Jan. 8, 1935. A. E. SCHNEIDER 1,987,580

FILLING MACHINE

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Fig. 1.

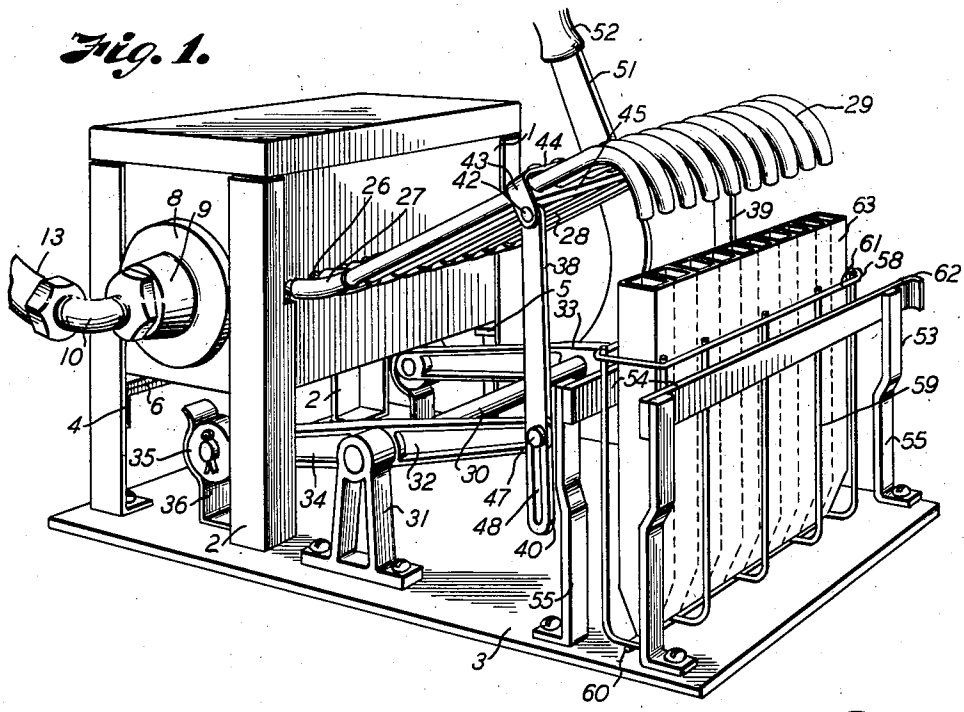
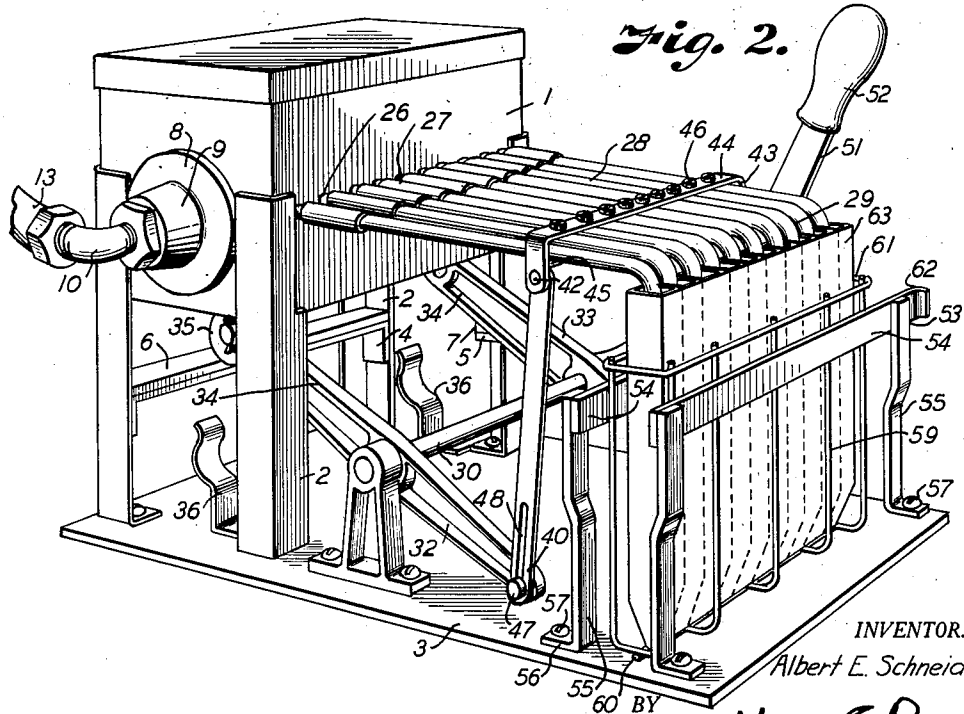


Fig. 2.



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Fig. 3.

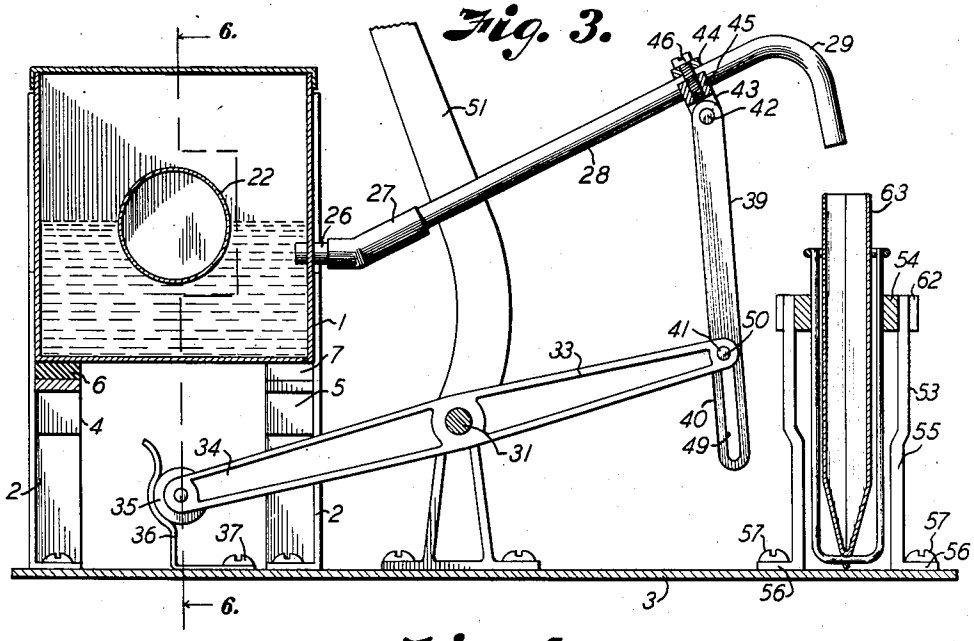
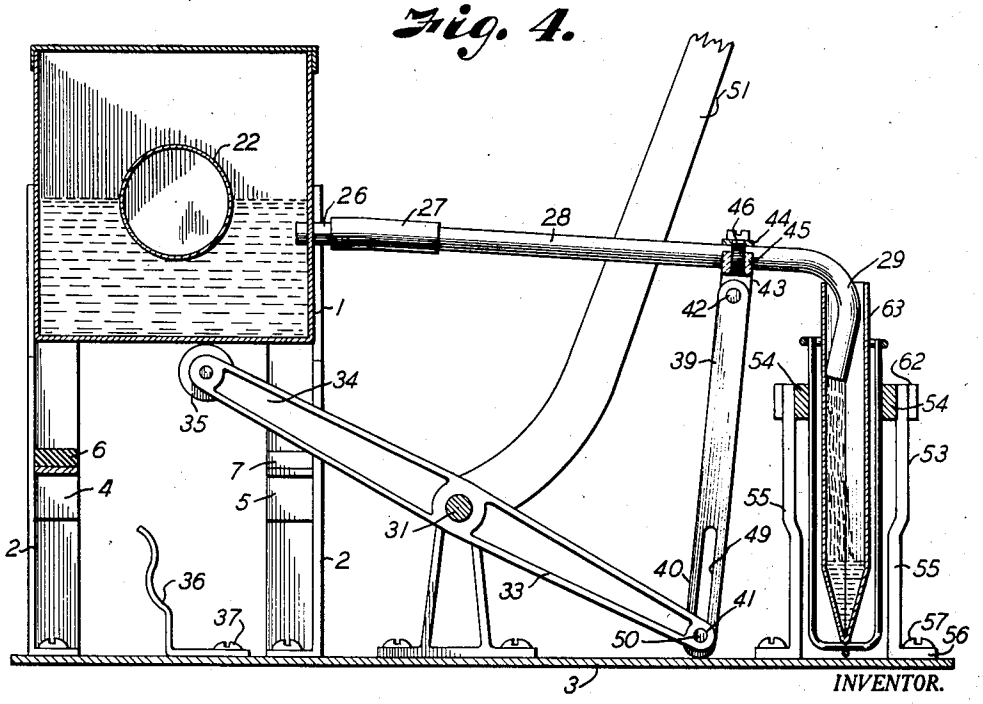


Fig. 4.



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Fig. 5.

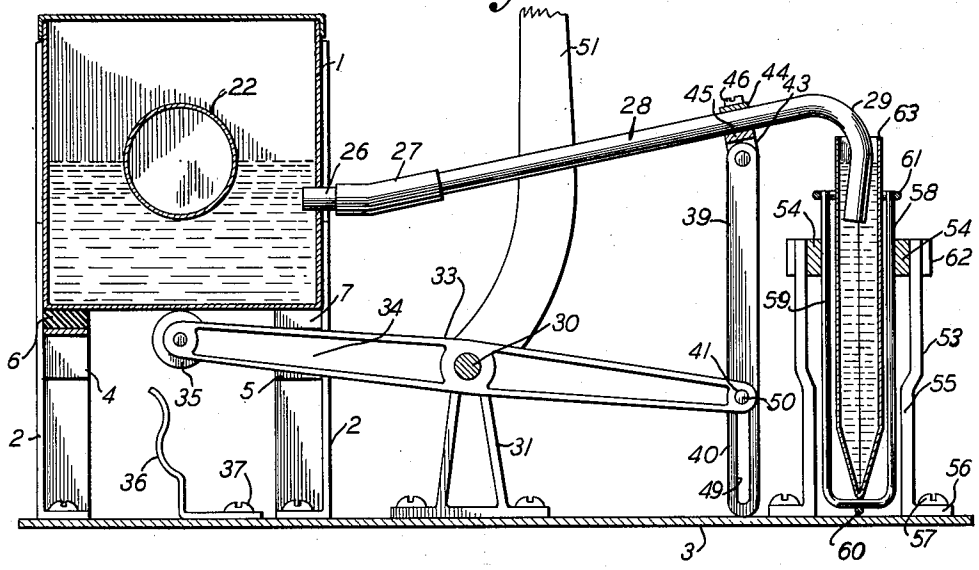
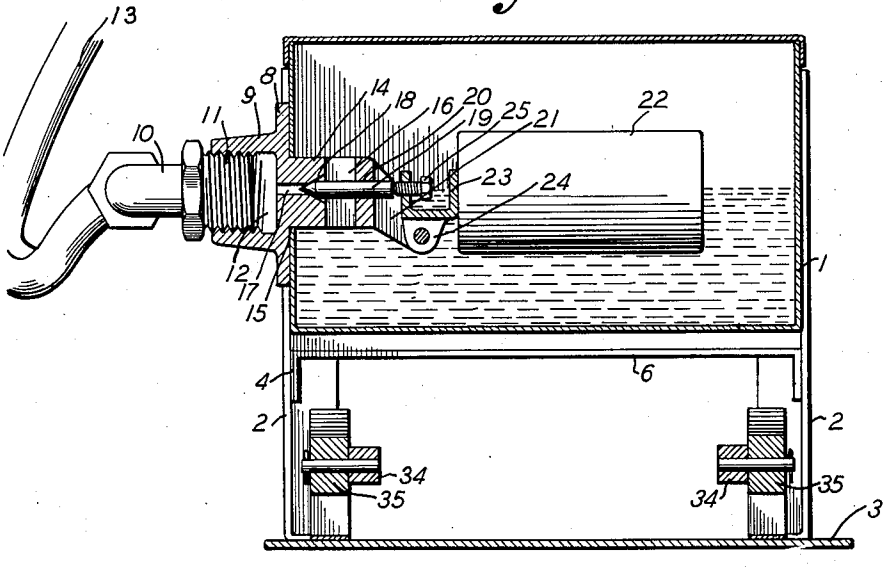


Fig. 6.



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UNITED STATES PATENT OFFICE

1,987,580

FILLING MACHINE

Albert E. Schneider, Carter Lake, Iowa, assignor to Baker Ice Machine Co. Inc., Omaha, Nebr., a corporation of Nebraska

Application June 28, 1932, Serial No. 619,692

12 Claims. (Cl. 226—26)

My invention relates to filling apparatus and more particularly to an apparatus for filling containers with confection material such as disclosed in the application filed by Kenneth E. Haworth, Serial No. 595,312, and has for its principal object to supply the fluid material in selectively measured quantities to the containers.

Another important object of the invention is to provide for effectively starting and stopping flow to the containers without the use of troublesome shut-off valves and the like.

In accomplishing these objects, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of the filling apparatus embodying my invention and showing the nozzles in raised position.

Fig. 2 is a similar view showing the tank and nozzles in position for starting initial flow from the tank to the containers.

Fig. 3 is a central vertical sectional view through the apparatus showing the nozzles in raised position relative to the containers.

Fig. 4 is a similar sectional view showing the tank and nozzles in position for starting initial flow to the containers.

Fig. 5 is a similar sectional view showing the tank in lowered position and the nozzles in syphoning position for filling the containers to the level of the liquid in the tank regardless of the size of the containers.

Fig. 6 is a vertical sectional view on the line 6—6, Fig. 3, particularly illustrating the float valve mechanism for admitting liquid to the tank.

Referring more in detail to the drawings:

1 designates a substantially rectangular-shaped tank slidably supported by corner legs 2 and normally supported thereby relative to a base 3 on a stop bar 4 connecting the rear legs and on angular-shaped corner brackets 5 carried by the front legs in horizontal alignment with the bar 4.

A suitable cushioning material, as indicated at 6 and 7, is interposed on the stop members for cushioning the tank when it is moved to seating relation therewith. Attached to one end of the tank is a flanged fitting 8 having a socket 9 mounting an L shaped fitting 10 including a plug 11 screwed into the socket to provide an inlet chamber 12 in the base thereof. The fitting 10 is provided at its outer end for connection with a flexible conduit 13 leading from a source of liquid material supply (not shown).

Integral with the fitting 8 is a cylinder 14 extending through an aperture 15 in the wall of the tank and which is provided with an outlet port 16 communicating with the chamber 12 through an outlet channel 17. The channel 17 has a valve seat 18 opening to the outlet port 16 for seating a needle valve 19 slidable in a bore 20 at the inner end of the cylinder.

Formed integrally with the ends of the fitting is a bearing bracket 21 pivotally mounting a float 22 for actuating the valve 19 to close flow through the valve seat when the liquid in the tank has reached a predetermined level.

The float includes a lever 23 having a depending ear 24 which is pivotally supported by the bearing bracket 21 to mount the float so that it will pivot to and from the end of the valve stem with the rise and fall of the liquid in the tank. The float lever 23 is preferably provided with an adjusting screw 25 adapted to engage the end of the valve to close flow through the port and whereby the closing of the valve may be adjusted relative to the position of the float to maintain a predetermined level of liquid in the tank.

Opening from the front wall of the tank slightly below the vertical center thereof is a series of nipples 26 arranged in horizontal alignment throughout the length of the tank and connected to each of said nipples by a flexible collar 27 is a nozzle 28 having a downturned discharge end 29 spaced from the tank a suitable distance to provide space for operating mechanism now to be described.

The operating mechanism includes a rock shaft 30 having its ends rotatably mounted in standards 31 supported on the base 3 adjacent the front legs 2 previously described. Fixed on the rock shaft adjacent the standards are rocker arms 32 and 33 having ends 34 extending under the bottom of the tank 1 and carrying rollers 35 adapted to engage against and lift the tank from its support, as later described, or to engage latch springs 36 to retain the lever arms in retractive position.

The latch springs 36 are secured to the base 3 by screws 37 extending through the latch springs and into the base as illustrated in Fig. 3.

The opposite ends of the rocker arms are operably connected with the nozzles 28 by links 38 and 39. The links 38 and 39 have slotted lower ends 40 pivotally connected with the ends of the rocker arms by pins 41 operating in the slots of the links, as best illustrated in Figs. 1 and 2, to provide a lost motion connection between the nozzles and the lever arms for a purpose later described.

The upper ends of the links are connected by

pins 42 with depending ears 43 on the ends of a strap 44 that extends over the series of nozzles and which is secured thereto by a clamp bar 45 extending across the under side of the nozzles and retained in clamped position by screws 46. The pin element 41 preferably consists of a screw having a head 47 adapted to bear against the faces of the link at the sides of the slots 48 and 49 and having shanks 50 extending through the slots and threaded into sockets formed in the ends of the rocker arms.

51 designates a lever arm fixed to the rock shaft 30 and provided with a handle 52 whereby the rock shaft may be reciprocated to effect the filling operation, as later described.

Mounted on the base 3 in front of the tank and operating mechanism is a rack 53 preferably comprising spaced rails 54 mounted on vertical legs 55 having feet 56 attached to the base by screws 57.

The legs 55 are offset at their upper ends in order that the inner faces of the rails 54 may align with the lower inner faces of the legs to support a basket 58. The basket 58 preferably consists of U shaped wires 59 connected at their lower ends by a wire 60 and at their upper ends by a wire band 61 forming the rim of the basket.

The rails 54 of the rack element are preferably flared as at 62 at the receiving end thereof to form a mouth for guiding the basket into the rack. The basket is dimensioned to receive a series of connected envelope containers 63 of water-proof material such as are disclosed in the application above referred to.

When assembling the apparatus the float 22 and valve 19 are adjusted to maintain a level of liquid in the tank slightly below the top of the containers carried in the filling rack.

Assuming the parts to be constructed and assembled as described with the float mechanism set to maintain a fixed level of liquid in the tank below the tops of the containers and with a basket of containers in the rack, the operation of filling the containers is as follows:

With the nozzles retained in elevated position, by the spring latches, the discharge ends thereof are above the liquid level in the tank and the lever 51 in retracted position, as illustrated in Figs. 1 and 3.

When the operating lever is drawn forwardly, the rocker arms are moved from engagement with the latches and the nozzles are lowered so that the curved ends 29 thereof enter the open ends of the containers.

In this position the ends of the nozzles are supported in fixed position below the level of liquid in the tank due to the fact that the ends of the links 38 and 39 have engaged the base 3, as best illustrated in Fig. 4.

Continued forward movement of the lever arm moves the rollers 35 to engage the bottom of the tank 1 so that the tank is lifted above its normal position and is guided by the upper ends of the legs to bring the inlet ends of the nozzles above the outlet ends thereof to start gravitational flow of liquid through the nozzles.

During lifting of the tank by the rocker arms, the opposite ends thereof move in the slots 48 and 49 until they are stopped by the lower ends thereof to control the extent of lift of the tank.

As soon as flow has started from the nozzles, the lever arm 51 is moved retractively toward the tank to lower the tank on its seat, as illustrated in Fig. 5.

Flow then continues through the nozzles by syphonic action until the level of liquid in the containers equals the level of liquid in the tank whereupon the syphon is broken to interrupt the flow of liquid to the containers.

The operating lever 51 is then moved to its first position to lift the nozzles from the containers and to engage the rollers with the latching members 36, as illustrated in Figs. 1 and 13, causing liquid in the nozzles to drain back into the tank, thereby preventing dripping from the nozzles.

The basket carrying the containers is then removed from the rack and replaced with a basket carrying empty containers whereup the operating steps are repeated as above described.

It is apparent from the foregoing disclosure that the level of liquid may be varied to correspond with the requirements of containers of different heights by adjustment of the float valve and that due to syphonic flow the containers may be filled from the tank without wastage of the liquid, as there is no overflowing or splashing of the liquid during the filling operations, because the syphon is broken when the respective levels in the containers are equalized.

It is also apparent that with the structure illustrated a series of containers, each having different cubical contents, may be filled to the same level during the filling operation.

While I have described the invention as particularly relating to an apparatus for filling containers for confections as disclosed in the above mentioned application, it is obvious that the apparatus may be utilized for filling various forms of containers and I do not wish to be limited to the specific use specified.

What I claim and desire to secure by Letters Patent is:

1. Apparatus of the character described including a vertically reciprocable vessel, means for maintaining a substantially constant liquid level in the vessel, a nozzle hingedly connected with the vessel, means for raising and lowering the nozzle including means for reciprocating the vessel, and means yieldingly retaining the discharge end of the nozzle above the level of liquid in the vessel when the nozzle is in raised position and the vessel is in lowered position.

2. Apparatus of the character described including a vertically reciprocable vessel, a nozzle hingedly connected with the vessel, and common means for successively reciprocating the vessel and the discharge end of the nozzle in opposite directions respectively.

3. Apparatus of the character described including a vertically reciprocable vessel, a nozzle hingedly connected with the vessel, and common means operable on the nozzle and vessel to successively lower the nozzle and lift the vessel and then successively lower the vessel and lift the nozzle.

4. Apparatus of the character described including a vertically reciprocable vessel, a nozzle hingedly connected with the vessel, common means operable on the nozzle and vessel to successively lower the nozzle and lift the vessel and then successively lower the vessel and lift the nozzle, and means for latching said common operating means in position for retaining the nozzle in elevated position.

5. Apparatus of the character described including a vertically reciprocable vessel, means for maintaining a substantially constant liquid level in the vessel, a nozzle hingedly connected with the vessel and having a downturned dis-

charge end, common means for successively lowering the nozzle to discharge position, raising the vessel to position for initiating syphonic flow through the nozzle, lowering the vessel to continue said syphonic flow, and raising the nozzle to stop the flow, and means retaining the discharge end of the nozzle above the liquid level of the vessel when the vessel is in lowered position.

6. Apparatus of the character described including a vertically reciprocable vessel, means for maintaining a substantially constant liquid level in the vessel, a nozzle flexibly connected with the vessel, and rocking means common to the vessel and nozzle to successively reciprocate the nozzle and vessel in opposite directions respectively.

7. In an apparatus of the character described, a support, a tank movable on the support, a rocker arm pivotally associated with the support, a lever arm operably connected with the rocker arm, a roller on the rocker arm adapted to raise the tank on its support upon actuation of the lever arm, a nozzle pivotally associated with the tank, and means operably connecting the nozzle with the rocker arm to move the nozzle to and from dispensing position upon actuation of the lever arm.

8. In an apparatus of the character described, a support, a tank slidable on the support, a rocker arm pivotally associated with the support, a lever arm operably connected with the rocker arm, a roller on the rocker arm adapted to raise the tank on its support upon actuation of the lever arm, a nozzle pivotally associated with the tank, means operably connecting the nozzle with the rocker arm to move the nozzle to and from dispensing position upon actuation of the lever arm, and a latch member associated with the rocker arm for supporting the nozzle when moved from dispensing position.

9. In an apparatus of the character described, a support, a tank slidable on the support, a rocker arm pivotally associated with the support, a lever arm operably connected with the rocker arm, a roller on the rocker arm adapted to raise the tank on its support upon actuation of the lever arm, a nozzle pivotally associated with the tank, and a link pivotally connected with the nozzle and having pin and slot connection with the rocker arm to move the nozzle to and from dispensing position upon actuation of the lever arm.

10. In an apparatus of the character described, a support, a tank slidable on the support, a rocker arm pivotally associated with the support, a lever arm operably connected with the rocker arm, a roller on the rocker arm adapted to raise the tank on its support upon actuation of the lever arm, a nozzle pivotally associated with the tank, means operably connecting the nozzle with the rocker arm to move the nozzle to and from dispensing position upon actuation of the lever arm, and a rack for supporting a container to be filled in filling relation with the nozzle.

11. In an apparatus of the character described, a support, a tank slidable on the support, a rocker arm pivotally associated with the support, a lever arm operably connected with the rocker arm, a roller on the rocker arm adapted to raise the tank on its support upon actuation of the lever arm, a nozzle pivotally associated with the tank, a link pivotally connected with the nozzle and having pin and slot connection with the rocker arm to move the nozzle to and from dispensing position upon actuation of the lever arm, and a rack for supporting a container to be filled in filling relation with the nozzle.

12. In an apparatus of the character described, a support, a tank slidable on the support, means for maintaining a fixed level of liquid in the tank, a rocker arm pivotally associated with the support, a lever arm operably connected with the rocker arm, a roller on the rocker arm adapted to raise the tank on its support upon actuation of the lever arm, a plurality of spaced nozzles pivotally associated with the tank, and means operably connecting the nozzles with the rocker arm to move the nozzles to and from dispensing position upon actuation of the lever arm.

ALBERT E. SCHNEIDER.