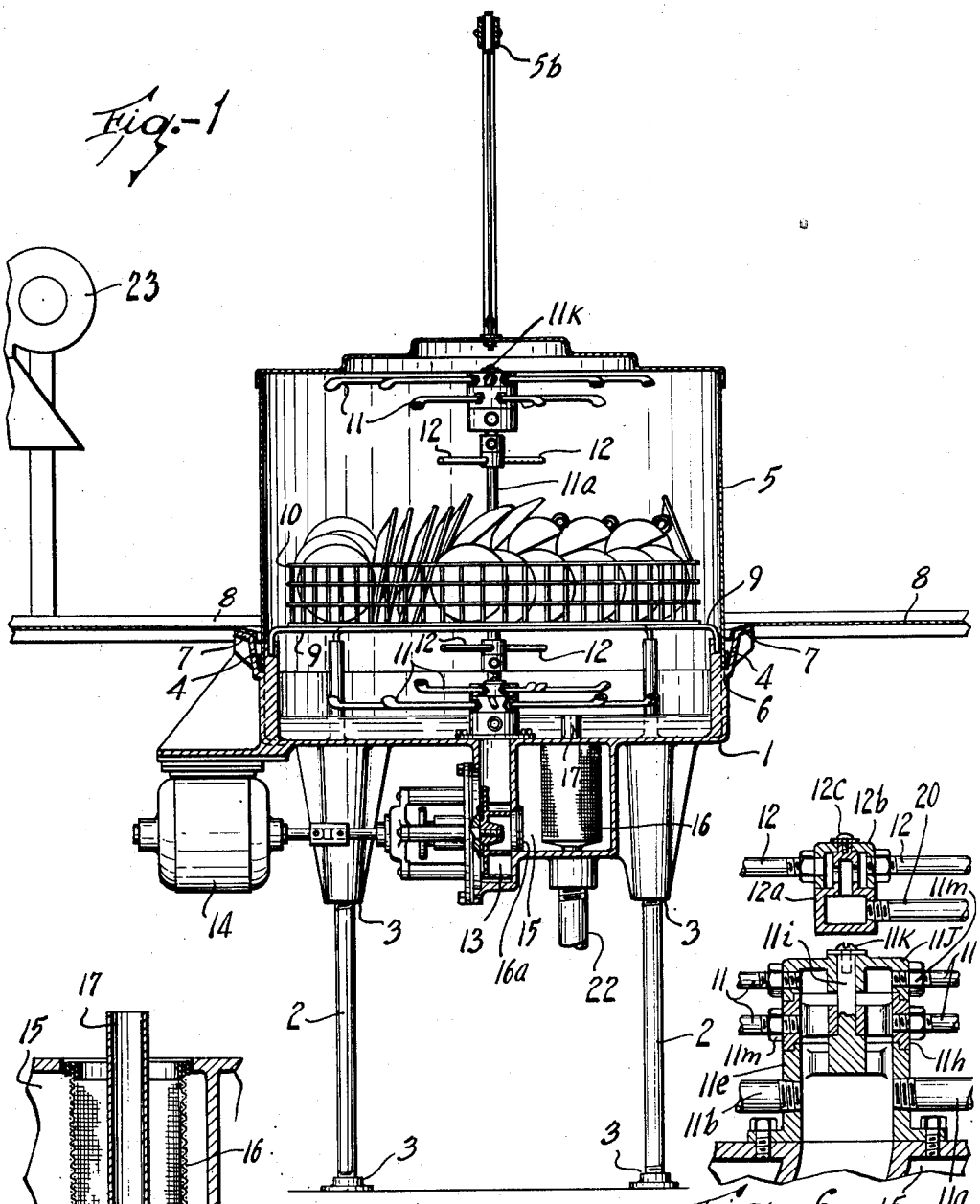
Sept. 2, 1952 O. V. JACKSON 2,608,981

DISHWASHING MACHINE

Filed Feb. 3, 1944 4 Sheets-Sheet 1

Fig.-1



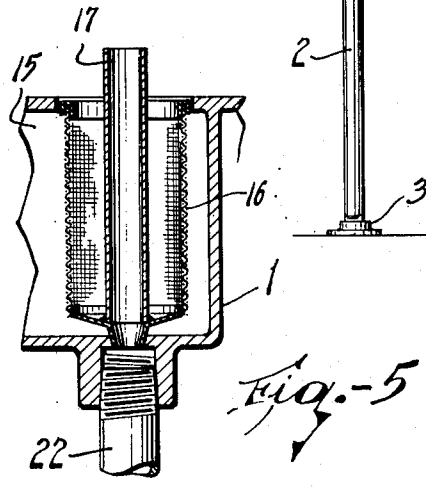




Fig.-5




Fig.-6

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DISHWASHING MACHINE

Filed Feb. 3, 1944 4 Sheets-Sheet 2

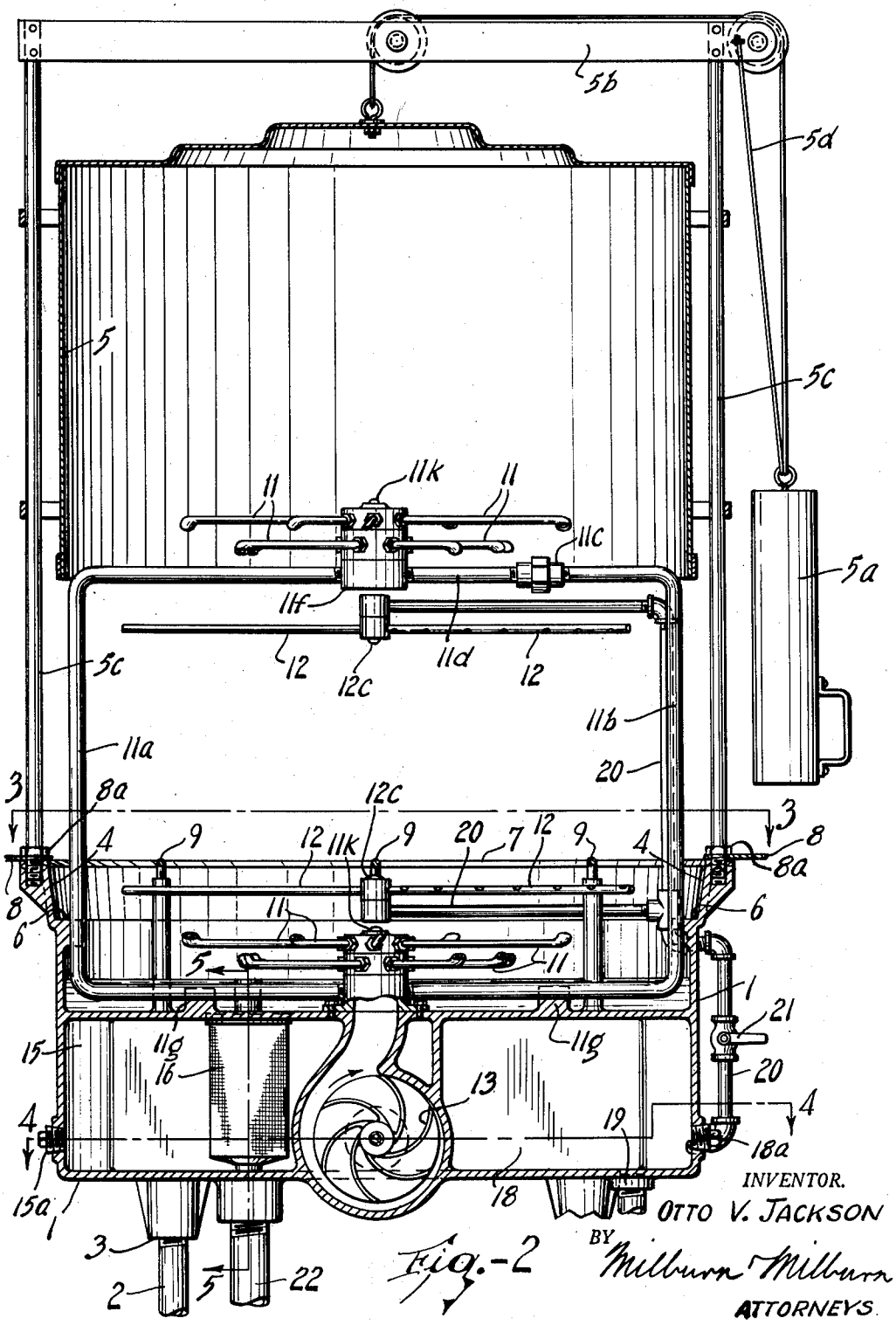



Fig.-2

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DISHWASHING MACHINE

Filed Feb. 3, 1944 4 Sheets-Sheet 3

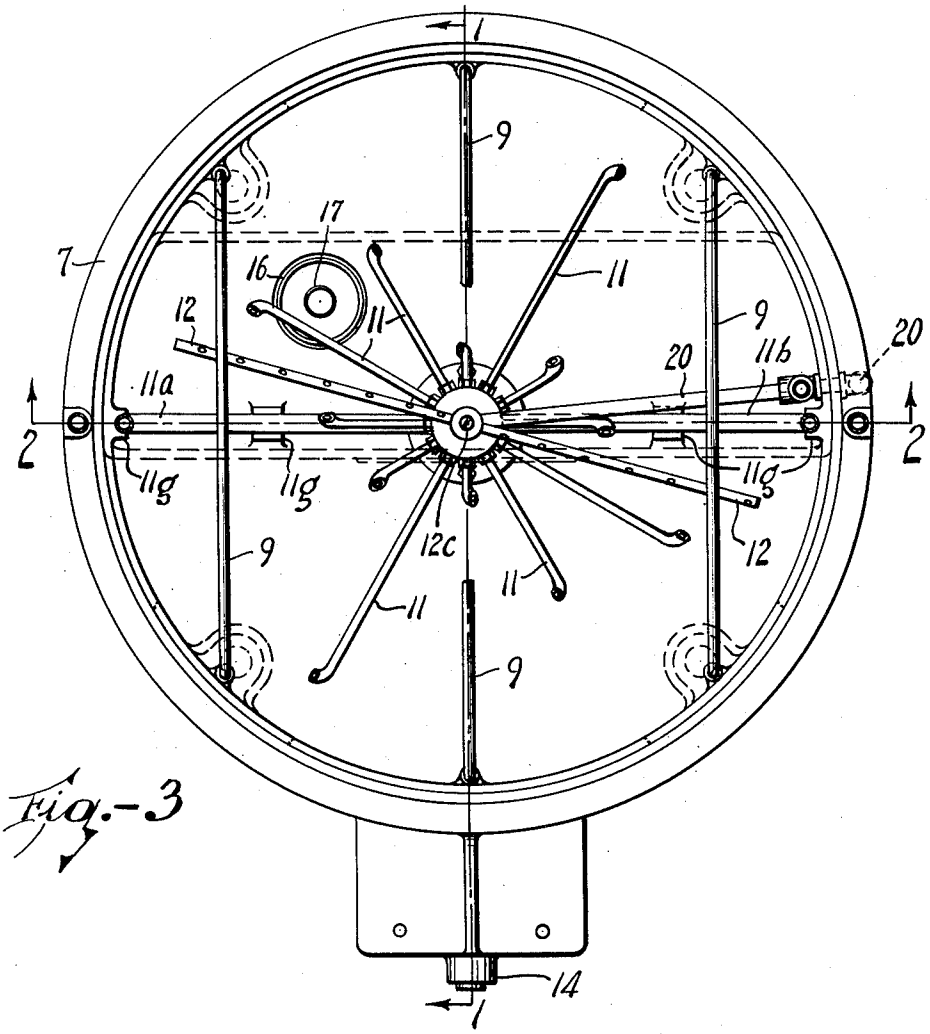



Fig.-3

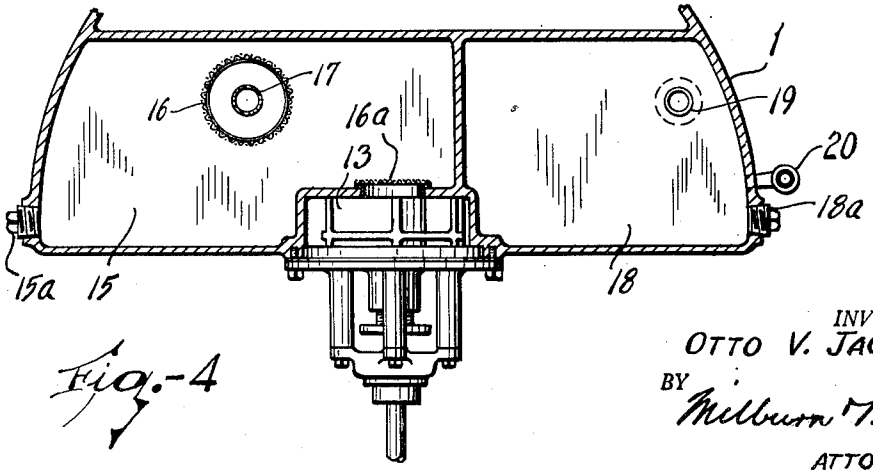



Fig.-4

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DISHWASHING MACHINE

Filed Feb. 3, 1944 4 Sheets-Sheet 4

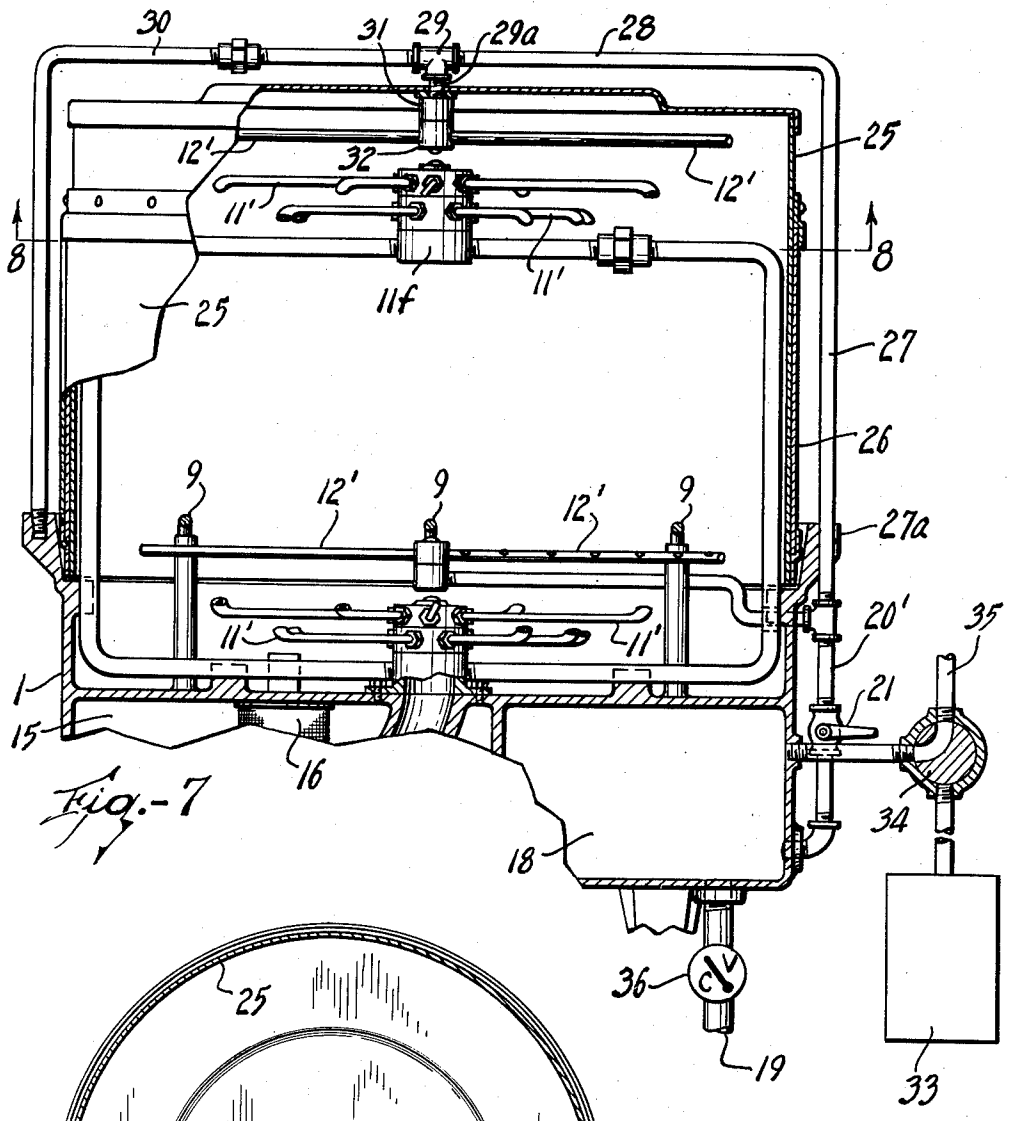



Fig.-7

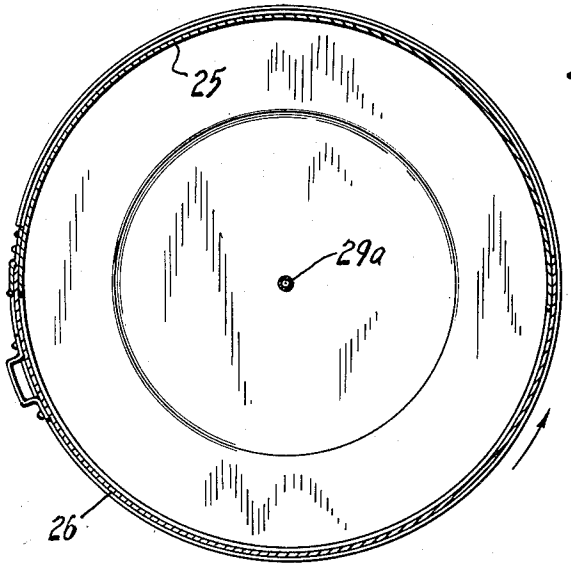



Fig.-8

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Patented Sept. 2, 1952 2,608,981

# UNITED STATES PATENT OFFICE

2,608,981

## DISHWASHING MACHINE

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Application February 3, 1944, Serial No. 520,972

6 Claims. (Cl. 134—102)

1

This invention relates to the art of washing machines and more particularly dish washing machines.

The general object of the present invention is to devise a dish washer with increased capacity and efficiency as compared with other such devices.

Another object is to devise a dish washer with comparatively simple means for effecting the washing and rinsing operations; more specifically, this object contemplates the spraying of the washing and rinsing fluids upon the dishes with sufficient force and in such manner as to ensure the complete removal of all food particles and also to preclude a film of the cleansing material from covering the dishes after removal from the machine.

Another object is to devise a dish washer with a modified form of closure which will permit moving the dishes into, through and out of the machine along a straight line even with a limited over-head clearance.

Another object is to devise a dish washer that possesses an attractive appearance and can be packed and shipped in compact form.

Another object is to devise a dish washer that is capable of producing a substantial saving in the cost of operation.

Other objects will appear from the following description and claims when considered together with the accompanying drawings.

Fig. 1 is a view taken on line 1—1 of Fig. 3;

Fig. 2 is a view taken on line 2—2 of Fig. 3;

Fig. 3 is a view taken on line 3—3 of Fig. 2;

Fig. 4 is a view taken on line 4—4 of Fig. 2;

Fig. 5 is an enlarged view of the combined strainer, over-flow pipe and drain plug;

Fig. 6 is a sectional view of the connections for the lower wash and rinse spray arms;

Fig. 7 is a partial sectional view illustrating a modified form of closure and also steam and compressed air connections for the rinse water; and

Fig. 8 is a view taken on line 8—8 of Fig. 7, this view illustrating the modified form of cover, with other parts omitted.

It is to be understood that the present form of disclosure is merely for the purpose of illustration and that there might be devised various modifications thereof without departing from the spirit of my invention as herein set forth and claimed.

In the present device, the dishes will be washed with a solution of a suitable cleanser in water and rinsed with plain water. However, this invention is not limited to the use of any particular washing or rinsing fluid nor to the washing of

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dishes only; but it comprehends any purpose or manner of use of which it is capable.

I will first refer to Figs. 1 to 6 and then to Figs. 7 and 8.

Briefly, in using my present dish washer as disclosed in Figs. 1 to 6, a basket of soiled dishes is slid into the same from the table at one side thereof; the cover is lowered to closed position; the dishes are first subjected to the washing operation and then the rinsing operation; the cover is then raised and the basket of cleaned dishes is removed from the opposite side of the machine by sliding the same onto the table so as to occupy proper position for the drying operation while another basket of soiled dishes is placed in the machine. A pump is employed to circulate the wash water which is directed onto the dishes by means of rotatable spray arms both above and below the dishes; the plain rinse water is directed onto the dishes both above and below the same by means of separate rotatable spray arms which are operated by the amplified force of the water from the main supply line; and the drying operation is then performed by a blower which forces warm air down over the dishes after their removal from the machine but while still in the basket.

The casting 1 is supported upon the floor by the legs 2 which are provided with the screw-thread means of adjustment 3 so that there might be obtained exactly the proper height for the top of the casting with reference to the table and also that there might be provided means of compensation for any irregularity in the floor upon which the legs rest. These legs are removable and hence the machine can be packed and shipped in comparatively small space.

The top part of the casting 1 is provided with the chamber above which the dishes are placed for the washing and rinsing operations and in the bottom of which the wash and rinse water is received, this chamber being herein referred to as the washing chamber as a matter of convenience. As indicated in the drawing, this chamber is of circular form; and the upper part of the annular wall thereof is flared outwardly and upwardly, as indicated by reference numeral 4, so as to more effectively receive the lower edge portion of the substantially cylindrical cover 5 which is adapted to rest upon the shoulder 6 at the bottom of the flared portion 4. This flared portion 4 is of sufficient depth to preclude the danger of any wash water or rinse water escaping from the inside of the machine during the washing or rinsing operation.

At the top of the flared portion 4 there is an

outwardly extending annular flange 7 which is adapted to support the edge portions of the table or tables 8 at opposite sides of the machine. Also, space provided between the portion 4 and the cover 5 will accommodate the edge portion of the metal table or tables 8. With my arrangement, the casting 1 serves as a means of support for the table or tables instead of supporting the machine upon the table.

The cover 5 is provided with the counterweight 5a which is suspended by cable over pulleys upon the top frame 5b. The top frame 5b is supported by the uprights 5c which are threaded into bosses provided in the casting 1 at opposite sides thereof and these uprights extend through holes in the table or tables 8 which are clamped upon the edge of the casting by means of the nuts 8a. Thus the cover 5 and its supporting means are readily removable. The cable 5d, extending between the counterweight 5a and the top frame 5b, will serve as a safety means for the counterweight in case the pulley cable should break and it will also limit the extent of upward movement of the cover 5.

At the same level as the table or tables 8, the washing machine is provided with readily removable tracks and supports 9 upon which might be slid the basket 10 of soiled dishes from the table upon the one side thereof and from which may be slid the same basket of dishes onto the opposite table after having been washed and rinsed. As is evident from the present illustration, the basket 10 may preferably be made of open wire construction in order to facilitate application of the wash water and rinse water to the dishes and the draining of the same therefrom as well as the blowing of warm air thereupon for the drying operation. The wire basket is provided with a suitable coating which is baked thereon so as to fill the pores of the metal and prevent the marring of the dishes, which would otherwise occur, by the transfer of metal film thereto from the wire of the basket. This basket 10 is also constructed in such manner that the dishes may be stood upon edge therein so as to still further facilitate the several operations just referred to.

The tracks 9 have their ends bent downwardly and are removably set in the suitably formed recesses in the oppositely located supports 9a which are formed as parts of the casting 1, so that these tracks can be removed at any time for renewal.

Both the wash water and rinse water are applied from above and below the basket of dishes; and the spray arms 11 for the wash water are separate from the spray arms 12 for the rinse water. In this way, the rinsing will be entirely free from even a trace of the wash wash.

The spray means for the washing operation consists of upper and lower sets of rotatable tubular arms 11 that are suitably bent at their ends so as to direct the fluid in such manner that the emission of the same therefrom under pressure will cause the arms to rotate, these openings in the arms of each set being in opposite directions, respectively, so as to cause them to rotate in opposite directions.

The spray means for the washing operation is here constructed in the form of a substantially rectangular unit that comprises the U-shaped pipe section 11a that is bent at the corners, and the other pipe section 11b that is also bent at its corners and has the union 11c between the same and the plain pipe section 11d. The two pipe sections 11a and 11b have screw-threaded connection at the bottom of the rectangle with the mounting 11e for the lower spray arms 11; and at the top of the pipe section 11a and plain pipe 11d have screw-threaded connection with the mounting 11f for the upper spray arms 11. The lower mounting 11e has an annular flange for securing the unit in registering operative relation above the pump; and there are provided also the substantially U-shaped lugs 11g on the side walls and the bottom of the washing chamber for receiving the vertical and bottom pipes of this unit and thereby afford a still further means for positioning and holding this unit in its proper place.

An annular flange about the top of mounting 11e serves to receive and hold the rotatable member 11h; and the mounting 11e has also a centrally and upwardly extending stem 11i for further centering of member 11h by engagement of its web portion therewith. Likewise the member 11j has rotatable seating engagement with an annular flange about the top of the member 11h and has further centering engagement with the stem 11i. The screw 11k and its washer hold these parts in assembly so that they can be removed upon removal of this screw. The spray arms 11 have readily removable and adjustable screw-threaded and lock-nut means of engagement 11m in the members 11h and 11j, whereby the spray arms can be adjusted to any desired position and then locked in such position. The same provision is made for the mounting of the upper spray arms 11 except that the mounting 11f will have its bottom closed; and, in each case, the spray arms can be removed with their mounting member upon removal of screw 11k, and the arms themselves can be removed from their mounting members.

The washing fluid is forced through the spray arms 11 by means of the rotatable pump 13 which is driven by the electric motor 14. A conventional electric cord for the motor 14 may be connected to any suitable base socket by means of the familiar removable electric plug. This pump is in communication with the reservoir 15 that is in turn in communication with the bottom of the washing chamber. That is to say, there is an established circuit for the wash water, consisting of the reservoir 15, pump 13, spray arms 11 and the washing chamber, all of which are in communication. The wash water, after being forced by pump 13 from reservoir 15 through arms 11 and onto the dishes, will fall into the bottom of the washing chamber whence it will return by gravity to the reservoir 15.

The pump 13 is embodied in a unit which includes its motor 14 and shaft connection and which has a suitable flange for bolting the same in assembled position upon the depending portion of the casting 1. With this arrangement, the pump unit may be readily removed at any time for servicing or renewal of the same. Also, the lower extensions into which legs 2 are screwed, are made sufficiently long to allow clearance enough for ready connection or removal of the pump unit before attachment or after removal of the legs 2.

In passing from the washing chamber to the reservoir 15, the wash water will go through the strainer in the form of a perforated cylindrical container 16 in which will be collected the particles of food and which can be readily removed and cleaned and replaced whenever necessary.

In order to prevent any foreign particles from

passing into the pump upon removal of the strainer 16, I have provided an auxiliary screen 16a with an annular flange for frictional engagement in the opening between the reservoir 15 and the pump, the force of the pump tending to hold this auxiliary screen in place. The screen 16a is removable.

Extending through and connected at its lower end to the strainer 16 is the over-flow pipe 17 which seats in an aperture in the bottom of the reservoir 15, thereby serving the dual purpose of over-flow pipe and tapered plug closure for the drain opening at the upper end of the drain pipe 22. Thus the level of the top of pipe 17 will determine the level of the wash water in the bottom of the washing chamber; and, upon removal of pipe 17 with the strainer 16, the washing chamber and reservoir 15 can be drained. By making the strainer of sufficient capacity, it will serve a considerable length of time without having to remove it for cleaning although this is a simple operation.

In order for the pump to force any wash water through the system, the combined strainer and over-flow unit must be in proper position; otherwise the water will pass out through the drain. Thus there can be no circulation of wash water when the strainer 16 is not in position; and, in this way, there is no danger of clogging the pump with food particles or other foreign matter or any danger of circulating dirty water through the spray arms and clogging the same.

In the same casting 1 I have provided also the reservoir 18 for the rinse water, which is separated from the wash water reservoir 15. By means of the threaded opening 19, the reservoir 18 may have connected thereto a pipe or hose from the main water supply line, with a conventional hand valve for opening or closing this connection to the rinse water reservoir. The reservoir 18 may also be drained through the opening 19 if ever necessary.

The only other opening from reservoir 18 is through the pipe 20 which extends from the side thereof upwardly and inwardly into the washing chamber where it branches off so as to supply the upper and lower spray arms 12 for the rinsing operation. Pipe 20 has spring valve 21 which will be opened and held open by the operator for the rinsing operation as well as for filling the washing chamber and reservoir 15 in the first instance preparatory to the washing operation. Valve 21 is automatically closed by its spring.

The spray means for the rinsing operation comprises upper and lower rotatable arms 12 with perforations so arranged that these arms will be rotated in opposite directions by the force of the water as it is emitted in jets therefrom. The apertures in the two arms 12, in each instance, are staggered with respect to each other and there is a staggered relation also between the apertures of the upper and lower arms. In this way, and with suitable spacing of these apertures, there will be an effective rinsing of all the dishes as the water will be made to cover all parts of the contents of the basket.

The rinse supply pipe 20 has screw-threaded connection with the mounting 12a which has an annular flange for centering rotatable engagement by the member 12b. The mounting 12a has also an apertured hollow central stem for centering engagement by the member 12b. The screw 12c and its washer hold these parts in readily removable assembly; and the spray arms 12 have screw-threaded and lock-nut engagement



with the said member 12b. Thus, upon removal of the screw 12c, the member 12b can be removed with the spray arms; and, by means of the screw-threaded and lock-nut engagement, the spray arms can be adjusted to any position desired and then locked in such position or they can be removed for servicing or renewal at any time. This same arrangement is employed for both sets of the upper and lower spray arms for rinsing, it being inverted at the top as indicated in the drawing.

The purpose of the reservoir 18 is to amplify the force of the water from the supply line as it is discharged through the spray arms 12, this provision alone being sufficient for the purpose. As a matter of fact, with this arrangement, the rinse water will be emitted from the jets of the spray arms 12 with considerably greater force than would be the case without the reservoir 18, as has been demonstrated by actual test, this phenomenon presumably being due to the compression of the air within this reservoir upon the introduction of the water thereinto, this reservoir being completely enclosed. As indicated in the drawing, as for instance in Fig. 2, the pipe 20 for discharging the rinsing fluid from its reservoir 18 to the spray arms is connected to the reservoir 18 at a point near the bottom thereof so as to permit air to be trapped in the upper part of this reservoir and to be compressed by the force of the pressure of the line supply thereinto at the point 19 in the bottom thereof.

By having the single casting 1 sufficiently elevated above the floor, there is allowed space for a heater beneath the same for applying heat to the reservoirs 15 and 18. Or, if desired, other suitable heating means may be applied to each of the two reservoirs through openings that are here shown closed by the screw plugs 15a and 18a.

Suitably mounted by means of a bracket upon the table 8 and at proper elevation thereabove, I have provided the air-drying means 23 for directing warm air down over the area occupied by the dishes while still remaining in the basket 10 after having been washed and rinsed and removed from the machine onto the table and into position beneath the drying means 23. That is, this drying means will be located just above the position occupied by the basket of cleaned dishes upon their removal from the machine in the manner above explained. This drying means consists of an electric-operated fan or blower which forces air over an electric heating element in a familiar manner; and it will be so constructed and arranged as to effectively direct the warm air over substantially the entire area occupied by the basket of cleaned dishes, at the same time being located at sufficient elevation thereabove so as not to interfere with the handling of the basket of dishes or with access to any part of the machine. With this provision, the basket of cleaned dishes can be dried while the succeeding basket of soiled dishes is being placed into the machine and the washing operation initiated in the manner above described. This drying means will be provided with a separate electric switch for its motor so as to be able to start and stop the same at will.

Briefly, the procedure is as follows, assuming that the washing chamber and both reservoirs 15 and 18 are empty, that the strainer 16 with the drain plug is in proper position, and that the main water supply line is connected to rinse water reservoir 18 at point 19. Water will enter reservoir 18 and, upon opening and holding open

the valve 21, there will be delivery of plain water through spray arms 12 into the bottom of the washing chamber until this chamber and reservoir 15 are filled, as indicated by over-flow pipe 17. Then, upon releasing valve 21, it will automatically close and a suitable cleanser is then supplied to the water in the washing chamber which is then ready for a basket of soiled dishes to be slid from table 8 onto the tracks 9 and into the position for the washing operation. With a basket of dishes thus located above the washing chamber, cover 5 is closed by the operator and motor 14 is started so that the wash water will be forced by pump 13 through spray arms 11 onto the dishes from above and below the same. Upon completion of this operation, motor 14 will be stopped. Then the valve 21 will be opened and held open so as to spray plain rinse water from the jets of arms 12 onto the dishes from above and below the same.

The rinse water is supplied continuously from the main supply line so as to always keep the reservoir 18 full except for the space occupied by the compressed air therewithin, as explained. Valve 21 will be closed upon filling the washing chamber and reservoir 15 and will remain closed during the washing operation and until it is opened for the rinsing operation. Thus there is ample time for the building up of compression within reservoir 18 each time and the force of this air compression is sufficient and will last long enough for the performance of the rinsing operation with amplified force as compared with that of the main supply line.

The rinse water is deposited in the washing chamber with the wash water which remains therein, the excess water running out through the over-flow pipe 17 to the drain pipe 22. Since the rinsing operation requires but a relatively short time, the dilution of the wash water will not be serious but more cleanser may be added whenever necessary. Since the greasy content from the soiled dishes will naturally rise to the top surface of the water in the washing chamber after the washing operation has been completed, the discharge of water out through the over-flow pipe, as caused by the addition of the rinse water, will consist at least partly of such greasy content and thus this may be considered as an advantage as it tends to improve the condition of the wash water for the next washing operation. Upon completion of the rinsing operation, valve 21 will be released by the operator and closed automatically by its spring and the cover will be raised so as to permit the sliding of the basket of cleaned dishes from tracks 9 into proper position upon table 8 at the opposite side of the device so as to be ready for the drying operation beneath the dryer 23. While one basket of dishes is being dried, another basket of soiled dishes may be slid into the machine for the successive operations in the manner above explained.

Now I will refer to Figs. 7 and 8, in which the structure and operation are the same as in Figs. 1 to 6 except for modifications to be explained. Here hood cover 25 is rotatably adjustable in the same horizontal plane so as to bring its closure 26 into position upon either side of the machine for introducing or removing a basket of dishes. Pipe 20' continues upwardly, as at 27, through U-shaped lug 27a on casting 1 and thence horizontally over the top of the cover, as at 28, and has connected thereto piping 30 which is screwed into the integral boss on the side of casting 1. There is no flow of rinse water past the T-connection except to rinse spray arms 12', the only purpose of piping 30 being to serve as a means of further support.

The mounting 31 serves as a means of support for the hood cover 25 through the top of which extends a connecting member 29a between T-joint 29 and the mounting 31. There may be here employed the same means of connection between the mounting 31 and the rotatable member 32 for the spray arms 12', as is indicated in the first form of device. (See Fig. 6.)

The cover 25 is of cylindrical form, as is also the cover 5; but in the present modification the cover 25 does not have movement upwardly and downwardly but only rotatably in the same horizontal plane. The cover 25 has its semi-cylindrical closure 26 mounted so as to be rotatably adjustable about a vertical axis from open to closed positions for access to the inside of the machine, this entire cover 25 extending down into the annular groove that is afforded by the inclined wall portion 4. With this arrangement, the cover 25 can be properly positioned and the closure 26 can then be opened to receive a basket of soiled dishes from the table at the one side of the machine; and later the entire cover 25 can be rotated to position so that, upon opening the closure 26, the basket of cleaned dishes can be slid out of the machine and onto the table at the other side thereof. Thus the basket of dishes can be handled in the same manner as in the first form of device and under conditions that do not permit the overhead clearance that is necessary for the operation of cover 5.

Another modification, shown in Fig. 7, consists of the connection of a source of steam supply 33 to the rinse reservoir 18 through the valve 34 which controls the flow also of compressed air from the supply line 35. That is, with valve 34 set in the position indicated in Fig. 7, the rinse water in reservoir 18 may be forced therefrom to the spray arms 12' by means of the compressed air; then, upon turning valve 34 to another position, the compressed air line can be closed off and the connection established for the supply of steam from the generator 33 to the rinse water reservoir 18 with the result that the rinse water will be delivered to the spray arms 12' not only under increased pressure but also at increased temperature.

Furthermore, I have provided in the rinse water intake pipe 19 a check valve 36 which will normally occupy open position but which will be automatically closed and held closed by the relatively greater pressure of the steam or compressed air, so long as the valve 34 occupies position for supply of steam or compressed air to the rinse reservoir.

As a result of the check valve 36 being held closed by the pressure of the steam or compressed air, the supply of rinse water in the reservoir 18 will become exhausted if the valve 34 be held in either position long enough; in which event, the supply of steam through the otherwise empty reservoir 18 may be continued sufficiently longer to subject the dishes to a steam bath which will serve to sterilize them and also to substantially dry them, or to the compressed air alone which will at least partially dry the dishes, thereby precluding the necessity of the further operation of the drying means 23 entirely or at least partially. As indicated in Fig. 7, the valve 34 may be connected to the upper part of reservoir 18 and the supply of rinse water in this reservoir may be limited to only a portion thereof, with the thought

of following each rinsing operation with a steam or air bath; in which event, the steam or compressed air would be applied to the top surface of the rinse water which would be emitted from the lower part of reservoir 18.

Upon closing of valve 34, after having employed either steam or compressed air, check valve 36 will automatically open so as to admit rinse water into the reservoir 18 from the main supply line in the manner and to the extent stated in connection with Figs. 1 to 6, unless valve 34 should be opened when reservoir 18 has been only partially filled, as above explained.

After the use of steam or compressed air, valve 34 will be closed prior to the closing of valve 21 so as to relieve pressure in reservoir 18 and thereby permit water to enter the same.

When it is desired not to employ either steam or compressed air, valve 34 will be turned to closed position and then the operator may rely entirely upon the pressure afforded by the compressed air within the reservoir 18, as above explained in connection with Figs. 1 to 6.

As will be observed, it is necessary to close valve 34 in order to permit the check valve 36 to open, thereby ensuring that the supply of steam or compressed air will be discontinued prior to the introduction of rinse water into the reservoir 18; and, by opening the valve 34 at the proper time, the supply of rinse water to reservoir 18 can be discontinued so as to have the reservoir filled only to the extent desired, as above explained.

It is to be understood that the compressed air may be supplied to the reservoir 18 in sufficiently heated condition to heat the rinse water and later to dry the dishes after completion of the rinsing operation. Whenever deemed necessary, the dishes may also be subjected to the air-drying means 23 after removal of the same from the machine, as above explained.

Among the many practical advantages flowing from my present improved structures, there may be mentioned the following. There is but one casting and it serves to house the two reservoirs 15 and 18 for the wash water and rinse water, respectively. This casting serves also as a means for supporting the table or tables 8 and it occupies sufficiently elevated position to accommodate heating means therebeneath. The cover 5 may be raised and lowered in a very convenient manner by virtue of the counterweight, with its safety provision, and there is precluded any danger of water escaping past the edge of the cover when in closed position. The modified form of cover 25 permits substantially the same advantages as the cover 5 and may be used under conditions of restricted over-head clearance. In both forms of device, the means for supporting the cover 5 or cover 25 is so placed as not to interfere with the handling of the baskets of dishes into and out of the machine in the manner explained. Both the washing and rinsing operations are performed with sufficient force to ensure complete removal of all particles of food from the dishes as well as all trace of wash water. The rinsing operation may be performed without the use of any other power than that supplied by the pressure developed within the reservoir 18; or there may be employed either the increased pressure of steam or compressed air with the increased heat incident thereto and also the steam or air bath that may follow the rinsing operation. As a further refinement in this same arrangement, the co-ordination between the pressure of the steam and the compressed air and the check valve in the rinse water supply line, constitutes another advantage that is found in the modified form of invention. There is every assurance that the washing and rinsing fluids will cover all dishes in the basket and there is no danger of the dishes being marred by the metal of the basket itself. Within the washing machine itself there are no moving parts except the pump and the spray arms. There is a convenient combined form of strainer, over-flow pipe and drain plug and this arrangement renders the device fool-proof as to the danger of the machine being operated while the strainer is not in proper position. Baskets of cleaned and soiled dishes may be most conveniently exchanged for each other by using either of the two forms of covers 5 and 25, and a basket of cleaned dishes may be dried under the blower 23 while the next basket of soiled dishes is being placed in position within the machine, the steam bath serving as a substitute drying means after the rinsing operation in the modified form of device and the compressed air bath serving at least as a partial means for this same purpose in the modification. In either form of device, easy access may be had to the spray means and the pipe connections therefor for adjustment or removal and servicing and replacement by new parts when necessary. With the several readily removable attachments, the entire device can be packed, shipped and stored in comparatively small space, the parts can be easily applied for assembly and they may be as easily removed at any time for cleaning or renewal without disturbing the single casting which will last indefinitely. By making the casting of proper size in any given case, it can be used as part of any one of several other models of dish washing machines, as for instance the type in which the dishes are inserted down through the top of the machine; and thus this casting can be considered as being interchangeable and hence standardized to this extent. Also, this machine is so constructed and arranged as to present an extremely attractive appearance.

Furthermore, from actual experience, this machine has been found to be capable of thoroughly cleaning a decidedly larger number of dishes in a given length of time than any other similar device, so far as I am aware, with a consequent saving in manpower and materials and hence a substantial saving in money.

What I claim is:

1. In combination, a washing machine having a body with an operating chamber in the top thereof, a substantially bell-shaped cover located over said chamber and having an opening in the side thereof and a closure therefor rotatably adjustable about the vertical axis of said cover from open to closed positions, a fluid supply means extending above and through said cover and terminating in spray means above said chamber and supporting said cover for rotatable adjustment about its vertical axis so as to permit said closure to be opened at diametrically opposite sides of said chamber.

2. In a washing machine, a washing chamber in the top thereof, a reservoir for the wash fluid, a separate reservoir for the rinse fluid, a substantially bell-shaped cover located over said chamber, means within said cover for delivering the wash fluid from its reservoir under pressure to the objects within the region of said chamber, said cover having an opening in the side thereof and a closure therefor rotatably adjustable about the vertical axis of said cover from open to closed

positions, rinse fluid supply means extending from said rinse reservoir above and through said cover and terminating in spray means above said chamber and supporting said cover for rotatable adjustment about its vertical axis so as to permit said closure to be opened at diametrically opposite sides of said chamber.

3. In combination, a washing machine having an operating chamber at the top thereof for the washing and rinsing operations, a reservoir for the washing fluid and a separate completely enclosed reservoir for the rinsing fluid, separate pipe means connected to said washing and rinsing reservoirs for discharging the washing and rinsing fluids, respectively, from their reservoirs to said operating chamber, pump means included in the discharging pipe means for only the washing fluid, said discharging pipe means for the rinsing fluid being connected to its reservoir at a point in the region of the bottom thereof and having a valve therein so as to permit the air within the upper part thereof to be trapped therein by rinsing fluid, and said rinsing fluid reservoir having means for connecting at the bottom thereof a supply of rinsing fluid under line pressure so that the trapped air in the upper part of said rinsing fluid reservoir will be compressed by the entrance of the rinsing fluid thereinto under the pressure of the supply line.

4. In combination, a washing machine having a body with an operating chamber in the top thereof, a substantially bell-shaped cover located over said chamber and having an opening in the side thereof and a closure therefor rotatably adjustable about the vertical axis of said cover from open to closed positions, a fluid supply means extending above said washing chamber and terminating in spray means thereabove and supporting said cover for rotatable adjustment about its vertical axis so as to permit said closure to be opened at different points about said chamber.

5. In a washing machine, a washing chamber in the top thereof, a reservoir for the wash fluid, a separate reservoir for the rinse fluid, a substantially bell-shaped cover located over said chamber, means within said cover for delivering the wash fluid from its reservoir under pressure to the objects within the region of said chamber, said cover having an opening in the side thereof and a closure therefor rotatably adjustable about the vertical axis of said cover from open to closed positions, rinse fluid supply means extending from said rinse reservoir above said chamber and terminating in spray means thereabove and supporting said cover for rotatable adjustment about its vertical axis so as to permit said closure to be opened at different points about said chamber.

6. In combination, a washing machine having a body with an operating chamber in the top thereof, a substantially bell-shaped cover located over said chamber and having means for effecting opening and closing of the same through the side thereof and including closure means rotatably adjustable about the vertical axis of said cover from open to closed positions, a fluid supply means extending above said washing chamber and terminating in spray means thereabove and supporting said cover for rotatable adjustment about its vertical axis so as to permit said closure means to be opened at different points about said chamber.



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