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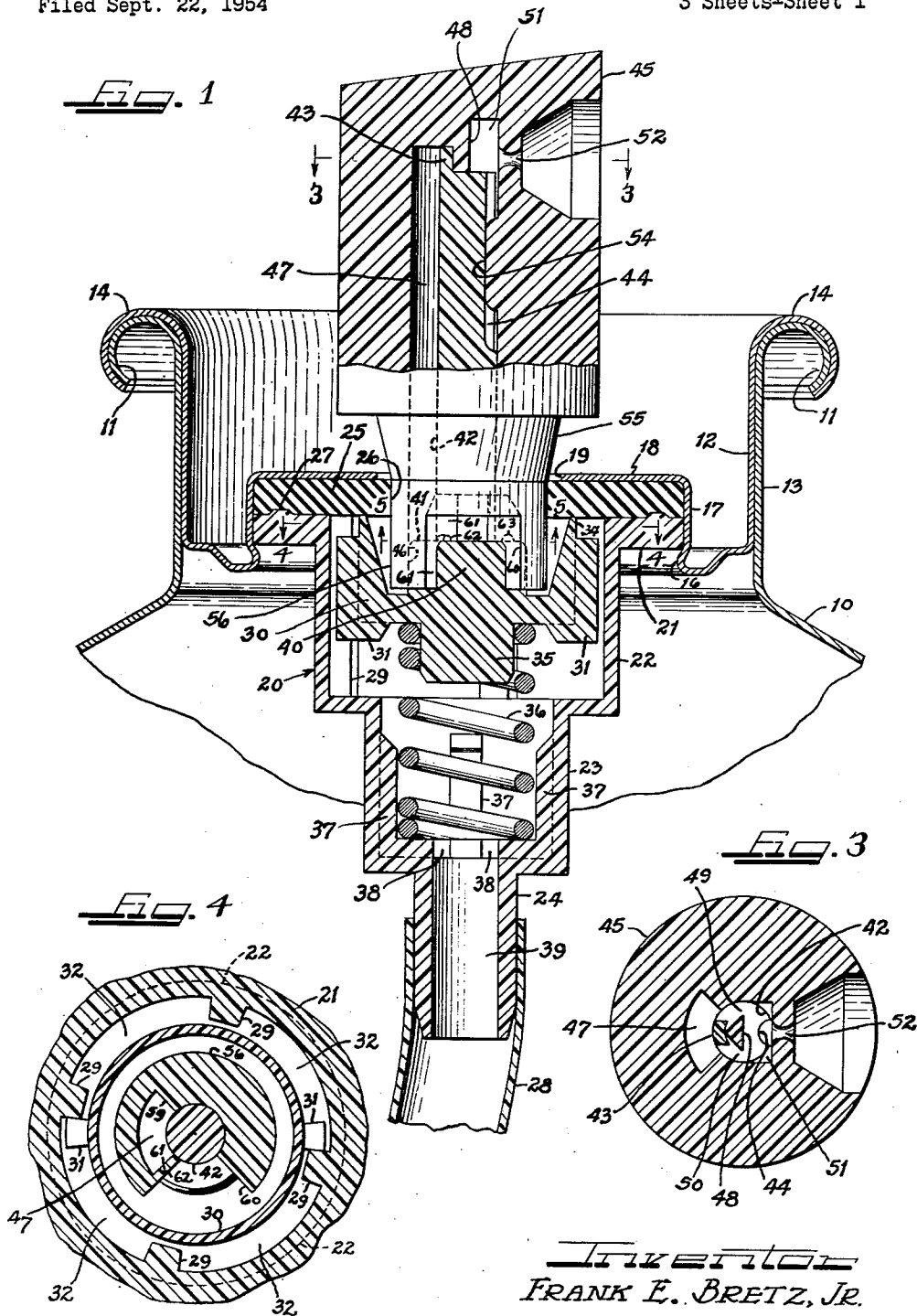
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VALVE MECHANISM FOR DISPENSING APPARATUS

Filed Sept. 22, 1954

3 Sheets-Sheet 1



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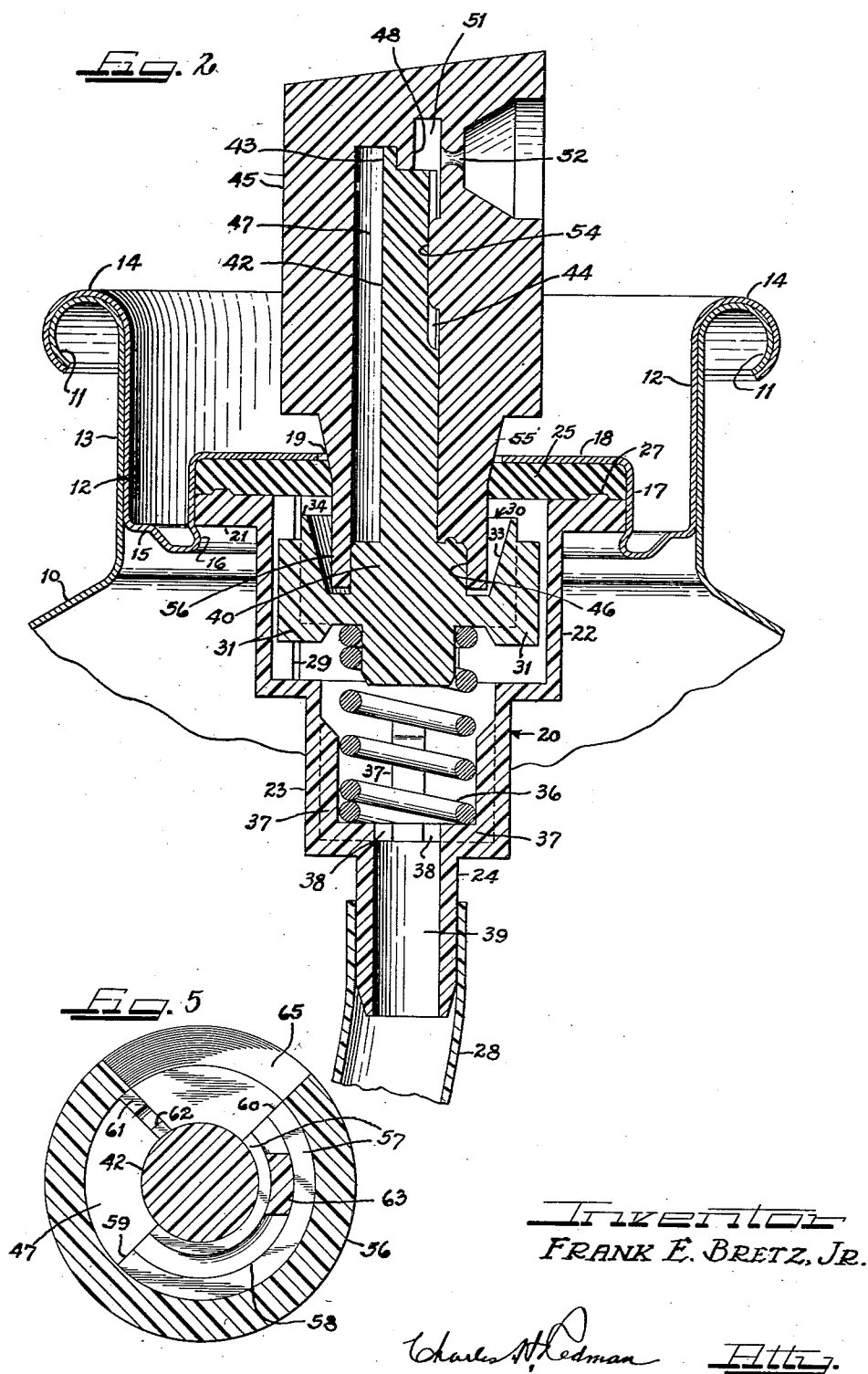
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VALVE MECHANISM FOR DISPENSING APPARATUS

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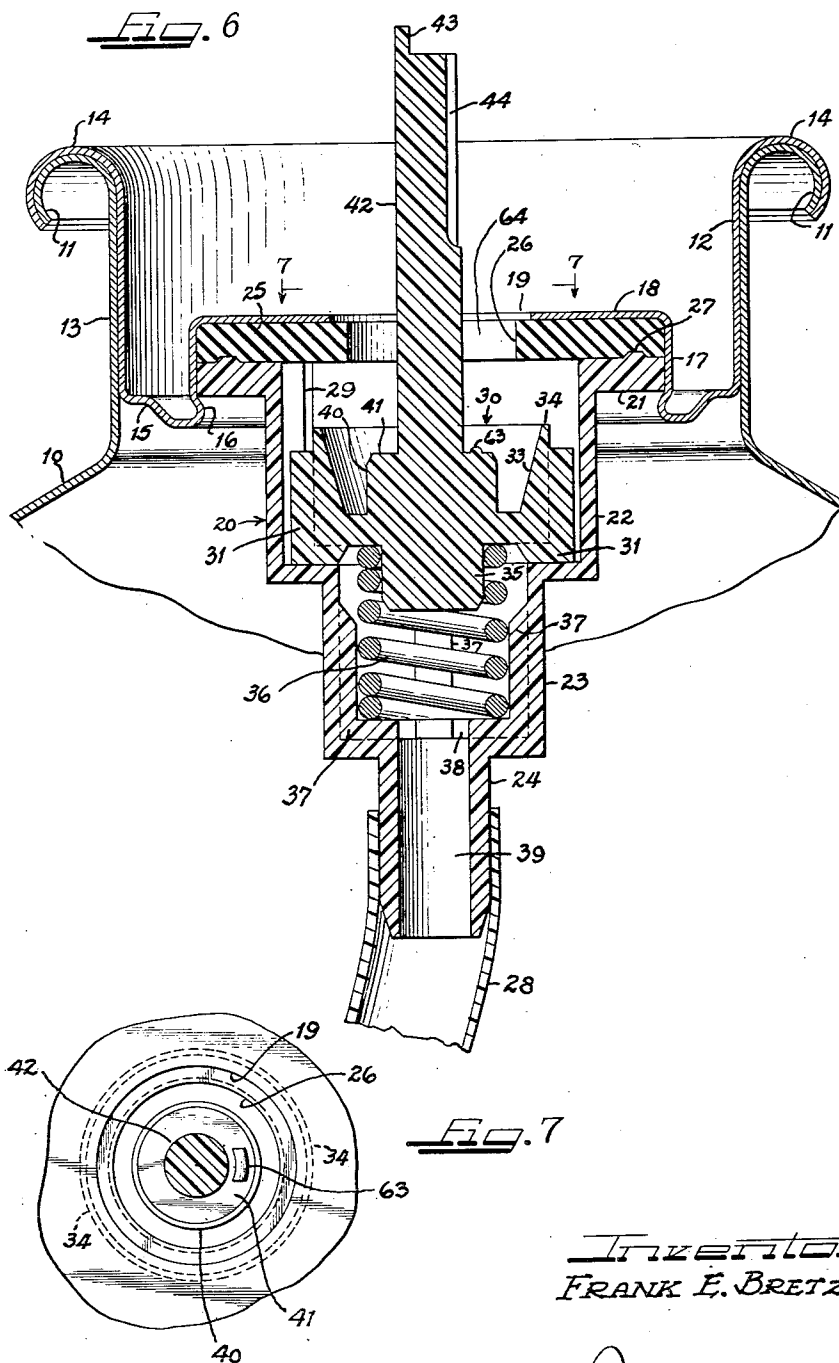
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VALVE MECHANISM FOR DISPENSING APPARATUS

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3 Sheets-Sheet 3



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VALVE MECHANISM FOR DISPENSING APPARATUS

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12 Claims. (Cl. 222-148)

This invention relates to valve mechanisms and more particularly to improvements in a valve designed for dispensing, in spray or aerosol form, materials under pressure from within a container.

The present invention is especially adapted for use with aerosol containers. In the usual dispensing valve constructions for aerosol containers, there is provided flow passageways of relatively small cross-section through which contained materials are forced during the ejection process. As a result, the passageways are easily clogged thereby seriously reducing the dispensing efficiency. Too frequently, these partial or complete failures in operation cannot be corrected as the container and valve constructions are such as to make it impossible to effect repairs without the complete ejection of the container contents.

Furthermore, the restricted flow passageways do not lend themselves to the rapid filling of a container. As a result, the usual practice is to place viscous formulations such as paints, waxes, lotions, foods, and the like in an open container, then assemble the dispensing valve to the container, and, finally, to add the propellant through the valve. Although the propellant flows through the restricted flow passageways more easily than the viscous formulations, the process is still slow and expensive.

The present invention seeks to overcome these objections by providing a valve structure having much larger flow passageways for the filling of a container than for the dispensing of the contents. This permits of a simultaneous injection or filling of the material to be stored in the container and the propellant which provides the discharge pressure. If desired, however, the material and propellant may be added separately in the usual manner. The valve is so constructed as to seal the container even when the spray tip or press-button is removed. In this condition, the normally closed valve opens under the influence of filling pressure and the flow passageways into the interior of the container are relatively large thereby insuring rapid and inexpensive filling. With the spray tip or press-button applied to the valve, additional but smaller flow passageways with restricted orifices are made available through which the container contents under pressure of the propellant are ejected in spray or aerosol form.

In addition to differences in size of the filling and dispensing passageways, there is provided cleaning lugs in alignment with and sized for complementary sliding engagement in the restricted orifices. Normally, the lugs are positioned away from the orifices in order not to close them to fluid flow. Both the lugs and orifices are so arranged that a turning of the spray tip or press-button on the valve effects a sliding of the lugs through the orifices thereby cleaning out any foreign matter lodged therein.

An important object, then, of this invention is the provision of a dispensing valve mechanism which permits with equal facility and uniform operation the aero-

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sol vaporization and atomization of various types of aerosol mixtures without being affected by the numerous different chemicals involved.

Another object of the invention is the provision of a dispensing valve mechanism arranged to provide larger flow passageways during the filling operation of an applied container than are used during the dispensing operation.

Still another object of the invention is the provision in a dispensing valve mechanism of a system of flow orifices and passageways of such size and position relative to each other as to enhance the aerosol vaporization and atomization of a contained fluid during the ejection or discharge thereof from the container.

Another and further object of the invention is the provision of a dispensing valve mechanism having flow orifices directing effluent streams of aerosol mixtures against each other in an expansion chamber immediately adjacent the terminal or ejection orifice.

Another and still further object of this invention is to provide a dispensing valve mechanism adapted to be actuated to clean certain internal flow passageways and orifices and maintain dispensing efficiency.

A still further object of the invention is the provision of a dispensing valve mechanism readily adapted for economical mass production without the use of soldering, welding, brazing or threading.

A still further object of the invention is the provision of a dispensing valve mechanism which is simple in construction and highly efficient in operation.

Other objects and advantages of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings, in which:

Figure 1 is a fragmental and partial vertical cross-sectional view, with portions in elevation, of the valve device of this invention mounted in a container;

Figure 2 is a vertical cross-sectional view, similar to Figure 1, showing the valve in an unseated position;

Figure 3 is a horizontal cross-sectional view taken along a plane indicated by the line 3-3 of Figure 1;

Figure 4 is a fragmental horizontal cross-sectional view taken along a plane indicated by the line 4-4 of Figure 1;

Figure 5 is an enlarged horizontal cross-sectional view taken along a plane indicated by the line 5-5 of Figure 1;

Figure 6 is a view, somewhat similar to Figure 2, illustrating the arrangement of parts without the valve cap and with the valve completely open for filling; and

Figure 7 is a fragmental plan view, with a part in horizontal cross-section, as seen when taken along a plane indicated by the line 7-7 of Figure 6.

Referring to Figures 1, 2 and 6 of the drawings, the numeral 10 designates the top portion of a container for holding aerosol material under pressure. At its upper edge, the top wall of the container is formed into an outwardly and downwardly extending bead 11. The container proper may be made of any suitable material which will withstand the internal pressure exerted by the particular dispersant utilized as the propellant in the spray or aerosol composition placed in the container.

A cup-shaped mounting cap 12 has its vertical cylindrical side wall in tight seated engagement within the cylindrical neck 13 of the container. The upper edge of the mounting cap 12 is formed as a bead 14 shaped to complementally embrace the bead 11 in crimped engagement therewith. A bottom 15 in the cap has a downwardly and inwardly extending annular crimp 16 formed as part of the assembly operation and for a purpose to be described later. An integrally formed and vertically disposed inverted cup portion 17 extends from the crimp 16 and terminates in a disk 18 having a central aperture 19 therethrough.

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A valve housing 20, preferably of metal or a non-resilient plastic, has an outwardly extending flange 21 sized to seat in the cup shaped portion 17 and from which concentrically depend cylindrical sections 22, 23 and 24. A disk type gasket 25, made of any suitable material such as natural or synthetic rubber, or the like, is seated against the disk 18 within the cup portion 17. A central opening 26 in the gasket is smaller than and concentric with the opening 19 in the retaining cup disk 18. An annular rib or sealing ring 27, formed on the upper surface of the housing flange 21 of the valve housing, is impressed into the disk gasket when the flange is forced toward the disk 18 by pressure exerted through the forming of annular crimp 16. The crimp is formed after the assembly of parts by exerting a pressure around the lowermost portion of the bottom 15 of cap 12 thereby bending the corner inwardly and upwardly. The gasket 25 is thereby retained within and squeezed into tight sealing engagement with the walls of the cup portion 17.

The cylindrical section 24 is adapted to telescope into the upper end of a flexible dip tube 28 which extends approximately to the bottom (not shown) of the container 10.

As best shown in Figures 4 and 6, the cylindrical section 22 of the valve housing has a plurality of circumferentially spaced lugs or ribs 29, 29 extending vertically of the section within the interior thereof. A cup-shaped valve body 30 is sized to loosely fit within the housing section 22 between the lugs 29, 29 for vertical movement between the ends thereof. Circumferentially spaced lugs 31, 31 extend partially both vertically along the side walls and across the bottom of the valve body 30. As shown in Figure 4, the housing section 22 has four lugs 29, 29 equally spaced apart and the valve body 30 has a pair of lugs 31, 31 in diametrically opposed relation. This arrangement permits the entry of the valve body within the housing to position the opposed lugs 31, 31 between adjacent pairs of lugs 29, 29. The valve body is thereby permitted to rotate horizontally approximately 90° or one-quarter turn and free to move vertically. This arrangement of lugs is, however, by way of example only and may be varied as to location and number as desired provided there is a limitation of rotation, the need for which is described in detail later herein.

It will be noted that the bottom portions of the lugs 31, 31 seat on the base of the cylindrical section 22. As a result, the cylindrical sections 22 and 23 are in flow communication through the passageways 32, 32 even when the valve body is bottomed in the valve housing, as shown in Figure 6.

The inside of the cup shaped valve body 30 is tapered as at 33 to provide a narrow seal ring 34. When the valve is in its uppermost position, as shown in Figure 1, the seal ring 34 engages the gasket 25 to seal the interior of the container 10. A positioning boss 35, extending from the base of the valve body, is embraced by a coiled spring 36 which seats against the bottom of the valve body 30 and normally urges it to the position sealing the container.

Circumferentially spaced lugs or ribs 37, 37 are provided along the sides and the bottom of the cylindrical section 23 of the valve body. These lugs properly position, guide and seat the coiled spring and also provide passageways 38, 38 to maintain the adjacent valve housing sections in flow communication.

The passageways so far defined comprise the flow channel from the exterior of the container to its interior through the axial bore 39 of the cylindrical section 24 of the valve housing and the dip tube 28. This is the flow channel, as shown in Figure 6, for pressure filling the container 10. It will be noted that the passageways are relatively large thereby effecting a rapid filling of the container.

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30 is a vertically extending stem boss 40 which terminates in a seating surface 41 preferably located below the plane of the valve sealing ring 34. Integrally formed with the boss and extending vertically along the axis of the valve body is a valve stem 42 which passes through the filler opening 26 of the gasket and the opening 19 in the disk 18 of the inverted cup of the mounting cap. The valve stem extends upwardly beyond the beaded edge of the crimped container neck and mounting cap. As seen in Figures 3 and 6, the stem is shaped at its upper end to provide an upper orifice cleaning lug 43 located at the periphery of the stem and being of uniform thickness and relatively narrow width. A semi-circular slot or keyway 44 is provided partially lengthwise of the valve stem in diametrically opposed relation to the upper orifice cleaning lug.

A press-button or spray tip 45 is axially bored partially along its length to receive therein the valve stem 42. The base of the button is internally bored as at 46 to tightly seat around and on the valve boss 40. A partially circular channel 47, formed in the press-button, extends from the seating surface 41 to the top of the upper cleaning lug 43. The bottom wall of this channel is spaced from the stem 42 to define a flow passageway. An integral baffle 48, of triangular cross-sectional shape, depends into the interior of the axial bore of the press-button to seat against the top of the valve stem and with one of its apices positioned normally against the curved inner surface of the upper cleaning lug 43. The lug is narrower than the width of the mouth of the channel 47 thereby forming flow passages along the sides of the lug. These passageways connect with orifices 49 and 50 formed between the baffle 48 and the adjacent sidewalls of the press-button. For convenience, these orifices 49 and 50 will hereafter be referred to as secondary or upper metering orifices. The secondary orifices communicate with a generally rectangular shaped expansion chamber 51 formed in the press-button. A terminal orifice 52 in the press-button connects the expansion chamber to the atmosphere. An internal lug or key 54, intermediately located along the axial bore of the press-button, is sized to fit into the slot 44 thereby normally locking the button to the valve stem.

The lower end of the button is of reduced diameter having an intermediate downwardly tapered exterior portion 55. The tapered portion is of a diameter sufficiently smaller than the opening 19 in the disk 18 to permit free maximum vertical movement of the button without contact with the edges of the opening. A cylindrical portion 56, depending from the tapered portion, is sized for snug engagement within the opening 26 of the gasket 25. When the valve is closed, as shown in Figure 1, the end of the cylindrical portion 56, adjacent the tapered portion 55, is seated in the gasket. With the valve depressed to open the mechanism to ejection, the tapered portion 55 is forced into the gasket thereby enhancing the sealing engagement.

It will be seen from Figure 5 that a seating surface 57 is formed within the press-button at the end of the internal bore 46. The surface 57 is arranged to seat on the surface 41 of the stem boss 40. A partially circular groove 58, intermediately located in the face of the seating surface 57 and concentric with the bore 46, is provided for a purpose to be more fully explained later herein. As shown, the seating surface 57 does not extend circumferentially of the press-button. One end 59 is one side of the vertically extending channel 47. The other end 60 is a side of a gateway, the construction and purpose of which will be described in detail later.

A wall 61 is intermediately located between the sides 59 and 60 defining the ends of the seating surface 57. One face of the wall 61 forms another side of vertically extending channel 47. The opposite face together with the end 60, defines the gateway 65. A groove 62 in the wall 61 is of complementary shape to and in circumfer-

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ent alignment with the groove 58. The groove 62 will hereafter be referred to as the initial or lower metering orifice. A cleaning lug 63, shaped to complementarily seat in the grooves 58 and 62, is provided in the seating surface 41 of the boss 40. It will be noted that the lug 63 is located within the slot 58 when the key 54 of the press-button engages within the keyway 44 in the valve stem 42.

The valve body and stem construction and the housing described may be made of any suitable material but it is preferred that they be of a rigid molded plastic such as nylon. The press-button is also a molded plastic but preferably resilient such as polyethylene. The particular material used should have the properties of rigidity with sufficient resilience to permit withdrawal of the key 54 from the slot 44 when the press-button is rotated relative to the valve stem and also for closely fitted surfaces to engage with sealing effect.

Operation of the valve mechanism will now be described.

The valve mechanism of Figure 6 shows the relative position of parts as the container 10 is being filled. Openings 19 and 26 form a filling channel 64 entirely open except for the valve stem 42 extending therethrough. As the aerosol mixture is injected under pressure through the filling channel, the valve body 30 is depressed by a collapse of the coiled spring 36. The mixture then passes through passageways 32, 32 around and under the valve body into the spring chamber 23. Flow is then through the spring or around it in the passageways between the lugs 37, 37. Finally, the flow of mixture is through the passageways 38, 38, into the axial bore 39 of the cylindrical body section 24, and then into the dip tube 28 to the container which fills upwardly from the bottom. When the container is filled, release of filling pressure effects a sealing of the interior by the coiled spring 36 urging the seal ring 34 into an impressed seating with the gasket 25.

As all of the filling passageways are relatively large, the container is quickly and easily filled.

The press-button 45 is then applied to the valve stem 42 until tightly seated on and around the boss 40. The pressure required to snap the press-button on the valve stem is not sufficient to overcome the compression of the coiled spring 36 and the internal pressure exerted by the contained aerosol mixture acting on the valve body to help maintain it sealed against the gasket.

The valve mechanism is now ready for operation to eject the aerosol mixture. When the press-button is depressed to break the seating contact between the seal ring 34 and the gasket 25, the tapered exterior 55 of the button pressure-seals the opening 26 in the gasket. The pressurized aerosol mixture then flows back through the filling channel into the cupped portion of the valve body, through the gateway 65 in the sidewall at the lower end of the button (see Figure 5), through the lower metering orifice 62 and into the vertical channel 47. From the channel 47 the material flows through the upper or secondary orifices 49 and 50, into the mixing or expansion chamber 51, and through the terminal orifice 52 to the atmosphere.

The provisions in a flow channel of a plurality of restricted orifices, of directing effluent streams of material against each other at the expansion chamber, and of minimizing flow restriction immediately preceding ejection into the atmosphere, all aid in effecting a finer vaporization or atomization of the aerosol material than is possible to obtain in other dispensing valve mechanisms.

However, flow passageways, particularly restricted orifices, easily clog or partially close in operation thereby reducing the dispensing efficiency of a valve mechanism. Furthermore, aerosol valve mechanism are generally so constructed that they cannot be disassembled by the user. Even if they could be so disassembled, the

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entire contents would be ejected. Accordingly, the user either loses the use of the container or its content and the net result in either event is a total loss of the product.

To overcome these objections, there is provided in this invention a dispensing valve mechanism operable by the user for cleaning the restricted orifices that may clog or partially close.

With the parts of the valve mechanism in the relative positions as shown in Figure 1, the user grasps the press-button 45 and turns or rotates it. The rotation is in a direction effecting movement of the lugs 31 into abutment with the lugs 29. As the lugs 29, 29 are shown in Figure 4 as being spaced 90° apart, the lugs 31, 31 may be turned approximately one-quarter turn when rotated from engagement with one pair of lugs 29 into engagement with the other pair of lugs 29. This eliminates further rotation of the valve stem 42 and body 30 in the one direction relative to the valve housing 20. The continued application of rotating pressure in the one direction on the press-button, however, effects a withdrawal of the flexible key 54 from the keyway 44 and permits the press-button to rotate relative to the valve stem 42. This is effected both by a giving way and deformation of the body portion of the button at the key and of the periphery of the valve stem along which the key is rotated. In addition, the open area between the valve stem and the press-button adjacent the keyway 44 facilitates a withdrawal of the key in the initial stage of rotating the button relative to the valve stem.

A continued manual rotation of the press-button until it has been revolved one complete turn or 360° automatically effects a cleaning of the surfaces of the upper secondary orifices 49 and 50 and of the lower metering orifice 62.

The baffle 48 rotates with the press-button thereby effecting a passing of the stationary cleaning lug 43 successively through the upper secondary orifices 49 and 50. As best shown in Figure 3, the width of the baffle is such as to space each of its normally free base apices from the valve stem bore of the button a distance approximately equal to the thickness of the cleaning lug. It will be noted that the peak of the baffle is normally positioned against the curved inner surface of the cleaning lug. Relative movement of the baffle and lug effects a scraping and a cleaning of the curved surface.

Similarly, a rotation of the press-button carries with it the face groove 58 and the wall 61 with the initial metering groove or lower orifice 62. The rotation of the groove and orifice effects a passing therethrough of the cleaning lug 63. In such positions, shown in Figures 3 and 5, the upper cleaning lug 43 is centered in the opening of the channel 47 facing the secondary orifices 49 and 50, and, the lug 63 is located intermediately of the ends of the groove 58 thereby limiting the flow connection between channel 47 and gateway 65 to the initial or lower metering orifice 62.

One complete turn of the press-button is sufficient to clean the orifices in the manner described. Upon the return of the press-button to its original starting point, the key 54 re-engages with and seats in the keyway 44. This re-engagement indicates a return of the parts to positions in which the valve mechanism is ready for spraying.

Although the invention has been described herein more or less precisely as to details, it is to be understood that the invention is not to be limited thereby, as changes may be made in the arrangement and proportion of parts, and equivalents may be substituted, without departing from the spirit and scope of the invention.

I claim as my invention:

1. A valve mechanism for a container comprising a sealing gasket having a container filler opening therethrough, a movable valve element normally engaging the gasket around and sealing said opening, means maintain-

ing said normal engagement, a stem member extending from said valve element through the filler opening, a tubular valve element actuating button having a bore to rotatably embrace said stem member and extending therealong through the filler opening in sealing engagement with the gasket, a wall portion of said button being spaced from the stem member to provide a flow passageway coextensive with the stem member, a cleaning lug at the free end of the stem member and positioned in a mouth of the passageway, and a baffle depending from and within the button in spaced relation to the sides thereof and in coextensive alignment with said lug, the relation of the lug and baffle being such that rotation of the button relative to the stem member effects a passing of the lug through the spaces between the baffle and a side of said bore.

2. A valve mechanism for a container comprising a sealing gasket having a container filler opening therethrough, a movable valve element normally engaging the gasket around and sealing said opening, means normally maintaining said valve element in said engagement, a stem member of smaller diameter than and extending through the filler opening from said valve element, a stem actuating button having a partially extending bore for rotatably receiving said stem member and extending through the filler opening in sealing engagement with the gasket, portions of the wall of said bore and stem being spaced to provide a flow passageway coextensive with said stem, a cleaning lug at the free end of the stem and together with the walls of the internal bore of the button forming flow openings at the sides thereof in communication with said stem passageway, and a baffle at the end of the button bore in spaced relation to the sides thereof and in coextensive alignment with said lug, the relation of the lug and baffle being such that rotation of the button relative to the stem effects a passing of the lug through the spaces between the baffle and sides of said bore.

3. A valve mechanism for a container having a closure cap, comprising a sealing gasket mounted on said cap and having a filler opening therethrough, a movable cup-shaped valve body normally engaging the gasket around and sealing said opening, means normally maintaining said valve body in said engagement, a valve actuating stem extending from the valve body through the filler opening, a tubular cap member embracing said stem and extending therealong through the filler opening in sealing engagement with the gasket, a channel in said cap cooperating with the stem to provide a flow passageway, a concentric groove in the cap member in communication with the passageway defining at least one orifice, and a cleaning lug for and in concentric alignment with the orifice, the lug being of complementary size to slidably seat in the associated orifice and normally in spaced apart relation thereto, the arrangement being such that the rotation of the cap on the stem effects a passing of each lug through its associated orifice.

4. A valve mechanism for a container having a closure cap, comprising a sealing gasket mounted on said cap and having a filler opening therethrough, a valve housing depending from said closure cap and having an outlet into the interior of the container, a movable cup-shaped valve body with its rim normally engaging the gasket around and sealing said opening, spring means in said housing normally maintaining the rim in said gasket engagement, a valve actuating stem extending from the cup of the valve body through said gasket opening, a tubular cap member embracing said stem and extending through the gasket filler opening in sealing engagement with the gasket and terminating in spaced relation to the valve body, said cap member having a flow passageway extending generally along the stem from the valve body to the atmosphere, the portions of the passageway adjacent the ends thereof being restricted to define orifices, said orifices being concentric with said

stem, and a cleaning lug on said stem for each orifice and shaped to conform for sliding engagement with the walls of said orifice, said lugs being positioned in concentric alignment with said orifices and normally offset circumferentially from that portion of the flow passageway extending along the stem, the arrangement being such that relative rotation of the tubular cap member and stem effects a passing of a lug through its associated orifice.

5. A valve mechanism for a container having a closure cap, comprising a sealing gasket mounted on said cap and having a filler opening therethrough, a valve housing depending from said closure cap within the container, a movable cup-shaped valve body with its rim normally engaging the gasket around and sealing said opening, spring means in said housing normally maintaining the rim in said gasket engagement, a stem extending from the cup of the valve body through said gasket opening, a tubular cap embracing said stem and extending through the gasket filler opening in sealing engagement with the gasket, said cap member having a flow passageway extending intermediate its ends generally along the stem into the atmosphere and also having a passage at the end of the cap adjacent the cup of the valve body in circumferentially spaced relation to said passageway thereby forming a wall therebetween, the wall between the passageway and passage having a groove therethrough concentric with the axis of said stem, a first cleaning lug on said stem shaped to conform for sliding engagement in said groove, a second cleaning lug at the periphery on the free end of the stem and of longitudinally curved shape concentric to the axis of the stem and positioned in said passageway to provide flow passages around the ends thereof, and a baffle depending interiorly and spaced from the sides of the cap and in adjacent coextensive alignment with said second lug, the arrangement being such that relative rotation of the cap and stem effects a passing of the first cleaning lug through the groove in the wall between the passageway and passage and of the second cleaning lug through the spaces between the baffle and the sides of the cap.

6. A valve mechanism for a container having a closure cap, comprising a sealing gasket mounted on said cap and having a filler opening therethrough, a valve housing having a superposed tubular sections depending from said closure cap within the container, a movable cup-shaped valve in one of said sections with its rim normally engaging the gasket around and sealing said opening, lug means between said housing and cup-shaped valve limiting relative rotation therebetween coiled spring means in another of said sections and normally maintaining the rim in said gasket engagement, a stem boss in the cup of the valve body, a stem extending from the boss through said gasket filler opening, a tubular cap embracing said stem and boss and having both a cylindrical exterior portion normally extending through the gasket filler opening in sealing engagement with the gasket and an adjacent tapered exterior portion arranged to enter the gasket filler opening when the cap is pressed against the stem to disengage the valve body from sealing engagement with the gasket, locking means disengageably connecting said cap and stem against relative rotation, said cap having an interior flow passageway extending intermediate its ends from said boss to the atmosphere, said cap also having an end recess at the stem boss opening into said cup-shaped valve body and circumferentially spaced from said passageway with walls therebetween, said walls each having a groove therethrough connecting said passageway and recess and being concentric with the axis of rotation of the stem, a first cleaning lug on said boss shaped to conform for sliding engagement in said wall grooves and being positioned, when the stem and cap are locked by said locking means, in one of said grooves, a second cleaning lug at the periphery on the free end of the stem and of longitudinally curved shape concentric to the axis of the stem and positioned in said passageway when the stem

and cap are locked to provide flow passages around the ends thereof, and a baffle depending interiorly and spaced from the sides of the cap in adjacent coextensive alignment with said second lug, the arrangement being such that relative rotation of the cap and stem when the locking means are released effects a passing of the first cleaning lug through said wall grooves and of the second cleaning lug through the spaces between the baffle and the sides of the cap.

7. A valve mechanism for a container comprising a sealing gasket having an opening therethrough, a movable valve element normally engaging the gasket around and sealing said opening, means maintaining said normal engagement, a stem member on said valve element and extending through the opening, an actuating member rotatably embracing said stem member and extending between the stem and gasket and arranged for moving the valve element away from the normal gasket engagement, one of said actuating and stem members having walls defining a passageway therebetween, and a lug on the other of said members in alignment and for sliding engagement with said walls defining the passageway during relative rotation of the actuating and stem members.

8. A valve mechanism for a container comprising a sealing gasket having an opening therethrough, a movable valve element normally engaging the gasket around and sealing said opening, means maintaining said normal engagement, a stem member on said valve element and extending through the opening, an actuating member rotatably embracing said stem member and extending between the stem and gasket and arranged for moving the valve element away from the normal gasket engagement, one of said actuating and stem members having walls defining a passageway therebetween and concentric with the axis of rotation of the actuating member, and a lug on the other of said members in alignment and for sliding engagement with the walls defining the passageway during relative rotation of the actuating and stem members.

9. A valve mechanism for a container comprising a sealing gasket having an opening therethrough, a movable valve element normally engaging the gasket around and sealing said opening, means maintaining said normal engagement, a stem member on said valve element and extending through the opening, an actuating member rotatably embracing said stem member and extending between the stem and gasket and arranged for moving the valve element away from the normal gasket engagement, one of said actuating and stem members having walls defining passageways therebetween, one of said passageways extending lengthwise of the stem member and another being concentric with the axis of rotation of the actuating member, and a lug on the other of said members in alignment and for sliding engagement with the walls defining the concentric passageway during relative rotation of the actuating and stem members.

10. A valve mechanism for a container comprising a sealing gasket having an opening therethrough, a movable valve element normally engaging the gasket around and sealing said opening, means maintaining said normal engagement, a stem member on said valve element and extending through the opening, an actuating member having an opening therethrough and arranged to rotatably embrace said stem member and extend between the stem and gasket and be operated to move the valve element away from the normal gasket engagement, means limiting rotation of the stem member, a keyway and deformable key construction normally connecting the valve stem and actuating member against relative movement, said deformable key being released when subjected to continued rotative pressure exerted on the actuating member when said limiting means are effective, said actuating member having walls defining flow passageways between the

actuating and stem members, one of said passageways extending lengthwise of the stem member and another being concentric with the axis of rotation of the actuating member and connecting opposite sides of said one passageway with the interior of the container when the valve element is disengaged from the gasket, and a lug on the stem member in alignment and for sliding engagement with the walls defining the concentric passageway during relative rotation of the actuating and stem members, the relative relation of said key and lug being such that when the key engages the keyway the lug is located in said concentric passageway on one side of said one passageway.

11. A valve mechanism for a container having a closure cap, comprising a sealing gasket having an opening therethrough, a valve housing depending from said closure cap and having an opening communicating with the interior of the container, a cup-shaped valve body having a rim arranged to normally engage the gasket around the opening therethrough, spring means maintaining said normal engagement, lug means on said housing and valve body limiting relative rotation therebetween, a stem member on said valve body and extending through the gasket opening, an actuating member having an opening therethrough and arranged to rotatably embrace said stem member and extend between the stem and gasket and be operated to move the valve body out of normal rim engagement with the gasket, a keyway and deformable key construction normally connecting the valve stem and actuating member against relative movement, said key being released when subjected to continued rotative pressure exerted on the actuating member when said limiting lug means are effective, said actuating member having walls defining flow passageways between the actuating and stem members, one of said passageways extending lengthwise of the stem member and another being concentric with the axis of rotation of the actuating member and connecting opposite sides of said one passageway with the interior of the container when the valve element is disengaged from the gasket, and a lug on the stem member in alignment and for sliding engagement with the walls defining the concentric passageway during relative rotation of the actuating and stem members, the relative relation of said key and lug being such that when the key engages the keyway the lug is located in said concentric passageway on one side of said one passageway.

12. A valve mechanism for a container comprising a sealing gasket having an opening therethrough, a movable valve element normally engaging the gasket around and sealing said opening, means maintaining said normal engagement, a stem member on said valve element and extending through the opening, a detachable actuating member snap mounted on and rotatably embracing said stem member and extending between the stem and gasket and arranged for moving the valve element away from the normal gasket engagement, one of said actuating and stem members having walls defining a passageway therebetween, said passageway having one or more portions of smaller cross-sectional area than the space between the stem member and gasket when the gasket is subjected to pressure in filling the container with the actuating member removed from the stem, and a lug on the other of said members in alignment and for sliding engagement with said walls defining one of the restricted passageway portions during relative rotation of the actuating and stem members.

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