

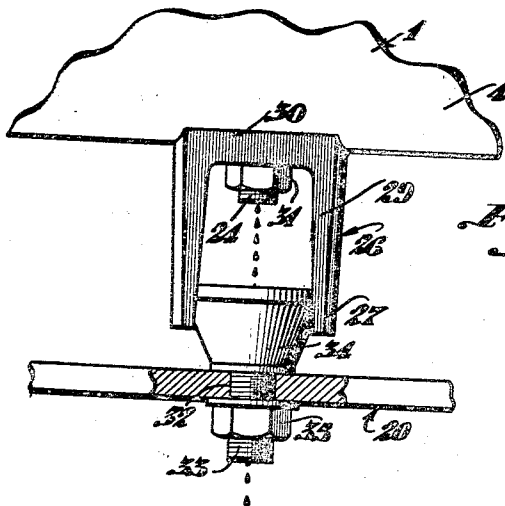
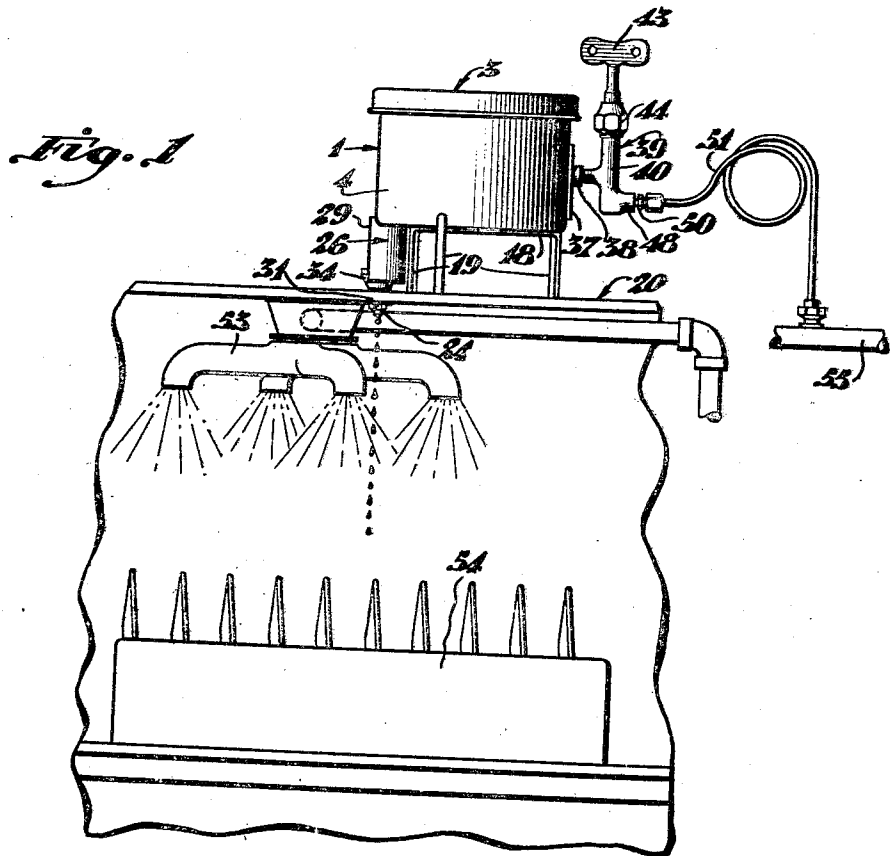
April 27, 1943.

S. J. MILLER
DETERGENT DISPENSER

2,317,548

Filed May 15, 1940

2 Sheets-Sheet 1



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2 Sheets—Sheet 2

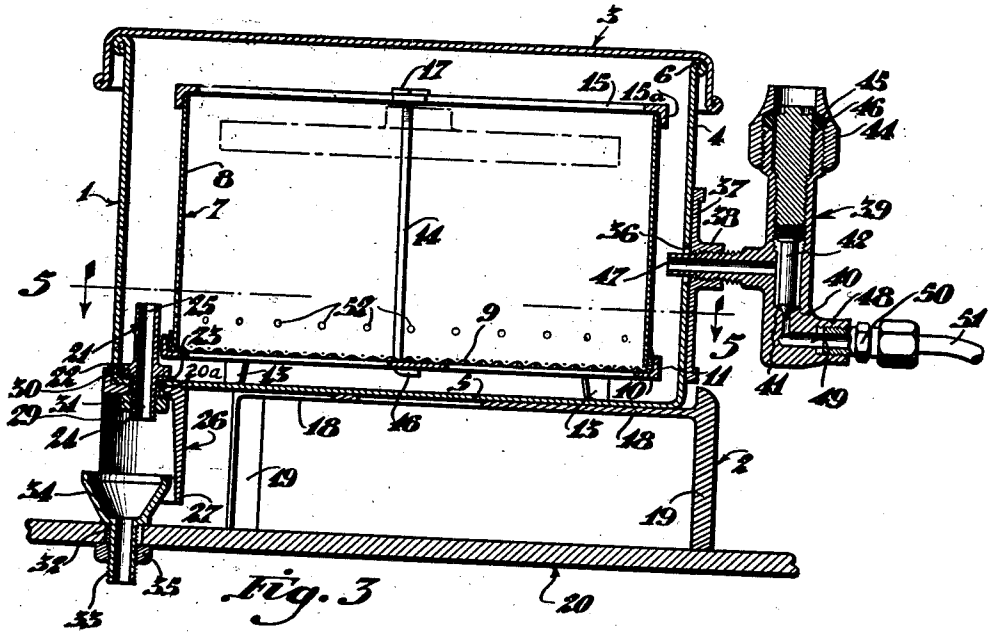


Fig. 3

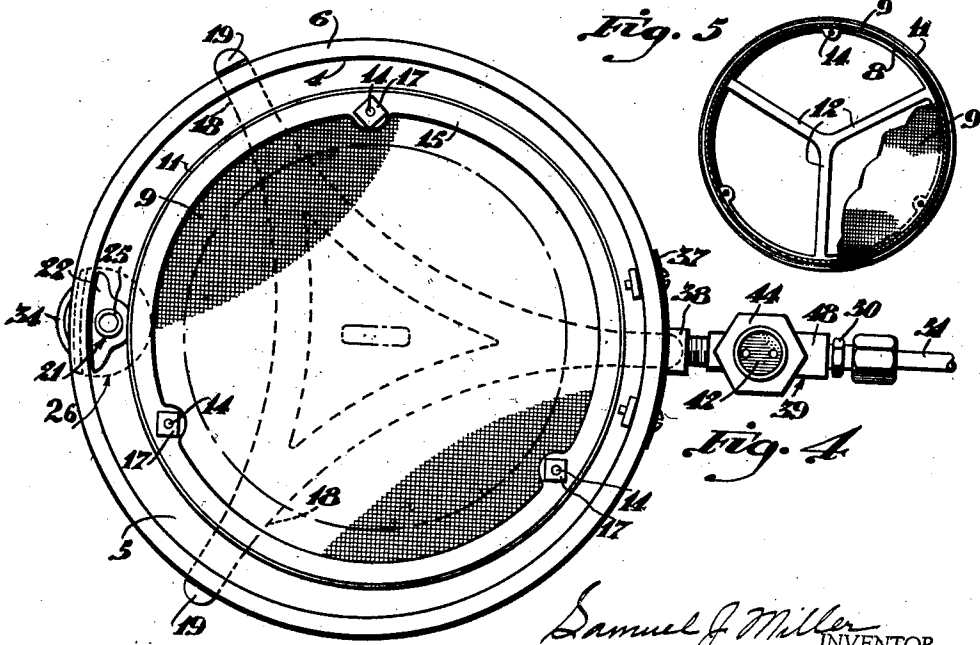


Fig. 5

Fig. 4

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DETERGENT DISPENSER

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5 Claims. (Cl. 299-83)

This invention relates to an apparatus for providing and dispensing a detergent solution for a washing machine. It is directed particularly to a device adapted to be used upon a dishwasher of the kind employed in hotels and restaurants.

In the use of machines of this general type the conventional procedure is to introduce, by hand, a quantity of cleanser into the water in which the dishes are to be washed. As a matter of practical experience, however, it is usual that either too little of the detergent is used which results in ineffectual washing, or else too much, which leads to needless expense, and, in some instances to an actual impairment of the cleansing function.

The primary object of the present invention has been to provide a simple and inexpensive apparatus which is capable of dispensing a solution of the detergent in an amount substantially predetermined in accordance with the quantity of water that is used, and therefore in accordance with the amount of dishwashing being done.

A further object of the invention is to provide a dispenser which is capable of furnishing a detergent solution of substantially uniform concentration by progressively dissolving it in water. In this regard the invention contemplates a device which is furnished with water and also furnished with a supply of dry detergent, for instance, in powdery or granular form. During the use of the device the water gradually and progressively dissolves a portion of the detergent so as to yield a detergent solution.

In a further respect the objective of the invention contemplates means for keeping the bulk of the body of the detergent material, except that which is in the process of actually being dissolved, in a substantially dry condition. This feature is a very desirable one since a detergent which has become wetted and then allowed to stand, for instance over night during a period when the dishwasher is not in use, tends to form into a hard cake which is relatively difficult to dissolve the next time a supply of detergent solution is desired. For purposes of economy and particularly for good dishwashing results, it is desirable that the strength of the solution be as uniform as possible.

The invention is also directed to the objective of providing a unitary type of dispenser adapted to be supported upon a dishwashing machine, e. g., upon the top of it, yet readily lifted away from the machine so that both can be cleaned conveniently.

A typical structure providing these desired re-

sults and other features is disclosed in the accompanying drawings in which:

Figure 1 is a sectional elevation showing the relationship of the dispenser unit to the washing machine and the dishes being cleansed within it.

Figure 2 is a fragmentary sectional elevation showing the means for holding the dispenser in a predetermined location upon the machine without interfering with the easy removal of it from the machine.

Figure 3 is a sectional elevation through the dispenser device itself.

Figure 4 is a top plan view showing the cover of the dispenser removed.

Figure 5 is a detailed sectional view taken on the line 5-5 of Figure 3.

The device which is shown in the drawings primarily comprises a tank 1, a support 2 upon which the tank is rested and a cover 3. The tank itself is preferably made of a rustless type of metal, for instance, copper or bronze or stainless steel. It is, in fact, desirable to make all of the parts of the structure of such a material so as to prevent deterioration of it.

The tank is preferably of a circular formation and is comprised of an annular wall 4 and a bottom wall 5, with the upper edge of the annular wall turned to provide a bead 6. The cap 3 fits over the bead as shown in Figure 3. This construction of the tank is not requisite but is recommended because of its cheapness and simplicity.

Within the tank a detergent basket 7 is provided. This element too is preferably of an annular formation and is comprised of a side wall 8, and a screen, or better still a foraminous plate, 9 as a bottom member. A ring 10 having an annularly upstanding flange 11 fits around the wall 8 of the basket and, to support the center portion of the screen, the ring is provided with a central spider comprising the arms 12 as shown in Figure 5. The annular member 10 is provided with feet 13 extending from its lower portion which serve to elevate the bottom of the detergent basket from the bottom 5 of the tank.

The ring 10 is provided, at intervals about its periphery, with bosses which extend inwardly of the wall 8 of the basket and these are bored to receive clamp rods 14 which extend upwardly along the walls and through similar bosses provided in an upper ring 15 which is provided with a depending annular flange 15a for holding it in position relative to the wall of the basket. The rods 14 are headed, as at 16, at one end and threaded to carry nuts 17 at the other end, so that the two rings can be drawn together to hold

the plate member 9 and the other parts of the basket in rigid assembly.

If desirable, a weight disc, illustrated in the dot and dash lines, Figure 3, may be provided to fit within the basket and rest upon the top of the detergent disposed therein to feed it downwardly as it dissolves.

The support member 2 upon which the tank rests is of a spider formation as shown in the dotted lines in Figure 4 and comprises the interconnected arms 18 upon which the bottom of the tank rests, and feet 19 at the extremities of the arms. The feet extend slightly above the arms and maintain the location of the tank upon the support. The feet themselves elevate the bottom of the tank above the top of the washer which is indicated generally at 20.

Adjacent the wall 4, at one portion of the bottom 5 of the tank, there is an outlet opening 20a through which a pipe 21 passes. The pipe is provided with a shoulder 22 which presses against a gasket 23 resting upon the bottom of the tank. Below the shoulder the pipe is provided with a threaded portion 24 and an offtake portion 25 extends a predetermined distance above the bottom of the tank and also above the bottom member of the basket.

The pipe 21 is bored to provide a discharge outlet from the tank. The lower threaded portion 24 of the pipe extends through a bore in a thimble 26 which provides a skirt 27 extending annularly about the discharge outlet. A portion of the skirt of the thimble is cut away as at 29 adjacent the wall 4 of the tank, so as to enable the discharge from the tank through the outlet to be visible. The upper surface of the thimble also is provided with an upstanding arcuate flange 30 which abuts the wall 4 of the tank and therefore holds the thimble in a predetermined position. A nut 31 cooperating with the shoulder 22 clamps the thimble against the bottom of the tank.

For the installation of the device the top member 20 of the washer is bored as at 32 to receive the threaded shank 33 of a funnel 34. A nut 35 carried upon the shank 33 holds the funnel in position. The funnel extends upwardly within the skirt 27 and is annularly surrounded by it except at the chordally cut away portion 29. In view of this arrangement the dispenser apparatus can be lifted upwardly and lifted away from the top of the washing machine when it is desired to clean the machine. During normal operation, the skirt of the thimble engages the funnel and therefore maintains the location of the outlet from the tank adjacent the inlet to the washing machine. This feature is of considerable practical importance because the washing machine tends to vibrate during its usage and the device, unless held in position, tends to "walk" across the upper surface, thereby uselessly spilling its discharge over the machine. If the dispenser is clamped firmly in position it is inconvenient to remove it.

An inlet opening 36 is provided in the wall 4 of the tank 1 preferably at a point approximately opposite the discharge outlet at a distance somewhat above the bottom plate of the basket. A boss plate 37 is clamped on the outside of the wall 4 of the tank around the opening 36 and is provided with a connector boss 38 which is bored to receive a control valve assembly indicated generally at 39. The inlet to the tank may reside adjacent the outlet, but with a baffle in between the two to prevent short circuiting of the flow of liquid.

The control valve comprises a body portion 40 which is bored longitudinally to provide a valve seat 41. Within the bore a threaded needle member 42 is provided. The shank of this member is threaded for adjustment of the position of the needle relative to the valve seat; for this purpose the upper end of the needle member is configured to receive a key 43.

The outer part of the valve body, at its upper end, is threaded to receive a collar 44 which is configured internally to provide a gland 45 containing packing material 46. Connector portion 47 extends from the body portion of the valve at a point adjacent the valve seat. The connector is threaded to engage the bosses 38 of the plate 37 and it extends internally of the tank 4 as at 47. The connector also is bored so as to communicate with the passageway surrounding the stem of the metal valve.

Below the seat the valve body terminates with an inlet portion 48 which is bored to provide an inlet passageway 49 to the valve. A connector 50 extends from the inlet portion 48 for the reception of copper tubing 51 or the like through which a supply of water is furnished to the dispenser apparatus.

Operation of the device

In the normal operation of the device a supply of the detergent powder is introduced into the dissolving basket. This basket in addition to the foraminous bottom contains a plurality of apertures 52 located in its wall 4. These inlets are located at a point above the bottom and preferably at a line slightly below the level of the outlet 25. The control valve preferably is of such size that it can admit water at no greater rate than the outlet is capable of discharging, in order that water may not unintentionally collect in the tank above the outlet level 25.

The water contained in the tank seeps upwardly through the foraminous bottom and through the inlet apertures 52 in the wall of the basket and dissolves the chemical detergent which is located at this portion of the basket. The solution which is thus formed permeates throughout the entire body of water contained within the tank. Thus, chemical detergent solution of a substantially uniform concentration is discharged through the nipple into the funnel 34 from which it proceeds to the washing chamber of the apparatus. In the normal operation, the level of the liquid in the tank is at the level of the discharge outlet.

The bulk of detergent material located within the basket above the dissolving area, which is delineated substantially by the apertures 52, remains in a substantially dry condition, and as the dissolution proceeds dry chemical is fed down toward the dissolving area under its own weight.

Figure 1 illustrates the use of the device in a typical washing machine provided with a spray head 53. The spray of water from this member is projected against the dishes which are held in the basket 54. The funnel 34 may be located relative to the spray head so that the detergent solution dripping in it is caught within the spray and mixed with the wash water, or at any other point suitable for effecting admixture of the detergent solution with the wash water.

In the installation of the unit, the tubing 51 is connected to the water supply line 55 through which the rinse water passes to the washing machine. By virtue of this arrangement detergent is supplied to the washing machine substantially

in accordance with the amount of washing which is being done as determined by the flow of rinse water.

Having described my invention I claim:

1. A device of the class described adapted to dispense detergent solution to a funnel which device comprises a tank, a support for holding the tank in an elevated position, the tank having an outlet skirt, the said skirt depending from the tank adjacent the outlet and adapted for loosely telescopically engaging a funnel whereby the tank may be removably associated with the funnel, and may be separated therefrom by lifting of the tank, but with the skirt arranged to locate the outlet of the tank in a predetermined position with respect to the funnel when the skirt surrounds the funnel.

2. A device of the class described which comprises a tank having an outlet, a means for supporting the tank in an elevated position, an element of tubular form depending from the tank about the outlet and having a portion cut away to enable the discharge from the outlet to be viewed as it passes through the tubular element, the support for the tank being adapted to rest on the top of a dish-washing machine and the tubular element being adapted to extend about a funnel member extending through the top of the washing machine whereby the tubular member maintains the outlet of the tank removably in position above the funnel and whereby the tank may be lifted to dissociate the device with the funnel without disturbing chemicals disposed within the tank.

3. A device of the class described which comprises a tank having an inlet, an outlet, a basket fitting within the tank and having a solid wall portion adjacent the inlet and having a foraminous bottom, the bottom of the basket being elevated above the bottom of the tank and a dis-

charge pipe passing through the outlet and extending upwardly to a level above the bottom of the basket, means for supporting the tank in an elevated position and means providing a skirt extending below the tank about the outlet, the said skirt being adapted to substantially surround a funnel extending through a surface upon which the support means for the tank is mounted.

4. A device of the class described which comprises a tank having an inlet in a wall thereof and having an outlet in its bottom member at a point substantially opposite the inlet, a basket fitting within the tank and having a solid wall portion adjacent the inlet and having a foraminous bottom, the bottom of the basket being elevated above the bottom of the tank and a discharge pipe passing through the outlet from the tank and extending upwardly to a level above the bottom of the basket, means for supporting the tank in an elevated position and means providing a skirt extending below the tank about the outlet, the said skirt being adapted to substantially surround a funnel extending through a surface upon which the support means for the tank is mounted, the means providing the said skirt having a portion cut away for visibility of the discharge from the tank as it passes through the skirt.

5. A dispenser of the type described for feeding a detergent solution to a funnel on a washing machine, which device comprises a tank having an outlet pipe, a support for holding the tank in elevated position, a skirt member surrounding the outlet pipe depending from the tank, said skirt member being sufficiently large to adapt it to be slipped telescopically over the funnel member to which it is to feed detergent solution, the said skirt member also having a portion cut away in order to permit detergent solution being discharged from said funnel member to be viewed.

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