

5. A cleaning material feeder for washing machines adapted to operate within a stream or shower of water, comprising a container for confining a solid soluble material, said container having fluid shedding walls and provided with a central compartment and marginal compartments within its side walls, an upwardly convex cover for said container having a small aperture near its crown for feeding a relatively small portion of the water impinging upon said cover to the central compartment, an annular gutter surrounding the side walls of the container for collecting the water flowing from said cover, said side walls of the container being provided with apertures for feeding large amounts of the water from the gutter into said marginal compartments, and a bottom for said container having apertures adapted to pass solution from the various compartments but to retain the solid material.

6. A cleaning material feeder for washing machines adapted to operate within a stream or shower of water, comprising a covered container for confining a solid soluble material, said container having water shedding walls, an annular gutter about the side walls of said container, said side walls having apertures adjacent the gutter for feeding water collected in the gutter into the container to form a solution with the material, the bottom of said container having apertures for passing solution while retaining the solid material, and said gutter also having apertures for passing solution.

In witness whereof, I have signed my name to the foregoing specification.

NORMAN W. HALSEY.