April 21, 1936. C. N. ASH 2,038,260

FEEDER DEVICE

Filed July 9, 1932

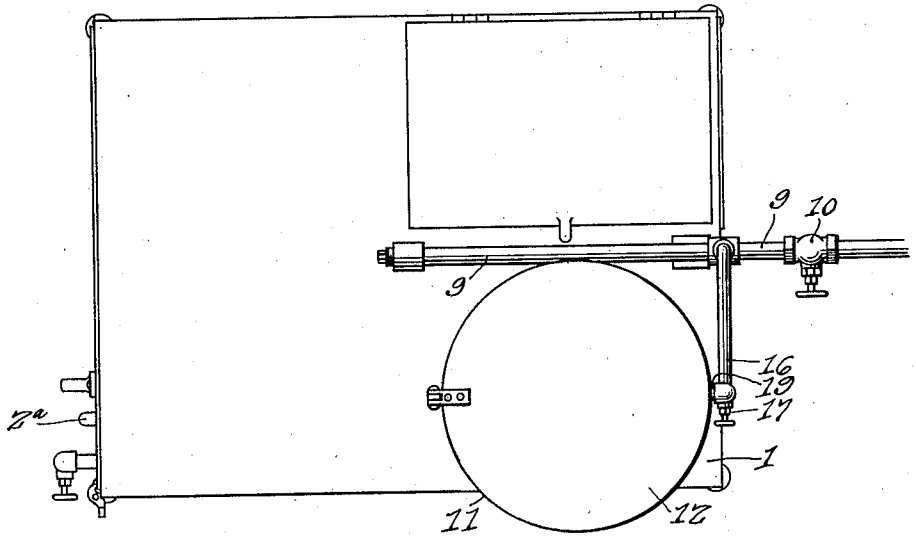


Fig. 2

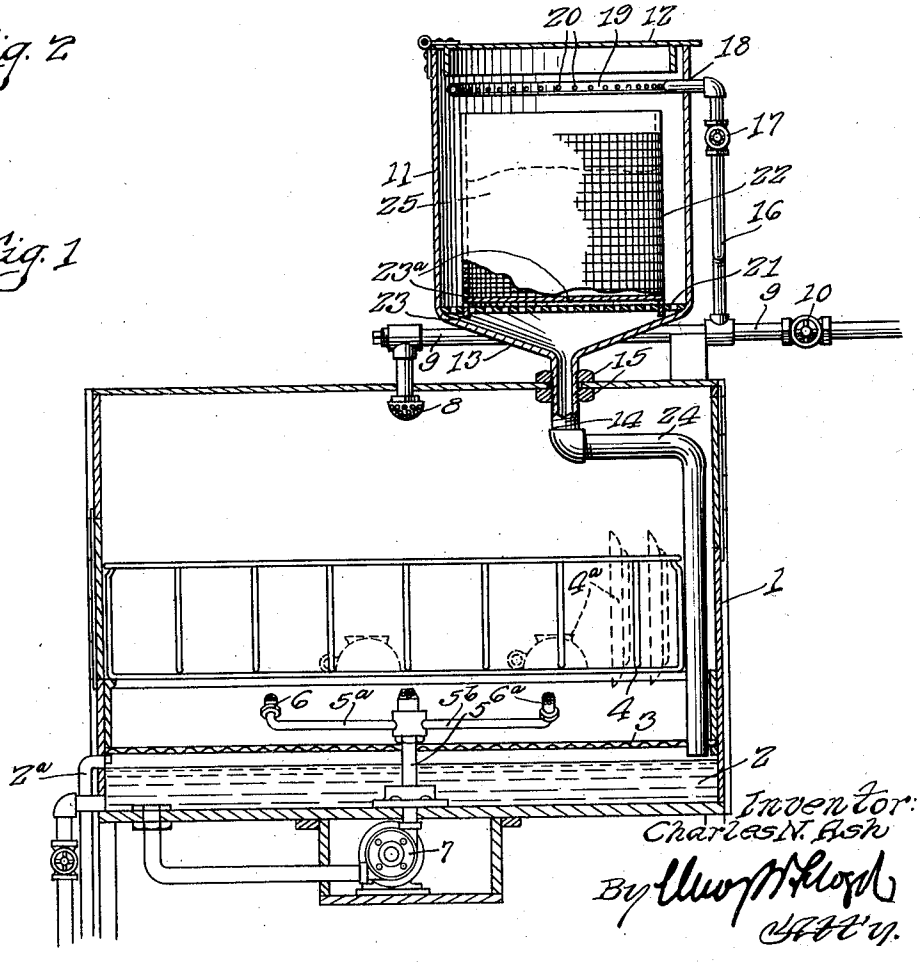


Fig. 1

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FEEDER DEVICE

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4 Claims. (Cl. 141—9)

This invention relates to improvements in material feeder devices for washing machines and the like and to which water or other liquid is supplied by means of conduits or similar apparatus.

In many dish washing machines and similar devices, water for cleansing is usually caused to flow through a supply system, generally pipes, into the machine until the machine is filled to the level of an overflow outlet. Cleansing material is then added to the water before it is used as wash water. After the water has been used for a time, additional water is added to the wash water, such added water being sometimes used as rinse water before becoming part of the trapped wash water. When additional water flows into the device, an equal amount flows out causing the wash water to be diluted. The strength of the wash water solution of the cleansing material is reduced unless new cleansing material is added concurrently with the addition of the water.

In the conventional device, it is necessary for an operator to add cleansing material to the wash water from time to time. The uniformity of the cleaning material solution then depends wholly upon the judgment and attentiveness of the operator. Naturally, in practice, the strength of the charged water varies very widely.

One of the objects of the present invention is to provide a washing machine which obtains its supply of water through a pipe or pipes or the equivalent thereof with means to automatically charge fresh water supplied with the desired proportion of cleansing material before it is used as wash water, thus obtaining great uniformity.

Another object of the present invention is to provide means to automatically maintain the proper proportion of cleansing material in the water of a washing machine at all times.

Another object of this invention is to provide such a washing machine with a means of automatic control for the ratio of cleansing material to the wash water which means will be convenient to operate, can be readily inspected and adjusted, and its supply of cleaning material replenished during the operation of the washing machine without interfering with the continuous employment thereof.

Another object of this invention is to provide a means of the character hereinabove described that is integral with a washing machine and which does not require any special external fitting or connection to the water supply pipes.

Another object of this invention is to provide means of the character described that may be made inoperable, if desired, and will not interfere with the methods of supplying water and cleaning materials to such washing machines as are now commonly used.

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

Figure 1 is a cross section of a portion of a washing machine embodying an automatic cleansing material feeder embodying the invention integral therewith; and

Figure 2 is a top view of the automatic feeder illustrated in Figure 1.

Like reference characters are used to designate similar parts in the drawing and in the description of the invention which follows.

Referring now to the drawing, which illustrates a preferred embodiment of the invention, 1 indicates an outer casing of a dish washing machine 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 positioned.

Within the casing 1 is provided an upright supply pipe 5 which is provided with the usual revoluble laterally-extending arms 5a and 5b on both of which are mounted wash nozzles 6 and 6a respectively, which nozzles are designed to spray or diffuse water on, against and between dishes 4a in the rack 4. Such sprayed or diffused water finally falls down through the strainer pan 3 and into the tank 2, after which such wash water is pumped by the pump 7 upwardly through the upright pipe 5 and nozzles 6 and 6a so as to form a continuous circulation and distribution or diffusion in contact with the dishes of such wash water. After an initial washing of the dishes by such wash water, the dishes are usually sprayed through the rinsing nozzle 8.

The supply of rinse water comes through a pipe 9 which is connected with a water supply system and the inflow of rinse water is controlled by a valve 10.

The cleaning material feeder consists of a metal casing 11 provided with a hinged top 12 and a funnel-shaped bottom 13 terminating in a tube 14 fitted externally with threads and by means thereof fastened with the nuts 15 in the

position shown. A metal pipe 16 is connected to the supply pipe 9 at a point between the valve 10 and the connection with the nozzle 8, fitted with a valve 17, and extends through an opening 18 in the casing 11 into the feeder forming a horizontally disposed ring 19 within the casing 11. A plurality of openings 20 are provided on the inner side of said ring 19.

A perforated or mesh screen 21 is disposed in casing 11 on which may be placed a receptacle 22 removably held in position by means of lugs 23 on the said receptacle 22. Such lugs engage in perforations or openings in the screen 21 and in a manner to hold the solid bottom 23a of the receptacle 22 from the screen. Said receptacle 22 has perforated or mesh-like side walls. The solid bottom plate 23a prevents the passage therethrough of cleansing material such as may be in a granular or other small particle form to be used in excess.

The flow of water charged with cleansing material is conducted to the tank 2 by means of pipe 24 connected with the tube 14.

In the preferred method of operation, if the cleaning material is in either powdered or granulated form, a supply 25 thereof is placed in the receptacle 22, and the flow of water into the tank 2 is started by opening the valve 10. The major portion of the water will flow through the nozzle 8 and fall into the tank 2. At the same time a smaller quantity of water regulated by means of the valve 17 will flow through the pipe 16 and be discharged through the openings 20 and fall upon the upper portion of the cleaning material 25 absorbing a portion thereof in solution or suspension and will flow off through the perforated sides of the receptacle 22 down the outside thereof and inside the casing 11 through the perforated screen 21 into and through the tube 14 and the pipe 24 into the tank 2 and there become mixed with and diluted by the water that has simultaneously flowed through the nozzle 8.

When the level of water in the tank has reached the overflow outlet 2a, the flow will be stopped by means of the valve 10 and the machine will be ready to operate.

After dishes have been introduced into the machine and they have been sufficiently washed, the operation of the pump 7 is stopped and the wash water comes to rest in the tank 2.

The rinse water is caused to flow through the nozzle 8 by means of the valve 10 and at the same time a quantity of water flows through the feeder in the manner previously described, displacing an equal quantity of the used water and maintaining the strength of that remaining in the tank.

In this manner the use of cleansing material is much more economical, there being no excess at any time, and more efficient, there being no dilution below the desired strength at any time.

In using cleansing materials in blocks, tablets, or cakes, the receptacle 22 may be removed, if desired, and the material placed in the casing 11, the water flowing through the interstices between them and through the screen 21, without violating the principle of the invention.

What is claimed as new and is desired to be secured by Letters Patent of the United States is:

1. The combination with a washing device comprising a tank for enclosing articles to be washed, of a liquid supply conduit leading to said tank, a valve on said conduit, an end piece upon said pipe within said tank and containing restricted openings, a receptacle for soluble cleansing material, a pipe branching from said liquid supply pipe between the valve thereon and said tank and leading to said receptacle, a valve on said branch pipe, and a pipe from said receptacle to said tank.

2. A washing device comprising a tank for enclosing articles to be washed and a rack for holding said articles and having an overflow opening below articles on said rack, in combination with a liquid supply conduit leading into said tank, a valve on said conduit, an end piece on said conduit having restricted openings therein and being positioned to spray articles in said rack, a receptacle for soluble cleansing material, a conduit branching from said liquid supply conduit between the valve thereon and said tank and leading to said receptacle, a valve on said branch conduit, and a conduit from said receptacle into said tank, the opening of said conduit within said tank being positioned to prevent liquid therefrom touching articles in said rack.

3. In combination, a washer, a cleaning material feeder disposed outside the washer, said feeder comprising a receptacle for cleaning material and having a discharge opening, a rinse water conduit for the washer, a branch conduit leading from the rinse water conduit and connected to the feeder to discharge water from said rinse conduit into said feeder at each rinsing operation of said washer, a gravity flow delivery conduit extending from the discharge opening of the feeder to the washer, and means outside the feeder and connected in the branch conduit for controlling the flow of water to the feeder.

4. Apparatus for the purpose described, comprising a washer having a container for washing solution arranged for overflow of contaminated solution by dilution with rinse water, a rinse water supply line for said washer having a rinsing control valve, a feeder having a water inlet and arranged to hold a supply of cleaning material and to deliver a quantity of solution of said cleaning material to said container proportional to the quantity of water received at said inlet, and a connection leading from said rinse water supply line, beyond said valve in the direction of said washer, to said feeder inlet, whereby cleaning material solution will be delivered by said feeder to said container during rinsing operations to maintain the washing strength of said washing solution, said connection including valve means accessible to the operator of the apparatus for adjustment during the operation of the apparatus, whereby the standard of said strength may be adjusted.

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