

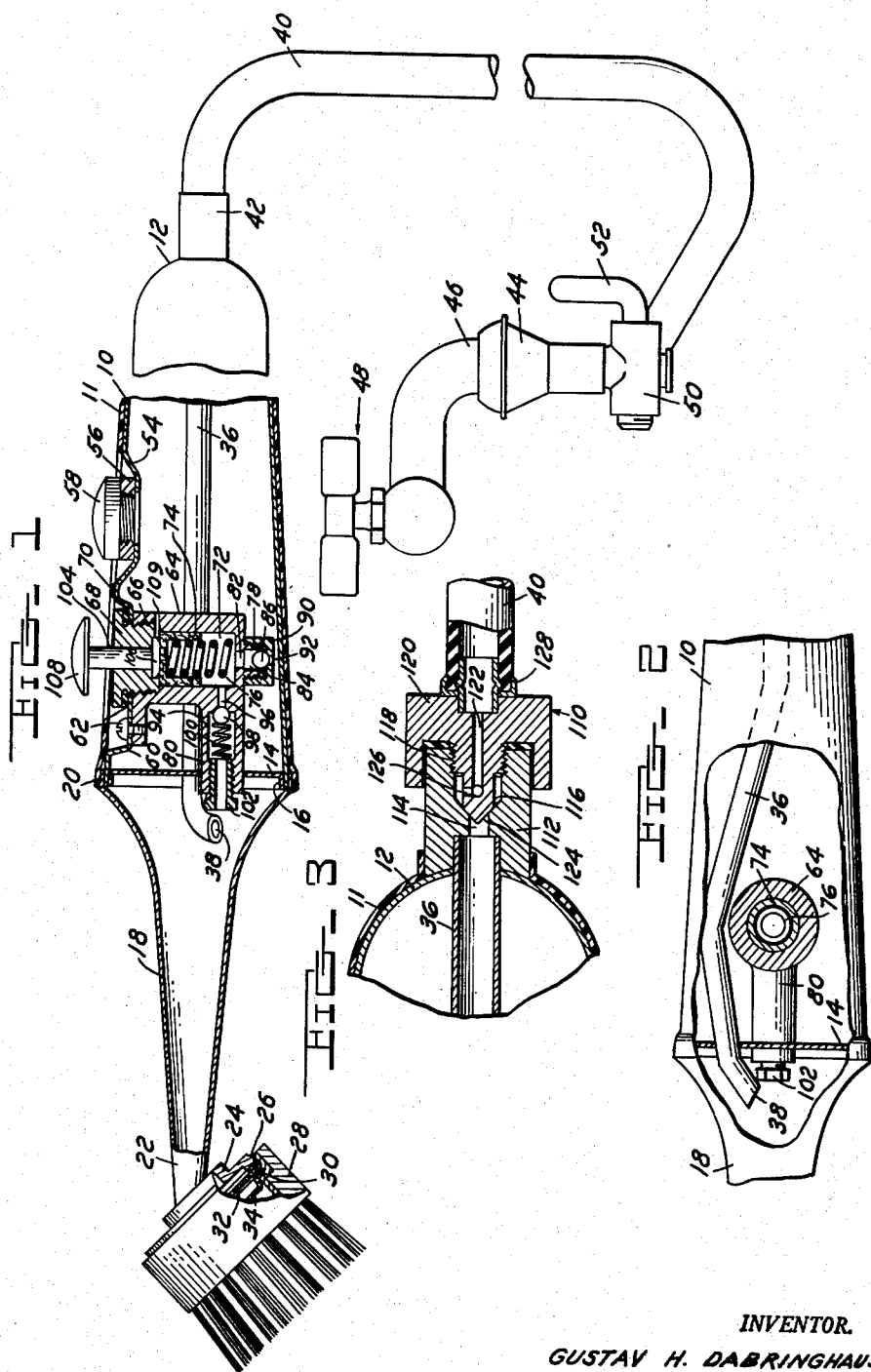
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DISHWASHING DEVICE

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DISHWASHING DEVICE

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This invention relates to a dishwasher and more particularly to a dishwasher of the type adapted to be manually manipulated.

It is an object of this invention to produce a dishwasher provided with means for discharging, at will, a metered amount of soap into a stream of water.

A further object of this invention resides in the provision of a dishwashing device which may be connected for operation with a sink faucet, the dishwasher having a hollow handle which forms a receptacle for soap.

Another object of the invention is to provide a dishwasher having a pump mechanism disposed within the handle for pumping a metered amount of liquid soap into a stream of water.

Still another object of the invention resides in the provision of a highly compact and conveniently operable dishwashing device which only requires connection to a sink faucet for operation.

In the drawings:

Fig. 1 is a side elevation, partly in section, of the dishwashing device of this invention.

Fig. 2 is a fragmentary top view of the device partly in section.

Fig. 3 is a sectional view of a modified form of valve arrangement for controlling the flow of water through the device.

Referring to the drawings and particularly to Fig. 1, the dishwashing device of this invention preferably comprises a tubular handle 10 which is generally cylindrical in form and covered by an outer rubber sleeve 11. At its rear end handle 10 is provided with a rounded contour as at 12, the front end of the handle being closed by an end wall 14 which is suitably flanged as at 15 and secured within the end of handle 10 as by brazing or the like. At the front end handle 10 is also provided with a throat 18 which is flanged as at 20 for connection with handle 10. Throat 18 is an elongated member of circular cross section which tapers from the flange 20 to the discharge end 22. The discharge end 22 of throat 18 has secured thereto a centrally apertured head plate 24 which is threaded as at 26 to receive a circular brush member 28. Plate 24 and brush 28 are angularly inclined to the axis of throat 18.

The threaded portion of brush 28 is provided with a shoulder 30 on which are seated a pair of spaced apart perforated discs 32 and 34. These discs serve to aerate the water discharged from throat 18. Water aerated in this manner from a nozzle or the like tends to flow smoothly over the surface being washed rather than splashing away from it. This feature of the spaced apart

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discs 32 and 34 is generally well known and forms no part of the present invention.

Within handle 10 there is arranged a conduit 36 which at its front end extends through wall 14 and projects angularly into throat 18 at its outlet end 38. Conduit 36 at its other end extends through the wall portion 12 of handle 10 and is connected with a rubber conduit 40 as by a ferrule 42. Conduit 40 is provided at its other end with a fitting 44 adapted for connection with the spout 46 of a conventional sink faucet 48. Fitting 44 includes a valve member 50 having a handle 52 which may be turned to control the flow of water through conduit 40.

Handle 10 is preferably in the form of a stamping having an apertured recessed portion 54 on the top side thereof in which is brazed or otherwise suitably secured a threaded bushing 56. A threaded plug 58 serves as a removable closure for bushing 56.

Spaced forwardly of recess 54, handle 10 is provided with another apertured recess portion 60 in which is secured, as by screws 62, a valve body 64. Valve body 64 is formed with a threaded bore 66 at its upper end which is adapted to receive an apertured bushing 68. Bushing 68 is provided with a rubber washer 70 which, when the bushing is threaded into valve 64, effectively seals the aperture in the recess 60 of handle 10. Body 64 is formed with a reduced cylindrical bore 72 in which is slidably arranged a cup-shaped piston 74 which is preferably formed of leather or a like material. Piston 74 is normally biased towards the upper end of bore 72 by a compression spring 76. Valve body 64 has formed integrally therewith nipple portions 78 and 80. Nipple 78 communicates with bore 72 through an opening 82 and is formed with an enlarged cavity 84 in which is disposed a ball valve 86. A cap 90 threaded over nipple 78 is provided with an outlet opening 92 of smaller diameter than ball 86. Ball 86 serves as a check valve which closes opening 92 when piston 74 moves downwardly in the bore 72.

The other nipple 80 extends forwardly through wall 14 in sealed relation thereto and is provided with an enlarged cavity 94 communicating with bore 72 through a smaller passage 96. A ball valve 98 is normally held in a position closing passage 96 by a spring 100 which backs against an apertured outlet fitting 102 threaded into the outer end of nipple 80.

Piston 74 is arranged to be actuated by a stem 104 which is slidably arranged in bushing 68. Stem 104 has an enlarged head 106 at its inner end which engages the rear or upper face of

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piston 74 and has threaded at its other end a head 108 which is arranged to be depressed by the thumb of the operator. Valve body 64 has a small aperture 109 at the upper end of bore 72. Aperture 109 is located such as to be disposed above piston 74 when the piston is at the upper end of its stroke. This aperture 109 produces considerable agitation of the soap within the handle and also provides a ready escape for soap which might leak past piston 74. In the absence of aperture 109 the soap leaking past piston 74 would tend to leak out of the valve around valve stem 104.

As is shown more clearly in Fig. 2, nipple 80 and fitting 102 project axially through wall 14 and the outlet end 38 of conduit 36 projects angularly into throat 18, the arrangement being such that the discharge axes of conduit 36 and nipple 80 intersect.

When it is desired to utilize the device for washing dishes, fitting 44 is slipped over the end of the spout 46 of faucet 48 and the faucet is turned on. Thereafter, handle 52 is turned to the "on" position and water from faucet 48 flows through rubber conduit 40 to conduit 36 and is discharged as a stream through outlet 38 into throat 18. The stream of water impinges against the tapered side walls of the throat and is thereby subjected to a swirling turbulent action. Assuming that handle 10 has been filled with a liquid soap through the filling aperture provided at plug 58, soap may be discharged into the stream of water emanating from outlet 38 by simply depressing head 108 on stem 104. When head 108 is depressed, piston 74 is pushed downwardly in bore 72. The downward movement of piston 72 causes the closing of ball valve 80 and the opening of check valve 98 and a predetermined quantity of soap is thereby discharged through fitting 102. When head 108 is released, piston 74 moves upwardly under the influence of spring 76 and, in so doing, check valve 98 closes and check valve 86 opens thereby drawing into bore 72 another charge of soap which is ejected into the stream of water issuing from outlet 38 when the head 108 is again depressed.

It will be noted that each time head 108 is depressed a predetermined charge of soap is discharged through apertured fitting 102. The soap thus discharged is picked up by the stream of water issuing from outlet 38 and a soap-and-water mixture is swirled through throat 18 so that when the mixture reaches the outlet end 22, it is discharged as a mixture very rich in suds. The discharge of a sudsy mixture at brush 28 is not instantaneous when head 108 is depressed. A few moments are required for the soap mixture to travel from outlet 102 through the throat 18 to brush 28. I have discovered, however, that after very little use, the operator becomes accustomed to the operation of the device and is enabled to obtain just exactly the right amount of soap by the manipulation of valve stem 104. I have found that the discharge of a metered amount of soap in this manner results in a more satisfactory operation of the device and that the soap desired in the issuing stream of water can be more accurately controlled in this manner as compared with devices in which the soap is continually discharged as long as the manipulating button on the device is maintained in a depressed position.

It will also be observed that the inlet opening 92 of check valve 78 is disposed adjacent the lower wall portion of the handle. The location

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of inlet opening 92 enables the supply of soap in handle 10 to be substantially completely depleted before additional soap is added. The supply of soap to the bore 72 is not effected by gravity, however. The soap is admitted in bore 72 by reason of the positive suction created in the bore when piston 74 moves upwardly under the influence of spring 76.

In the modified construction illustrated in Fig. 3, the valve assembly designated 50 in Fig. 1 is replaced by a valve arrangement generally designated 110. In this form of construction a valve body 112 is secured to the rear end 12 of handle 10 as by welding. Valve body 112 has a passage 114 therethrough, the passage being provided with an enlarged conical seat portion 116. Valve body 112 has a threaded socket 118 in which a valve member 120 is adapted to be threaded. Valve member 120 has a needle valve portion 124 which, when the valve is threaded fully into valve body 112, seats on the conical seat portion 116 and closes passage 114 which communicates with conduit 36. Valve 120 has a central passage 122 which terminates at its inner end with radially extending passages 126. Conduit 40 is connected with valve 120 by a ferruled fitting 128.

When the device is provided with the valve arrangement illustrated in Fig. 3, it will be seen that the flow of water through the device may be controlled simply by rotating handle 10 with respect to valve member 120 or conduit 40. The valve is illustrated in Fig. 3 in the closed position and when handle 10 is turned to unseat needle portion 124, the water flows from conduit 40 through passage 122 then around the needle head 124 through passage 114 and into conduit 36. The threaded portion 118 is preferably provided with a relatively coarse thread so that the valve may be fully opened or fully closed with only a slight rotation of handle 10.

It will thus be seen that I have provided a dishwashing device which can be constructed economically and which can be conveniently operated to supply to the water flowing through the device metered charges of soap as desired. The unit is furthermore very compact, the handle 10, which can be conveniently grasped in the hand, also serving as a soap receptacle with the pump for the soap located directly in the soap receptacle.

I claim:

1. A dishwashing device comprising a tubular handle forming an elongate soap receptacle, a throat portion extending axially from one end of the soap receptacle and separated therefrom by means of a wall, said throat being provided with a discharge port remote from said wall, a liquid conduit extending through said handle and discharging into said throat portion, means within the receptacle forming an enclosed cylinder, the axis of which extends generally transversely of the axis of the receptacle, a reciprocable piston within said cylinder, said cylinder having an inner and an outer end, spring means biasing said piston towards the outer end of said cylinder, means for depressing said piston toward the inner end of the cylinder, said cylinder being provided at its inner end with an inlet port and an outlet passage, said inlet port opening directly into said soap receptacle and said outlet passage opening into said throat at a point adjacent the discharge end of said liquid conduit, said inlet port and said outlet passage being provided with oppositely acting check valves whereby when

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the piston is depressed the check valve in said outlet passage opens and the check valve in said inlet port closes and when said piston moves in a direction outwardly of said cylinder the check valve in said inlet port opens and the check valve in said outlet passage closes.

2. The combination set forth in claim 1 wherein said inner end of said cylinder and said inlet port are disposed closely adjacent the tubular wall of said soap receptacle.

3. The combination set forth in claim 1 wherein said cylinder has a port adjacent its outer end communicating with said soap receptacle and communicating with said cylinder on the side of said piston opposite said inlet port and outlet passage.

4. The combination set forth in claim 1 wherein said means forming said cylinder are disposed adjacent the end of the handle from which said throat portion extends.

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5. The combination set forth in claim 1 wherein said means for depressing said piston comprises a stem operatively associated with said piston and projecting exteriorly of the handle from the outer end of said cylinder.

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