Jan. 25, 1938. W. L. MERRILL 2,106,619

WASHING APPARATUS

Filed May 1, 1935

Fig. 1.

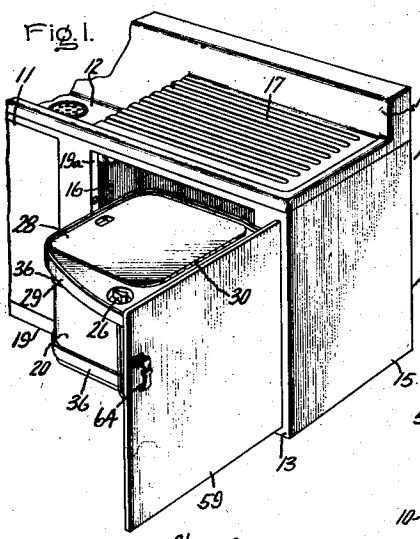


Fig. 2.

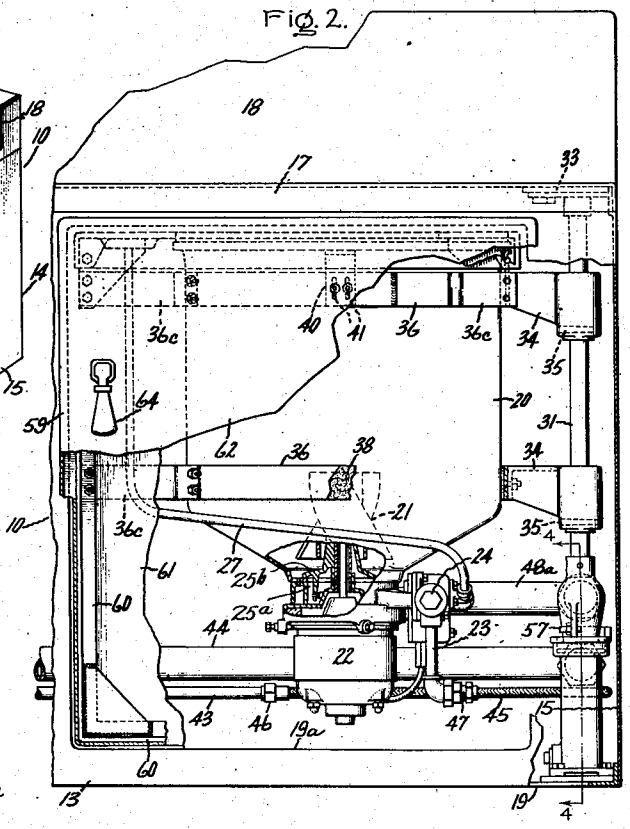


Fig. 4.

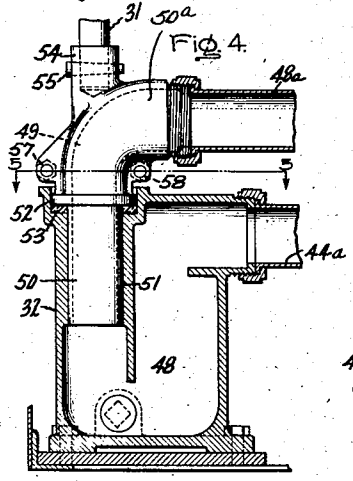


Fig. 5.

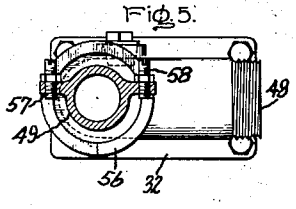


Fig. 3.

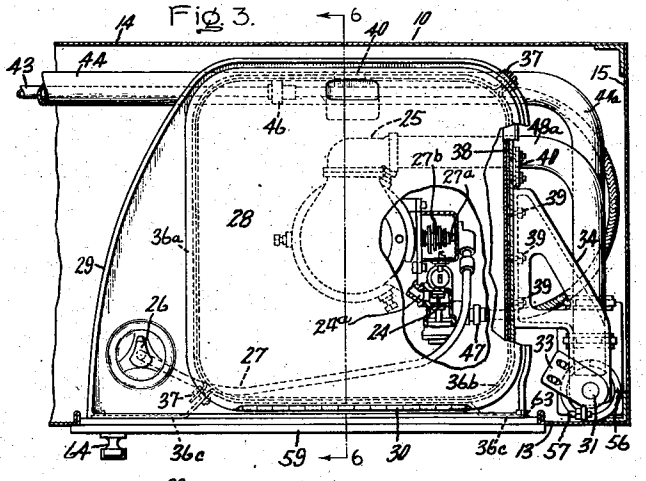
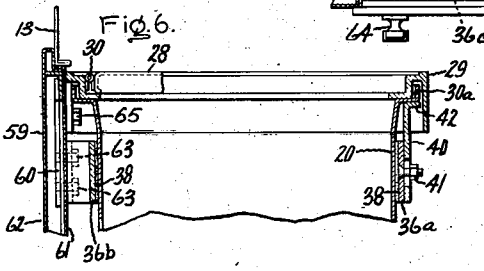


Fig. 6.



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2,106,619

WASHING APPARATUS

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Application May 1, 1935, Serial No. 19,230

8 Claims. (Cl. 141—9)

This invention relates to washing apparatus, more particularly to dishwashing apparatus, and it has for its object the provision of improved washing apparatus of this character.

While not limited thereto, this invention is particularly applicable to dishwashing apparatus wherein a cleansing fluid, such as water, is circulated or hurled through the washing chamber or vat by suitable power driven means, such as a motor driven impeller.

In certain dishwashing apparatus heretofore used there is provided a casing for the washing apparatus. At the top of the casing there is a cover which when opened provides access to the interior of the vat. This top or cover usually is unsuitable for use as a work table or bench, especially when the dishwasher is combined with a sink. As a result, valuable kitchen space is lost which might otherwise be made available for a bench or table working surface.

In accordance with this invention, a suitable dishwashing machine including its washing vat, its impeller and the driving motor therefor, suitable fluid supply and drain conduit means, and necessary controlling apparatus are all mounted within a cabinet. The cabinet is provided with a top wall which is suitable as a work table or bench.

The cabinet is further provided with a front opening therein, and the washing machine is movably mounted within the cabinet so that it can be readily removed therefrom through the front opening, whereby access can be had to the washing vat.

A suitable door is provided arranged to close the front opening when the washing machine is returned to the cabinet.

For a more complete understanding of this invention, reference should be had to the accompanying drawing, in which Fig. 1 is a fragmentary perspective view illustrating washing apparatus arranged in accordance with this invention; Fig. 2 is an enlarged fragmentary front elevation of a portion of the apparatus shown in Fig. 1, parts being broken away and parts being shown in section so as to illustrate certain details of construction; Fig. 3 is a plan view of the apparatus shown in Fig. 2, parts being shown in section and parts being broken away so as to illustrate certain details of construction; Fig. 4 is an enlarged sectional view taken through the line 4—4 of Fig. 2 and looking in the direction of the arrows; Fig. 5 is a sectional view taken through the line 5—5 of Fig. 4 and looking in the direction of the arrows; and Fig. 6 is a fragmentary sectional view taken through the line 6—6 of Fig. 3 and looking in the direction of the arrows.

Referring to the drawing, this invention has been shown as applied to dishwashing apparatus wherein a power operated dishwashing machine is used. It is to be understood, however, that the invention has more general application, and may be applied to types of dishwashing apparatus other than the power driven arrangement. Moreover, this invention has been shown as applied to dishwashing apparatus that is formed or combined with a household sink, but it is not limited to organizations of this character; that is, it may be applied to dishwashing apparatus that is independent of sink structure. As shown, the washing apparatus arranged in accordance with this invention comprises a cabinet 10, which is united with a cabinet 11, which in turn is associated with a kitchen sink 12. The cabinet 10 is intended to enclose suitable dishwashing apparatus. As shown, the cabinet 10 is defined by a front wall 13, a rear wall 14, an end wall 15 and an end wall 16 facing the wall 15. The cabinet is completed by a top wall 17 that is arranged immediately to one side of the sink 12, the right side as shown in Fig. 1, and can be used as a work table or bench. A suitable back splasher 18 is provided for the top wall 17, the back splasher being formed integrally with the back of the sink, as shown. A bottom wall 19 is provided opposite the top wall 17. The cabinet, as shown, is provided in the front wall 13 with an enlarged rectangular opening 19a.

It will be observed that the front and rear walls 13 and 14, the end walls 15 and 16 and the top and bottom walls 17 and 19 form a substantially rectangular cabinet provided with a front opening therein. This cabinet is utilized to house a suitable dishwashing machine, which preferably will be substantially the same as the dishwashing machine described and claimed in the United States patent to Carl M. Snyder and Jesse H. Clark No. 1,995,332 and dated March 26, 1935. This machine comprises a vat 20, a suitable impeller 21 in the lower portion of the vat and a driving motor 22 for the impeller. It will be understood that the vat will be provided with suitable dish-supporting trays or racks (not shown) and that the impeller is so arranged that it will engage washing fluid placed in the vat so as to circulate it with considerable force upwardly and outwardly in the vat through the supporting racks so as to effect a cleansing action on the dishes placed in the racks. The washing apparatus is further provided with a fluid supply

conduit 23, which is controlled by means of a fluid supply valve 24. This valve controls an inlet port 24a of the washing apparatus. Moreover, the washing apparatus is provided with a drain conduit 25 that communicates with the vat through a drain port 25a. This port is controlled by means of a suitable drain valve 25b within the vat. The operation of the fluid supply and drain valves and of the impeller driving motor 22 is controlled by means of a control knob 26 arranged at the top of the washing machine. This control knob is connected with the valve and motor unit by means of a flexible shaft 27. The shaft 27 drives a cam shaft 27a on which a series of cams 27b are provided. These cams control the operation of the fluid supply and drain valves 24 and 25b and also the switch (not shown) for the motor 22 so that when the control knob 26 is turned, the shaft moves the cams 27b to successive controlling positions to effect the operation of the liquid supply and drain valves and the motor in a predetermined cycle, all as fully described in the above-mentioned patent to Snyder and Clark No. 1,995,332. A suitable cover 28 is provided for the vat; a cover frame 29 is arranged about the upper periphery of the vat, and the cover is attached to this frame by means of a suitable hinge 30. As shown, the frame 29 rests on a horizontal flange 30a provided at the upper end of the vat.

The specific arrangement of the dish-supporting trays, the fluid supply comprising the conduit 23 and its controlling valve 24, the draining means including the drain conduit 25 and its controlling valve 25b, and the control member 26 have not been described in greater detail in this application because the specific arrangement of these elements forms no part of the present invention. For a more detailed understanding of the construction of these parts, reference should be had to the above-mentioned United States Patent to Snyder and Clark No. 1,995,332.

Suitable means are provided for movably mounting the washing machine within the cabinet 10 so that it can be readily removed therefrom in order that access can be had to the interior of the vat for loading and unloading the dishes and for washing operations, and in order that it can be readily returned to its position within the cabinet. For this purpose, a suitable supporting shaft 31 is provided. The shaft 31 is supported in an upright position in the front of the cabinet at the right side of the opening 19a in the front wall, as viewed in Figs. 1, 2 and 3. The lower end of the shaft 31 is supported upon a suitable standard 32. The arrangement of this supporting standard will be described in greater detail hereinafter. At its upper end, the shaft is supported in a suitable bearing 33 which is secured to the top wall 17 of the cabinet. Mounted upon the shaft in vertically spaced relation are a pair of supporting brackets 34 which are rigidly secured to the shaft by means of pins 35.

The washing apparatus is secured to the brackets 34 by means of suitable clamping bands 36 embracing the vat and rigidly secured to the brackets 34. Each supporting band 36 is formed of two right angle sections 36a and 36b rigidly clamped together by means of bolts 37 positioned at opposite corners of the vat, as clearly shown in Fig. 3. Preferably, a suitable felt or other flexible lining 38 will be interposed between each band 36 and the vat. As shown in Figs. 2 and 3, the brackets 34 are rigidly secured to the bands 36 by means of suitable screw fastening means 39.

It will be understood that the bands are so firmly secured about the vat that they will support the vat in an upright position, as shown in Fig. 2. However, in order to insure the upright position of the vat, a pair of auxiliary plates 40 are provided, one adjacent the upper bracket 34, as shown in Fig. 3, and the other on the adjacent side of the vat opposite the hinge 30 midway between its edges, as also shown in Fig. 3. As shown more clearly in Figs. 2 and 6, each of these brackets comprises an upright plate member which is rigidly secured to the upper band 36 by means of screw fastening means 41 and which is provided at its upper end with a horizontal flange portion 42. This flange portion 42 engages the outwardly extending flange 30a provided at the upper edge of the vat.

It will be observed in view of the foregoing construction that the vat is rigidly secured to the shaft 31 for pivotal movement about a fixed axis, whereby the vat, together with its associated apparatus may be swung outwardly to an open position through the front opening 19a in the cabinet, as shown in Fig. 1. It is contemplated that the dishwashing machine will be used in this position to effect the washing of the dishes placed within the vat, the apparatus being under the control of the knob 26. It will also be observed that the standard 32 takes the entire weight of the shaft 31, and the washing vat 20 and its associated apparatus. The walls of the vat are relieved of this duty. The upper bearing 33 supports the upper end of the shaft 31 to prevent lateral displacement of the shaft, and hence, of the axis of movement of the washing apparatus.

Suitable means are provided for supplying cleansing fluid to the vat and for draining soiled fluid from the vat comprising conduit means arranged to permit the washing apparatus to be swung upon its shaft 31. As shown a suitable fixed conduit 43 is provided at the rear of the cabinet 10. This conduit is connected with a suitable source of cleansing fluid supply (not shown), such as a hot water supply. Also arranged at the rear of the cabinet is a suitable fixed drain conduit 44 which is connected, in the particular apparatus shown, with the drain of the sink 12.

The fluid supply conduit 43 is connected with the fluid supply conduit 23, associated with the vat, by means of a flexible conduit 45 which has fluid tight connections 46 and 47 with the conduits 43 and 23 respectively.

The drain conduit 44 has a right angle extension 44a which terminates at a point adjacent the standard 32. This member in addition to functioning as a bearing for the shaft 31, also functions as a drain passageway and trap. As shown, the member 32 is provided with an internal drain passageway and trap 48 which at its upper end communicates with the drain conduit 44. The chamber 48 is also connected with the drain conduit 25, which is associated with the vat, by means of a conduit elbow member 48a connected with the conduit 25, and a second elbow member 49. The member 49, as shown, is provided with a downwardly extending portion 50, which is received in a cylindrical housing 51 provided for it in the base member 32. The lower end of the conduit 50 discharges into the chamber 48. The upper arm 50a of the elbow 49 is secured directly to the drain conduit 48a.

The elbow 49 also functions as a bearing for the shaft 31. For this purpose, the conduit member 49 is provided with a bearing collar 52,

which is received on a bearing seat 53 provided for it in the member 32. The conduit member 49 is further provided with a socket member 54 which receives the lower end of the shaft 31, the shaft being rigidly secured to the member 49 by means of a pin 55.

It will be observed in view of the foregoing arrangement that the vat 20 can be rotated on the shaft 31 from its position in the vat, as shown in Figs. 2 and 3, to its position out of the vat, as shown in Fig. 1, and that irrespective of whether it is within the vat or without the vat, its fluid suppy and drain conduits 23 and 25 will be connected respectively to the fixed fluid supply and drain conduits 43 and 44 arranged in the cabinet.

The standard member 32 is further provided with an upright arcuate shaped wall 56 extending through an angle of substantially 90°, as shown in Figs. 3 and 5, while the conduit member 49 is provided with a pair of stop pins 57 and 58 arranged to engage the two ends of the arcuate shaped wall 56 respectively. The wall 56 is arranged to function as a stop for the dishwashing apparatus to limit its position within the cabinet, and further, to act as a stop to limit its position out of the cabinet.

The front opening 19a is closed by means of a suitable door 59 which is rigidly secured to the dishwashing machine so that when the machine is moved to its position within the cabinet, as shown in Figs. 2 and 3 the door 59 will close the front opening 19a. The door 59 is defined by means of a metallic frame 60, which supports a rear cover member 61 and a front cover member 62. The cover members may be secured to the frame in any suitable manner, as by welding. The frame 60 is rigidly secured to the bands 36. For this purpose, the band portions 36b of the bands are provided with lateral extensions 36c which are arranged flush with the inner plate 61. These extensions are secured to the frame 60 by means of screw fastening means 63 directed through suitable apertures provided for them in the rear cover 61 and received in threaded apertures provided for them in the frame. A suitable latch 64 is provided for the door.

The frame 29 is also secured to the door frame 60 by means of screw fastening means 65. If desired, the frame 29 may also be screwed to the auxiliary supports 40, as by means of screw fastening means.

In operation, it will be understood that normally, the washing apparatus will occupy the position within its cabinet shown in Figs. 2 and 3, but when it is desired to wash dishes, it will be moved to its open position shown in Fig. 1, whereby the cover 28 of the vat may be opened to permit the loading of the dishes in the vat. While the apparatus is supported in this open position, the control member 26 will be operated to effect the washing actions. After this, the dishes may be removed, whereupon the washing apparatus may be returned to its closed position, shown in Figs. 2 and 3.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. Washing apparatus comprising a cabinet provided with a front opening therein, washing apparatus within said cabinet comprising a vat, a supporting shaft within said cabinet, means mounting said vat on said shaft for swinging movement to and from said cabinet through said opening, and a door for said front opening secured to said vat and supported solely thereby so that when said vat is moved into said cabinet said door is moved to close said front opening.

2. Dishwashing apparatus comprising walls defining a cabinet having an opening therein, a washing vat having fluid supply and drain ports, means mounting said washing vat within said cabinet for movement out of said cabinet and for return movement into said cabinet through said opening, relatively fixed fluid supply and drain conduits in said cabinet, conduit means connecting said last named conduits to said fluid supply and drain ports respectively and arranged to permit movement of said vat to and from said cabinet while maintaining said connections, fluid supply and drain valves controlling said last-named conduit means and a single control member for said valves accessible to the attendant when said vat is moved out of said cabinet.

3. Dishwashing apparatus comprising side and top walls defining a cabinet having an opening therein, a dishwashing machine including a washing vat within said cabinet, a fluid conduit attached to said vat, a bearing member in the lower portion of said cabinet supported independently of the side walls of the cabinet, a shaft mounted on said bearing member, means securing said vat to said shaft for pivotal movement on said bearing member to and from said cabinet through said opening, the bearing member supporting the weight of the shaft and vat, a fluid passageway in said bearing member and means connecting said fluid conduit with said passageway.

4. Dishwashing apparatus comprising walls defining a cabinet having an opening therein, a dishwashing machine including a washing vat within said cabinet, a drain conduit rigidly attached to said vat, a bearing member in the lower portion of said cabinet provided with a bearing seat and a drain passageway and trap below said seat, a second conduit having a member bearing on said seat and communicating with said passageway and trap, conduit means connecting said first conduit to said second conduit, a vertical shaft mounted on said second conduit, means supporting the upper end of said shaft in said cabinet and means securing said vat to said shaft for pivotal movement to and from said cabinet through said opening.

5. Mechanical dishwashing apparatus comprising walls defining a cabinet having an opening therein, a washing vat having fluid supply and drain ports, a fluid circulating impeller in said vat, a motor carried by said vat and having a driving connection with said impeller, means mounting said washing vat within said cabinet for movement as a unit with said motor out of and into said cabinet through said opening, relatively fixed fluid supply and drain conduits in said cabinet, conduit means connecting said last named conduits to said fluid supply and drain ports respectively and arranged to permit movement of said vat to and from said cabinet while maintaining said connections, fluid supply and drain valves controlling said last-named conduit means respectively and a single control member for said valves and motor accessible to the attendant when said vat is moved out of said cabinet.

6. Dishwashing apparatus comprising walls defining a cabinet having a front opening therein and a top wall constituting a work surface, a dishwashing machine within said cabinet having a washing vat, a water circulating impeller within said vat, a motor for driving said impeller secured to said vat, fluid supply and drain conduits secured to said vat, a relatively fixed fluid supply conduit within said cabinet, a relatively fixed drain member positioned in the front of said cabinet at one side of said opening, said drain member having a bearing seat and a drain passageway below said bearing seat, a rigid conduit having a portion extending through said bearing seat to communicate with said drain passageway, and having a bearing resting on said seat, a second rigid conduit connecting said drain conduit attached to said vat with said first rigid conduit, a shaft mounted on and secured to said first rigid conduit extending vertically in said cabinet, a bearing in said cabinet for the upper end of said shaft, means securing said vat to said shaft whereby said vat, together with said impeller, said motor and said conduits secured to said vat can be moved as a unitary structure into and from said cabinet through said opening, a door carried by said vat arranged when said vat is moved into said cabinet to close said opening and a flexible conduit connecting said fluid supply conduit secured to said vat to said relatively fixed fluid supply conduit in said cabinet.

7. Dishwashing apparatus comprising a cabinet having an opening in one of its side walls, a dishwashing vat within said cabinet having a flange thereon, a vertically positioned shaft within said cabinet, supporting brackets mounted on said shaft one above the other, clamping bands embracing said vat arranged one above the other and secured to said brackets and auxiliary supporting members secured to one of said bands and engaging said flange on said vat.

8. Dishwashing apparatus comprising a cabinet having an opening in one of its side walls, a dishwashing vat in said cabinet, a vertically positioned shaft within said cabinet, supporting brackets mounted on said shaft one above the other, clamping bands embracing said vat arranged one above the other and secured to said brackets, brackets carried by said bands adjacent said opening, a door for said opening and means securing said door to said last named brackets.

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