

[54] **SPRAYER WITH DETERGENT OR
CHEMICAL ADDITIVE FEED**

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[51] Int. Cl. **B05b 7/28**

[58] Field of Search **239/310, 317, 318**

[56] **References Cited**

UNITED STATES PATENTS

2,789,010	4/1957	Dean.....	239/310 X
3,447,753	6/1969	Proctor et al.....	239/317

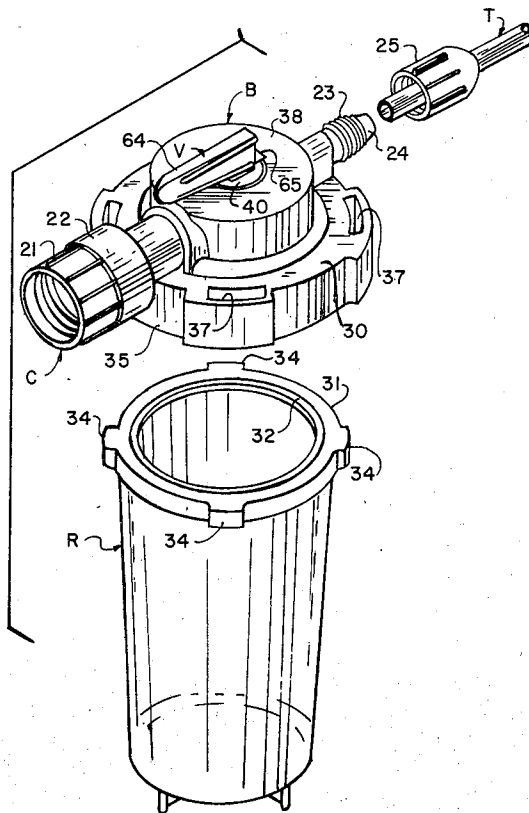
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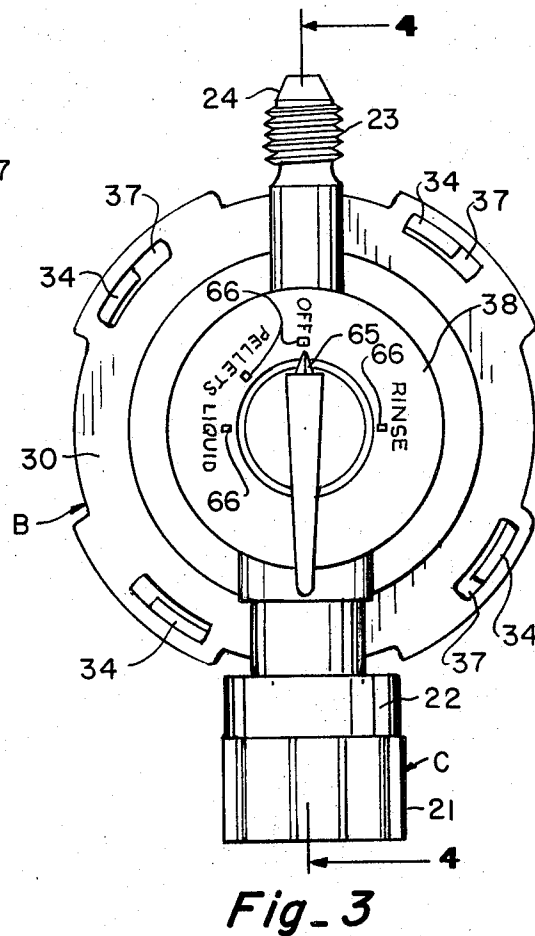
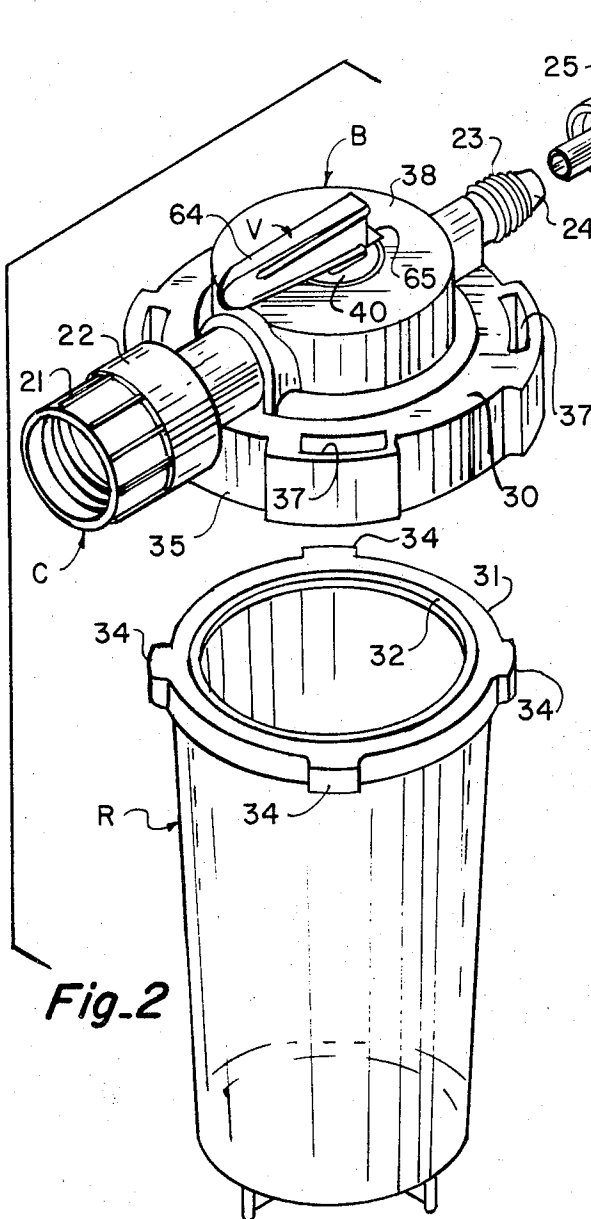
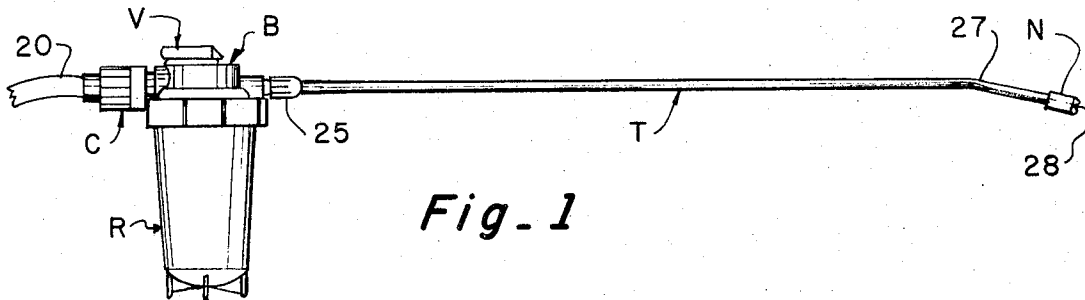
[57]

ABSTRACT

A sprayer connectable to a hose and including a body having a compound four-position valve controlling a primary passageway and two sets of auxiliary passageways. An antisiphon device attached to the body connects the hose to the primary passageway, while an extension tube, also attached to the body, forms a continuation of the primary passageway and terminates in a spray nozzle. The auxiliary passageways, shunting the primary passageway, include a common reservoir mounted on the underside of the body for containing either a liquid soap or detergent or pellets of a soluble chemical, such as a pesticide or plant food additive compound. The valve, operable by a finger lever, may be shifted from an "off" position where the main passageway is closed, to a "rinse" position where only the primary passageway is open, to a "liquid" position where both the primary and a first set of auxiliary passageways are open, and to a "pellet" position where both the primary and the second set of auxiliary passageways are open.

11 Claims, 19 Drawing Figures





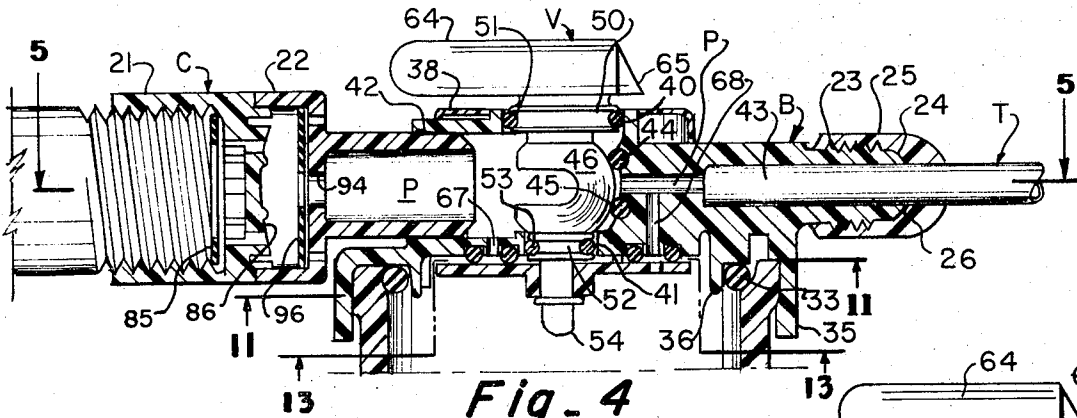


Fig. 4

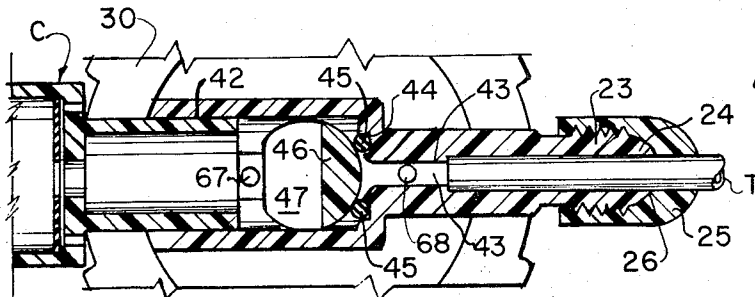
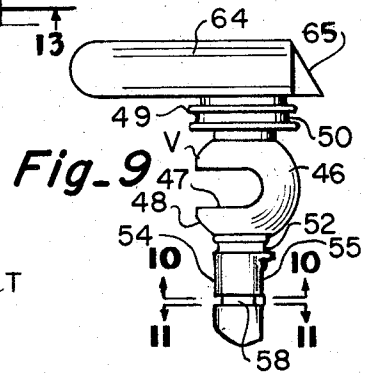


Fig. 5



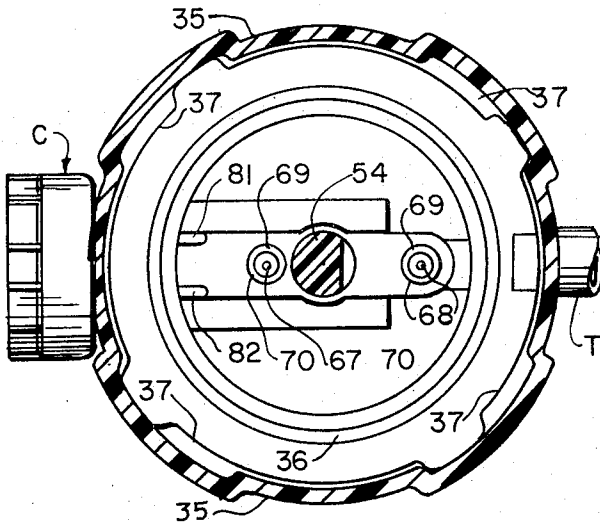


Fig. 13

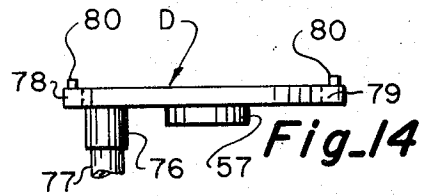


Fig. 14

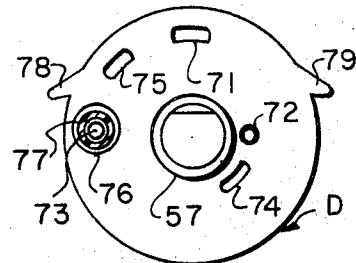
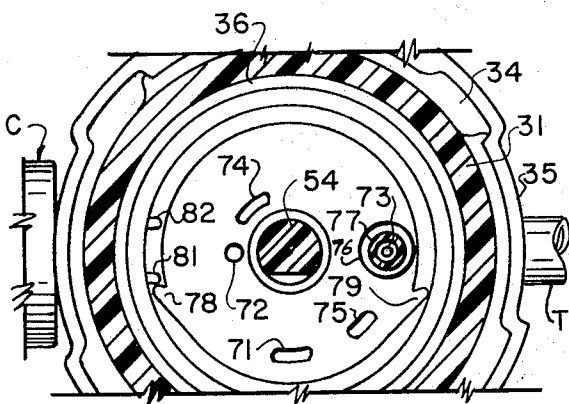
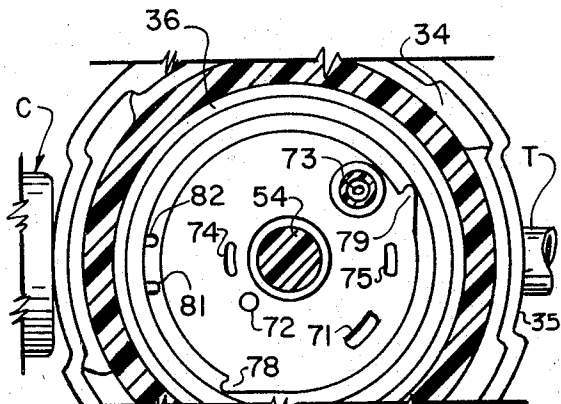


Fig. 15



(LIQUID POSITION)

Fig. 16



31 (PELLETS POSITION)

Fig. 17

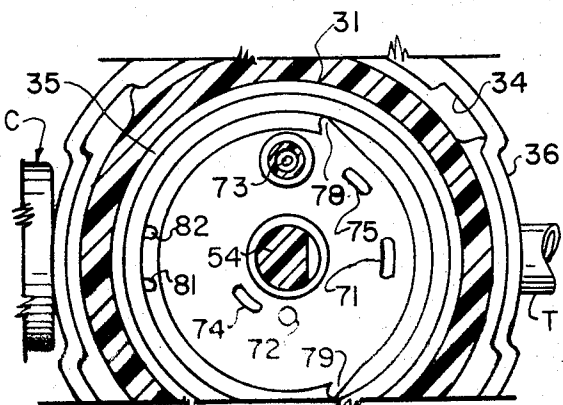


Fig. 18
(OFF POSITION)

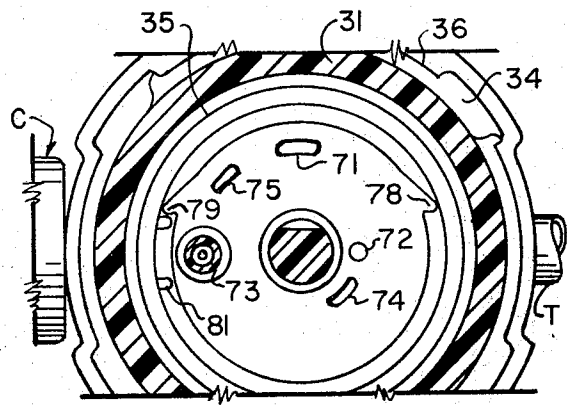


Fig. 19
(RINSE POSITION)

SPRAYER WITH DETERGENT OR CHEMICAL ADDITIVE FEED

This invention relates to an improvement in a sprayer of the general type which is attached to a water hose or the like, and more particularly to sprayers which include facilities for optionally adding chemical compounds, such as soap or detergent, insecticide, herbicide, plant food or other commonly sprayed chemicals, to the water. Specifically, this invention relates to an improvement on the invention of U.S. Pat. No. 3,447,753 for "Spray Washer with Detergent Feed." For simplicity, the invention will be herein referred to as a "sprayer."

An object of the invention is to provide a novel and improved sprayer adapted to selectively spray a water solution of a liquid, such as a soap or detergent solution, or a pelletized chemical compound, as well as fresh water, by a simple manipulation of a control valve.

Another object of the invention is to provide, in a sprayer, novel and simple auxiliary passageways shunting a primary water passageway, to provide flow into a reservoir containing either a liquid or a pelletized chemical additive and which will stir and agitate the pellets and uniformly discharge the additive in solution form into the water stream flowing through the primary passageway.

Another object of the invention is to provide, in a sprayer having auxiliary passageways shunting a primary water passageway and a reservoir containing either a liquid or a pelletized chemical additive, selective means for producing low agitation or primarily pressure in the reservoir when a liquid additive is used and high agitation in the reservoir when a pelletized additive is used, to uniformly discharge the additive in solution form into the water stream flowing through the primary passageway.

Another object of the invention is to provide a novel and improved sprayer adapted to feed a small stream of additive solution from a reservoir into the water stream flowing through the sprayer and through auxiliary passageways shunting the main passageway of the sprayer, wherein a varying pressure gradient through the main passageway produces a positive pressure flow of additive solution through either set of auxiliary passageways.

Another object of the invention is to provide, in a sprayer having a primary passageway and an auxiliary passageway shunting the primary passageway, a novel and improved compound valve for controlling the flow, selectively, through the primary passageway only, through the primary and a first auxiliary passageway, through the primary and a second auxiliary passageway, or to terminate flow.

Another object of the invention is to provide a sprayer which has a simple antisiphon device connecting an inlet hose to the sprayer, preventing feedback of chemical solution from the sprayer into the inlet hose.

Another object of the invention is to provide a sprayer which includes a body having a primary passageway and a chemical additive reservoir readily attached to and detached from the body, particularly wherein the construction of the body is such as to facilitate molding, installation of parts and production of seals at valve control parts.

Further objects of the invention are to provide a novel and improved sprayer, with an optional chemical additive feed, which is a sturdy, compact, neat appearing, low cost unit.

With the foregoing and other objects in view, all of which more fully hereinafter appear, our invention comprises certain constructions, combinations and arrangements of parts and elements, as hereinafter described and illustrated, in preferred embodiment in the accompanying drawings, in which:

FIG. 1 is a side elevation of the improved washer connected to the end of a water hose and ready for use;

FIG. 2 is an isometric, exploded view of the basic subassemblies of the washer, including a body, a chemical or other additive reservoir and an elongated discharge tube, which are often disconnected from each other, as when the reservoir is being refilled with a chemical or other additive, or the sprayer is being cleaned or packaged for storage;

FIG. 3 is a top plan view of the body of the washer, illustrating the control lever at an "off" position and showing the indicia for the "liquid," "pellet" and "rinse" positions;

FIG. 4 is a longitudinal vertical section through the body of the apparatus, taken along line 4—4 of FIG. 3;

FIG. 5 is a fragmentary, longitudinal horizontal section, taken along line 5—5 of FIG. 4 but broken away at each side to conserve space;

FIG. 6 is a longitudinal section, similar to FIG. 4 but including the reservoir, the view showing the valve being turned to the "liquid" position and arrows which indicate the mixing action but principally pressure of water flowing into the reservoir;

FIG. 7 is a rear view of a front portion of the antisiphon connector;

FIG. 8 is a front view of a rear portion of the antisiphon connector;

FIG. 9 is a side elevation of the control valve for the main passageway;

FIG. 10 is a transverse section, looking upwardly and taken along line 10—10 of FIG. 9;

FIG. 11 is a transverse section, looking downwardly and taken along line 11—11 of FIG. 9, but on an enlarged scale;

FIG. 12 is a top plan view, on an enlarged scale, of a dual function clip used to hold the control valve in its seated position;

FIG. 13 is a horizontal sectional view, looking upwardly and taken along line 13—13 of FIG. 4;

FIG. 14 is a side elevation of a control disc, forming a part of the compound control valve;

FIG. 15 is a bottom plan view of the control disc of FIG. 14, with a discharge tube connected thereto shown in section;

FIG. 16 is a generally horizontal sectional view, looking upwardly and taken along line 16—16 of FIG. 6, but broken away at each side to conserve space, showing particularly the position of the control disc of FIGS. 14 and 15 when the valve is in the "liquid" position, as in FIG. 6;

FIGS. 17, 18 and 19 are views similar to FIG. 16 but showing the control disc when the valve is in the respective "pellet," "off" and "rinse" positions.

Referring more particularly to the drawings, the improved sprayer, as in FIGS. 1 and 2, is connected by a connector C to the discharge end of a common garden hose 20, which provides a flow of water under pressure

through the apparatus. The standard male fitting of the hose is connected to a rear portion 21 of connector C, the front portion 22 of which is attached to or formed integrally with the body B of the sprayer, the latter being a disc-like structure carrying a valve V and to the underside of which an additive reservoir R is detachably connected. Connector C, body B, valve V and reservoir R may be formed of any suitable chemical resistant material, but preferably of a rigid, thermoplastic resin, such as high impact polystyrene, which is especially easy to form by injection molding or other suitable process.

Connector C leads to the intake end of a primary passageway P through the body B, which extends past valve V, as in FIGS. 4 and 5, to an externally threaded stub 23, formed similar to the male end of a standard, flared tube fitting and terminating as a sloping chamfer 24. This stub is adapted to receive a socketed, internally threaded nut 25, as in FIGS. 4 and 5, formed similar to a flared tube nut having a slope 26 at the bottom of the threaded socket adapted to contact and squeeze the stub chamfer 24. The discharge end of the passageway P is sized to snugly receive the end of an extension tube T which, when fitted therein, may be snugly held in place by tightening the nut 25 against the flare 24. The tube T, as of aluminum or any other suitable material, may be of any suitable length, turned at the discharge end as at 27, or otherwise as desired, and terminating at a nozzle N. The nozzle N has a suitable slotted orifice 28 to produce a fan-like spray jet of water flowing from it, as in FIG. 1.

The body B carries a disc-shaped flange 30 at its underside, forming a lid for detergent reservoir R, which is adapted to be attached to the lid in any conventional manner which assures easy disconnection, as for refilling, and a leakproof fit when connected to the lid. The reservoir R, a wide mouth, jar-like unit, is formed of a rigid, chemical resistant, resin material, similar to the body but preferably of a type that is transparent, so that the level and concentration of the additive in the reservoir may be readily ascertained by visual inspection. It is formed, as by molding, with an enlarged rim 31 having an internally rabbeted shoulder 32, as in FIG. 2, to receive and hold an internal seal ring 33 of rubber or like material, as in FIGS. 4 and 6. Four lugs 34 outstand from rim 31 for connection to bayonet slots in a depending flange 35 of the lid 30, as in the manner taught by aforesaid U.S. Pat. No. 3,447,753. Sealing is effected when the reservoir R is fastened to the lid or flange 30 by contact of the seal ring 33 with an annular lip 36 depending from the underside of the lid concentric to and within the embrace of the flange 35, lip 36 being chamfered on the outside to wedge against seal ring 33.

The bayonet slots, referred to above, continue to the top surface of the body lid as slots 37, as in FIGS. 2 and 3. This construction permits injection mold forming of the bayonet slots in the manner described in aforesaid U.S. Pat. No. 3,447,753. The body B may also be provided with a bonnet 38, which may be attached to the body by a suitable cement, or may be integral therewith, to provide a flat surface on which the indicia "liquid," "pellets," "off" and "rinse" may be placed, for a purpose hereinafter described.

The stem of a compound valve V is mounted in opposed circular sockets 40 and 41 centered on the common axis of the lid 30 and reservoir R and disposed

above and below, respectively, the centerline of passageway P. The stem of valve V commences at the top of the body to cross the passageway P, extend through the floor thereof and project from the underside of the lip 30. This is a compound valve functioning to open and close the primary passageway P and also to open and close alternative auxiliary passageways shunting the primary passageway and extending through the reservoir R, as hereinafter further described.

The passageway P through the body B is enlarged at its upstream end 42, where it receives connector C, which enlarged portion extends to the opposite side of valve V. Where an ordinary garden hose is to be used, a convenient inside diameter for this enlarged portion of passageway P is approximately $\frac{3}{4}$ inch. The diameter of the passageway P abruptly decreases, as to approximately $\frac{1}{4}$ inch, at the downstream section 43, i.e. downstream from the valve V. This decrease in diameter forms a circular wall in which is formed a groove 44 adapted to hold an O-ring 45 at the downstream side of the valve. The valve stem is enlarged in this passageway to form a sphere 46 which seats against the O-ring 45 at all rotative positions of the stem, as in FIGS. 4 and 5. This sphere has a centered passageway 47, as in FIG. 9, which is open at one side for convenience in molding, the side opening thereof facing upstream and opposite the O-ring 45 when the valve is closed, as illustrated in FIG. 4. The valve stem may be rotated from this closed position, in either direction, to align the passageway 47 with the body passageway P, i.e. to an open, or partially open, position. As a further feature, one side of this sphere, such as at the edges of passageway 47, is flattened as at 48, as in FIGS. 4, 5 and 9, so that when the stem is rotated 180° from the closed position of FIG. 4, the flat 48 opposes O-ring 45 but clears the same, to permit the valve stem to be withdrawn from or placed in the body, as during assembly or disassembly of the unit.

The socket 40 above the passageway P is formed as a smooth walled, cylindrical surface and the top portion of the valve stem, at this surface, is enlarged as a disc 49, fitting into the opening. The disc 49 has a circumferential groove 50, as in FIGS. 4 and 9, to retain an O-ring 51 for a leakproof fit against the surface of socket 40. Socket 41, at the floor of the passageway P, is reduced in diameter from socket 40 and is formed as a smooth walled, cylindrical bore extending to the underside of body B. The portion of the stem of valve V just below sphere 46 is sized to fit the bore of socket 41 and has a groove 52 which carries an O-ring 53, to effect a leakproof fit in the bore.

The portion 54 of the valve stem which projects below socket 41 is cylindrical in section, as in FIGS. 9-11, but has one flattened face 55, to fit a central hole 56 in a disc D of FIGS. 14 and 15 formed in a like manner, i.e. cylindrical with one flattened face. Disc D may be molded from the same material as body B and valve V and is provided with a central depending tubular hub 57, as in FIGS. 14 and 15, for a purpose described below. The disc D, fitted upon the stem, rotates with the stem of valve V and is located at a selected circumferential position on the stem, which is established by the meshing of the flat face 55 with the corresponding face in the disc hole 56. The foregoing features are similar to those of aforesaid U.S. Pat. No. 3,447,753.

In accordance with the present invention, the disc D is locked vertically into the valve stem by a special clip

or lock ring L of FIG. 12, which abuts disc hub 57 and fits into a groove 58 near the bottom of the valve stem, as shown in FIGS. 4 and 6. Groove 58, as in FIG. 11, does not encircle the depending stem 54 of valve V, but terminates at ears 59, each adjacent flat 55, for a purpose described below. The lock ring L, shown in FIG. 11 and preferably made of flexible plastic material, comprises a circular ring 60 having an opening 61 at one side, with a notch 62 at each side of the opening. The inner diameter of ring 60 corresponds to the inner diameter of groove 58, while the position of each notch 62 corresponds to the position of an ear 59. The open side of ring 60 is expandable to allow placement of or removal of the ring from groove 58, for assembly or disassembly of valve V from body B of the sprayer, while lock ring L, after expansion and placement in the groove, may be turned about stem 54 until notches 62 snap over ears 59 and hold the ring in a predetermined radial position. Such a radial position is correlated with the position of a tab 63 extending outwardly from the side of ring 60 to provide a deflection surface for baffling a liquid stream entering the reservoir when valve V is in the "liquid" position, as shown by the flow arrows in FIG. 6, as will be hereinafter explained in connection with flow through the "liquid" auxiliary passageway. Valve V, as in FIGS. 2-4 and 9, is provided at its upper end with a handle 64 extending to one side and a pointer 65 at the opposite side, so that the handle may be moved to positions in which the pointer 65 is opposite an indicating mark 66, raised from bonnet 38 and corresponding to the desired position of the valve for the various positions thereof, such as the "off" position of FIG. 3. The handle 64 and pointer 65 are correlated with certain ports in the body and in disc D, described later. As will be evident from FIGS. 9-11, when notches 62 engage ears 59, tab 63 will extend parallel to flat 55 and thus will be perpendicular to handle 64, so that tab 63 will extend rearwardly, as in FIG. 6, when the handle is in the "liquid" position, the effect of which will be described below.

The disc D is held by lock ring L snugly against the undersurface of body B, the diameter of the disc being such that it fits within the circular lip 36 on the underside of the body. The disc D rotates with rotation of valve V, to provide control of a pair of auxiliary passageways which shunt the primary passageway P, including orifices 67 and 68 extending from the bottom of passageway P to the underside of the body, on the upstream side and the downstream side of valve V, respectively, as in FIGS. 4, 5 and 6. A groove 69, surrounding each orifice at the underside of the body, as in FIG. 13, receives a small O-ring 70 which bears against the top side of the disc D, as in FIG. 6, to block flow between passageway P and the reservoir at the orifices, except in selected positions, hereinafter explained.

In further accordance with this invention, the disc D, as in FIG. 15, is not only provided with an orifice slot 71, useful in the "off" position, and orifices 72 and 73, for the "liquid" position, as in the aforesaid U.S. Pat. No. 3,447,753, but also with orifice slots 74 and 75 for the "pellet" position. Disc D is further provided with a boss 76 surrounding and depending from orifice 73, for receiving the upper end of a tube 77, which extends downwardly into the container R, as in FIG. 6, for a purpose described below. Disc D is also provided with a pair of laterally extending ears 78 and 79 at generally

diametrically opposed positions, as in FIGS. 14 and 15, while each ear is provided with an upstanding tab 80 and the underside of the body B is provided with a pair of depending flanges 81 and 82, as in FIGS. 13 and 16-19. As will be evident from FIGS. 16 and 19, abutment of ear 78 and its tab 80 with flange 81, as in FIG. 16, will prevent rotation of the valve V past the "liquid" position of FIG. 16 in one direction, while abutment of ear 79 and its tab 80 against flange 82 will prevent rotation of valve V past the "rinse" position of FIG. 19, in the opposite direction. The ears of the discs and the flanges of the body will assist in correct positioning of the valve for these positions. As in FIG. 15, the ears 78 and 79 are offset from exact diametrically opposed positions by a distance corresponding to the offset of abutment flanges 81 and 82 from the centerline of the body B.

As in FIGS. 6 and 16, when the valve V is rotated to the "liquid" position, the orifices 72 and 73 of the disc register with body orifices 67 and 68, respectively. As in FIG. 6, back pressure in the nozzle and in passageway P, created by the reduction in diameter from the enlarged upstream portion 42 to the smaller diameter downstream portion 43 of the main passageway, causes a jet of water to be injected through disc orifice 72 and into the reservoir containing a soap or detergent solution, i.e. "liquid." It is to be noted that, when the valve V is in the "liquid" position, the tab 63 of lock ring L lies directly below disc orifice 72, the tab thus serving to disrupt and baffle the stream of water entering the reservoir, thereby creating a low degree of agitation in the reservoir. As indicated by the arrows of FIG. 6, water entering the reservoir creates a pressure therein to force the liquid through the lower end of tube 77, thence through disc orifice 73 and body orifice 68 to join the flow of water through passageway P at a point downstream of the valve, completing the path of the auxiliary passageway corresponding to the "liquid" setting of the sprayer. It has been found that, by baffling the water stream as it enters the reservoir and by using a drop tube into the reservoir for the "liquid" auxiliary passageway, less dilution of the soap or detergent solution occurs, until the solution is exhausted, so that a more uniform discharge of the liquid is produced.

When an insecticide, herbicide, plant food or the like is to be utilized, since such additives are often supplied in the form of pellets, such pellets are placed in the reservoir and the valve V turned to the "pellets" position, shown in FIG. 17. In this position, ports 74 and 75 of the disc register with orifices 67 and 68, respectively, with ports 74 and 75 opening directly into the reservoir to form the "pellets" position auxiliary passageway. Registration of disc port 74 with orifice 67 allows a stream of water to be injected directly into the reservoir, to dissolve the pellets as the operation proceeds and furnish the resulting solution to the downstream orifice 68, through disc port 75. No baffle is used to reduce the force of the stream, since high agitation in the reservoir is desired. Thus, when a chemical additive consisting of solid pellets is used in the sprayer and the "pellet" position is selected, a more thorough stirring and faster dissolving rate of the pellets is produced.

It is to be noted that the "pellets" auxiliary passageway is open when the disc D is turned approximately 45° from the "off" position. When valve V is in this position, as shown by the dotted lines in FIG. 5, passageway 47 in the valve sphere opens only partially into the

upstream end of reduced section 43 of primary passageway P, since the spherical body 46 of valve V may partially block the opening through O-ring 45. Thus, water flow through primary passageway P is restricted when the valve is in the "pellets" position, but the consequent pressure increase in the enlarged end 42 of the primary passageway causes an increase in the pressure and velocity of the stream of water entering the reservoir through port 74, with consequently increased agitation in the reservoir to better dissolve pelletized additive compounds contained therein. The amount of agitation in the reservoir, as well as the amount of water flow through primary passageway P, can be controlled by turning valve V slightly to one side or the other of the "pellets" position. To permit a slight turning of the valve or perhaps a slightly inaccurate positioning of the valve for the "pellets" position, orifices 74 and 75, as shown, are preferably arcuate slots. When the pellets have been dissolved, this can be observed through the transparent wall of reservoir R.

In the "rinse" position of FIG. 19, both orifices 67 and 68 are blocked by the disc D, so that no auxiliary flow through the reservoir occurs, and a stream of clear water passes through the sprayer for rinsing purposes or the like.

When the valve is turned to the "off" position, as illustrated in FIGS. 4, 5 and 18, relief slot 71 of the disc D is positioned to register with downstream orifice 68, to maintain atmospheric pressure within the reservoir, when the sprayer is not in use, as well as relieving any pressure in reservoir R, when the reservoir is to be detached, as for replenishing of the additive. It is to be noted that the orifices 67 and 68 are located at different radial distances with respect to the central axis of disc D, with orifice 67 being closer, so that ports 71, 73 and 75 will not register with orifice 67, nor will ports 72 and 74 register with orifice 68, as the disc D is turned to different positions, other than those in which the above ports are specifically intended to register with the orifices.

The rear portion 21 and front portion 22 of connector C are both formed essentially as cylindrical tubes, as shown in FIGS. 6-8. Rear portion 21, as in FIGS. 6 and 8, has a threaded rear opening 84 to receive the standard male fitting of hose 20, with a washer 85 for the conventional purpose, and a front wall 86 having a concave front surface and an annular ring of spaced holes 87 extending therethrough. A counterbore 88 extends centrally into the front wall, to reduce the pressure drop through holes 87, while an annular slot 89 surrounds the ring of holes 87, for a purpose described later. The leading end of rear portion 21 has a reduced diameter to fit into the rear opening of front portion 22, being provided with an annular shoulder 90 permitting a suitable cement to be used to make a strong, sealed joint between the portions. As in FIGS. 6 and 7, a disc-shaped wall 92 of portion 22 forms a chamber between the front and rear portions, while a reduced diameter tube 93 extends forwardly to the intake end of body primary passageway P, for attachment by a suitable cement. As indicated previously, front portion 22 of the connector C may be formed integrally with body B. Wall 92 is provided with a central hole 94 and an annular ring of spaced holes 95 extending outside tube 93 to communicate with the atmosphere. A thin, flat, disc-shaped ring 96, as of rubber sheet material, having a central hole 97 therethrough, seals air holes 95 during

normal flow but prevents reverse flow of liquid back into the hose 20, by sealing holes 87 in wall 86 of rear portion 21. When water pressure is again present in the hose, the positive water pressure from the hose, through holes 87 in rear portion 21, forces ring 96 against wall 92, sealing off air holes 95, but allowing water to flow through central holes 97 and 94, through tube 91 to passageway P of the sprayer. This movement of ring 96 is assisted by the flow of water into annular slot 89 and the production of positive pressure against the outer edges of the ring and a positive force pushing the ring against air holes 95, so that any tendency for leakage around the front of the ring and discharge of water through holes 95, before full flow through hole 94 can be established, is avoided. In the event of back pressure in the sprayer or suction in the hose sufficient to cause a reverse liquid flow, disc 96 is again forced back against wall 86, thereby sealing holes 87 and opening air holes 95 to prevent reverse flow into the hose.

The use of the apparatus is quite simple. The sprayer may be used with or without an additive of either a liquid or pelletized solid compound which is soluble in water, and whenever the reservoir becomes depleted, the reservoir may be disconnected from the body, filled with a new additive, reconnected and operation continued.

It will be understood that the positions of valve V may be changed, such as an interchange of the "liquid" and "pellets" positions, with an appropriate relocation of the baffle 63 carried by the lock ring L, as well as a shift of the "pellets" position closer to the "liquid" position. Also, the "rinse" position may be on the opposite side of the valve bonnet from that shown in FIG. 3, with the "liquid" and "pellets" position also on the opposite side. If desired, the "pellets" and "rinse" positions may be on the same side of the bonnet. Other changes in these positions will be evident.

We have now described our invention in considerable detail. However, others skilled in the art can easily build other constructions which are nevertheless within the spirit and scope of our invention.

What is claimed is:

1. A sprayer comprising:

- a. a body having a primary passageway through it, a lid on the underside of the body, means at the upstream end of the primary passageway for connection with a water supply line, a first orifice from the primary passageway to the underside of the lid at an upstream position, and a second orifice from the primary passageway to the underside of the lid at a downstream position, said orifices forming portions of an auxiliary passageway shunting the primary passageway and the diameter of the primary passageway at the upstream orifice being substantially larger than the diameter of the downstream orifice, whereby flow in the primary passageway produces a positive pressure differential in the primary passageway at the orifices;
- b. an additive reservoir adapted to be attached to the underside of the lid and completing the auxiliary passageway;
- c. rotatable valve means controlling the flow through the auxiliary passageway, and including:
- d. disc means carried upon said valve means at the underside of the lid and adapted to abut against the orifice exits, said upstream orifice and downstream

- orifice being oriented 180° apart with respect to the valve axis with one being positioned at a greater radial distance from the axis than the others;
- e. a first pair of ports through the disc means adapted to register with the orifice exits when said disc means is moved to one position; and
 - f. a second pair of ports through said disc means adapted to register with the orifice exits when said disc means is moved to another position.
2. A sprayer, as defined in claim 1, including:
 - a. a baffle means carried by said valve means in spaced relation to the underside of said disc means and opposite one of said first ports, said baffle means being adapted to register with said upstream orifice exit when said disc is moved to said one position.
 3. A sprayer, as defined in claim 2, including:
 - a. a tube carried upon the underside of said disc means, having one end connected to the disc means at the opposite of said first pair of ports and the other end disposed near the bottom of the reservoir, said tube being mounted in a position whereby it registers with said downstream orifice when said disc means is moved to said one position.
 4. A sprayer, as defined in claim 2, wherein:
 - a. said rotatable valve means is provided with a depending stem on which said disc means is mounted;
 - b. said disc means is held on said stem by a locking device; and
 - c. said baffle means extends from said locking device.
 5. A sprayer, as defined in claim 4, wherein:
 - a. said depending stem is circular in cross section except for a longitudinal planar surface on one side;
 - b. said disc means is provided with a central aperture corresponding in shape to said stem;
 - c. said stem is provided with an annular groove on the outside terminating in an angular ear at each edge of said planar surface; and
 - d. said locking device includes a generally circular ring adapted to fit into said groove, said ring having an opening to permit said locking device to snap onto said stem and a notch at each side of said opening positioned to engage an ear of said stem.
 6. A sprayer, as defined in claim 5, wherein:
 - a. said baffle means extends laterally from said ring of said locking device at a position spaced from said opening.
 7. A sprayer, as defined in claim 1, including:
 - a. cooperating stop means between said body and said disc means for limiting rotation.
 8. A sprayer, as defined in claim 1, wherein:
 - a. each of said second pair of ports is an elongated circumferential slot adapted to register with said ori-

- fice exits when said valve is moved to positions slightly to either side of a central position with respect to the corresponding port.
9. A sprayer comprising:
 - a. a body having a primary passageway through it, a lid on the underside of the body, means at the upstream end of the primary passageway for connection with a water supply line, a first orifice from the primary passageway to the underside of the lid at an upstream position and a second orifice from the primary passageway to the underside of the lid at a downstream position, said first and second orifices forming portions of auxiliary passageways shunting the primary passageway and the diameter of the primary passageway at the upstream orifice being substantially larger than the diameter at the downstream orifice, whereby the fluid pressures established by flow in the primary passageway produce a positive pressure differential in the primary passageway at the orifices;
 - b. an additive reservoir adapted to be connected to the underside of the lid and adapted to complete each auxiliary passageway; and
 - c. a compound valve having a first closure means in the primary passageway between the orifices and a second closure means cooperating with both said orifices, said valve being adapted to open both the primary passageway and a first auxiliary passageway when moved to a first position, to at least partially open the primary passageway and to open a second auxiliary passageway when moved to a second position, to close the primary passageway and the upstream orifice to the reservoir when moved to a third position and to open the primary passageway only when moved to a fourth position.
 10. A sprayer, as defined in claim 9, wherein:
 - a. said rotatable compound valve is provided with stop means which limits its rotation in one direction at said first position and in the opposite direction at said fourth position.
 11. A sprayer, as defined in claim 9, wherein said second closure means includes a disc having ports adapted to register with the respective orifices and said stop means comprises:
 - a. a pair of abutments on the underside of said lid; and
 - b. a pair of flanges extending radially outwardly from the sides of said disc, each flange having an upwardly extending tab thereon, said flanges and tabs engaging against said abutments to limit the rotation of said compound valve.

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