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FEEDING MEANS FOR WASHING MACHINES

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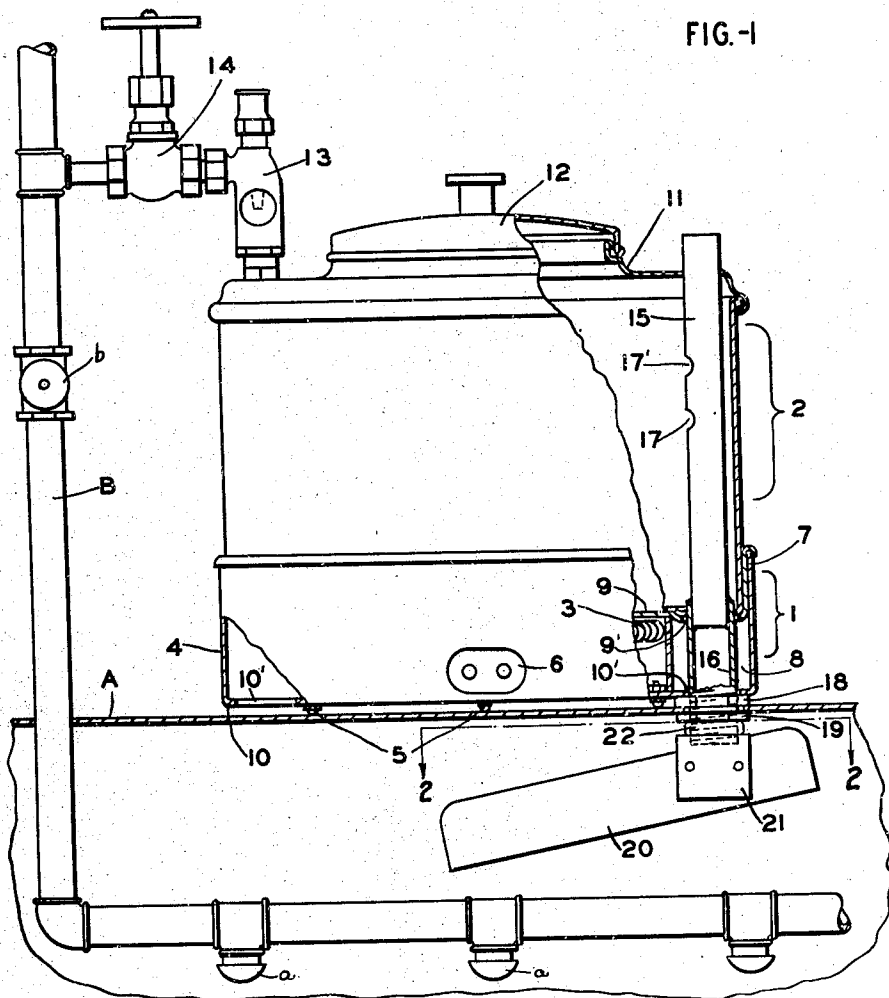


FIG. 1

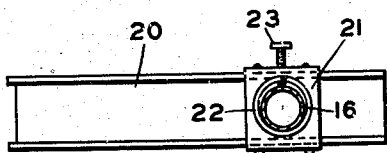


FIG. 2

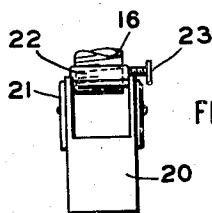


FIG. 3

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FEEDING MEANS FOR WASHING MACHINES

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6 Claims. (Cl. 299—83)

This invention relates to means for feeding cleaning chemicals and the like to dish washing and similar machines, the chemicals being supplied to the feeding means in powder, crystalline or cake form and hot water being fed to the feeding means at a predetermined rate in small quantities and the feeding means delivering a solution of the chemical in the water to the machine served.

10 This general type of apparatus is characterized by the disclosure in my Patent No. 2,034,796, issued March 24, 1936, and in my copending application, Serial No. 127,107 filed February 23, 1937, Heating means for the chemical container and
15 the reasons therefor appearing in the latter case.

Some of the chemicals employed in such apparatus tend to cake and deposit and encrust, particularly about openings and in passageways, and where heating means are employed condensation occurs at relatively cool locations, providing difficulties which may greatly impair the efficiency of the apparatus or eventually render it inoperative.

25 The general objects of this invention are to overcome these difficulties, as will appear, and particularly by providing apparatus of simple construction without small openings or passageways and having provision for maintaining the provided openings and passageways clear of obstructions. Further detailed objects are to provide novel means of relating the chemical container and its heating means and for locating the discharge of the chemical solution into the washing machine, selectively dependent upon conditions of installation which vary greatly with type and make of washing machine, location of the machine, etc.

30 With reference now to the drawing, Fig. 1 is a view in elevation, with parts broken away to show details of construction, illustrating an embodiment of the invention with essential parts of a washing machine to be served thereby; Fig. 2 is a detail in horizontal section as in the plane of line 2—2, Fig. 1, showing parts disposed within
45 the washing machine; and Fig. 3 is an end elevation of the parts appearing in Fig. 2.

With reference now to the drawing, A is the top wall of a dish washing machine having a number of rinsing-spray nozzles a served from a hot water rinse line B having a valve b for a rinsing control. The valve b is here shown as a hand operated one located outside the washing machine but as will be understood by one familiar with the art, such valve may have automatic operation
55 from suitable mechanism within the machine.

The apparatus of the present invention includes two principal units, a heating unit generally indicated at 1 and a container unit generally indicated at 2, both units being here indicated as of cylindrical form.

The heater unit 1 has an electrical heating element conventionally indicated at 3 centrally located within a casing 4 having feet 5 resting upon the top wall of the washing machine, a lateral receptacle 6 being provided on the casing for service of the heating unit which may preferably be subject to a thermostatic control not shown. The casing 4 has its peripheral wall upwardly extending, as at 7, and encloses an annular recess 8 about the heating element 3, the casing having upper and lower walls 9 and 10 which enclose the heating element and bound the recess 8.

These walls are provided at peripherally spaced locations with a plurality of pairs of opposed openings 9', 10' for a purpose which will appear.

The container unit 2 is formed to seat upon the heater unit 1 having a bottom wall which rests upon the top wall 9 of the heater and a peripheral wall fitting within the upwardly extending wall part 7 of the heater. The container also has a top wall 11 partially overhanging its bottom wall, with a closure 12 therefor. A sight drip feeding device 13 such as appears in my Patent No. 2,034,796, is mounted on the top wall 11 and connected to a hot water supply line subject to an on-and-off valve 14. Preferably, and as here shown, the connection is to the rinse water supply line B beyond its control valve b so that feed of hot water to the container is not dependent upon feed of rinse water to the washing machine.

Pipe means comprising a pipe 15 and a nipple 16 are arranged between opposed upper and lower wall parts of the container adjacent the container side wall and preferably opposite the feed valve 13 as indicated. The pipe means is open ended, extends below the container and preferably above also, and is provided, within the container, with a large lateral opening 17 very substantially below the top wall of the container and preferably also with an auxiliary opening 17' located somewhat above the opening 17. The nipple 16 is soldered or otherwise sealed within the container bottom, extends substantially therebelow and is externally threaded. The pipe 15 fits within the upper mouth of the nipple and is there secured, as by soldering.

The downwardly projecting part of the pipe means, that is the nipple part, is disposed within a pair of openings 9', 10' in the heater unit, down

through an opening in the top wall of the washing machine and projects substantially therebelow into the washing machine. The selected pair of openings in the heater unit is such as to best relate the locations of the pipe means, the inlet valve means 13 and the receptacle 6, dependent upon the conditions of the installation.

The container unit is secured to the heater unit by a nut 18 threaded onto the nipple 16 of thickness corresponding to the projection of the feet 5, and the heater unit is secured to the washing machine by a nut 19 threaded onto the nipple and turned against the under side of the washing machine top wall, the nipple extending below this nut.

An open ended conveyor 20 which may be of the trough form indicated, is rigidly secured to a yoke 21 having a collar part 22 and a set screw 23 is mounted on the projecting end of the nipple. The relation between the yoke 21 and the conveyor 20 may be such that the latter has a slight slope, with its lower end disposed more remotely from the nipple than its upper end. The collar 22 may be threaded upon the nipple 16 or may be secured thereto by the set screw 23 as indicated so that the lower, discharge end of the conveyor member is adjustable about the nipple dependent upon conditions of installation, the conveyor member always being disposed however above the rinse nozzles a.

Operation will be as follows: A quantity of the cleaning chemicals are placed within the container by removal of its closure 12, filling the container not above the level of the opening 17 in the pipe 15. The valve 14 being open and the valve 13 properly set to feed the proper amount of hot water into the container, a solution of the cleaning chemical is had within the container as the water feed continues. This solution overflows through the opening 17 into the pipe 15 dependent upon the rate of water delivered by the valve 13. This solution runs downwardly through the nipple 16 and into the washing solution within the washing machine, being discharged at the end of the conveyor 20. In some installations, where the nipple 16 is suitably located relative to parts within the washing machine, the conveyor 20 need not be employed.

After a few hours use of the feeding device a new batch of chemicals will be added to the container. The opening 17 in the pipe being substantially below the top of the container there will be no overflow even though a large quantity of chemical is suddenly added. The upper opening 17' serves as an auxiliary to the opening 17 for the added overflow into the pipe means when chemical is added to the container, and also will act should a stoppage occur at the opening 17 as by a piece of paper or the like, as an overflow.

The pipe means and its openings 17 and 17' are easily maintained clear of obstruction by occasionally running a brush downwardly through the open upper end of the pipe and thence downwardly through the nipple. Similarly, the conveyor member 20 being open at both ends is easily cleaned by a through stroke of the brush therebetween, below the nipple. The projection of the pipe above the top wall 11 of the container assists in locating its mouth for the cleaning operation. The lower mouth of the pipe 15 being within the nipple 16, there is no projection within the pipe means at the joint, for accumulation of

solidified chemical due to condensation during inoperative periods of the apparatus.

It will be understood that the heater unit functions during operation to maintain a substantially uniform solution within the container. Some chemicals employed require heat to remain in solution. Also, during long shut-down periods, as over night, there is a decided tendency with most chemicals to solidify so that the heating element is employed after such periods, to liquefy the container contents before the apparatus is put into operation.

What I claim is:

1. Feeding means of the class described, comprising a container having top and bottom wall parts with opposed openings, open ended pipe means arranged in said openings to inter-connect them and having a lateral opening within said container, the opening in said container top wall part being at least as large as the inside diameter of said pipe means.

2. Feeding means of the class described, comprising a container having top and bottom wall parts with opposed openings, open ended pipe means of generally uniform cross section arranged in said openings to inter-connect them and extending above said container top wall part and having a lateral opening within said container.

3. Feeding means of the class described, comprising cooperative container and heater units, said heater being adapted for disposition on top of a washing machine and said container to be mounted upon said heater, said container having outlet pipe means located adjacent a side wall part and extending downwardly to project through an opening in the top of said washing machine, said heater having an opening to receive said pipe means and be positioned thereby.

4. Feeding means of the class described, comprising cooperative container and heater units, said heater being adapted for disposition on top of a washing machine and having a centrally located heating element, a plurality of vertical through openings peripherally spaced thereabout, and a lateral receptacle for connection to a power source, said container having outlet pipe means located adjacent a side wall part and extending downwardly and being adapted to be mounted upon said heater with said pipe means projecting through any of said heater openings, whereby said receptacle may have selective location relative to said pipe means.

5. Feeding means of the class described, comprising a container having outlet pipe means extending downwardly below its bottom, to project through the top wall of a washing machine upon which said container is mounted, and conveyor means mounted upon said pipe means with sloping disposition to receive the discharge therefrom and to discharge at a laterally removed location, said conveyor means having a through opening transverse to said pipe means.

6. Feeding means of the class described, comprising a container having top and bottom wall parts with opposed openings, open ended pipe means arranged in said openings to inter-connect them and extending respectively above and below said container top and bottom wall parts, said pipe means having a lateral opening within said container.

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