Dec. 13, 1949 A. J. GUNN 2,491,175

DISH AND LIKE WASHING MACHINE

Filed Sept. 6, 1944 2 Sheets-Sheet 1

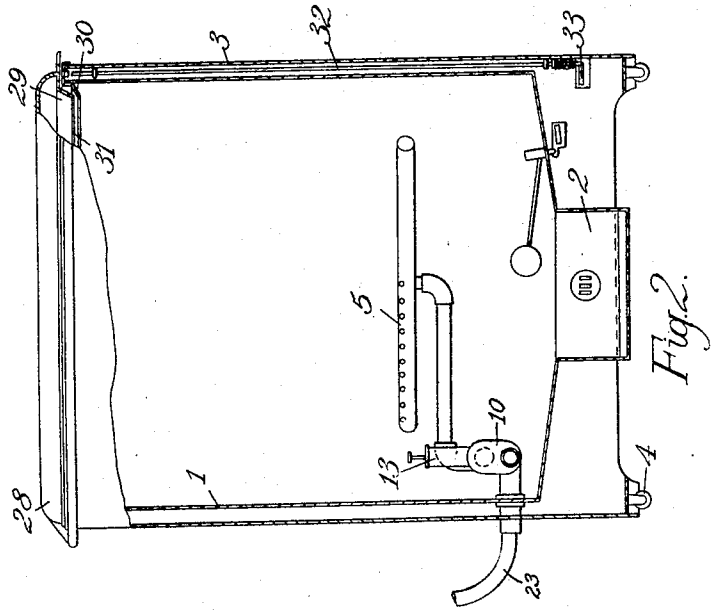


Fig. 2.

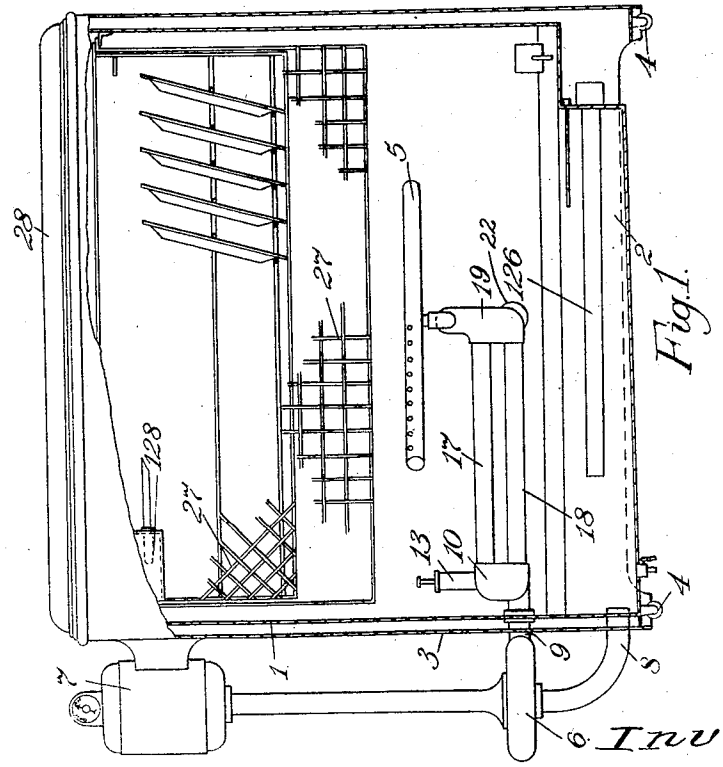


Fig. 1.

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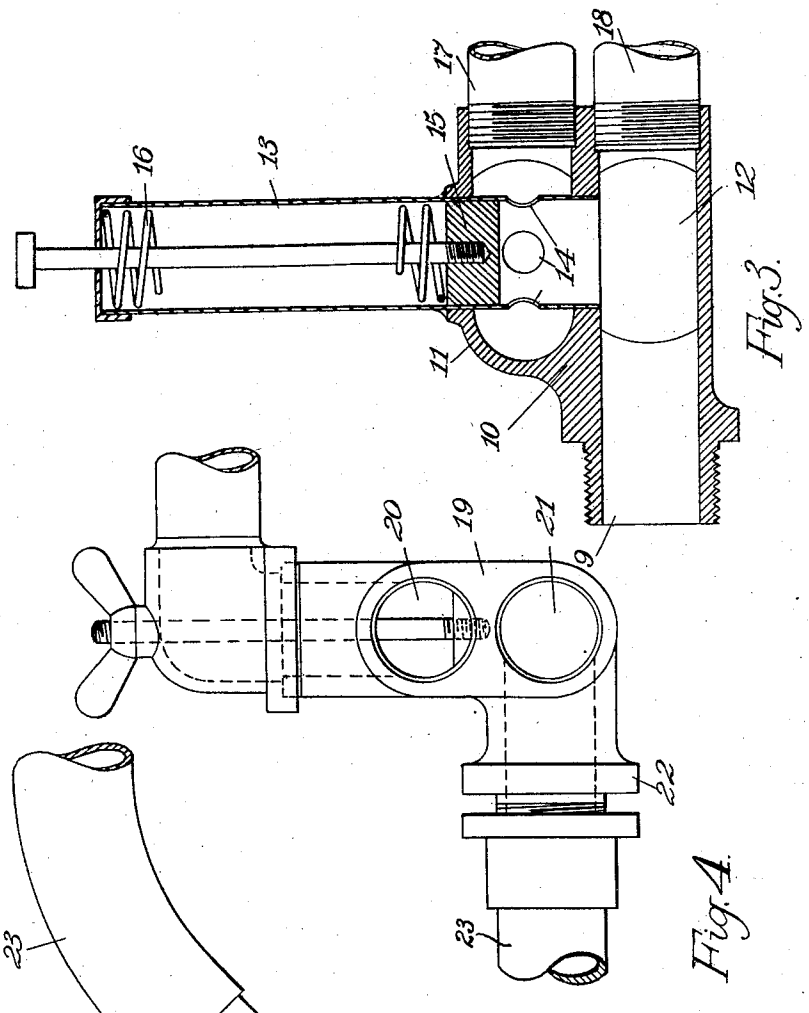


Fig. 3.

Fig. 4.

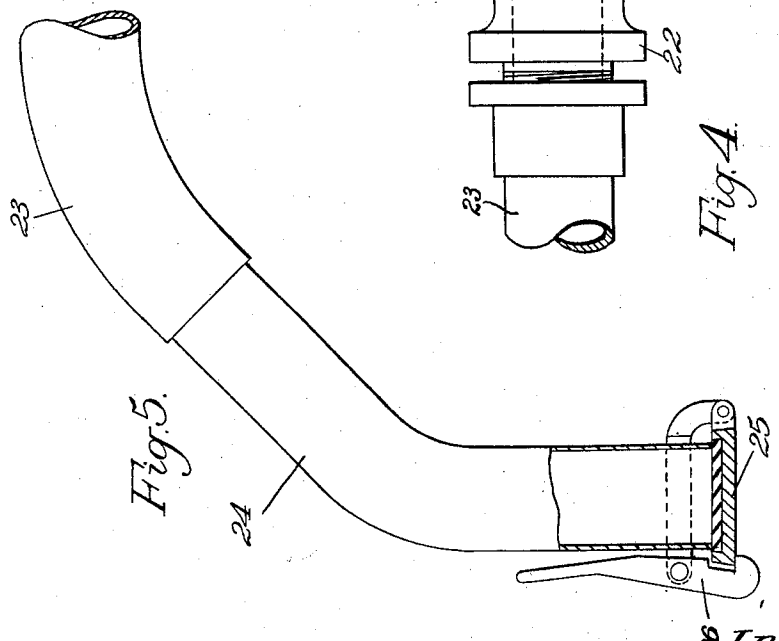


Fig. 5.

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UNITED STATES PATENT OFFICE

2,491,175

DISH AND LIKE WASHING MACHINE

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4 Claims. (Cl. 134—186)

1

This invention relates to washing machines for culinary utensils such as plates, dishes, etc. of the type wherein the articles are supported in openwork baskets and are treated by spraying a washing fluid thereon.

It is an object of the present invention to provide an improved washing apparatus of the type described adapted particularly for domestic use which is of simplified construction and in which the parts are arranged so that cleaning of the machine may be readily effected and which permits of the machine being used as a domestic boiler.

A further object is to provide improved means adapted to facilitate the supplying of washing water to the machine and removal of dirty water therefrom.

According to the invention, water circulating means, such as a pump, are adapted to be connected alternately to two pipe lines one of which is coupled to the spray means, the other leading to a discharge, said pipe lines being controlled by valve means.

The discharge is preferably coupled to a hose permitting the supply of water to the machine when the circulating means are not in operation.

The valve means are preferably automatically operating by pressure set up by the circulation means.

Further features of the invention will be hereinafter described.

In the accompanying drawings:

Figure 1 is a sectional elevation of a washing machine incorporating the invention,

Figure 2 is a section at right angles to Figure 1,

Figure 3 is a detail view of a controlling valve,

Figure 4 is a detail view of a delivery head, and

Figure 5 is a detail of a filling and emptying hose.

In carrying the invention into effect according to one convenient mode by way of example, the machine comprises a tank 1 the base of which slopes downwardly to a water sump 2 which extends substantially the whole length of the tank.

The tank 1 is located within an outer container 3 which is provided with castor wheels 4 so that the machine is rendered portable.

At a convenient height above the base of the tank spray means 5 are provided adapted to provide a plurality of upwardly directed water jets covering the whole area of the tank. The spray means may be of any suitable form and are readily removable from the tank.

Mounted on the exterior of the outer container 3 at one end thereof is a centrifugal pump 6 having an electric driving motor 7. The inlet 8 to the pump extends through the walls of the outer container 3 and tank 1 into the water sump 2. The discharge 9 from the centrifugal pump extends through the same wall and into the tank between the base thereof and the spray means 5 and is coupled to a valve casing 10.

2

The valve casing 10 is located in one corner of the tank 1 and is provided with upper and lower chambers 11 and 12. The pump discharge 9 is connected to the lower chamber 12.

A vertical valve cylinder or sleeve 13 extends through the upper chamber 11 and opens into the lower chamber 12. Communication is also afforded between the valve sleeve and the upper chamber by a circumferential series of ports 14 in the sleeve. These ports 14 are controlled by a piston valve 15 sliding in the sleeve 13 under the influence of a spring 16 (or weight) so that it normally moves downwardly to close the ports 14.

The upper and lower chambers 11 and 12 are connected by horizontally extending pipes 17 and 18 with a delivery head 19 which is located about midway of the length of the tank 1 adjacent a side wall thereof. The delivery head 19 is divided, its upper chamber 20 which connects to the upper pipe 17 being coupled to the spray means 5. The lower chamber 21 of the delivery head 19 which is connected to the lower pipe 18 is connected to a fitting 22 extending through the walls of the tank and outer container and to which a flexible hose 23 is connected. At its outer end the hose is provided with a spout or pipe 24 having a closure or flap valve 25 of a snap-action type so that it may be readily opened or closed. The flap valve 25 is controlled by a spring pressed trigger catch 26. The hose 18 is adapted to provide means for filling or supplying washing fluid or water to the tank 1 and also for emptying such therefrom.

During filling the hose 23 is adapted to be held under a tap, the flap valve 25 having been opened, and the water flows into the tank by way of the delivery head 19, lower pipe 18, the pump 6 and water sump 2. The filling continues until the level of water operates a float actuated switch whereby audible and visual signals are operated. The operator then shuts off the supply and closes the flap valve 25 on the hose 23.

During the filling operation the valve 15 is in its lower position shutting off the ports 14 and the spray means.

During the washing operation, the centrifugal pump 6 circulates water from the sump 2 and delivers it to the valve casing 10. Owing to the

flap valve 25 on the hose being closed a pressure is set up in the hose 23 and in the lower pipe 18 which is communicated to the valve 15 and lifts same to uncover the ports 14 so that the water may flow through the ports, the upper pipe 17 and to the spray means.

After the washing operation and when it is desired to empty the dirty water from the tank, the flap valve 25 on the hose is opened and the hose placed over a sink or the like and the pump 6 operated to draw the water from the sump 2 through the lower pipe 18, the hose 23 and to waste.

By this means it will be appreciated that the filling and emptying of the tank 1 are effected through the same hose 23 and the emptying operation is effected by the pump 6 thus avoiding any unnecessary manual labor.

While it is preferred that the valve control 15 shall operate automatically it will be obvious that the feature of utilising the circulating pump 6 to empty the tank 1 may be combined with positively operated valve means which may be set to the desired position by the operator.

Removable filtering means are provided between the sump and tank.

Heating means comprising an electrical immersion heater 126 are provided for heating the water or boosting up the heat of the water should the supply of water to the machine be from a suitable domestic or other hot water supply. The heater 126 may be located in the sump 2 and thermostatic means may be provided to control the temperature. Protection for the heater 126 may be afforded by a float operated switch actuated in accordance with the level of water in the tank 1.

Located above the spray means are means for supporting the articles to be washed. These may conveniently comprise removable nested openwork baskets 27.

In addition knife supporting means 128 may be mounted in the inner basket.

The machine is provided with a hinged lid 28 against which the upwardly directed sprays or jets are adapted to be deflected so that cleansing of the upper surfaces of articles in the baskets will be effected.

The lid 28 and tank 1 are provided with cooperating flanges adapted to form a splash trap to render the lid liquid tight without the necessity of gasket means. For this purpose the lid 28 is provided with a downwardly extending flange 29 and the tank 1 is provided with an inwardly extending flange 30 which extends across the rim 31 of the lid flange 29.

In order to prevent operation of the spray while the lid 28 is open, the motor circuit is controlled by a lid operated switch 33 which may be located at the base of the machine and operated by a spring plunger rod 32 located between the walls of the tank 1 and outer casing 3 and extending upwardly to the upper edge of the casing.

The sump 2 may be provided with an emergency cock for emptying purposes.

When it is desired to use the machine as a domestic boiler, the baskets and spray means are removed leaving the tank substantially free of interior obstructions. Under these conditions it will be appreciated that emptying of the tank may still be effected by means of the circulating pump 6 through the hose 23.

The cross-sectional shape of the tank 1 may be circular, the baskets being correspondingly shaped, while the container 3 may be of square or oblong shape in cross section. Any other suitable shapes may be adopted.

I claim:

1. A dish washing machine comprising a tank having a sump, a water circulating pump coupled to the sump, a valve casing having a pair of chambers one of which is coupled to the pump delivery and through a pipe line to a flexible hose having a filling and emptying orifice controlled by a manually operable valve, the other chamber being coupled by a pipe line to a spray means, and a spring controlled valve normally closing the pipe line to the spray means from the pump delivery, and automatically operable to open said pipe line to the spray means by pressure set up by the pump when said orifice is closed.

2. A dish washing machine as claimed in claim 1, wherein said pipe lines are connected to two compartments of a delivery head, one compartment being coupled to said spray means, said spray means being removable, the other compartment of said head being coupled to said hose.

3. A dish washing machine as claimed in claim 1, wherein the automatically operable valve comprises a piston element operable in a cylinder extending through the chamber of the valve casing connected to the spray means, and opening into the other chamber, said cylinder having lateral openings communicating with the chamber connected to the pipe line connected to the spray means, and a spring acting against said piston to move it to its normal position, closing said lateral openings.

4. A dish washing machine comprising a tank having a sump, a water circulating pump coupled to the sump, a first pipe line connected to the pump delivery, a hose connected to said pipe line and having a filling and emptying orifice, a manually operable valve for controlling said orifice, a second pipe line having a valve controlled connection to the first pipe line, spray means in the tank connected to said second pipe line, the valve controlling said connection being pressure actuated by pressure set up in the first pipe line when said orifice is closed to automatically open the second pipe line and spray means to the pump.

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