Nov. 1, 1955 B. R. CARSON 2,722,225

AUTOMATIC DISHWASHER

Filed Feb. 24, 1954 5 Sheets-Sheet 1

Fig. 1.

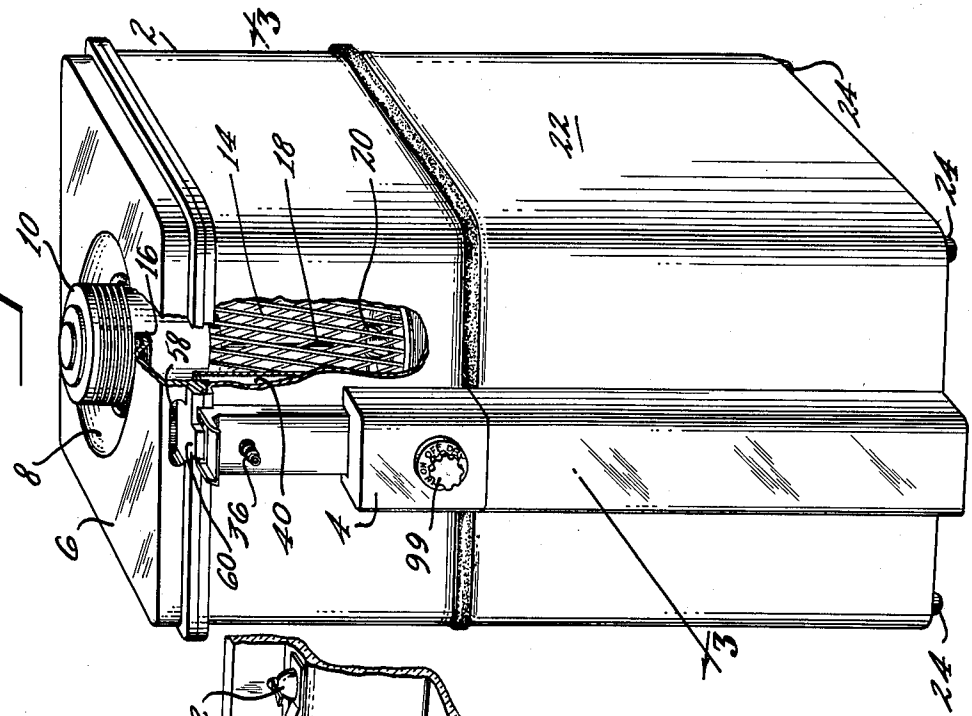
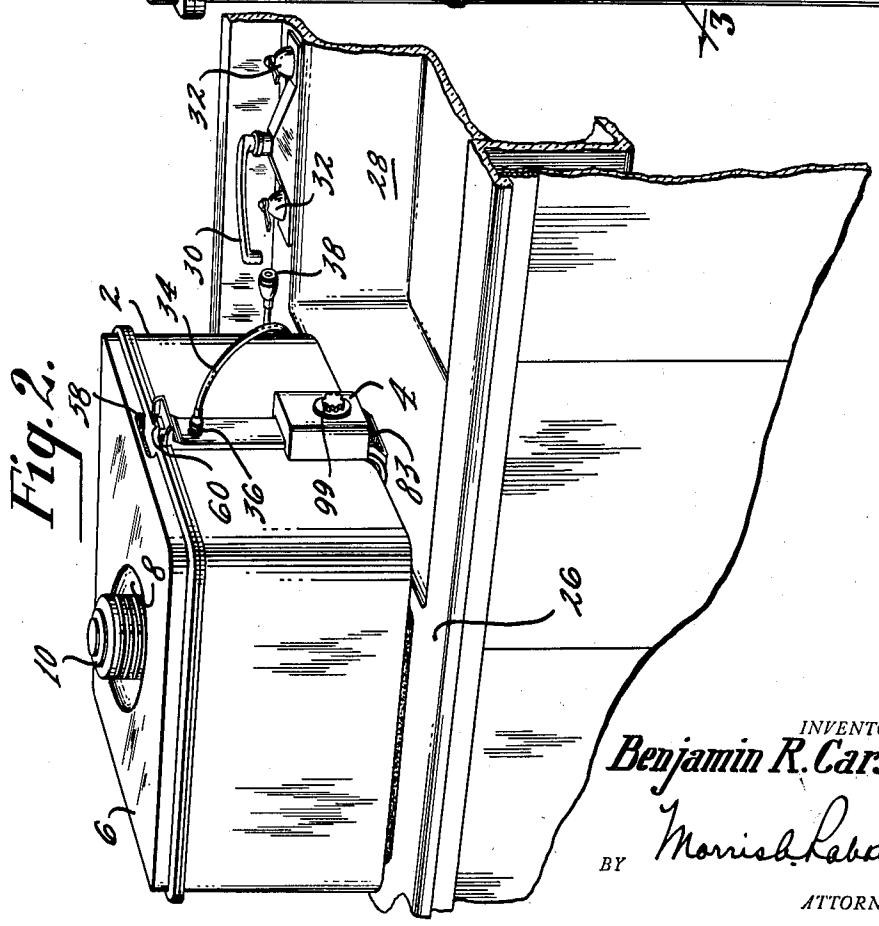


Fig. 2.



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AUTOMATIC DISHWASHER

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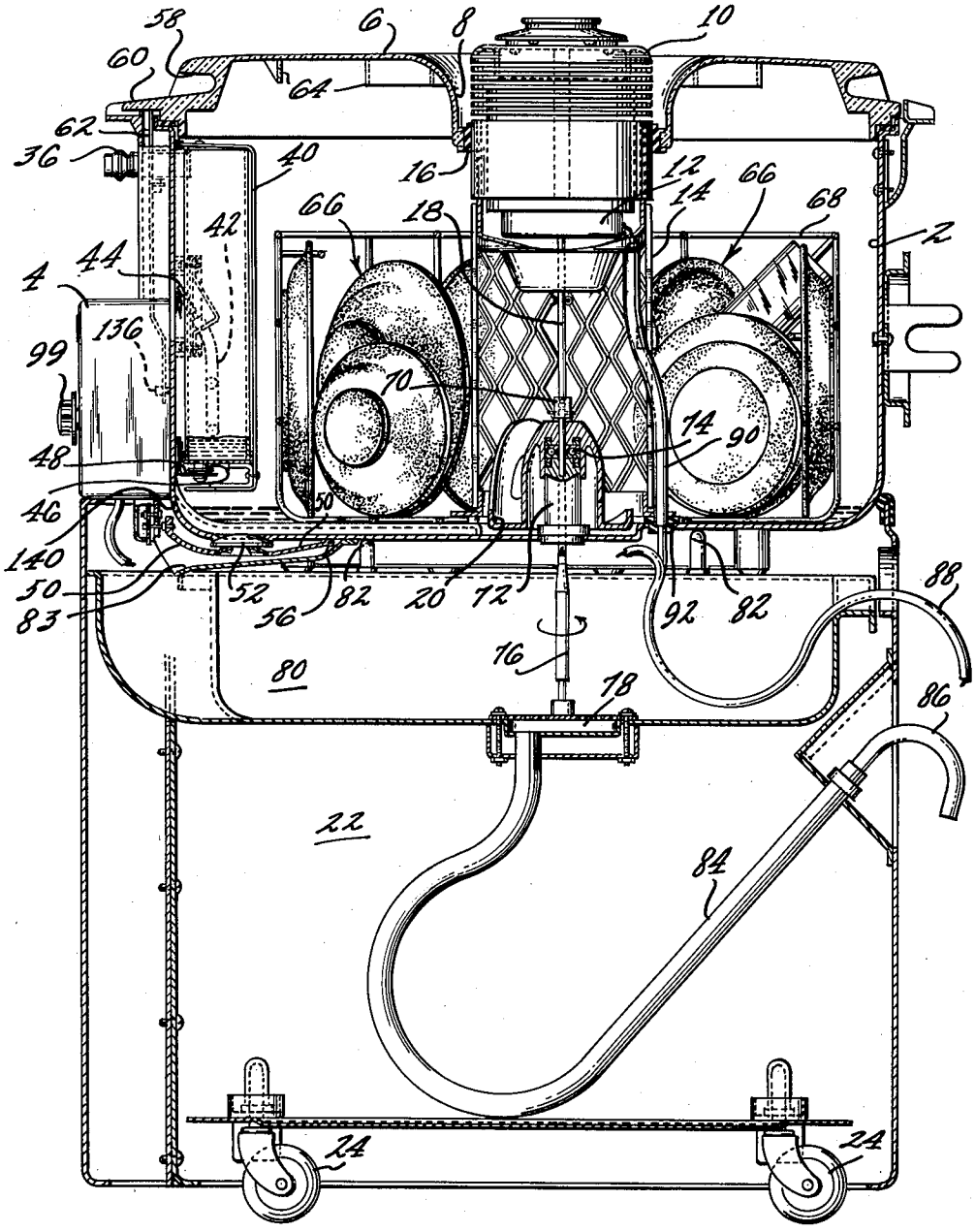


Fig. 3.

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AUTOMATIC DISHWASHER

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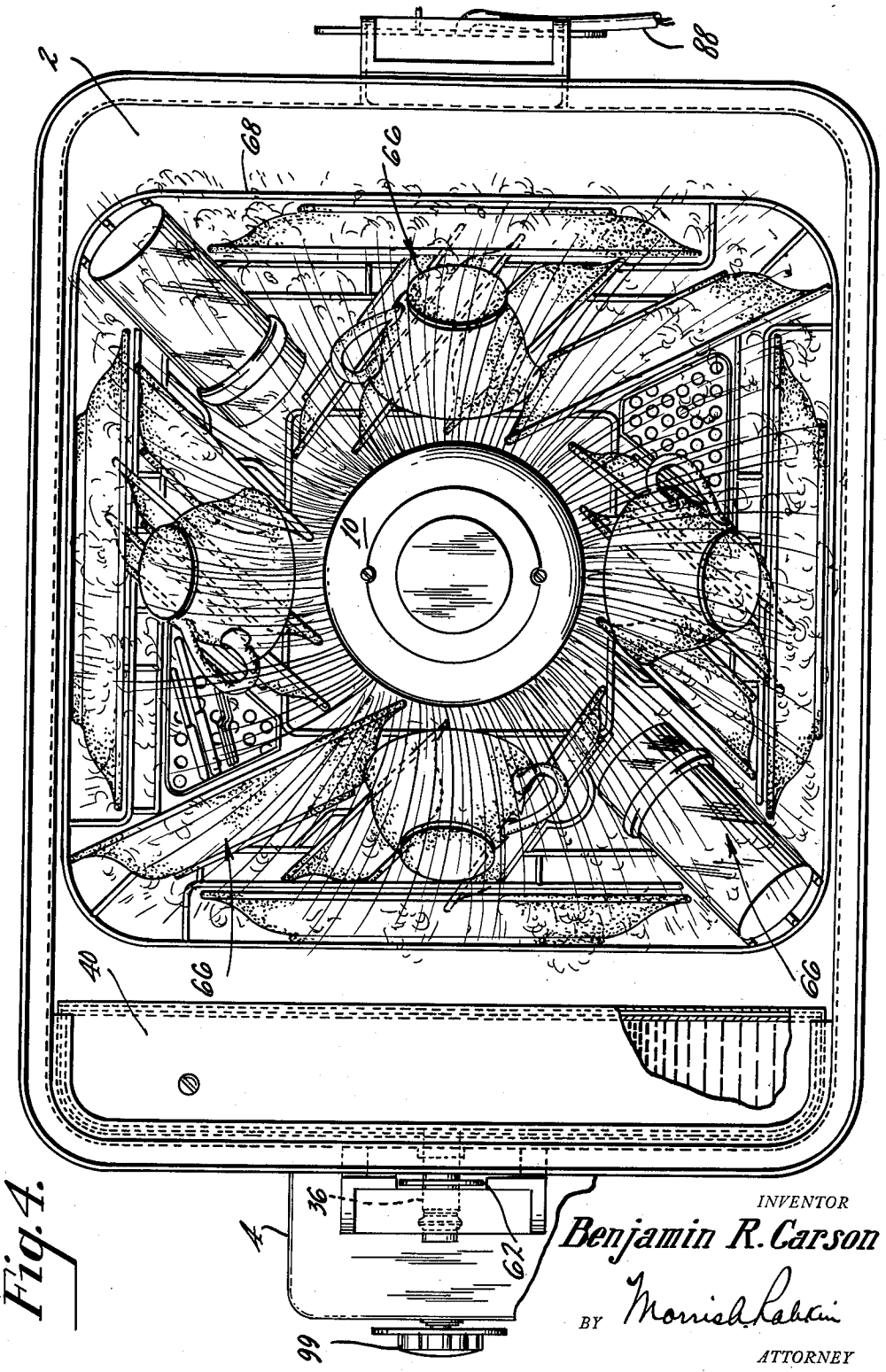


Fig. 4.

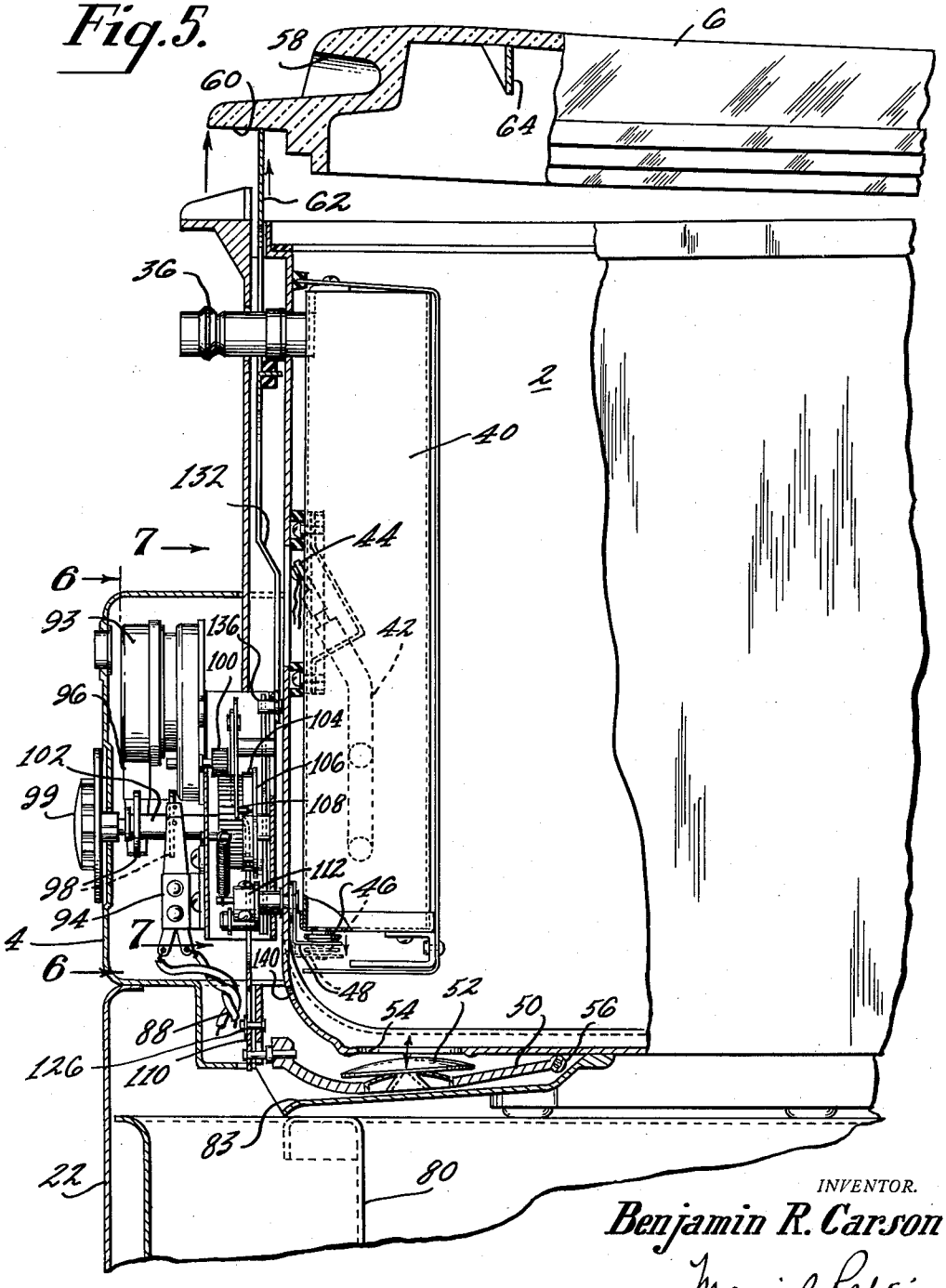
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AUTOMATIC DISHWASHER

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Fig. 5.



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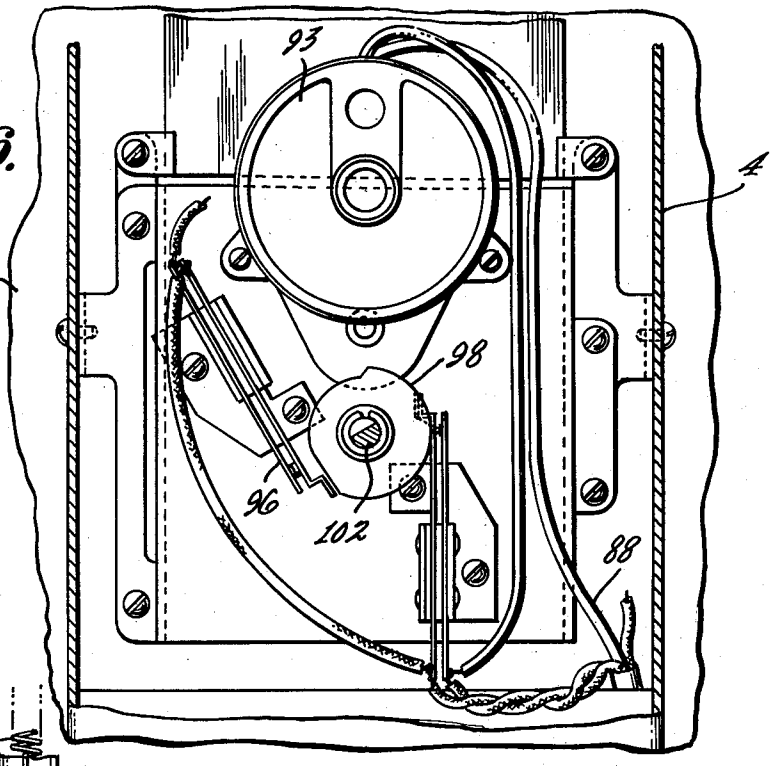
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AUTOMATIC DISHWASHER

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Fig. 6.



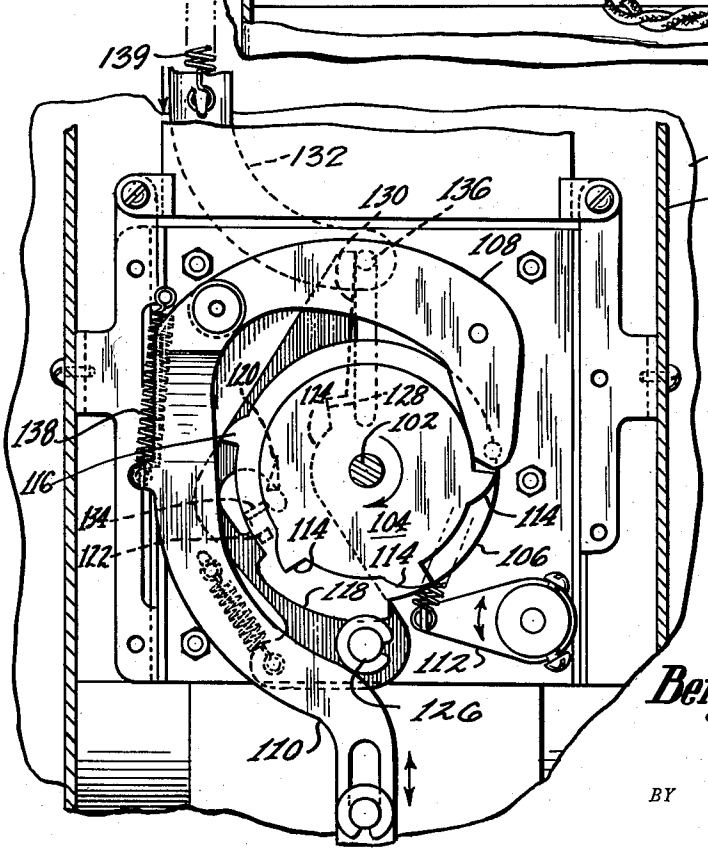


Fig. 7.

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United States Patent Office

2,722,225

Patented Nov. 1, 1955

2,722,225

AUTOMATIC DISHWASHER

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Application February 24, 1954, Serial No. 412,185

16 Claims. (Cl. 134—58)

This invention relates to dishwashing apparatus, and more particularly to a compact, portable and fully automatic dishwasher.

In the prior art, there are numerous examples of home dishwashing machines. Some of these machines are more or less automatic. Some are large and bulky, while others are small enough to be considered portable. However, the ones which are small enough to be considered portable are not fully automatic and the ones that are fully automatic are not compact and, therefore, are too large and complex to be considered portable.

A great number of families now live in relatively small apartments having limited available space particularly in the kitchens. In some of the more expensive and more modern apartments, automatic dishwashing equipment is built-in as a part of the kitchen facilities. However, in the great bulk of the present apartments, such deluxe facilities are not included nor is there sufficient space for the accommodation of the large and bulky, fully automatic machines. The smaller machines which might be accommodated space-wise, but are not automatic, provide such a limited service as to leave much to be desired.

It is accordingly an object of the present invention to provide a compact, portable, fully automatic dishwashing machine occupying a small space.

It is another object of this invention to provide a dishwashing machine as set forth which is economical in construction and operation.

A further object of this invention is to provide a machine as set forth which may be positioned and operated on the drainboard of a sink or on its own castered base.

It is another object of this invention to provide a dishwashing machine as set forth characterized by the provision of means for storing and heating rinse water.

In accomplishing these and other objects, there has been provided in accordance with the present invention a portable, fully automatic dishwashing machine comprising a main tank in which the dishes are washed, a reservoir enclosed within the walls of the main tank for storing a supply of rinse water, means in the reservoir for heating the rinse water, a timer mechanism for controlling the operation of the machine through a wash and two rinse cycles and a drying cycle, and an impeller for violently agitating the water in the main tank into contact with the dishes.

A better understanding of this invention may be had from the following detailed description when read in connection with the accompanying drawings in which:

Figure 1 is a perspective view of a dishwashing machine constructed in accordance with the present invention and shown emplaced upon its own special castered base;

Figure 2 is a perspective view showing a dishwasher constructed in accordance with the present invention emplaced on the drainboard of a kitchen sink;

Figure 3 is a cross sectional view taken along the line 3—3 of Figure 1 and looking in the direction of the appended arrows;

Figure 4 is a top plan view of the dishwasher constructed in accordance with the present invention and with the cover member removed;

Figure 5 is an enlarged side elevational of one end of the dishwasher embodying the present invention and partly broken away to show details of the control mechanism;

Figure 6 is a fragmentary view taken along the line 6—6 of Figure 5 and looking in the direction of the appended arrows; and

Figure 7 is a fragmentary view taken along the line 7—7 of Figure 5 and looking in the direction of the appended arrows.

Referring now to the drawings in more detail, there is shown in Figure 1 a dishwashing machine comprising a main compartment 2, a control box 4 and a cover member 6. The cover member 6 encloses the top opening of the main compartment 2. However, there is provided in the cover member, a central circular opening 8. A housing 10 for the main drive motor 12 projects through this central opening 8. The motor and housing is supported in a vertical position from substantially the center of the main compartment 2 by a support cage 14. Affixed to the rim of the central opening 8 and the cover member 6 is a gasket or grommet 16 which effectively seals the cover around the motor housing preventing water from escaping through the opening when the machine is in operation. Depending from the motor and inside the cage 14 is a main drive shaft 18 to the lower end of which is affixed a water impeller 20.

The dishwashing machine is illustrated as being emplaced on a base 22 designed to accommodate the machine. The base 22 is mounted on casters 24 which provides means for readily moving the assembly from one place to another. For example, the assembly may be moved to a position adjacent the table and the soiled dishes loaded directly into the machine from the table. The machine may then be pushed to a position adjacent the sink where the washing operation is carried out. Other features of the base will be described in detail hereafter.

In Figure 2, the machine is shown resting on a drainboard 26 and slightly overhanging an adjacent sink 28. The sink 28 is of course provided with the usual spigot 30 and water flow control valves 32. A hose 34 is shown coupled to an inlet port 36 on the washing machine. The other end of the hose has an adaptor 38 whereby the hose may be connected to the spigot 30.

Details of the structure of the dishwashing machine is shown more clearly in Figure 3. In this view, it may be seen that the main washing compartment 2 carries within its walls a smaller tank or reservoir 40. Within the reservoir 40, there is a heater element 42 having external contacts 44. At the bottom of the reservoir there is shown a valve 46 carried by an arm 48 which is actuated by the control mechanism in the box 4 in the manner to be described hereinafter. Also coupled to the control mechanism in the box 4 is an arm 50 carrying a valve 52 which is operable to open or close a drain port 54 in the bottom of the main compartment. The end of the arm 50 which is remote from the end coupled to the control mechanism is pivotally secured to a pivot member 56.

The cover member 6 which may be, for example of molded plastic, has a pair of horizontally extending depressions 58 which constitute hand grips whereby the cover may be readily removed from the machine. A portion of the forward edge 60 of the cover projects substantially over the edge of the main compartment and is adapted to be engaging by a push rod 62 which is, in turn, operated by the control mechanism, as hereinafter described, to lift, automatically, the cover 6 for the drying cycle following the last rinse cycle. On the inner surface of the cover and spaced radially about the center opening 8, there are positioned a number of dependent ribs 64

which serve to deflect water thrown against them by the impeller 20 to the reverse side of dishes 66 carried in and supported by a suitable basket 68 in the main wash compartment 2.

The motor 12, which is supported on the support cage 14, is enclosed in a ventilated, but water-proof, housing 10. The shaft 18 which extends downwardly from the motor toward the impeller 20 is coupled to the impeller through a separable coupling 70. The impeller 20 is mounted on a central fixed pedestal 72 and is carried in free rotation relation therewith by suitable bearing means as, for example, the ball bearings 74. The shaft 18 extends through a center opening in the pedestal 72 to a portion exterior of the bottom of the main compartment. Means are provided at this lower extension of the shaft 18 for coupling that shaft to a drive shaft 76 which is connected in driving relation with a suitable pump 78. The pump 78 is positioned in a catch basin 80 which forms a portion of the base 22. When the dishwashing machine is properly positioned on the base 22 as, for example, by means of locating studs 82 which cooperatively engage suitable openings in the bottom of the dishwasher apparatus, the lower extension of the shaft is necessarily coupled to the drive shaft 76. Thus, whenever the motor 12 drives the impeller it also drives the pump. Whenever the dishwashing machine is used on its provided base 22, the waste water from the main compartment is allowed to run into the catch basin from the drain port and its associated spout 83. The water which thus drains into the catch basin is fed into the pump 78 which in turn forces the water through the hose 84 and hooked spout 86 into a suitable receiver such, for example, as a kitchen sink. However, when the machine is used on the drainboard of a sink, the operation of the pump is not needed because the water is allowed to drain, by gravity, directly into the sink from the outlet spout 83.

Electrical power is brought into the apparatus through a power line 88 to the control box 4 from a switch contact member, to be hereinafter described, in the control box 4. The power line is fed to the motor 12 through a water-tight conduit 90 which extends from motor housing 10 down along the support cage 14 through a suitable grommeted opening 92 in the bottom of the main compartment 2.

Referring now to the control mechanism enclosed by the control box 4, in more detail, and with particular reference to Figures 5, 6 and 7, the heart of the device is a clock-type motor 93. The clock motor 93 is connected through a first switch 94 to the power line 88. A second switch 96 controls the application of electrical energy to the external contacts 44 of the heater element 42 in the reservoir 40. The first switch member 94 not only controls the energization of the clock motor 93 in the control box but also connected therewith is the main drive motor 12 so that closure of the first switch member 94 simultaneously starts the main drive motor 12 rotating the impeller 20 and starts the operation of the automatic timing or control mechanism in the control box 4. The two switches 94 and 96 are controlled by the operation of cam members 98 secured to an operating control shaft 102 which may be manually operated by a control knob 99. Suitable dwells are provided in the periphery of these cam members to correspond to an "off" position of the apparatus. Through suitable gearing 100 interconnecting the clock motor 93 and the shaft 102 of the control knob 99. Once the control knob has been turned to a "start" position closing the two switches, the clock motor 93 will drive the shaft 102 through one complete revolution. When the shaft has completed the revolution, the cam members again present the dwells to the two switch members, interrupting the current thereto and thereby stopping the clock motor 93, the main drive motor 12 and the heater 42.

Also mounted on the shaft 102 is a plurality of mechanism operating cams 104 and 106. The first cam 104 is coupled by a cam follower lever 108, through a link 110, to the operating arm 50 which is, in turn, connected to operate the valve 52, controlling the flow of water through the drain port 54. The second cam 106 is positioned to be engaged by a cam follower lever 112. Operatively coupled to the cam follower lever 112 is an arm 48 which carries the valve 46. This valve, as previously indicated, controls the flow of water from the reservoir 40. It will be noticed, from an examination of Figure 7, that cam 104 has three protuberances 114 thereon. These protuberances are arranged to open the drain valve 52 three times during a complete wash cycle; once at the end of the first or suds wash and once at the end of each of two rinse periods. The other cam 106 has two protuberances, one of short duration 116 and one of longer duration 118. The first of these protuberances 116 is so positioned, relative to the first protuberance 114 on the cam 104, that immediately following the emptying of the main compartment of the suds water and the reclosing of the valve 52, the valve 46 on the bottom of the reservoir 40 is opened momentarily to allow approximately one half of the heated rinse water to flow by gravity from the reservoir into the main compartment. Following such a rinse cycle, the drain valve 52 is again opened to drain off that rinse water. Then, when the valve 52 is again closed by the passing of the second protuberance 114 on the cam 104, the second protuberance 118 on the second cam 106 engages the cam follower lever 112 opening the valve 46 and allowing the remainder of the water in the reservoir to drain into the main compartment where the impeller 20 will throw it violently against the dishes 66 to again rinse them. Following this rinse period, the third protuberance 114 on the first cam 104 again opens valve 52 in the drain port 54 allowing the last of the rinse water to drain off.

It should be remembered that all during the first or suds wash cycle and during the first rinse cycle, the heater element 42 in the reservoir is continuously energized. Thus, while the suds wash water may be of whatever temperature as is available from the spigot 30, for each successive rinse cycle the water will be considerably hotter. In fact, the last rinse water will be hot enough to scald the dishes 66.

The cam member 106 has a pair of axial protuberances 120 and 122 extending from one face thereof toward the main compartment 2. A cam follower lever 124 is positioned to be engaged by these protuberances to effect the raising of the cover member 6 from the main compartment 2 at the completion of the last rinse cycle to allow the trapped steam in the compartment to escape and permitting the dishes 66 to be air-dried. This air drying is, of course, accelerated by the elevated temperature to which the dishes 66 have been raised by the last rinse cycle. The cam follower lever 124 is pivoted about a pivot member 126 and includes a notch 128 and a secondary cam surface 130. Associated with this cam lever is an operating link 132 which is connected directly to the push rod 62 which operates to lift the cover. The first of the axial protuberances 120 engages an upstanding stud 134 on the cam follower lever 124 and when the cam assembly rotates clockwise, as shown in Figure 7, the stud 134 is cammed to the left, as viewed in Figure 7, disengaging the notch 128 from a latch pin 136 carried by the end of the link 132. The link 132 is biased upwardly by a spring 139. The link moves upward when the pin and notch become unlatched. In the movement upward, the pin 136 engages the secondary cam surface 130 of the cam follower lever 124 further camming the lever to the left. With the cam follower lever 124 in this position, the second axial protuberance 122 on the cam 126 engages the upstanding stud 134 preventing further rotational motion of the cam 106 and hence of the entire cam assembly. With such an arrangement, it is apparent that the apparatus cannot be turned on while the cover 6 is in its raised position. It will, of course, be appreciated that the posi-

tion established by the engagement of the stud **124** and the axial protuberance **122** coincides with the "off" position of the electrical current operating cams **98**.

In operating a device of this type, the dishwashing machine may be placed on either the drainboard of a sink, as shown in Figure 2, or mounted on its special base **22** as shown in Figure 1. In either event, the hose **34** is connected to the spigot **30**. Valves **32** are open and water from the spigot flows through the hose **34** into the reservoir **40**. When the reservoir has been filled, overflow water from the reservoir flows into the main compartment until the water has reached a desired level as determined by an overflow port **140**. When water begins to flow from the drain port **54**, the operator then knows that sufficient water has been supplied to the machine, whereupon the valves **32** may be closed and the hose **34** disconnected from the spigot **30**. The control knob **99** is turned to the "on" position. As aforesaid, this closes the contacts of the switch members **94** and **96**. This applies electrical energy to the heater **42** to the main drive motor **12** and to the clock motor **93** in the control box **4**. A suitable detergent, of course, is presumed to have been previously placed in the compartment along with the dishes **66** in their provided basket **68**. When the main drive motor is energized, the impeller **20** is rapidly rotated and violently throws the water against the dishes. The relationship to the dishes and the associated basket to the impeller and the remainder of the wash compartment is shown most clearly in Figures 3 and 4. When the clock motor is energized, the shaft **102** carrying the cam members **98**, **104** and **106** is slowly rotated by the clock motor through the gearing **100**. As previously pointed out, each step of the washing, rinsing and drying operations is carried out automatically by the cooperation of the various valves, heaters and the like under the control of the cam and link mechanisms in the control box.

Thus, it may be seen that there has been provided a small, portable, fully automatic dishwashing machine which is economical in construction and operation and is extremely versatile in its applicability.

What is claimed is:

1. In an automatic dishwashing machine, in combination, means providing a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, means whereby overflow water from said reservoir flows into said main compartment, means for indicating a predetermined quantity of water in said compartment, a driving motor, means for supporting said motor above and centrally with respect to said compartment, an impeller positioned adjacent the bottom of said compartment and connected to be driven by said motor, first valve means for draining water from said reservoir into said compartment, means responsive to time for controlling the operation of said first valve means, means for heating the water in said reservoir, second valve means for exhausting water from said compartment, and control means responsive to time for operating said second valve means, said first valve means being operable and controlled to drain substantially half of the water from said reservoir into said compartment on one operation of said first valve means and the remainder of said water on a subsequent operation of said first valve means during the course of a single wash cycle.

2. In an automatic dishwashing machine, in combination, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, means whereby overflow water from said reservoir flows into said main compartment, means for indicating a predetermined quantity of water in said compartment, a driving motor, means for supporting said motor above and centrally with respect to said compartment, an impeller position adjacent the bottom of said compartment and connected to be driven by said motor, first valve means for draining water from said reservoir into said compartment, a timing control mechanism, means responsive to said timing control mechanism for periodically operating said first valve means during a wash cycle, means responsive to said control mechanism for heating the water in said reservoir, second valve means for exhausting water from said compartment, and means responsive to said control mechanism for operating said second valve means, said first valve means being operable and controlled to drain substantially half of the water from said reservoir into said compartment on one operation of said first valve means and the remainder of said water on a subsequent operation of said first valve means during the course of a single wash cycle.

3. In an automatic dishwashing machine, in combination, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, means whereby overflow water from said reservoir flows into said main compartment, means for indicating a predetermined quantity of water in said compartment, a timing control mechanism, a driving motor, means for supporting said motor above and centrally with respect to said compartment, an impeller position adjacent the bottom of said compartment, and connected to be driven by said motor, said motor being responsive to said control mechanism, first valve means for draining water from said reservoir into said compartment, means responsive to said control mechanism for periodically operating said first valve means, means responsive to said control mechanism for heating the water in said reservoir, second valve means for exhausting water from said compartment, and means responsive to said control mechanism for periodically operating said second valve means, said first valve means being operable and controlled to drain substantially half of the water from said reservoir into said compartment on one operation of said first valve means and the remainder of said water on a subsequent operation of said first valve means during the course of a single wash cycle.

4. In an automatic dishwashing machine, in combination, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, means whereby overflow water from said reservoir flows into said main compartment, overflow means for indicating a predetermined quantity of water in said compartment, a time-responsive control mechanism, a driving motor, means for supporting said motor above and centrally with respect to said compartment, an impeller position adjacent the bottom of said compartment and connected to be driven by said motor, said motor being responsive to said control mechanism, first valve means for draining water from said reservoir into said compartment, means responsive to said control mechanism for periodically operating said first valve means, means responsive to said control mechanism heating the water in said reservoir, second valve means for exhausting water from said compartment, and control means responsive to said control mechanism for periodically operating said second valve means, said first valve means being operable and controlled to drain substantially half of the water from said reservoir into said compartment on one operation of said first valve means and the remainder of said water on a subsequent operation of said first valve means during the course of a single wash cycle.

5. In an automatic dishwashing machine, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to said compartment, an impeller positioned adjacent the bottom of said compartment and connected to be driven by said motor, heating means for heating water stored in said

reservoir, first valve means for controlling the flow of water, other than said overflow, from said reservoir, a drain port for emptying water from said main compartment, second valve means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism driven by said timing motor, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said cam shaft operatively coupled to control the operation of said first valve means, and a second mechanical cam on said cam shaft operatively coupled to control the operation of said second valve means, said first valve means being operable to drain substantially one-half of the water from said reservoir at one time and the remaining half at a second time during a complete wash cycle.

6. In an automatic dishwashing machine, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to the bottom of said main compartment, an impeller positioned adjacent the bottom of said main compartment, and connected to be driven by said motor, heating means for heating water stored in said reservoir, said reservoir having an opening in the bottom thereof whereby water may flow from said reservoir into said main compartment, first valve means for controlling the flow of water through said opening, a drain port for emptying water from said main compartment, second valve means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism selectively driven by said timing motor, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said shaft operatively coupled to control the operation of said first valve means, and a second mechanical cam on said shaft operatively coupled to control the operation of said second valve means, said first valve means being operable under the control of said first mechanical cam to drain substantially one-half of the water from said reservoir at one time and the remaining half at a second time during a complete wash cycle.

7. In an automatic dishwashing machine, means defining a main compartment, a water reservoir positioned within said main compartment, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to the bottom of said compartment, and impeller positioned adjacent the bottom of said main compartment and connected to be driven by said motor, said supporting means including a cage-like structure which also encloses said impeller, heating means for heating water stored in said reservoir, said reservoir having an opening in the bottom thereof whereby water may flow from said reservoir into said main compartment, first valve means for controlling the flow of water through said opening, a drain port for emptying water from said main compartment, second valve means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism selectively driven by said timing motor, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said shaft operatively coupled to control the operation of said first valve means, and a second mechanical cam on said shaft operatively coupled to control the operation of said second valve means, said first valve means being operable under the control of said first mechanical cam to drain substantially one-half of the water from said reservoir at one time and the remaining half at a second time during a complete wash cycle.

8. In an automatic dishwashing machine, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to the bottom of said main compartment, an impeller positioned adjacent the bottom of said main compartment and connected to be driven by said motor whereby to violently agitate water in said main compartment, a cover member for said main compartment to prevent the agitated water from splashing out, heating means for heating water stored in said reservoir, said reservoir having an opening in the bottom thereof whereby water may flow from said reservoir into said main compartment, first valve means for controlling flow of water through said opening, a drain port for emptying water from said main compartment, second valve means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism selectively driven by said timing motor, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said shaft operatively coupled to control the operation of said first valve means, and a second mechanical cam on said shaft operatively coupled to control the operation of said second valve means, said first valve means being operable under the control of said first mechanical cam to drain substantially one-half of the water from said reservoir at one time and the remaining half at a second time during a complete wash cycle.

9. In an automatic dishwashing machine, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to the bottom of said main compartment, an impeller positioned adjacent the bottom of said main compartment and connected to be driven by said motor whereby to violently agitate water in said main compartment, a cover member for said main compartment to prevent the agitated water from splashing out, said cover having a central opening through which said motor extends when said cover is emplaced on said compartment, heating means for heating water stored in said reservoir, said reservoir having an opening in the bottom thereof whereby water may flow from said reservoir into said main compartment, first valve means for controlling the flow of water through said opening, a drain port for emptying water from said main compartment, second valve

means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism selectively driven by said timing motor, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said shaft operatively coupled to control the operation of said first valve means, and a second mechanical cam on said shaft operatively coupled to control the operation of said second valve means, said first valve means being operable under the control of said first mechanical cam to drain substantially one-half of the water from said reservoir at one time and the remaining half at a second time during a complete wash cycle.

10. In an automatic dishwashing machine, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to the bottom of said main compartment, an impeller positioned adjacent the bottom of said main compartment and connected to be driven by said motor whereby to violently agitate water in said main compartment, a cover member for said main compartment to prevent the agitated water from splashing out, said cover having a central opening through which said motor extends when said cover is emplaced on said compartment, heating means for heating water stored in said reservoir, said reservoir having an opening in the bottom thereof whereby water may flow from said reservoir into said main compartment, first valve means for controlling the flow of water through said opening, a drain port for emptying water from said main compartment, second valve means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism selectively driven by said timing motor through a complete wash cycle, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said shaft operatively coupled to control the operation of said first valve means, a second mechanical cam on said shaft operatively coupled to control the operation of said second valve means, said first valve means being operable under the control of said first mechanical cam to drain substantially one-half of the water from said reservoir at one time and the remaining half at a second time during said complete wash cycle, and means for raising said cover member at the end of said complete wash cycle.

11. In an automatic dishwasing machine, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to the bottom of said main compartment, an impeller positioned adjacent the bottom of said main compartment and connected to be driven by said motor whereby to violently agitate water in said main compartment, a cover member for said main compartment to prevent the agitated water from splashing out, said cover having a central opening through which said motor extends when said cover is emplaced on said compartment, heating means for heating water stored in said reservoir, said reservoir having an opening in the bottom thereof whereby water may flow from said reservoir into said main compartment, first valve means for controlling the flow of water through said opening, a drain port for emptying water from said main compartment, second valve means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism selectively driven by said timing motor through a complete wash cycle, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said shaft operatively coupled to control the operation of said first valve means, a second mechanical cam on said shaft operatively coupled to control the operation of said second valve means, said first valve means being operable under the control of said first mechanical cam to drain substantially one-half of the water from said reservoir at one time and the remaining half at a second time during said complete wash cycle, and means for raising said cover member at the end of said complete wash cycle, and raising means including a spring biased push-rod operable by said control mechanism and operatively engageable with said cover.

12. The invention as set forth in claim 11 wherein said control mechanism includes latch means for holding said push-rod in a retracted position and cam means on said cam shaft for releasing said latch means.

13. The invention as set forth in claim 12 characterized by the addition of stop means associated with said last mentioned cam means and said latch means for preventing said control mechanism from being actuated while said push-rod is in its released condition.

14. In an automatic dishwashing machine, means defining a main compartment, a water reservoir positioned within said main compartment, means for feeding water into said reservoir, overflow water from said reservoir flowing into said main compartment, overflow means for indicating a predetermined quantity of water in said main compartment, a main driving motor, means supporting said motor above and centrally with respect to the bottom of said main compartment, an impeller positioned adjacent the bottom of said main compartment and connected to be driven by said motor whereby to violently agitate water in said main compartment, a cover member for said main compartment to prevent the agitated water from splashing out, said cover having a central opening through which said cover extends when said cover is emplaced on said compartment, heating means for heating water stored in said reservoir, said reservoir having an opening in the bottom thereof whereby water may flow from said reservoir into said main compartment, first valve means for controlling the flow of water through said opening, a drain port for emptying water from said main compartment, second valve means for controlling the flow of water from said main compartment through said drain port, a timing motor, a control mechanism selectively driven by said timing motor, a cam shaft included in said control mechanism, a first switch cam member on said shaft operatively coupled to control the flow of electrical energy to said main drive motor and to said timing motor, a second switch cam member on said shaft operatively coupled to control the flow of electrical energy to said heating means, a first mechanical cam on said shaft operatively coupled to control the operation of said first valve means, a second mechanical cam on said shaft operatively coupled to control the operation of said second valve means, said first valve means being operable under the control of said first mechanical cam to drain

substantially one-half of the water from said reservoir at one time and the remaining half at a second time during a complete wash cycle, and a base member for said dishwashing machine, said base member including a catch basin for receiving water from said drain port.

15. The invention set forth in claim 14 characterized by the addition of a pump associated with said catch basin for removing water therefrom.

16. The invention set forth in claim 15 characterized by the addition of means interconnecting said pump and said impeller whereby said pump and said impeller are simultaneously driven by said main motor.

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