Jan. 3, 1950 P. M. PAPPAS 2,493,691

DISHWASHING MACHINE

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Fig. 1.

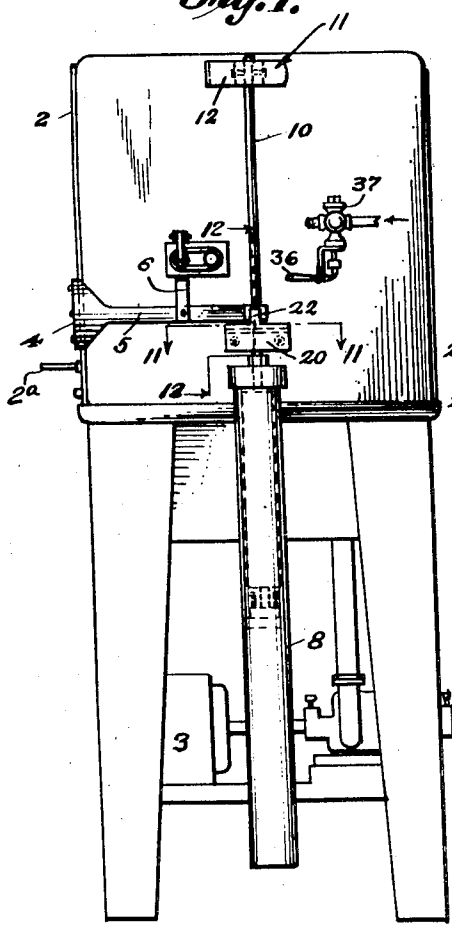


Fig. 2.

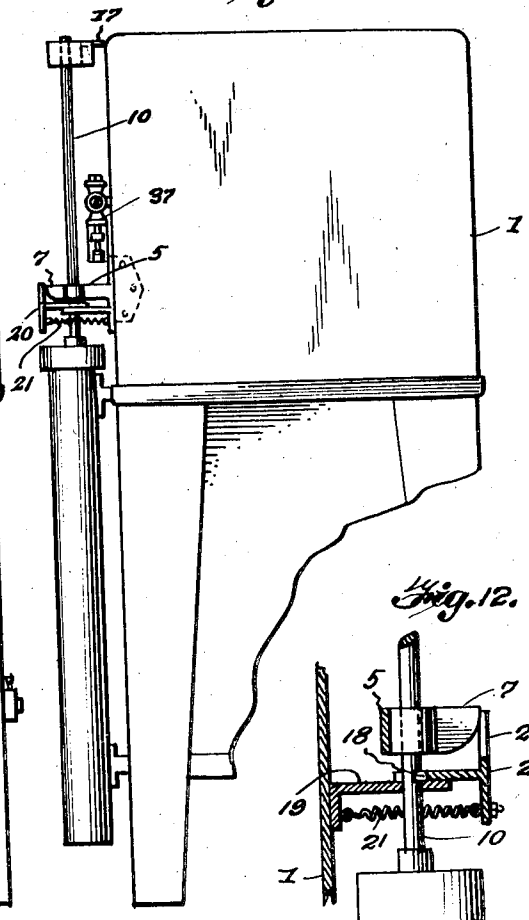


Fig. 12.

Fig. 3.

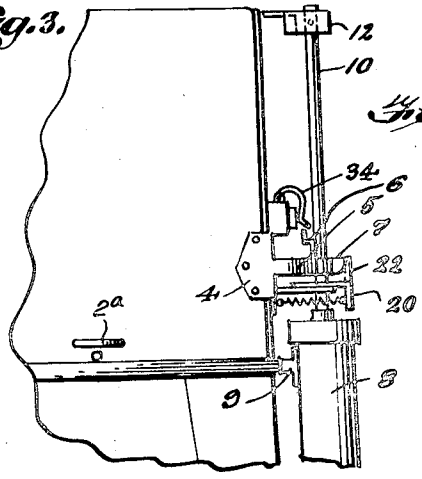
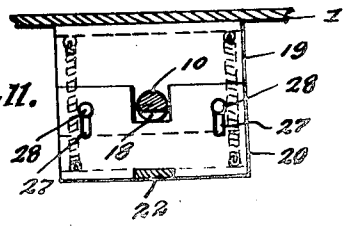


Fig. 11.



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Fig. 5.

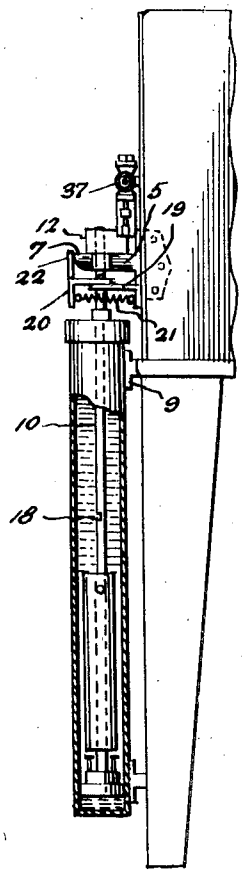


Fig. 4.

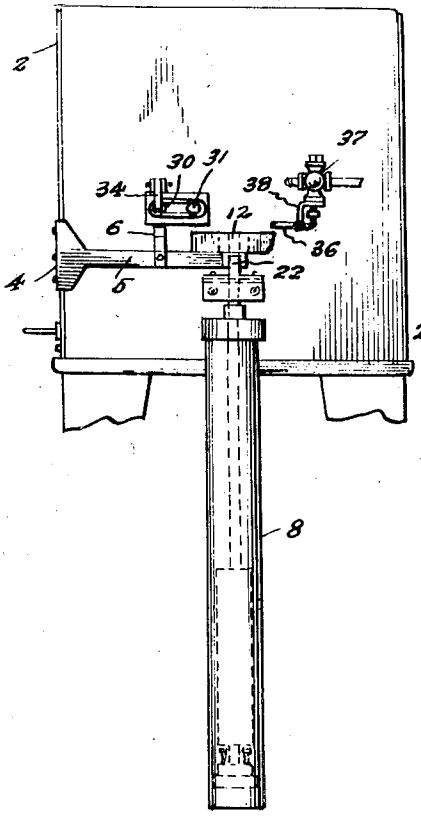
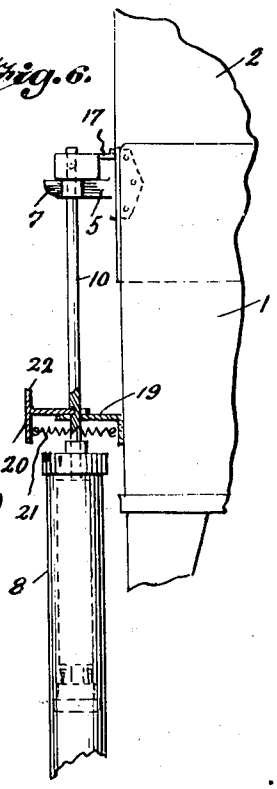


Fig. 6.



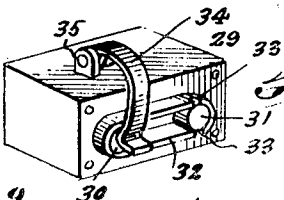


Fig. 8.

Fig. 7.

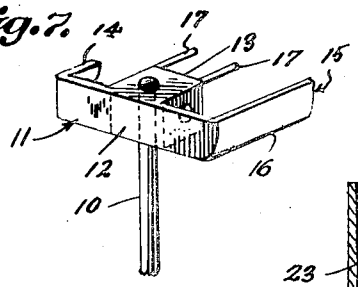


Fig. 9.

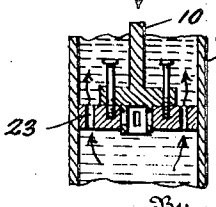
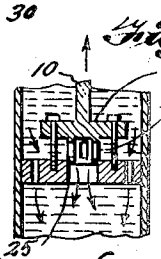


Fig. 10.



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UNITED STATES PATENT OFFICE

2,493,691

DISHWASHING MACHINE

Phillip M. Pappas, Houston, Tex.

Application June 29, 1943, Serial No. 492,765

9 Claims. (Cl. 134—57)

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This invention relates to a dish washing machine.

An object of the invention is the provision of novel and efficient means for easily controlling and timing the thorough washing of dishes.

Another object of the invention is to equip a standard dish washing machine with novel means for timing the washing and the rinsing of dishes, or the like.

A further object of the invention is the provision of novel and efficient means that is set for action when the door of the dish washing machine is in its open position, and then when the dishes are placed in the machine and the door closed, the washing will automatically proceed for a predetermined length of time, then automatically stop for a short period, and then the rinsing automatically takes place, whereupon the dishes are thoroughly cleaned.

A still further object of the invention is to provide a single automatic means to sterilize dishes, silver, and glasses by timing the rinsing period.

Another object is to produce a single automatic device which provides for the thorough washing of the dishes, silver and glasses and also provides that the rinsing period shall be sufficiently long to sterilize the dishes, etc.

A further object of the invention is to eliminate human operation, thus providing uniform and positive results.

With the foregoing and other objects in view, my invention comprises certain novel constructions, combinations, and arrangements of parts as will be hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a view in front elevation of a standard dish washing machine showing my invention applied thereto, while

Figure 2 is a side view of the machine showing in side elevation my invention.

Figure 3 is a fragmentary side view of a dish washing machine, showing my invention as it begins to operate.

Figure 4 is a fragmentary front view of a dish washing machine showing the position of my invention near its completion of operation, while

Figure 5 is a side view showing the casing of the timing device partly in vertical section.

Figure 6 is a fragmentary view of the machine showing particularly the latch device in vertical section.

Figure 7 is a perspective view of a control device

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that is fixedly secured to the upper end of the piston rod.

Figure 8 is a perspective view of the "button" or switch device.

Figure 9 is a fragmentary vertical sectional view of the timing device showing the piston rod and its cooperating units as they appear on the downward stroke or movement, while

Figure 10 is a similar view, showing the position of the piston rod and its units on the upward stroke or movement.

Figure 11 is a sectional view taken on line 11—11, Figure 1, and looking in the direction of the arrows.

Figure 12 is an enlarged sectional view taken on line 12—12, Figure 1, and looking in the direction of the arrows.

Referring to the drawings, in which I have shown the preferred embodiment of my invention, 1 designates a standard dish washing machine casing, which is provided with the usual vertically sliding door 2. This door 2 may be provided with suitably-connected weights (not shown) for facilitating the manipulation of the door and the attachments fastened thereto. An ordinary motor 3 is provided which is employed for the general distribution of the washing water in the standard machine. These parts are well known in the art and not specifically illustrated in the accompanying drawings.

A bracket 4 is attached to the outer face of door 2 and near its lower end. This bracket 4 is provided with a horizontal arm 5, and intermediate its length is an upstanding offset flexible finger 6. On the inner end of arm 5 is a right-angularly-extending presser finger 7 (Fig. 12).

A timing device casing 8 is suitably fastened at 9 (Fig. 3) to the casing 1. A piston rod 10 extends into the casing 8 and upwardly through a portion of the finger 7. Attached to the upper or outer end of piston rod 10 is a control device 11. This control device comprises a straight body 12 having at its center an integral block 13. The piston rod 10 extends into this block 13 (Fig. 7). On one end of body 12 is an inwardly-extending short primary flange 14. On the opposite end of body 12 is an inwardly-extending auxiliary flange 15. Flange 15 is straight throughout nearly its entire vertical height, but is slightly rounded at its lower portion 16, for the purpose hereinafter described. Extending outwardly from the inner end of block 13 are two guiding fingers 17; these fingers normally engage the vertical side of casing 1 during the vertical movement of the device.

The piston rod 10 is provided with a locking notch 18. A latch device (Fig. 12) is provided for holding the piston rod 10 in a set position at the time the door 2 is raised for placing the dishes in casing 1 that are to be washed. This latch device comprises a horizontal fixed bracket 19 that is secured to the side casing 1. A sliding section 20 is mounted on the fixed bracket 19 and this section 20 is adapted to have a portion enter notch 18 for holding the piston rod in a locked position. Each coil spring 21 has one end fastened to bracket 19 and its other end fastened to the sliding section 20, as clearly shown in Figure 12. Therefore, the tendency of the springs is always to draw sliding section 20 inwardly, whereby it is ready to have a portion enter notch 18, when the door is raised to its fullest height. When the door 2 is closed the presser finger 7 will engage the upstanding flange 22, causing the sliding section to be forced outwardly against the action of springs 21, whereupon piston rod 10 is released from its locked position and permits the timing device to operate.

As specifically described in my Patent No. 2,393,559, dated January 22, 1946, for the timing device, when rod 10 is released it will begin to descend by being suitably weighted, causing the oil in casing 8 to pass through the ports 23 into the upper portion of the casing. When the operator lifts upwardly on the door 2 the passage of the oil in casing 8 from its upper part to its lower part is greatly facilitated by the ports 24 in the shell 25 of the auxiliary disc 26 (Fig. 10).

The latch device (Fig. 11) has its sliding section 22 provided with elongated slots 27, in which suitable fastening means 28 are positioned to slidably retain section 22 upon its supporting bracket 19.

A "button" or switch device 29 is provided which includes a starting button 30 and a stopping button 31, Fig. 8. The details of this switch device 29 are not illustrated as it is of a common structure and is only generally referred to in this specification. The switch device is provided with an elongated shell 32 which surrounds the buttons 30 and 31. Vertically aligned slots 33 are formed upon the shell 32 in alignment with button 31 for the purpose hereinafter described. An arm 34 is pivotally mounted at 35 upon the top of the switch device, the outer end of the curved arm 34 normally resting against the outer end of button 30.

When the dishes or glasses have been placed in the washing machine and the door 2 is being moved from its open position (Fig. 6) to its closed position (Fig. 1) the finger 6 of arm 5 will ride over the pivoted arm 34, causing said arm to press upon button 30, starting motor 3, while the presser finger 7 will press against flange 22 and as it rides into its full engaging position (Fig. 12), the sliding section 20 will be moved outwardly, whereupon locked piston rod 10 will be released. Then the piston rod 10 will begin to descend in casing 8, and when the control device has reached the switch device 29, the inner end of flange 14 will ride into the upper notch 33, pressing upon button 31 to stop the motor 3. This stoppage is prior to the rinsing and sterilizing action. The time occurring between the termination of the washing action and the beginning of the rinsing action is short, say three seconds. As the piston rod 10 continues to descend within casing 8 after motor 3 has been

stopped, the curved or rounded lower edge 16 of auxiliary flange 15 (Fig. 7) will contact the operating arm 36, pressing downwardly upon its outer end, whereby the rinsing valve 37 will operate to discharge preferably heated water upon the articles in the casing 1 being washed, for rinsing and sterilizing same. Of course, it will be obvious that when the arm 36 is disengaged by the flange 15 moving downwardly past said arm, that the cycle of action is completed.

When the door 2 is lifted from its closed position, the upper end of the finger 6 will strike against the outer end of pivoted arm 34, raising said arm until arm 5 has passed the same, whereupon pivoted arm 34 will drop back into its normal position as clearly shown in Figure 8.

It will also be noted that while door 2 is closed the latch device will be inoperative (Fig. 12), permitting free movement of the piston rod 10.

In setting the timing device for action the operator pulls upward on the handle 2a attached to the door, which action opens the door and pushes control device 11 upward, which action pulls the piston rod 10 upward. As finger 7 attached to the arm 5 is no longer engaging flange 22 of the latch device, the sliding section 20 is being pulled by the action of the springs against the piston shaft and when the door is fully opened, sliding section 20 will engage the locking notch 18 of the piston rod, thus holding it securely until the closing of the door again disengages the latch and permits the piston rod to start its downward timing stroke.

While I have described the preferred embodiment of my invention and illustrated the same in the accompanying drawings, certain minor changes or alterations may appear to one skilled in the art to which this invention relates during the extensive manufacture of the same and I, therefore, reserve the right to make such changes or alterations as shall fairly fall within the scope of the appended claims.

Referring to the rinsing valve 37, when the door 2 is in its closed position and the operator begins to raise the door, the top edge of flange 15 will engage handle 36, raising the handle upward partly in a notch of bracket 38 (not shown) permitting the flange 15 to clear handle 16 and move upwardly to the position shown in Figures 1 and 2.

What I claim is:

1. In a dish washing machine, the combination with a casing provided with a door, of a timing device associated with said casing, means holding said timing device in a set position while the door is open, means for unsetting said timing device when said door is closed, means actuated by the closing of the door for operating a switch, and means associated with said timing device for operating a rinsing valve.

2. In a dish washing machine, the combination with a casing provided with a door, of a timing device associated with said casing and door, said timing device including a piston rod, means locking said piston rod in a set position, means for releasing said piston rod when the door is moved to a closed position, and rinsing valve actuating means actuated just prior to the final movement of the piston rod of said timing device.

3. In a dish washing machine, the combination with a casing, a hydraulic timing device, said casing provided with switch operating means for starting a motor, said hydraulic timing device provided with switch operating means for stop-

ping said motor, and said hydraulic timing device provided with means for actuating a rinsing valve.

4. In a dish washing machine, the combination with a casing provided with a sliding door, of a timing device carried by said casing, said timing device provided with a piston rod, said door provided with an arm, said casing provided with a latch device for holding said piston rod in a set position, a switch device on said casing, said arm provided with means for operating a portion of said switch device for starting a motor, said piston rod provided with a control device, said control device provided with means for operating a portion of said switch device for stopping said motor, and said control device provided with means for operating a rinsing valve.

5. In a dish washing machine, the combination with a casing provided with a sliding door, of a timing device carried by said casing, said timing device provided with a piston rod, said door provided with a horizontal arm and an upstanding finger intermediate the ends of said arm, said arm provided at its outer end with a right angled extending presser finger, said piston rod provided with a notch, a latch device mounted on said casing and comprising a fixed bracket and a sliding section on said fixed bracket, said sliding section adapted to enter the notch of said piston rod, said sliding section provided with an upstanding flange, said upstanding flange being adapted to be engaged by said presser finger for releasing said piston rod, a switch device on said casing provided with a pair of buttons, said switch device provided with an elongated shell surrounding said buttons, said shell provided with notches registering with one of said buttons, a pivoted arm on said switch device and resting normally upon one of said buttons, said upstanding finger being adapted to press upon said pivoted arm for actuating its engaged button when the door is moved to a closed position, a rinsing valve on said casing, a control device on the upper end of said piston rod, said control device comprising a body having a block into which said piston rod extends, said block provided with a pair of inwardly-extending guide fingers, said body provided at one end with a primary short flange and at its other end with an auxiliary long flange, said primary flange adapted to enter the notches of said shell and press upon a button, and said auxiliary flange adapted to travel over a portion of said rinsing valve for actuating the same.

6. In a dish washing machine, the combination with a casing provided with a door, of a hydraulic timing device, and means associated with said door and said timing device for controlling the time of washing, and of the rinsing and sterilizing of dishes, glasses, etc. in said casing.

7. In a dish washing machine, the combination of a casing provided with a door, of a hydraulic timing device associated with said casing, means supplying washing liquid to said casing, means supplying rinsing liquid to said casing, and means associated with said door and hydraulic timing device for automatically actuating the washing supply means and the stopping of said washing supply means just prior to the actuation of said rinsing liquid supply means.

8. In a dish washing machine, the combination of a casing provided with a door, of a timing device provided with a sliding piston rod, means carried by said door for setting said timing device, a latch device for holding said piston rod in a set position, a switch device and a rinsing valve on said casing, and said door provided with means for first actuating said switch device for starting the washing operation, and said piston rod provided with means for operating said switch for stopping the washing action and subsequently operating said rinsing valve.

9. In a dishwashing machine, the combination with a casing provided with a movable door, of a hydraulic timing device carried by said casing, said door provided with means for actuating and resetting said hydraulic timing device, and said hydraulic timing device being provided with means for controlling the time of the washing period and with means for controlling the time of the rinsing period.

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