

June 26, 1928.

1,675,192

C. A. MURDOCH

WASHING MACHINE

Filed July 26, 1926

5 Sheets-Sheet 1

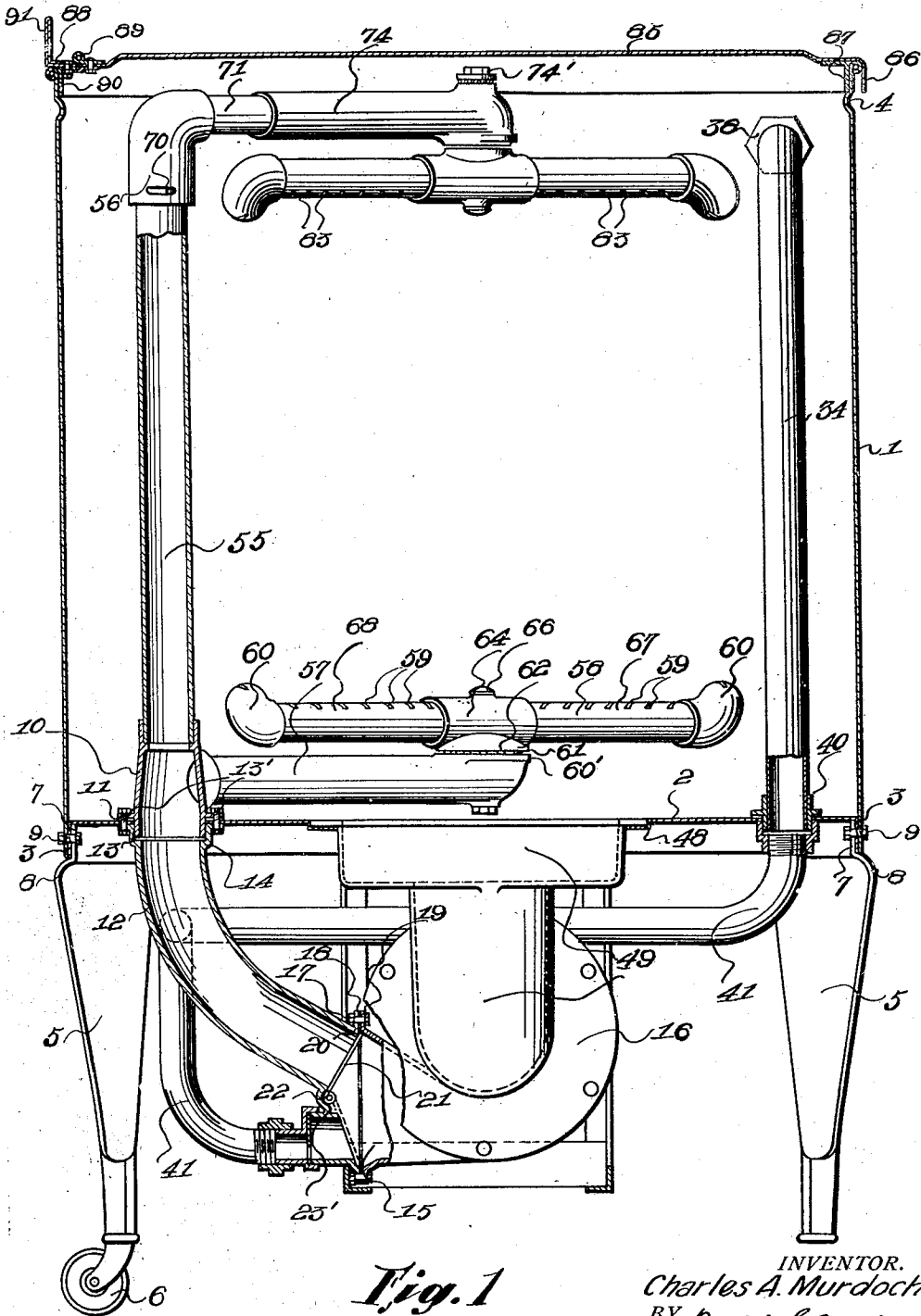


Fig. 1

INVENTOR.
Charles A. Murdoch
BY *Daniel S. Morris*
ATTORNEY

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5 Sheets-Sheet 2

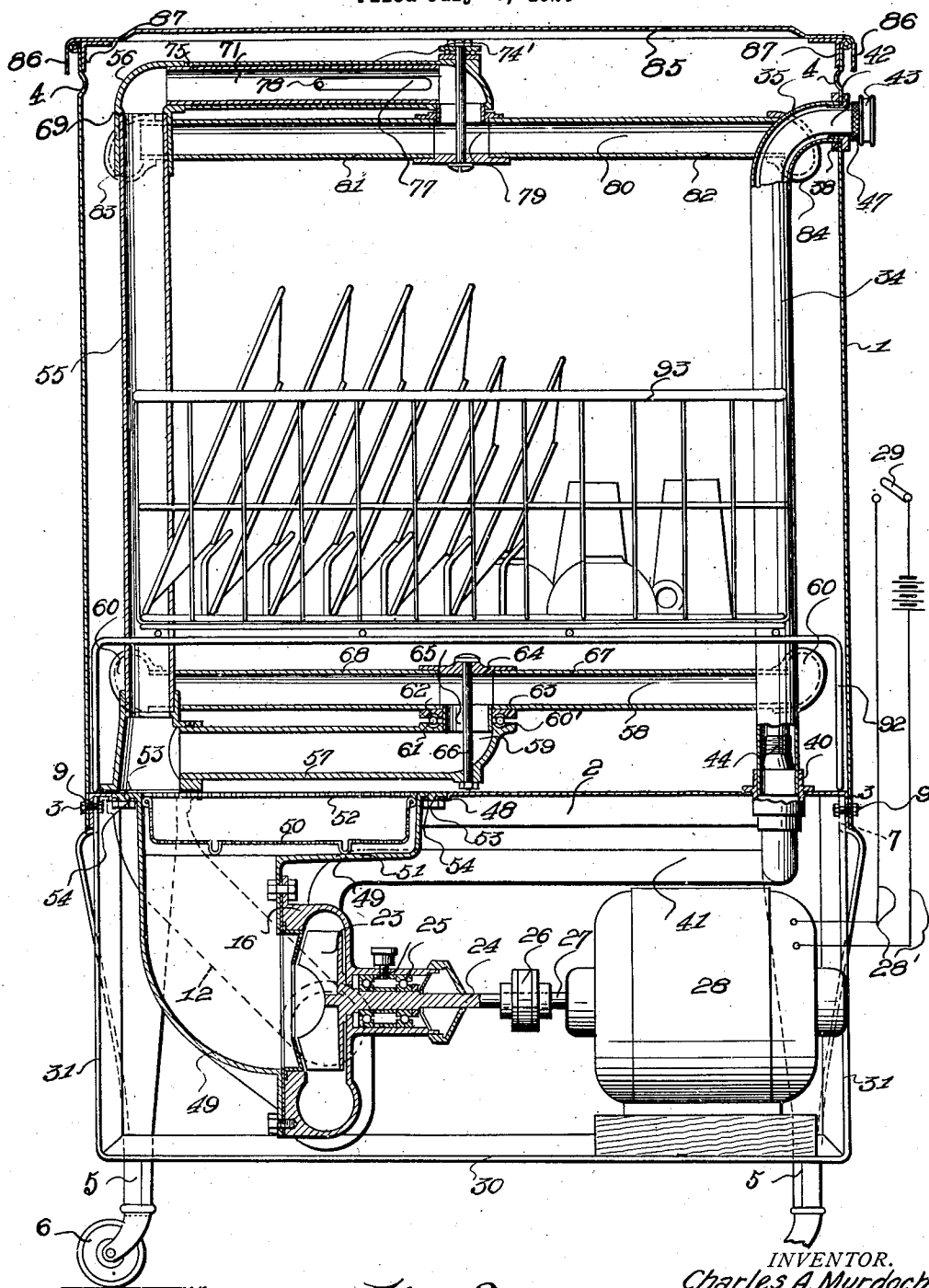


Fig. 2

INVENTOR,
Charles A. Murdoch
BY Daniel L. Morris
ATTORNEY.

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5 Sheets-Sheet 3

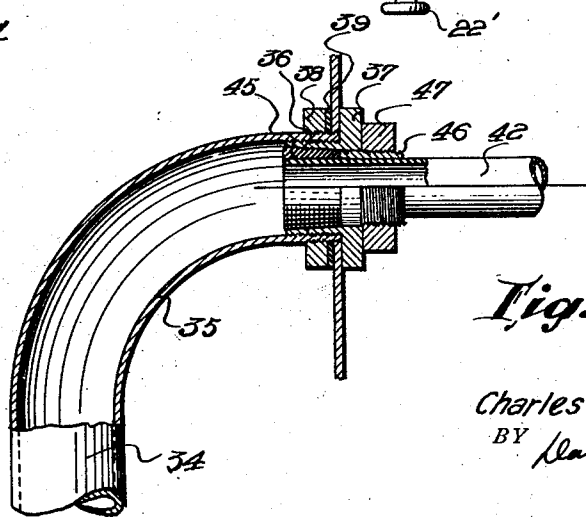
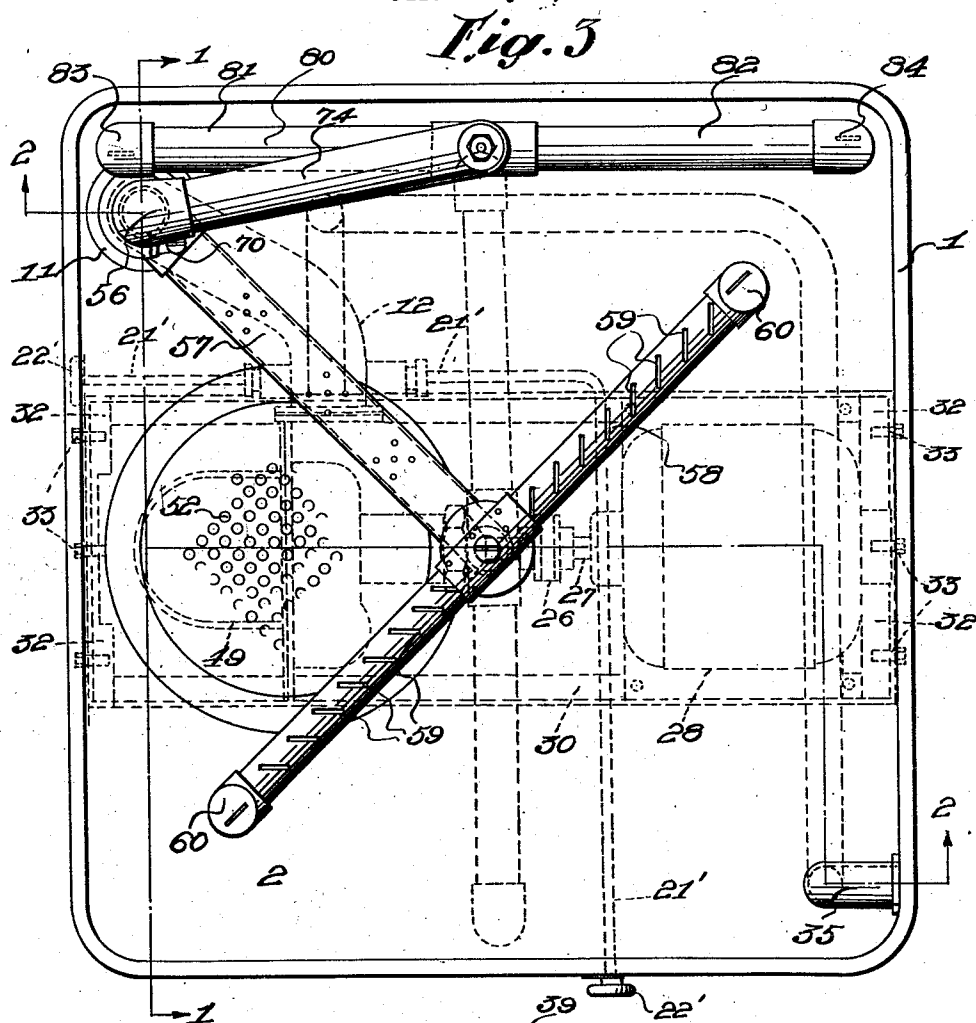


Fig. 6

INVENTOR,
Charles A. Murdoch
BY Daniel L. Morris
ATTORNEY.

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Fig. 4

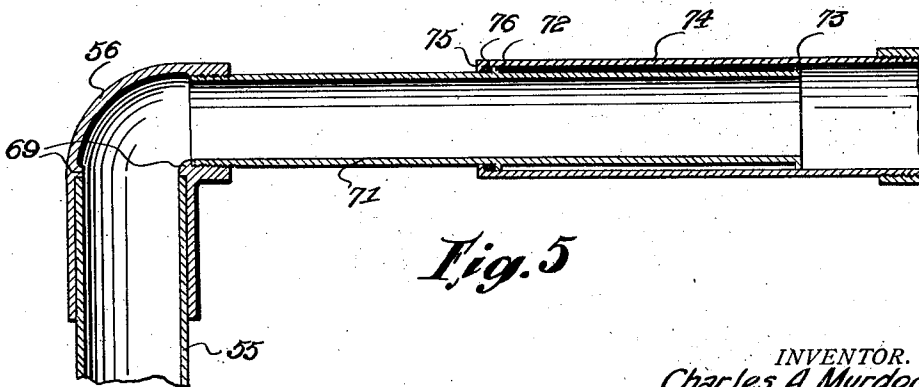
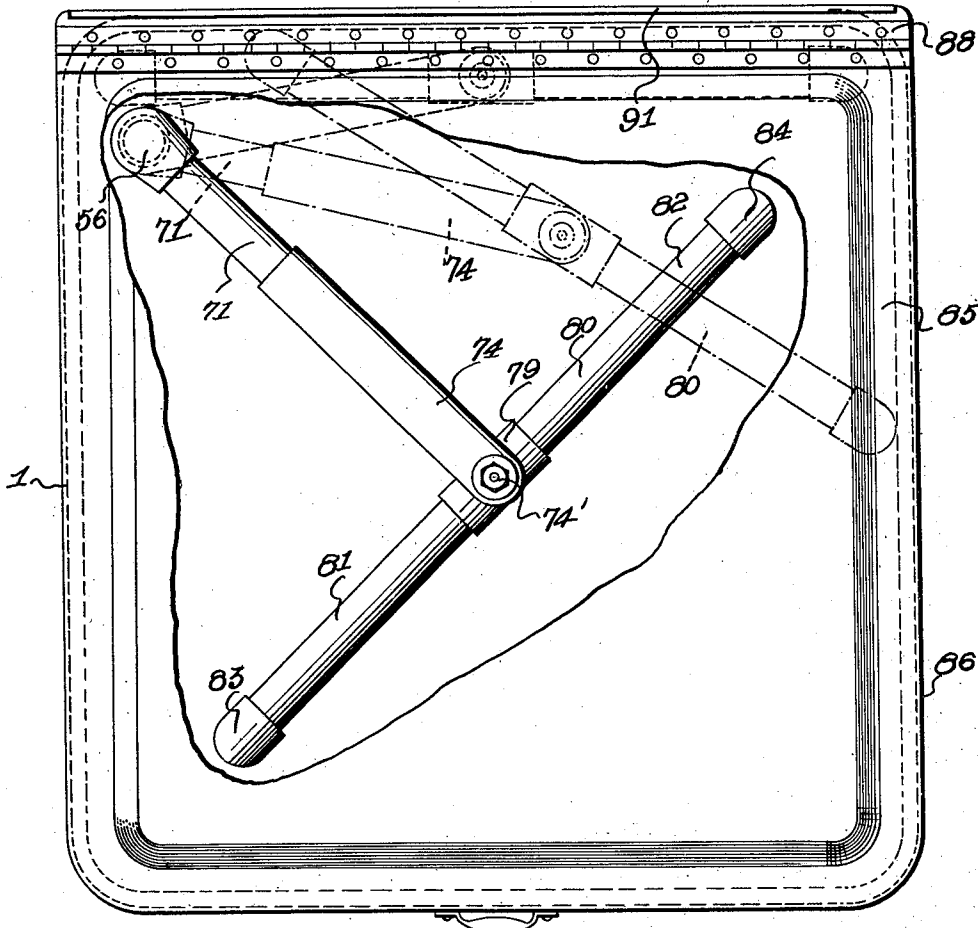


Fig. 5

INVENTOR.
Charles A. Murdoch
BY Daniel S. Morris
ATTORNEY.

June 26, 1928,

C. A. MURDOCH

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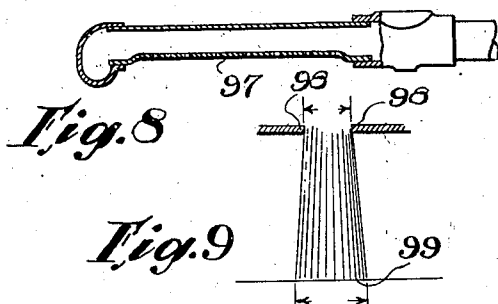
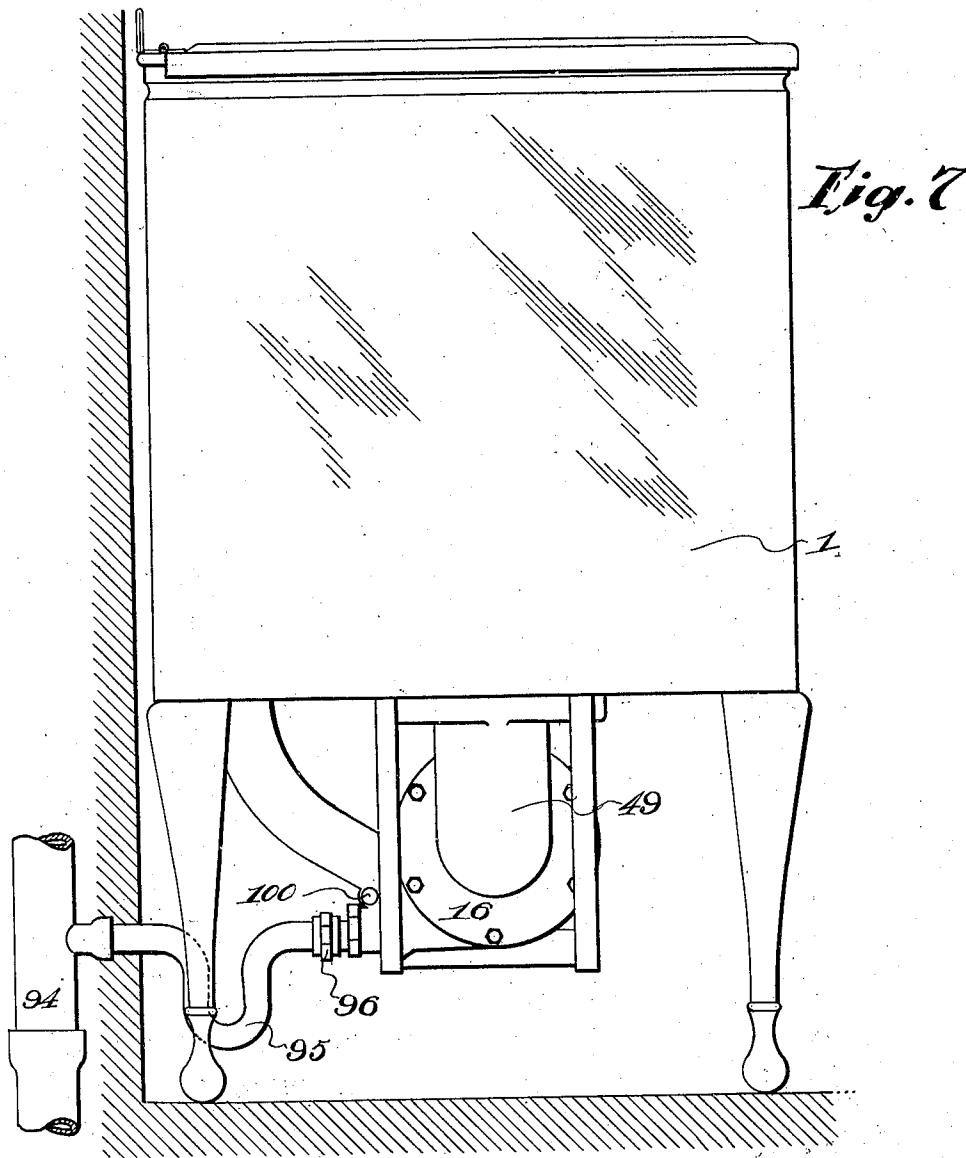


Fig. 10

INVENTOR,
Charles A. Murdoch
BY Daniel L. Morris
ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES A. MURDOCH, OF NEW YORK, N. Y.

WASHING MACHINE.

Application filed July 26, 1926. Serial No. 125,005.

This invention relates to machines for washing and sterilizing dishes, china, cutlery, silverware and the like.

The primary object of this invention is to provide a compact, efficient washing machine, which will be attractive in appearance and suitable for use in households or families.

A further object of the present invention is to provide a dish washing machine capable of cleansing and sterilizing and washing articles of irregular contour, such as cups, glasses, goblets, and pitchers, as well as plates, platters and other dishes of substantially simple or uniform contour.

A still further object of the invention is the provision of a washing machine in which the cleansing fluid is injected therein from an upper and lower manifold in such a manner that the resultant double spray is substantially balanced.

Another object of the invention is the provision of a washing machine in which the articles to be washed are inserted through the top thereof, the top being then covered by a lid.

Still another object of this invention is the provision of a washing machine having an upper manifold which can be folded back to permit free and easy access to the interior of the machine.

Other objects and advantages of this invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a side elevation, partly in section, taken on the line 1—1 of Fig. 3.

Fig. 2 is a sectional elevation, taken on the line 2—2, Fig. 3.

Fig. 3 is a top plan view of the machine, with the cover removed.

Fig. 4 is a top plan view of the machine, with a portion of the cover broken away.

Fig. 5 is a fragmentary sectional view of the upper manifold coupling.

Fig. 6 is a fragmentary sectional view of the end of the filling and discharge pipe.

Fig. 7 is a side elevation of the machine, showing the same as attached to the usual house plumbing.

Fig. 8 is a modified form, partly in section, of the manifold.

Fig. 9 is a diagrammatic view showing the expelling of the washing fluid from the manifold of Fig. 8, and

Fig. 10 is a fragmentary view of the manifold shown in Fig. 8.

Referring now, more particularly to the drawings, in which similar characters of reference designate similar parts in the several views, the washing machine of the present invention comprises a tank 1, which, in the form here shown is formed preferably of stamped sheet metal, but which might be formed otherwise if desired. The tank 1 is provided with a bottom 2 positioned above the lower edge of the sides of the tank and preferably formed integral with a folded portion 3, which latter forms a reinforcing element for said lower edge and provides a securing flange, the purpose of which will be hereinafter described.

The walls of the tank 1 are provided with an inwardly formed bead 4 extending entirely around the tank and positioned adjacent the upper rolled edge thereof. The tank 1 is supported by suitable legs 5 which may be provided with casters 6 or the like for an obvious purpose. The preferred form of the legs is shown in the figures and comprises a generally tapered structure and the upper end of each leg is offset as shown at 7, forming a flange adjacent an abutting shoulder 8, the lower edge of the tank 1 seating on the shoulder 8 and the legs being secured to the tank by bolts 9 or the like passing through the securing flange.

The bottom 2 of the tank is provided with an opening near one side thereof and a coupling member 10 is supported therein. As shown clearly in the drawings, the coupling member 10 is provided with a flange 11 intermediate the ends thereof which flange seats around the edge of the opening. Connected with the lower end of the coupling 10 is a conduit 12 having an upper flanged end 13 which engages the bottom 2 around the edge of the opening therein, and from Fig. 1 it will be noted that the lower end of the coupling 10 seats on a shoulder 14 formed circumferentially in the upper end of the conduit 12. Bolts 13' or the like connect the coupling 10, the conduit 12 and the bottom 2 together.

The conduit 12 communicates with the end 15 of a pump housing 16 and is connected therewith by any suitable means, such as bolts 17 which latter are secured through the flanges 18 and 19 of the lower ends of the conduit and pump housing respectively. The end of the conduit adjacent the flange 18 defines a stop 20 to limit the movement of a flap valve 21 which is pivotally mounted at 22 in the end of conduit 12. Control members 21' are provided for operating the flap valve 21, each of said members terminating in a handle 22'.

Referring now to Fig. 2, the pump housing 16 contains an impeller 23 mounted on a shaft 24 which latter is journaled in suitable bearings 25. The shaft 24 is connected by means of a coupling 26 with the drive shaft 27 of a motor 28, which motor is controlled in its operation through suitable leads 28' having a control switch 29 or the like. The motor and pump and the associated parts therefor are all supported by means of a suspended rack which includes a base 30 and sides 31, the upper ends of the latter engaging against the folded end 2 of tank 1 and the extreme ends of the sides 31 being turned over as shown more clearly in dotted lines in Fig. 3 at 32. The rack is rigidly secured to the lower edge of the tank 1 by means of bolts 33 or the like. From the construction just described, it will be obvious that due to the turned over edges of the sides 31 and the bolting of said sides to the edge 2 of the tank 1, an altogether rigid and strong supporting means for the motor, pump and associated parts is obtained and a rack provided which is totally unconnected with the legs and independent of support therefrom, the support for the rack being the tank 1 itself.

Positioned within the tank 1, near one side thereof, is a pipe 34, the upper end of which is curved as shown at 35 and is secured to the adjacent wall of the tank. As shown clearly in Fig. 6, the upper end of pipe 34 is both externally and internally threaded, the internal threads engaging the external threads of a tapered bushing 36 provided with a head 37, while the external threads are engaged by a nut 38. To insure a water tight connection, a packing 39 is placed between the nut 38 and the adjacent wall of tank 1. The lower end of the pipe 34 is seated within a coupling 40 which latter connects with a pump feed pipe 41 leading to the pump housing 16. Arranged within pipe 34 is a flexible tube 42 having a coupling 43 at its upper end and a fitting 44 at its lower end.

The structure of the fitting 44 is more clearly disclosed in Fig. 6 and comprises an elastic packing 45 attached to the lower end of the tube 42, and a partially threaded ring member 46 adjacent said packing and adapt-

ed to be engaged by a nut 47. From the structure just described, it is apparent that the tube 42 can be raised within pipe 34 and the fitting 44 frictionally engaged within the upper end of said pipe 34 in an easy and quick manner to procure a substantially leak-proof union.

The bottom of the tank 1 is provided with a substantially circular opening adjacent one side wall, and the edge defining said opening is circumferentially flanged as shown at 48 defining a supporting shoulder, and the latter supports a conduit 49 secured to the pump housing 16 and communicating therewith. A strainer 50 of substantially basket shape is supported in said conduit, as shown in Fig. 2 on the section 51. The conduit 49 is provided with a second strainer 52, supported by the upper edge of strainer 50 and from Fig. 2 it will be noted that lugs 53 formed on the upper flange of conduit 49 pass through suitable apertures in the shoulder 48, and the ends of the lugs are engaged by nuts 54 or the like; the arrangement of strainer 52 being flush with the bottom 2 of the tank.

Arranged within the tank 1, and preferably opposite pipe 34 is a manifold feed pipe 55, the lower end of which engages the coupling 10 and the upper end is provided with an elbow 56 which is pivotally engaged therewith. A feed pipe 57 is connected with the coupling 10 and its free end pivotally carries a rotatable manifold 58 having discharge ports 59 formed therein. As shown more clearly in Fig. 3, the discharge ports 59 on one side of the pivotal connection are oppositely arranged with respect to angularity than those on the other side, in order to obtain a rotary movement of the manifold. Each end of the manifold 58 is closed by a ported nozzle 60, the positions of which may be varied to vary the rotation of the manifold and the discharge of fluid therefrom.

As before mentioned, the manifold is pivotally supported at the end of feed pipe 57, and to this end, the feed pipe adjacent opening 59 thereof is provided with a circumferential raceway 60' to receive bearings 61 which work also in a raceway 62 formed in a flange 63 of a coupling 64, the lower end 65 of which latter extends within the opening 59. A pivot pin 66 retains the coupling in its connected relation with the feed pipe 57. The manifold 58 is preferably, though not necessarily, formed of sections 67 and 68, the inner end of each of which is connected to the coupling as shown in Fig. 2.

It has been found highly satisfactory to arrange the discharge ports 59 on the manifold in such a manner that those in section 67 are substantially at right angles to those on section 68—but I am not restricted to such angularity as obviously any arrange-

ment of ports which will result in effective spraying is within the scope of this invention.

As before stated, the upper end of manifold feed pipe 55 carries an elbow 56, and this latter is provided with a circumferentially arranged internal shoulder 69 which rests on the upper edge of pipe 55, the elbow thus being pivotally or rotatably supported and being capable of a limited horizontal rotation; suitable stops 70 limiting the movement of said elbow. The free end of the elbow 56 is threaded to receive one end of a feed or branch pipe 71, the latter being provided with spaced circumferential collars 72 and 73 which serve as bearings for a slidable pipe connection 74 the free end of which is downwardly flanged as at 75 to limit the movement of said connection in an obvious manner. A packing 76 is arranged adjacent the collar 72 forming a water tight connection. A slot 77 is formed in connection 71 and pipe connection 74 is provided with a pin 78 or the like which is slidable in said slot for limiting the extension of the pipe 74 and for preventing relative rotation thereof. Carried by a pivot pin 74' supported at the free end of connection 74 is a coupling 79 which latter has secured thereto a manifold 80 formed preferably of sections 81 and 82 each provided with apertures 83 (see Fig. 1). The ends of sections 81 and 82 are each closed by ported nozzles 83 and 84 respectively which are adjustable on said sections.

With the structure just described, it is obvious that the upper manifold may be pushed back to the position shown in Fig. 3 to permit free access to the interior of the tank 1, and may as easily be forced into operative position, and when in operative position the respective centers of manifolds 58 and 80 are aligned and a fully balanced spray is injected into the tank from each manifold.

A removable lid for the machine is provided which comprises a main portion 85 and a hinged portion 88, the main portion 85 having a depending flange 86 and a reinforcing flange 87 spaced therefrom; the upper edge of tank 1 being frictionally held between said two flanges. As shown clearly in the drawings, the internal bead 4 serves also to retain the lid in position on said tank. The hinged portion of the lid is likewise provided with a depending flange 90 which frictionally engages the inner wall of the tank and is limited in its downward position by the bead 4. This hinged portion 88 is preferably provided with a back piece 91 which serves as a handle to facilitate the easy moving of the machine and a grip by means of which the entire lid may be raised from the tank.

A supporting rack 92 is provided which

removably rests on and is supported by the bottom of the tank, and said rack is adapted to support a basket 93 of the like in a position intermediate the top and bottom manifolds, the basket receiving the articles to be cleansed.

Fig. 7 discloses the device as permanently connected with the house plumbing—and 94 indicates a house drain or sewer pipe. When the device is connected to house plumbing the pipes 34 and 41 may be dispensed with and a drain pipe 95 connected with the sewer pipe 94 is employed, which pipe 95 is connected to the pump housing 16, a coupling 96 of any desired form being used.

Figs. 8 and 10 disclose a modified form of manifold, in which the same is provided with a flattened portion 97 in which the discharge ports are located. As shown clearly in Figs. 9 and 10 the walls defining the discharge ports converge outwardly as shown at 98 for the purpose of obtaining a greater area at the striking point 99 of the spray.

With the parts assembled as shown and described, the nozzle 43 is engaged with a source of water supply, the tube 42 being withdrawn until the fitting 44 is engaged within the end of pipe 34, and water or other cleansing fluid admitted, the same passing through 34 and 41 into the pump housing. The flap valve 21 has been positioned as shown in full lines in Fig. 1, and the pump is operated, thus forcing the cleansing fluid through the conduit 49 into the tank 1. When sufficient cleansing fluid has been admitted, the motor may be stopped, and the lid removed if it has been in place. The tank 1, obviously may be supplied with cleansing fluid without the lid thereon inasmuch as the manifolds are not being supplied.

The upper manifold 80 is pushed back to the position shown in Fig. 3, and the rack 92 then inserted. The basket 93 containing the articles to be cleansed is then placed on the rack 92, and the upper manifold 80 swung outwardly to the full line position illustrated in Fig. 4. In such position, the centers of the upper and lower manifolds are aligned, as previously described.

The lid is then placed on the tank, and the flap valve 21 operated to lower the same and close the conduit or pipe 41 at 100, (see Fig. 1). The motor is then started, and the impeller 23 operated whereupon the cleansing fluid will be circulated throughout the machine; passing upwardly through coupling 10 into and out of the manifold 58 and also upwardly through 55 into and out of the upper manifold; the two manifolds rapidly rotating under the influence of the cleansing fluid and delivering a whirling spray of such cleansing fluid onto the articles to be cleansed. Due to the alignment of the manifold centers it will be apparent that a balanced spray is delivered on to the articles

being cleansed from below and above the latter.

After the articles have been thoroughly cleansed it will be noted that the refuse has been collected in the strainer 50 and also on the strainer 52, both of which may be later easily removed for the purpose of cleaning.

To discontinue the washing action, and remove the fluid from the tank, shown in Figure 1, the flap valve 21 is operated to close the end of pipe 12 and the impeller will then force the fluid from the pump housing through pipe 41 and upwardly through pipe 34 and tube 42 into a sink or other desired place, through the coupling or discharge nozzle 43. If desired, after all the foul liquid has been removed, it is obvious that the cleansed articles may be easily rinsed by clean washing fluid by connecting the nozzle 43 with a suitable source of supply. The lid being removed and the upper manifold swung back, the basket 93 may be readily removed from the tank.

If the machine shown in Figure 7 is used, that is, the machine which is permanently connected to the house plumbing system, it is necessary to add the water to the inside of the machine by any means such as by having a spigot or the like arranged so as to communicate with the interior thereof and the flap valve which is pivoted at 100 in this figure is so arranged as to close the passage from the pump housing 16 to the drain pipe 95. When it is desired to remove the water or other washing fluid from the tank, all that is necessary is to turn the flap valve and thus open the passage from the pump housing 16 to the sewer 94 through 95, whereupon the water in the tank 1 will draw in through 49, the pump housing 16, the pipe 95 and out through the sewer pipe 94.

The above description and the accompanying drawings show the preferred form of the machine of the present invention, but I de-

sire it understood that I am not restricted to the specific details shown and described and that various changes in the form and proportions of the machine may be made such as fall within the scope of the appended claims without departing from the spirit of the invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A washing machine comprising a tank, a pump positioned beneath said tank, a fluid delivery pipe in said tank and connecting with said pump, a tube within said pipe and adapted to connect at its lower end with the upper end of said delivery pipe, a feed pipe in said tank and connecting with said pump, a common valve for said fluid delivery pipe and said feed pipe, a connection secured to said feed pipe, a manifold rotatably secured to said connection, a pivotally mounted elbow secured to the upper end of said feed pipe, an extensible connection secured to said elbow, and a rotatable manifold carried by said extensible connection.

2. A washing machine comprising a tank, a rotary lower manifold in said tank, a rotary upper manifold in said tank and operatively aligned with said lower manifold, a conduit connecting both of said manifolds, means for supplying a washing fluid under pressure to both of said manifolds through said conduit, a telescopic pipe section connecting said upper manifold with said conduit, and cooperating stops on the sections of said telescopic pipe whereby, when said stops are in abutting engagement, said upper manifold will be centered in alignment with said lower manifold.

In testimony whereof, I have signed my name to this specification this 21st day of July 1926.

CHARLES A. MURDOCH.