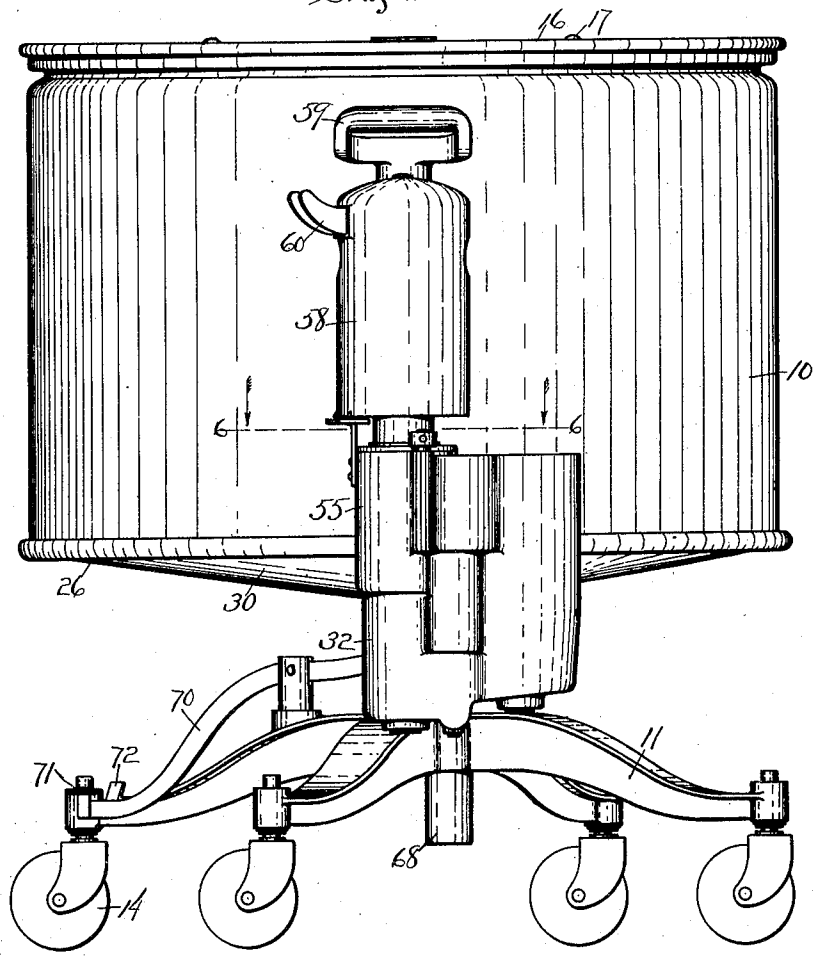
Oct. 6, 1936. H. CAVE 2,056,343

DISHWASHING MACHINE

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Fig. 1.



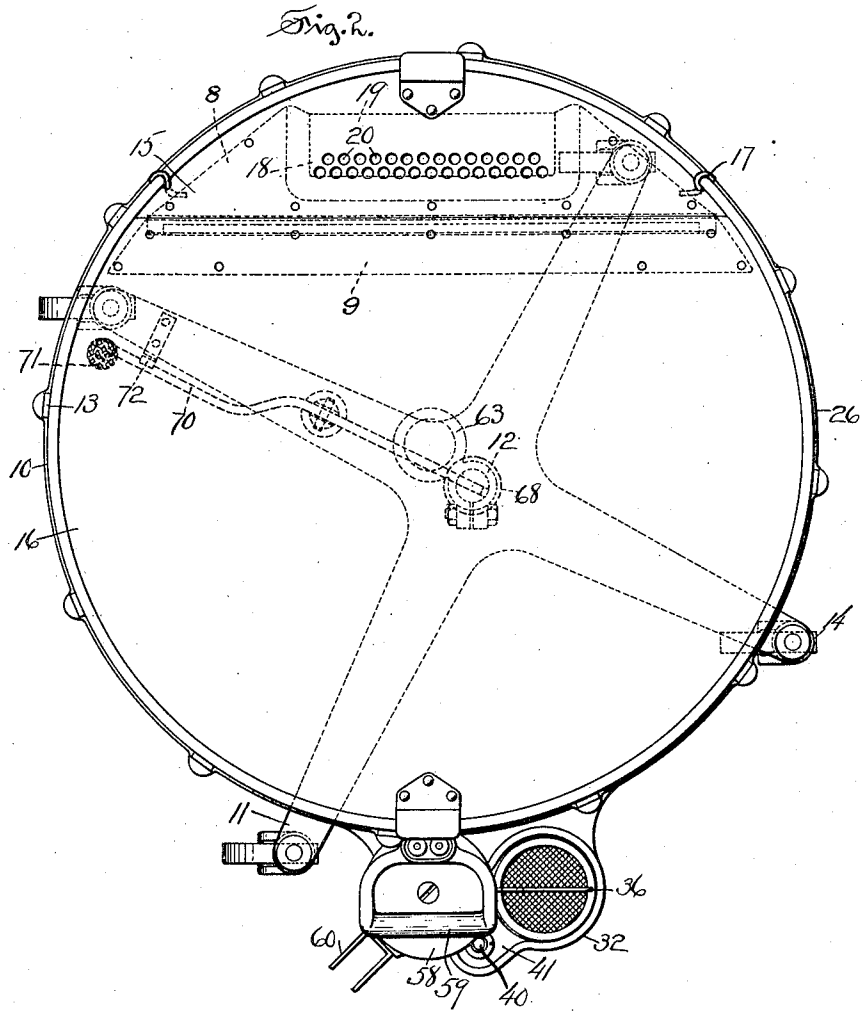
INVENTOR
Henry Cave,
by
Arthur B. Jenkins,
ATTORNEY

Oct. 6, 1936. H. CAVE 2,056,343

DISHWASHING MACHINE

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Fig. 2.



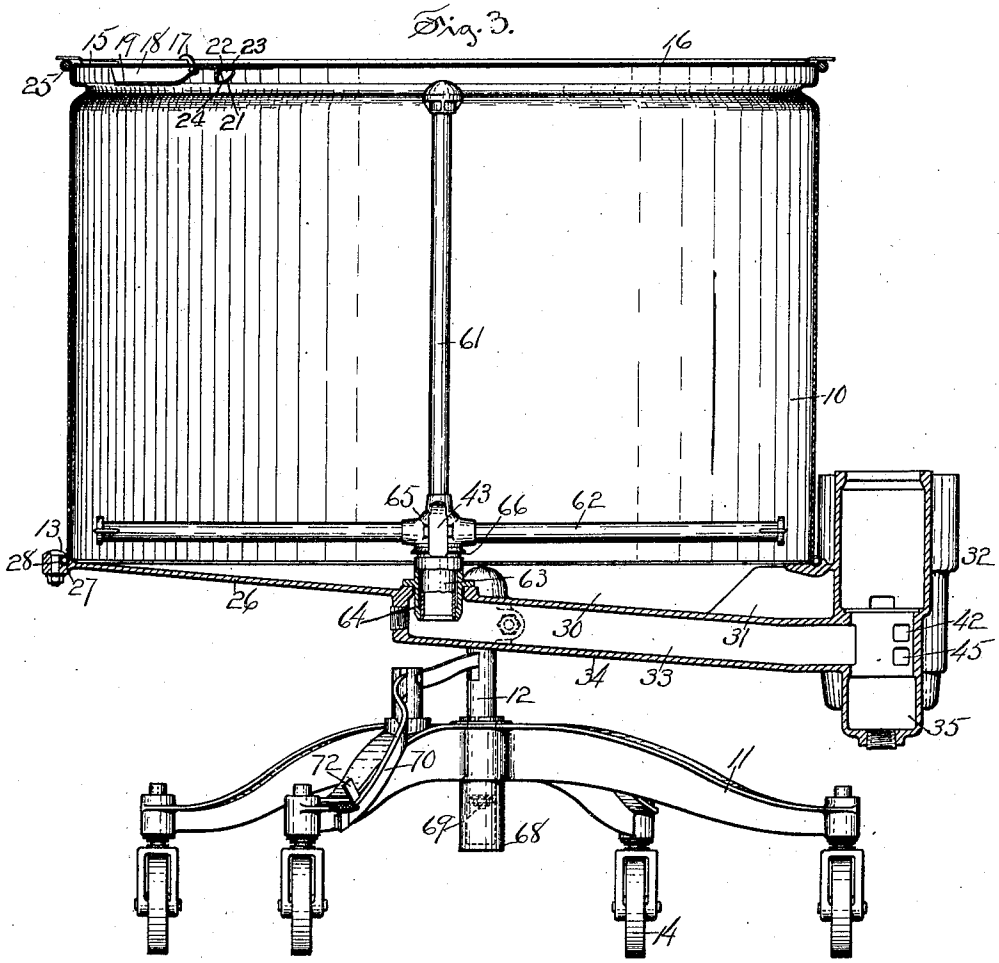
INVENTOR
Henry Cave,
By
Arthur G. Jenkins,
ATTORNEY

Oct. 6, 1936. H. CAVE 2,056,343

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Fig. 3.



INVENTOR
Henry Cave,
By
Arthur F. Jenkins,
ATTORNEY

Oct. 6, 1936. H. CAVE 2,056,343

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Fig. 4.

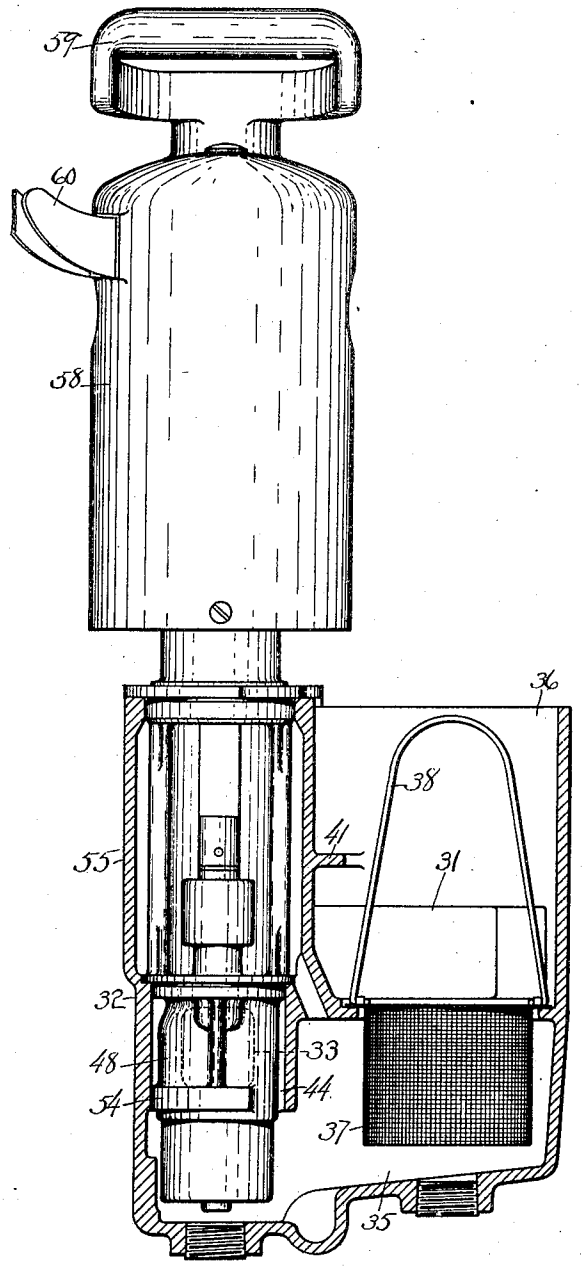
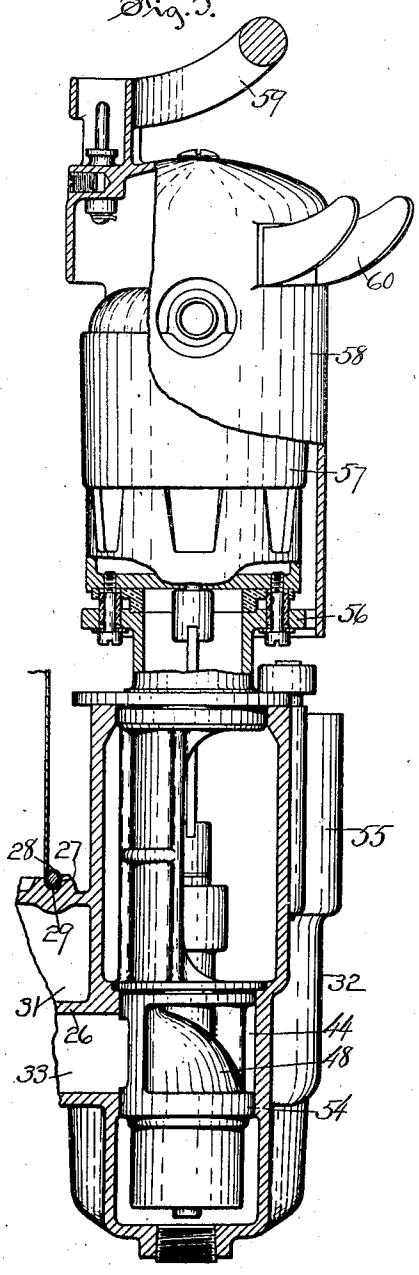


Fig. 5.



INVENTOR
Henry Cave,
By
Arthur B. Jenkins
ATTORNEY

Oct. 6, 1936. H. CAVE 2,056,343

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Fig. 6.

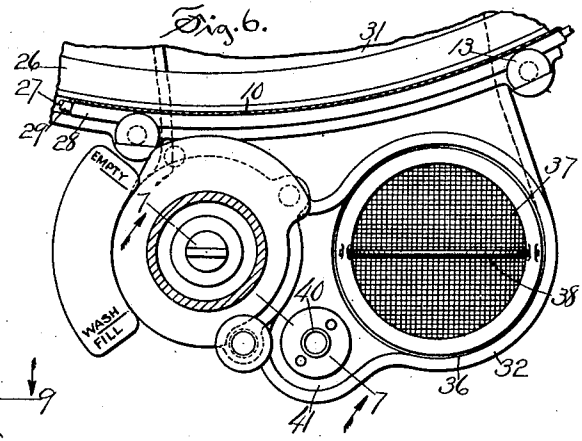


Fig. 7.

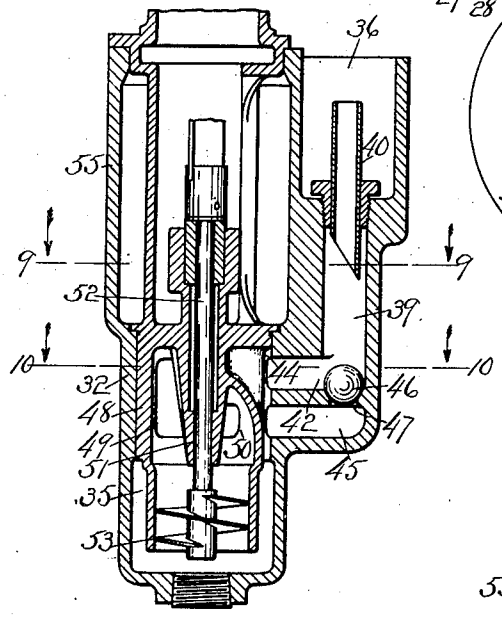


Fig. 9.

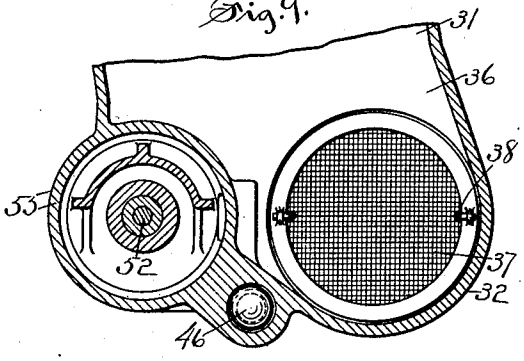


Fig. 8.

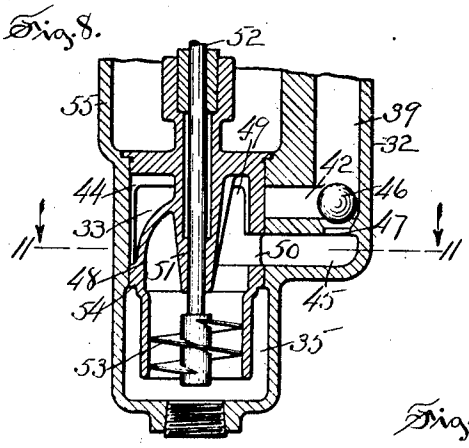


Fig. 10.

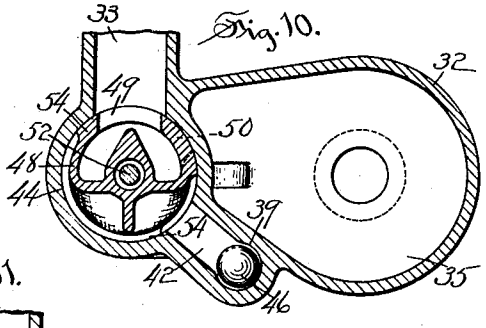
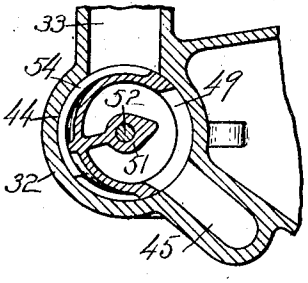


Fig. 11.



INVENTOR
Henry Cave,
by
Arthur B. Jenkins,
ATTORNEY

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2,056,343

UNITED STATES PATENT OFFICE

2,056,343

DISHWASHING MACHINE

Henry Cave, Hartford, Conn.

Application December 19, 1929, Serial No. 415,154

15 Claims. (Cl. 141—9)

My invention relates more particularly to that class of washing machines designed for cleansing dishes and similar articles, and an object of my invention, among others, is the production of a machine of this type that shall be simple in construction and eminently efficient in operation.

One form of a machine embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my improved machine.

Figure 2 is a top view of the same.

Figure 3 is a view in section on a plane passing vertically through the center of the tank.

Figure 4 is a detail view, scale enlarged, partially in section, illustrating the construction of the motor and pump unit.

Figure 5 is a similar view but looking from a different point of observation.

Figure 6 is a detail view on a plane denoted by the dotted line 6—6 of Figure 1.

Figure 7 is a detail view in section on a plane denoted by the dotted line 7—7 of Figure 6 and with the valve in the filling and washing position.

Figure 8 is a view similar to Figure 7 but with the main valve in the tank emptying position.

Figure 9 is a view in section on a plane denoted by the dotted line 9—9 of Figure 7.

Figure 10 is a view in section on a plane denoted by the dotted line 10—10 of Figure 7.

Figure 11 is a view in section on a plane denoted by the dotted line 11—11 of Figure 8.

My improved dishwasher comprises a tank adapted to receive the articles to be cleansed by a liquid forced on to said articles, in the drawings herein, such tank being denoted by the numeral 10, which tank is supported upon a base comprising legs 11 radiating from a post 12 and by which post the tank is supported in a manner to be hereinafter described. These legs are supported as by rollers or casters 14 attached in any suitable manner to the outer ends of the legs.

The tank is closed at its top by a removable closure which comprises a cover base 15 and a cover 16. This base is of peculiar construction, being formed to fit the inner wall of the tank at the top of the latter and extending inwardly from the back edge of said top for a short distance only. It is supported by means of hooks 17 secured to the cover base and hooked over the top edge of the tank, as shown in Figure 2. The cover and cover base are united as by means of the hinge plates 8 and 9 formed from pressed steel and riveted to said members, these plates being formed at their meeting edges with interlocking means for pivotally attaching the cover to the base. The plate 8 is depressed at 19 as by stamping, thereby creating a baffle chamber 18 between said plate and the under surface of the cover base, openings 20 being formed in the cover base to freely admit air to the interior of the tank, but at the same time to obstruct the escape of liquid therefrom by reason of splashing in the washing operations within the tank. A knuckle 21 is formed on the plate 8, extending thereacross and having a slot 22 bounded by a retaining lip 23 along one edge, and the plate 9 has a holding lip 24 projecting inwardly at substantially right angles to the cover and extending along its back edge and through the slot 22.

This provides a structure wherein the cover may be readily lifted from its place on top of the tank, but when the cover 16 is raised the engagement of the lips 23 and 24 pivotally attach such cover to its base 15. Both the cover and the base are formed to fit within the rim 25 extending around the top edge of the tank.

The tank, except as to the bottom thereof, is preferably formed from sheet metal and the base, generally denoted by the numeral 26, is composed of heavier metal with a groove or seat 27 to receive a rolled edge 28 extending around the bottom of the tank, a gasket 29 of any suitable material being placed in said groove to secure the joint from leaking, as shown in Figure 5 of the drawings.

The tank or case 10 is removably secured to the base as by means of bolts each of which has a holding lip 13 overlying the roller edge 28 and drawing said edge tightly into engagement with the gasket 29. By loosening the nuts on the bolts, the latter may be readily disengaged from the tank or case to permit its removal.

The base 26 constitutes the bottom of the tank and it has a sump 30 preferably sloping to one side from which an outlet opening 31 extends into a chamber in a fixture 32 preferably formed integral with the base but located at one edge thereof. A return passage 33 extends from the chamber fixture, as through a rib 34, backwardly into the tank through an inlet to be more specifically hereinafter described.

The fixture contains a circulating chamber 35 in the bottom part thereof with an opening therefrom into an inlet chamber 36, shown herein as opening out at the top of the fixture. The first mentioned opening establishes communication between said inlet chamber and the circulating chamber 35, and a strainer 37, in the form of a

basket with a ball 38, intercepts any grease or coarse matter and prevents its entry into the chamber 35, and hence its return to the chamber in the tank. The inlet chamber 36 is mainly located in a laterally offset part of the fixture and is open at the top for ready access thereto.

A filling chamber 39 is formed in a forwardly projecting part of the fixture 32, extending downwardly alongside of and separated from the lower part of the inlet chamber 36 and circulating chamber 35, as shown in Figure 10, and a filling tube 40 extends through a raised bottom 41 of the inlet chamber 36 into the chamber 39, as shown in Figure 7. A filling passage 42 extends from the chamber 39 into the upper part of the chamber 35, and an outlet passage 45 extends from within said chamber through a valve controlled port into the passage 42 and chamber 39, a valve 46 for said port 47 in the bottom of the chamber 39 closing said port, thereby directing outflow through the chamber 39.

A main valve or pump chamber 48 is rotatably mounted in an opening 44 in the main part of the fixture and has a washing port 49 and an offset therefrom constituting an emptying port 50. This valve is hollow and has a bearing 51 for a pump shaft 52 of a pump 53 of the helical type located in the lower part of the chamber in the valve, which chamber is open at the bottom, as shown in Figures 7 and 8 of the drawings. A bearing rib 54 for support of the valve against the wall of the opening 44 extends partially around the valve on the outside thereof, and said valve is rounded above said rib for the purpose of aiding flow of liquid through the valve.

The valve extends upwardly through a housing 55 in the fixture 32 and terminates in a flange 56 above said housing, and to which flange a motor 57 is secured. A hood 58 secured to said valve and to said motor partially houses the latter, said hood being provided with a handle 59 at its upper end. A hose may be attached to the tube 40 for the purpose of filling or emptying the tank, and such hose, when not in use, may be supported upon hooks 60 projecting from the hood 58.

A washing frame is mounted within the tank, this frame comprising a vertical tube 61 and horizontal tubes 62, the latter being located preferably near the bottom of the tank, and these tubes having perforations for projecting the cleansing liquid in such directions as may be desired, and in a manner that will be readily understood by those skilled in the art. This frame is rotatably and removably supported at its lower end as by means of a hub 63 seated in a socket 64 opening into the passage 33 in the base 26.

Spring retaining clips 43 are pivotally mounted on ears projecting from opposite sides of a union 65 from which the tubes 61 and 62 project, these clips having lips to engage under an annular shoulder 66 on a stationary member underneath the union 65, and as shown in Figure 3 of the drawings to yieldingly retain the tubular structure in place.

The dishes or articles to be cleansed may be supported within the tank as by means of racks, frames or other suitable devices in a manner common to structures of this type.

The dish washer is attached to the base comprising the legs 11 as by means of the post 12 extending into a cylinder 68 located at the junction of the legs 11. This post is formed at its lower end as a piston 69, shown in the dotted lines in Figure 3, said piston and the pocket in the inner end of the cylinder 68 forming a dash pot construction to prevent rapid movement of the post downwardly. A foot lever 70 is pivotally mounted on the base with one end engaged in an opening in the post 12 and the other end formed with a pad 71 to receive a human foot for the purpose of operating the lever to raise the washer to the position shown in Figure 3, and to engage the lever with a holder 72 to hold it in this position. The lever has lateral play to enable it to be disengaged from the holder and thereby permit the washer to be lowered for the purpose of receiving articles to be cleansed.

It will be noted that the body of the tank 10, which it is desired shall be formed of sheet metal, is a plain sheet metal tube with a rolled top and bottom edge. A liquid tight joint is created between the bottom edge of this tank body and the base, and should this body become injured or damaged, it may be readily removed and the machine supplied with a new body. Said body being comparatively inexpensive, any injury or damage to the apparatus may be readily repaired at comparatively little cost, it being observed that this tank body, constituting by far the greater part of the apparatus, is the most susceptible to injury.

Attention is further directed to the unit construction of the motor, the valve plug, the pump, the connecting mechanism between the pump and the motor, and the shield for said motor. All of this mechanism is removable as a unit from the fixture 32 at the side of the base. The connection between the handle 59 and the valve plug is a rigid connection and includes the motor and the connecting mechanism so that the means for operating the valve plug is reduced to a very simple form. The motor is entirely enclosed within the casing thus removing all liability of injury to persons that may be operating the machine or others. This arrangement locates the handle for operating the valve at a very convenient height and no added mechanism is required to so locate the handle or to connect it with the valve.

In the operation of the machine the requisite amount of water mixed with soap or other cleansing material is placed in the tank 10. This may be done by attaching a hose to the tube 40 with the valve 48 in the position shown in Figs. 6 and 7, and the motor being in operation the liquid will flow from the chamber 39 through the passage 42 and the chamber 35 from which it will be forced by the pump upwardly through the valve and passage 33 into the tank. For this operation the valve is operated by means of the handle 59 which, properly positions the valve for a filling as well as for a washing operation, placing said valve in the position above mentioned and the pump forcing the liquid through the tube 33 and upwardly into the tubes 61—62, spraying the water therefrom on to the dishes within the tank.

By turning the handle 59 to another position the valve and openings therein will be properly located, as shown in Figs. 8 and 11, to cause the mechanism to operate to eject the liquid from the apparatus by forcing it through the passage 45, port 47, chamber 39 and tube 40 to which a hose may be attached as for filling.

If the tank becomes injured or worn it may be readily removed by simply loosening the bolts and nuts securing it to the base. It will be noted that there are no attached parts which prevent this free removal of the tank.

I claim—

1. A dishwasher including a tank base, a tank body detachably secured to said base and free for sole removal therefrom without disconnection of attached parts, said base comprising passages formed therein for supply of liquid to and delivery from said tank body, said base also including a fixture at the peripheral edge thereof for operating mechanism, said fixture being integrally formed with the base at one edge thereof and unobstructive to removal of said tank body, said passages communicating with the interior of said fixture, operating mechanism supported by said fixture, and means within said tank for cleansing articles placed therein, said supply passage connecting said cleansing means with said operating mechanism.

2. A dishwasher including a tank base having an annular groove extending therearound, a packing located in said groove, a tank body having its lower edge located in said groove against said packing and free for removal therefrom without disconnection of attached parts, means for clamping said tank body within said groove, a fixture carrying operating mechanism, said fixture being integrally formed with and projecting beyond the base at one edge thereof and unobstructive to the removal of said tank, and means within said tank body for cleansing articles placed therein, said cleansing means having connection with said operating mechanism.

3. A dishwasher including a tank base having an annular groove therein, a packing located in said groove, a tank body having its lower edge located in said groove against said packing and free for removal therefrom without disconnection of attached parts, engaging means on the lower edge of the tank body, fastening bolts secured to the base and having lips to grip said engaging means, a fixture carrying operating mechanism, said fixture being integrally formed with and projecting beyond the base at one edge thereof and unobstructive to the removal of said tank, and means within said tank body for cleansing articles placed therein, said cleansing means having connection with said operating mechanism.

4. A dishwasher including a tank base having an annular groove therein, a packing located in said groove, a tank body formed of sheet metal with a rolled lower edge located in said groove against said packing and free for removal therefrom without disconnection of attached parts, fixed means engageable with said rolled edge and secured to the base to clamp said tank body in place, a fixture carrying operating mechanism, said fixture being integrally formed with and projecting beyond the base at one edge thereof and unobstructive to the removal of said tank, and means within said tank body for cleansing articles placed therein, said cleansing means having connection with said operating mechanism.

5. A dishwasher including a base with a fixture integrally formed therewith at one side thereof and projecting upwardly above its top, said fixture having pump and circulating chambers and said base having integrally formed projections with passages communicating with said chambers, and a tank body detachably secured to said base over said projections and passages and projecting upwardly alongside of said fixture.

6. A dishwasher including a base having a depressed bottom sloping to one side and a fixture integrally formed therewith at said side thereof and projecting above its top, said fixture having pump and circulating chambers and said base having an outlet opening into said fixture and a return passage therefrom, and a tank body removably secured to said base over said depressed bottom and return passage and projecting upwardly alongside of said fixture.

7. A dishwasher structure including a base, a tank body detachably secured to and rising from the base, a fixture rigidly supported by the base, said fixture including a main part to contain a pump, a laterally offset part and a forwardly projecting part, said laterally offset part having an inlet communicating with the tank body to receive liquid therefrom and also having a circulating chamber, said forwardly projecting part having a filling and emptying chamber communicating with said tank body to supply liquid thereto and with said circulating chamber to receive liquid therethrough from the tank body for discharge of said liquid from the machine, and said main part having a pump section removably positioned in said fixture and comprising a chamber with a pump therein, said pump chamber communicating with said circulating chamber to receive liquid therefrom, said pump chamber also communicating with said tank body whereby said pump is capable of forcing into said tank body liquid received from the circulating chamber.

8. A dishwasher including a tank, a fixture located at one side of said tank, and including a pump for supply of liquid to said tank, a valve for controlling flow of said liquid, a motor, a rigid connection between the case of said motor and said valve for operation of the latter by movement of the former, and a driving connection between said motor and pump.

9. A dishwasher including a tank, a fixture located at one side of said tank and including a pump for supply of liquid to said tank, a valve for controlling flow of said liquid, a motor, a rigid connection between the case of said motor and said valve for operation of the latter by movement of the former, a driving connection between said motor and pump, and a handle on the upper end of the motor for effecting therethrough operation of said valve.

10. A dishwasher including a tank, a fixture located at one side of said tank and including a pump for supply of liquid to said tank, a valve for controlling flow of said liquid, a motor, a rigid connection between the case of said motor and said valve for operation of the latter by movement of the former, a housing enveloping said motor, and an operative connection between said motor and pump.

11. A dishwasher including a tank, a fixture located at one side of said tank and including a pump for supply of liquid to said tank, a valve for controlling flow of said liquid, a motor, a rigid connection between the case of said motor and said valve for operation of the latter by movement of the former, a housing enclosing said motor and rigidly connected therewith, a handle secured to said housing to operate said valve, and an operative connection between said motor and pump.

12. A dishwasher including a tank, a chambered fixture located at one side of said tank, and a unit removably placed in said fixture and including a pump, a valve for controlling supply of liquid to said tank by said pump, and a motor rigidly connected with said valve for operation of the latter by movement of the former, said motor being operatively connected with said pump.

13. A dishwasher including a tank, a cham-

bered fixture located at one side of said tank and rigidly connected thereto, and an operating unit removably placed in said fixture and including a hollow valve, a pump housed in said valve, a frame rigid with said valve, a motor fastened to said frame whereby movement of the motor casing operates said valve, and a connection between said motor and pump for operation of the latter.

14. A dishwasher including a tank, a chambered fixture rigidly connected with said tank at one side thereof, and an operating unit removably placed in said fixture and including a valve located in a chamber in the fixture, a pump to force liquid through the passage controlled by said valve, a frame rigid with said valve and located in said chamber, a motor located outside of said chamber and rigidly connected with said frame, a housing enveloping said motor and rigid therewith, a valve actuating handle secured to said housing and thus rigidly connected with said valve whereby movement of said handle effects movement of said valve, and a connection between said motor and pump for operation of the latter.

15. A dishwasher structure including a base, a tank body detachably secured to and rising from the base, a fixture attached to the base at one side thereof and comprising two chambered sections, one of said sections having an inlet communicating with the tank body to receive liquid therefrom and also having a circulating chamber and the other of said sections having a filling and emptying chamber communicating with said tank body, and a pump chamber section removably positioned within said fixture and communicating with said circulating chamber and with said tank body and containing a pump to force liquid into said tank body.

HENRY CAVE.