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[54] MANUALLY OPERATED WASHING DEVICE

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[51] Int. Cl. A46b 11/06

[58] Field of Search 401/41-47, 401/137-139; 239/314, 306

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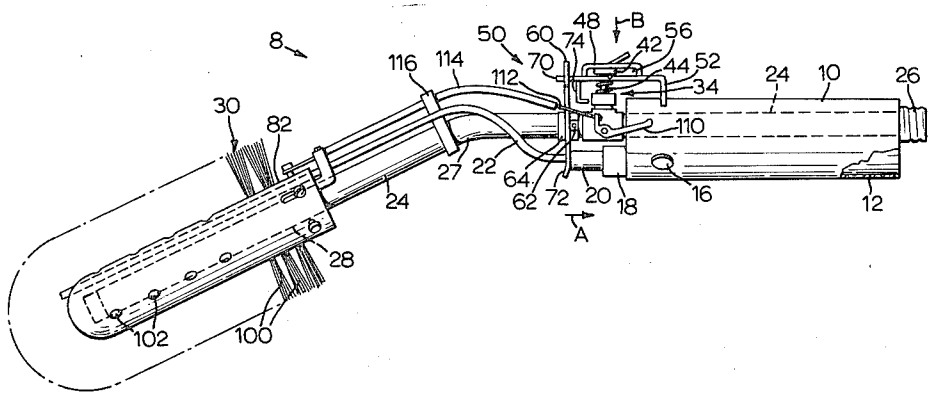
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[57] ABSTRACT

A manually operated washing device having a detergent container which also acts as a handle, a detergent pump in the detergent container, a water conduit extending through the detergent container to a brush and controlled by a tap, and an operating handle connected by a linkage to the tap and pump to close the tap when the handle is depressed and to actuate the pump when the handle is pushed forward, so that either water or detergent or both can be applied to the article being washed.

5 Claims, 5 Drawing Figures



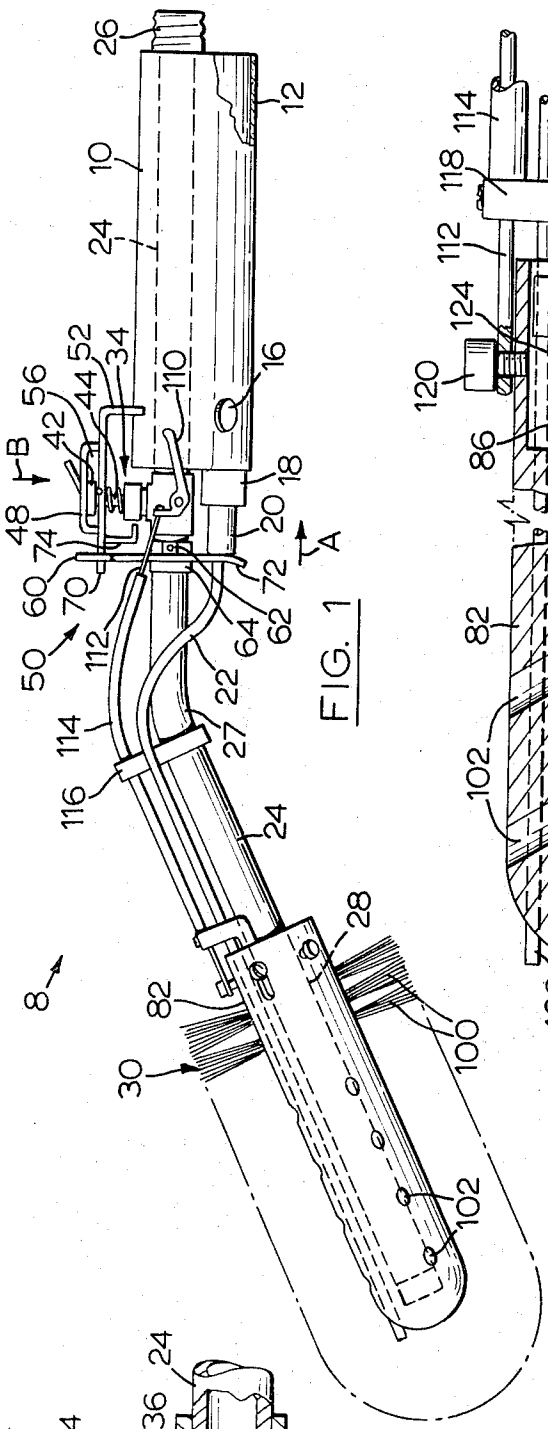


FIG. 1

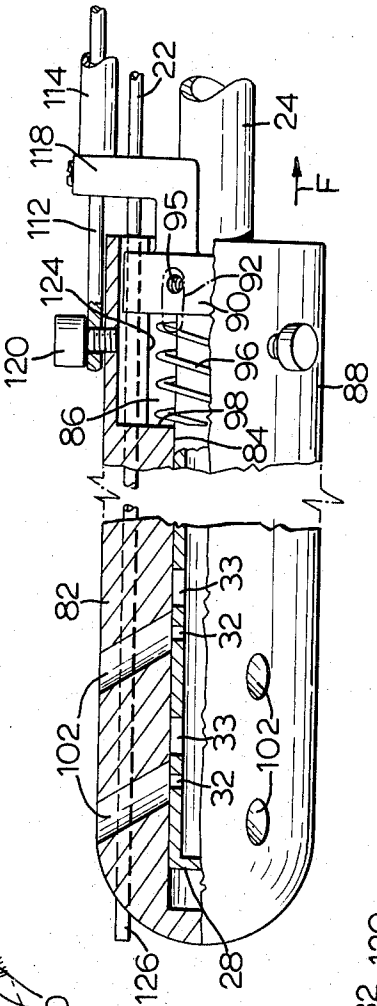


FIG. 4

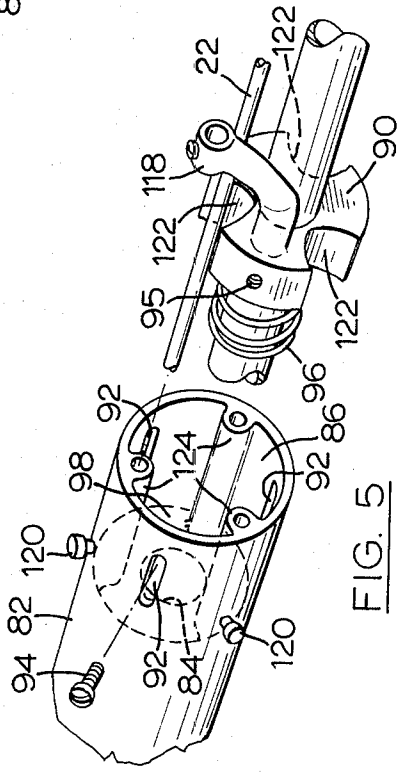


FIG. 5

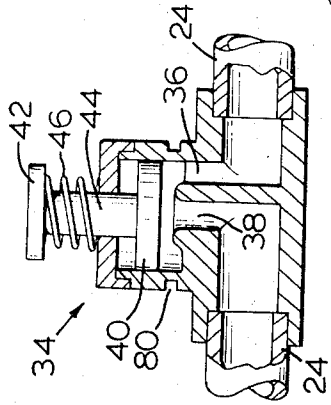


FIG. 2

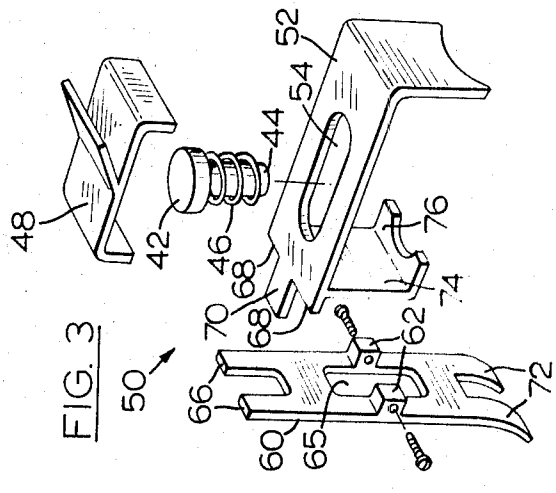


FIG. 3

MANUALLY OPERATED WASHING DEVICE

This invention relates to a manual washing device adapted to apply either water or detergent or both to an article to be washed. The device of the invention is particularly suitable for washing cups, glasses and dishes.

Various manual washing devices have been designed for use in washing dishes. The devices usually have either separate controls for water and detergent, or else have a control only for detergent, with no water control. In general they are awkward to use.

Accordingly, the invention provides a device that can conveniently be held in one hand and which has a single control which can be operated to apply either water or detergent or both to an article to be washed.

In a preferred embodiment of the invention this is achieved by providing a detergent dispenser having a detergent pump therein, and a water conduit having a water tap therein. A single control member is provided which when moved in one direction operates the detergent pump and which when moved in another direction operates the water tap. The two movements of the control member are independent of each other, so that the control member may be moved in either of the two directions or in a third direction representing a combination of the first two directions, thereby applying either water or detergent or both to the article to be washed.

In a preferred embodiment the invention also provides separate means for increasing the flow of water when the article being washed is to be rinsed and a brush that can be removed and replaced in any one of a number of positions, to increase the life of the brush.

Further objects and advantages of the invention will appear from the following description, taken together with the accompanying drawings, in which:

FIG. 1 is a side view of a preferred washing device according to the invention;

FIG. 2 is a sectional elevation of a water valve of the washing device of FIG. 1;

FIG. 3 is a perspective exploded view of portions of the control linkage used to operate the water valve and detergent pump of the washing device;

FIG. 4 is a side view, partly in section, of the brush of the washing device of FIG. 1 mounted on the water conduit, the bristles of the brush being omitted for clarity; and

FIG. 5 is a perspective view showing the base of the brush base member in position to be mounted on the water conduit of the washing device.

Reference is first made to FIG. 1, which shows a preferred washing device **8**. The washing device **8** includes a cylindrical detergent dispenser **10** covered with a high friction material **12** such as cork, rubber or cloth, so that the detergent dispenser forms a non-slip handle for the washing device. The detergent dispenser may be opened for filling with detergent by unscrewing a conventional cap **16**. The detergent dispenser includes a conventional pump **18**, of the kind found in bottles for window washing solution and the like. The pump **18** includes a plunger **20** which, when depressed in the direction of arrow A, forces detergent from the detergent dispenser through a flexible plastic hose **22**. Since the pump **18** is entirely conventional, its construction will not be described.

A separate water conduit **24** extends through the detergent dispenser. The conduit **24** includes at one end

thereof a threaded connector **26** which can be connected to a hose to a water supply. The conduit **24** extends through the detergent dispenser **10**, then out through the end of the detergent dispenser from which the pump plunger **20** projects, and then is angled at **27** and extends to a free end **28**. A brush generally indicated at **30** is mounted on the free end **28**. As shown in FIG. **4**, the free end **28** of the water conduit **24** includes a number of small holes **32** and a number of larger holes **33** for spraying water into the brush bristles, as will be explained. Except for holes **32, 33**, free end **28** is closed.

The means by which the flow of water and detergent is controlled will next be described, following which the detailed manner in which the brush **30** mounts on the water conduit **24** will be described.

As shown in FIGS. **1** to **3**, flow of water through the water conduit **24** is controlled by a push valve generally indicated at **34**. The push valve is conventional and includes an inlet aperture **36**, an outlet aperture **38**, and a valve disc **40**. The valve disc **40** can be depressed to close off the flow of water between the inlet and outlet apertures **36, 38** and when raised permits flow of water through the conduit **24**. The valve disc **40** is operated by a push button **42** screwed onto the top of a valve stem **44** connected to the valve disc **40**. A coil spring **46** encircling the valve stem normally biases the valve to its open position.

An operating member **48** is provided for the water valve **34** and for the detergent pump **18**. This operating member **48** is connected to the water valve **34** and detergent pump **18** by a linkage generally indicated at **50**. The linkage **50** includes a push lever **52** having a slot **54** therein to accommodate the valve stem **44**. The push lever **52** is spaced below the operating member **48** and is secured thereto (by welding or by forming as one piece). Located in the space **56** between push lever **52** and operating member **48** is the valve push button **42**. The valve stem **44** extends downwardly through the slot **54**, so that when the operating member **48** is depressed in the direction of arrow B, it shuts off the flow of water through the conduit **24**.

To operate the detergent pump **18**, the linkage **50** includes a separate pump lever **60** pivotally mounted at **62** on a collar **64** secured (by screws or adhesive) on the water conduit **24**. The water conduit **24** extends through an aperture **65** in the pump lever **60**. The top end of the pump lever **60** is forked at **66**, and shoulders **68** of the push lever **52** bear against the forks **66**. A tongue **70** of the push lever **52** extends through the forks **66** to prevent pivoting of the push lever. The bottom end of the pump lever **60** includes curved forks **72** which bear against the plunger **20** of the detergent pump and through which detergent hose **22** extends. Thus, when the operating member **48** is pushed forwardly, the bottom forks **72** of the pump lever **60** move in the direction of arrow A, depressing the detergent plunger **20** and forcing detergent through the plastic detergent hose **22**. When the operating member **48** is released, the spring (not shown) in the detergent pump **18** will force the forks **72** of the pump lever forwardly returning the operating member **48** to its rearmost position. The forward and rearward movement of operating member **48** does not affect the water valve **34**, because the valve push button **42** simply slides in the space **56** and the valve stem **44** slides in the slot **54**.

In summary at this point, the operating member 48 may be moved vertically to control water flow through the brush, and may be moved forwardly and rearwardly to control the flow of detergent to be applied to the article being washed. The two movements are quite independent, but both can be effected together if it is desired to apply both water and detergent to the article being washed.

In order to lock the water valve 34 in an off condition, the push lever 52 includes a locking piece 74 which extends downwardly therefrom and which has at its bottom a curved rearwardly extending flange 76. When the operating member 48 is depressed in the direction of arrow B, it may then be moved rearwardly in the direction of arrow A to hook the curved flange 76 within a circumferential groove 80 (FIG. 2) provided in the base of the water tap 34. This prevents the spring 46 from lifting the valve disc 40 and holds the tap in an off position.

The manner in which the brush 30 is mounted on the water conduit 24 will next be explained, with particular reference to FIGS. 4 and 5. As shown, the brush includes a base member 82 having a central bore 84 and an enlarged bore 86 near the end 88 of the base member facing the detergent reservoir 10. The base member 82 is mounted on the free end 28 of the water conduit, with the free end 28 located snugly but slidably in the bore 84.

To hold the brush base member 82 in position on the water conduit, the water conduit includes a retaining ring 90 welded or soldered to its free end 28. The retaining ring 90 fits snugly but slidably within the enlarged bore 86. The end 88 of the base member includes three slots 92, so that a screw 94 can be inserted through one of the slots 92 into a hole 95 in the retaining ring 90 to mount the base member 82 for limited sliding movement on the conduit 24. The base member 82 is biased forwardly (so that screw 94 normally sits at the rear of its slot 92) by a coil spring 96 encircling water conduit 24 and acting between the retaining ring 90 and the shoulder 98 separating the bores 84, 86.

The brush 28 includes bristles 100 (shown only in FIG. 1) imbedded in the exterior of the base member 82 (by means not shown) and a plurality of passages 102 extending between the exterior of the base member 82 and the interior bore 84, to conduct water from the water conduit to the bristles. To inject water into the passages 102, the free end 28 of the water conduit 24 includes as described two sets of apertures, namely the first set of small apertures 32, and the second set of larger apertures 33. The apertures 32, 33 are positioned so that when the brush base 82 is in its normal position (as drawn in FIG. 4) on the free end of the water conduit 24, the small apertures 32 are aligned with the passages 102. This is the washing position, and in this position a relatively small amount of water is allowed through the passages 102 to reach the article being washed.

For the rinse position more water is desired, and means are provided to pull the brush base member 82 rearwardly so that the larger apertures 33 are aligned with the passages 102. The pulling means comprises a lever 110 pivotally mounted on the water conduit 24 near the detergent dispenser 10. Connected to the lever 110 is a wire 112 running within a jacket 114. The jacket 114 is secured at its centre by a collar 116 secured to the water conduit and at its far end by a clamp 118 connected to the retaining ring 90. The wire 112 is connected to a pin 120 secured to the exterior of the brush base member 82, so that when the lever 110 is depressed, the wire 112 is withdrawn and the brush base member 82 is drawn in the direction of arrow F, aligning the larger apertures 33 with the passages 102. When the lever 110 is released, the spring 96 returns the brush base member 82 to the position drawn in FIG. 4.

The detergent hose 22 extends through a slot 122 in retaining ring 90 and then through a guide conduit 124 near the surface of the interior of brush base member 82. A tip 126 of the detergent hose 22 protrudes from the front of the brush base member 82. From tip 126, detergent is applied directly to an article being washed.

In order that the brush may be rotated after it has become worn on one side, two additional guide conduits 124 are provided in the brush base member 82 and two additional slots 122 are provided in the retaining ring 90. Thus, when the brush has become worn on one side, the screw 94 can be removed, and the brush can be removed from the water conduit and replaced in a position rotated 120 degrees from its previous position. In that event, the detergent hose 22 will extend through a new one of the guide conduits 124 and the wire 112 will be secured to a new one of the pins 120 (of which three are provided).

It will be seen that since the user grips the detergent dispenser 10 and not the conduit 24, the user's hand is insulated from the conduit 24 (which can become hot when hot water is used). The covering 12 of the detergent dispenser is heat resistant and also provides additional insulation.

What I claim is:

1. A manually operated washing device comprising: a detergent dispenser, said detergent dispenser including a detergent pump therein; a water conduit; means for connecting said water conduit to a source of water under pressure; means connected to said water conduit to spray water on an article to be washed; a water tap connected in said water conduit to control the flow of water therethrough; a detergent conduit connected to said detergent pump for conveying pumped detergent onto said article; and combined operating means for operating said water tap and said detergent pump; said combined operating means comprising an operating member, and linkage means connecting said operating member to said tap and to said pump, said linkage means permitting movement of said operating member in a first direction to operate said tap alone and in a second direction to operate said pump alone, and in a third direction representing said first and second directions combined, to operate said pump and tap together.

2. A device according to claim 1 wherein said detergent dispenser is cylindrical in form and serves as a handle for said device, said water conduit extending through said detergent dispenser, said detergent pump including an operating plunger extending from one end of said detergent dispenser, said plunger being movable in a direction parallel with the axis of said dispenser, said first direction being a direction perpendicular to the axis of said dispenser and said second direction being a direction parallel with the axis of said dispenser.

3. A device according to claim 2 wherein said means connected to said water conduit to spray water includes a brush having a base; said base having an interior re-

cess, an exterior surface, and a plurality of interior passages therein extending between said recess and said exterior surface; said water conduit having a free end and said base being slidably mounted on said free end with said free end located in said recess; said free end having a first set of apertures therein for washing and a second set of apertures therein for rinsing, the apertures of said second set being larger than those of said first set, and operating means for moving said brush axially along said free end of said water conduit to align said passages in said base with one of said first and second set of apertures, whereby said passages may be alinged with said first set of apertures for washing and with said second set of apertures for rinsing, to increase the flow of water during rinsing.

4. A device according to claim 3 wherein said base of said brush includes a guide conduit therein and extending therethrough, said detergent conduit extending through said guide conduit and projecting from an end of said base whereby to spray detergent directly on said article.

5. A device according to claim 4 wherein said brush includes a plurality of said guide conduits spaced apart circumferentially around said base, whereby said brush may be removed and replaced in any one of a plurality of angular positions.

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