

[54] VALVE FOR SIMULTANEOUSLY
DISPENSING A PLURALITY OF
PRESSURIZED FLUIDS

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222/139, 140, 193, 402.14, 402.16-402.18, 94, 145

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[57] ABSTRACT
Valve for simultaneously dispensing a plurality of fluids under pressure is adapted to be set to a position permitting a purge of pressurizing gas to be passed therethrough without any fluid to be dispensed, another position in which gas is passed through the valve along with the fluids to be dispensed, and yet another position in which only fluids to be dispensed may pass through the valve.

3 Claims, 2 Drawing Figures

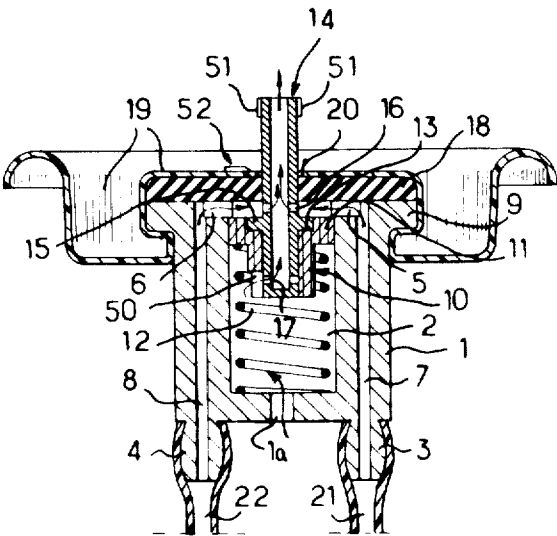


FIG. 1

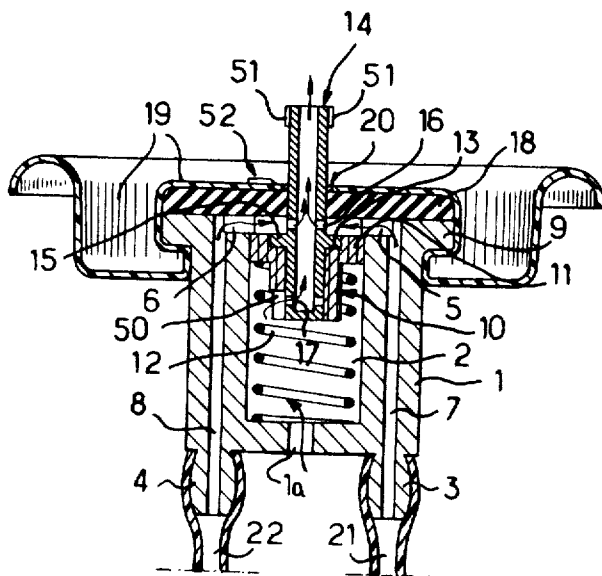
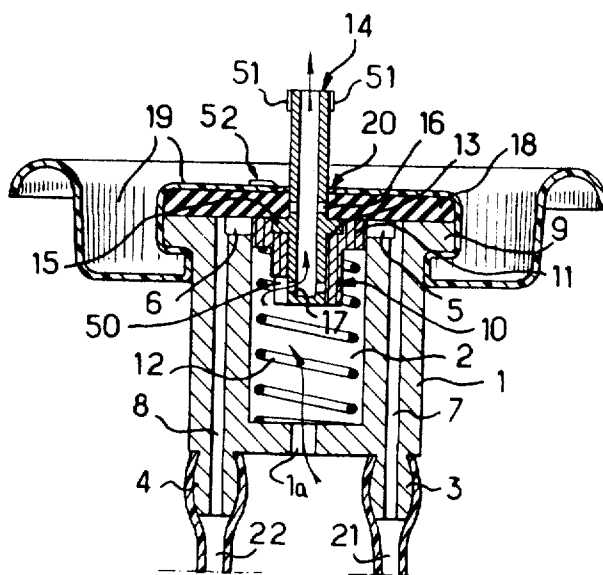


FIG. 2

VALVE FOR SIMULTANEOUSLY DISPENSING A PLURALITY OF PRESSURIZED FLUIDS

SUMMARY OF THE INVENTION

My prior U. S. application Ser. No. 839,842, filed July 8, 1969, now U.S. Pat. No. 3,593,886 issued July 20, 1971, describes an improved valve for simultaneously dispensing a plurality of fluids which are stored under pressure. This valve is essentially characterized by the fact that it comprises an outer cylindrical cup having as many radial notches around its upper edge as there are products to be dispensed. The notches are connected by passageways in the wall of the cup to spigots mounted on the lower part of the cup. The cup also comprises a central chamber having a substantially coaxial hole in its bottom. A slidable sealing member is movable inside the central chamber in the cup along the axis thereof and is biased upward by a spring inside said central chamber. This sealing member is annular and is provided with a preferably circular cylindrical seat at its upper end. The device also comprises a spout which is open at its upper end and carries a preferably circular central external rib adapted to engage the seat in the lower part of the slidable sealing member. The spout is provided with at least one radial hole near its lower end and another radial hole at a level just above the shoulder. Finally, the device comprises a sealing ring encircling the spout and resting on the upper edges of the outer cup, the sliding sealing member and the circular rib on the spout.

It is sometimes necessary to use the valve described in my prior application to dispense at least one product which is capable of leaving a residue inside the valve, which eventually stops up the passages and orifices therein. In this case it may be desirable to be able to flush through the passageway traversed by the products to be dispensed a current of gas under pressure, and in particular a current of pressurizing gas stored in the dispenser to which the valve is attached.

It is the object of the present invention to describe an improvement on the valve disclosed in the aforesaid application, which improvement makes it possible to clean the valve internally whenever such cleaning is considered necessary.

It is accordingly the object of the present invention to provide, as a new article of manufacture, an improved valve for simultaneously dispensing a plurality of products stored under pressure. This valve is of the general type described in U.S. application, Ser. No. 839,842, now U.S. Pat. No. 3,593,886, and comprises an outer cylindrical cup, a sliding sealing member which may be moved inside a central chamber in said cylindrical cup, and a cylindrical spout axially mounted in said sliding sealing member, which valve is essentially characterized by the fact that, at the level of the lower radial hole in the spout, the sliding sealing member which grips this spout in a fluid-tight manner has at least one notch or orifice in its lateral wall.

In a preferred embodiment of the invention the valve spout is provided with a mark at its upper end lying on substantially the same generatrix as the center of the hole in the lower part of the spout, and means fixed to the valve which also carries a mark in the same axial plane as the notch in the sliding sealing member.

In the spout according to the invention, as described in application, Ser. No. 839,842, a translational movement along the axis of the valve is imparted to the sliding sealing member by the user. This movement is produced by depressing the spout of the valve and is resisted by a return spring seated in the central chamber of the outer cup and bearing against the bottom of the sliding sealing member itself.

When the user sees fit to do so, independently of any dispensing operation, he may internally purge the valve according to the invention by turning the spout of the valve about its axis until the lower hole in the spout is opposite the notch or orifice in the lateral wall of the sliding sealing member. When the spout and the stationary components of the valve carry indicia such as those above described, it suffices to bring the marks carried by the spout and the stationary component of the valve into register. At this moment, the

propellant gas inside the outer container may escape through the central passageway in the spout by passing first into the central chamber in the cylindrical cup, which chamber is in communication with the inside of the outer container, as indicated in U.S. application, Ser. No. 839,842, now U.S. Pat. No. 3,593,886 issued July 20, 1971. This fluid then travels through the notch in the lateral wall of the sliding sealing member and through the hole in the lower part of the spout, which hole is in alignment with said notch. The inner passageway in the dispensing spout of the valve is thus effectively cleaned.

Said prior U.S. application also discloses that the products within the container may be dispensed by exerting pressure on the valve spout, which forces it into the outer valve cup. This movement results in compression of the return spring associated with the sliding sealing member. If, in the dispensing position, the user rotates the spout about its axis to occupy a position such that the hole in the lower part of the spout is opposite the notch in the sliding sealing member, the propellant gas in the outer container to which the valve is attached enters the spout and acts to assist in expelling the products to be dispensed. In other words, such an operation makes it possible to transform the valve according to the invention into a valve for receiving an additional flow of propellant gas, which may be very useful in evacuating products to be dispensed when these have a high viscosity.

The present invention also relates to a dispenser for at least one pressurized fluid essentially characterized by the fact that it comprises a dispensing valve of the type described.

In order that the invention may be better understood, a preferred embodiment thereof will now be described, purely by way of illustration and example, with reference to the accompanying drawings, on which:

FIG. 1 is an axial section taken through the valve according to the invention, showing it in cleaning position, in which position the products stored cannot be dispensed;

FIG. 2 is an axial section taken through the valve according to the invention showing it in the position in which the products stored are being dispensed and the pressurizing gas is nevertheless introduced into the spout as an additional propellant.

Referring now to the drawings, it will be seen that reference numeral 1 indicates the outer cup of the valve. The cup 1 is generally cylindrical in shape and has an axial central hole 2. Two diametrically opposed spouts are carried on its bottom and its upper edges are notched at 5 and 6. The notches are in alignment with the spouts 3 and 4 respectively. Passageways 7 and 8 in the wall of the cup connect the spouts to the notches. The cup carries an outer shoulder 9 and the bottom of the cup is pierced by an axial hole 1a.

Inside the central chamber 2 is a sliding sealing member 10. Sealing member 10 is essentially annular and carries an upper flange 11, the outer diameter of which is equal to the inner diameter of the chamber 2. The lower face of the flange 11 rests on a spring 12 inside the central chamber 2, which spring biases the sealing member 10 upward. The sealing member 10 has an annular seat 13 at its upper end, and there is a notch 50 in the lateral wall of the slidable sealing member at its lower end.

A spout 14 is positioned in the center of sliding sealing member 10. The spout 14 has a generally cylindrical shape. It carries a circular external rib 15, the outer diameter of which is equal to the inner diameter of the seat 13 at the top of the sliding sealing member 10. Immediately above the rib 15 the spout 14 is pierced by two diametrically opposed holes 16 and, near its lower end, by two diametrically opposed holes 17. At its upper end, in the axial plane containing the axes of the two holes 17, the spout 14 carries two marks 51 which are diametrically opposite each other.

A sealing ring 18 is positioned at the top of the valve. This ring has an external diameter equal to the external diameter of the shoulder 9 and an inner diameter equal to the external diameter of the spout 14. It rests on the upper edges of the outer cup 1, the sliding sealing member 10 and the rib 15.

When the spring 18 is positioned inside the cup 1, the notches 5 and 6 in the upper edge of this cup are converted into holes. The sealing ring 18 is fastened to the cup 1 by a metallic cap 19 which grips the sealing ring and the shoulder 9 on the cup 1. It is obvious that the cap 19 has a central hole 20 in which the spout 14 is freely movable. The cap 19 carries a mark 52 in the axial plane of the valve which contains the median plane of the notch 50.

The cap 19 is adapted to be crimped to the upper part of an outer jacket, which jacket may hold flexible inner containers, which in turn hold the two products to be simultaneously dispensed. The outer jacket also holds the pressurizing fluid which is to place the products in the flexible containers under pressure. This fluid may be a conventional Freon. The upper parts of the flexible containers which hold the products to be dispensed are in the form of tubes 21 and 22. These tubes are attached to the spigots 3 and 4.

When the cap 19 has been crimped to the outer jacket, this outer jacket holds, connected to the spigots, the flexible inner containers filled with the products to be dispensed. As indicated in application, Ser. No. 839,842, the introduction of pressurizing gas into the outer jacket may be effectuated through the passageway in the spout by deforming the lower part of the sliding sealing member 10. In the embodiment according to the present invention this method of introduction may be used. But it is also possible to bring the two marks 51 and 52 into registration and then introduce the pressurizing gas into the outer jacket to which the valve is attached. In this case the pressurizing gas passes through the spout, through one of the holes 17 and the notch 50 which is in alignment therewith, then through the central chamber and the hole 1a in the lower part of the central chamber. It will be seen that the outer jacket may thus be filled without having to deform the sliding sealing member.

When the products within the flexible containers 21 and 22 are to be dispensed, the user exerts pressure on the spout 14 of the valve or on a suitable member mechanically connected to the upper end of this spout. This forces the spout 14 downward as it slides in the sealing ring 18, and acts through the rib 15 to slide the sealing member 10 down, while compressing spring 12. This movement of the sealing member clears the notches 5 and 6, thus permitting each of the products to be dispensed to escape through the passageways 21 and 7 on the one hand and 22 and 8 on the other hand. The pressure exerted by the Freon in the outer jacket forces these products into the central passageway in the spout 14 through the holes 7, which are open because of previous movement of the spout 14.

When the user releases the spout 14, the spring 12 returns the sliding sealing member upward until the upper surface of the sliding sealing member 10 and the rib 15 on the spout come into contact with the sealing ring 18. During this movement, the notches 5 and 6 through which the fluid is dispensed are blocked, and the holes 16 are also blocked since they are then covered by the sealing ring 18.

If, with the valve in closed position, it is desired to clean the central passageway in the spout 14, this spout is turned about its axis so as to bring one of the marks 51 into alignment with the mark 52 carried by the cup 19. At this moment the pressurizing gas contained in the outer jacket may escape by passing through the notch 50 in the sliding sealing member, through the hole 17 in alignment therewith, and through the central passageway in the spout 14. This release of pressurizing gas cleans the dispensing passageways of the valve. It is important to note that, in the non-dispensing position, the valve has no mixing chamber in which the two products to be

dispensed are in contact.

If, in the course of a dispensing operation, when the spout 14 is depressed by compressing the spring 12, it is desired to facilitate the release of products to be dispensed by providing an additional flow of propellant gas, it suffices to bring one of the marks 51 into alignment with the mark 52. At this moment in the course of the dispensing operation the propellant gas passes through the notch 50 and the hole 17, which are opposite each other, and entrains toward the outlet of the spout 14 the products which have been introduced into the spout through the hole 16. This provides an additional flow of gas to facilitate the evacuation of particularly viscous products.

It will, of course, be appreciated that the foregoing embodiment has been given purely by way of example, and may be modified as to detail without thereby departing from the basic principles of the invention as defined by the following claims.

What is claimed is:

1. In a dispensing valve for dispensing pressurized fluids from a plurality of flexible containers enclosed in an outer jacket containing a pressurizing fluid, said valve comprising:

a cup having a peripheral wall and defining a central chamber, said cup having an opening in the lower part thereof for admitting pressurizing fluid from said jacket to said central chamber and said peripheral wall having a plurality of passageways therethrough, each for connection to an individual flexible container for holding a product to be dispersed and each terminating in the upper part of said chamber,

an upper sealing ring closing the top of said cup,

a manually movable spout projecting through said upper sealing ring into said chamber and defining a central dispensing passage, said spout being provided with first radial openings leading from said dispensing passage to the exterior of said spout and being movable between a first position in which said first radial openings are blocked by said upper sealing ring and a second position within said upper part of said chamber in which said first radial openings are in communication with the passageways in said cup, and

lower sealing means encircling the end of said spout within said chamber and sealing said lower part of said chamber off from said upper part of said chamber,

the improvement according to which said lower sealing means is provided with at least one radial opening into said lower part of said chamber and said spout is provided with a lower radial opening, said spout being rotatable within said lower sealing means between a first radial position in which the lower radial opening therein is in alignment with the radial opening in said lower sealing means and a position in which it is not.

2. Valve as claimed in claim 1 mounted on a jacket top provided with indicia in alignment with the radial opening in said lower sealing ring, and said spout having a portion projecting upward from said container top and bearing indicia in alignment with the lower radial opening in said spout.

3. In combination, a valve as claimed in claim 1 mounted on the top of a jacket holding a pressurizing fluid and a plurality of flexible containers holding a pressurized fluid mounted inside said jacket, each passageway in said cup being connected to one of said flexible containers, so that said pressurized fluid is admitted to the dispensing passage in said spout when said spout and upper sealing ring are in said second position, and the opening in said cup connects the chamber in said cup to the inside of said jacket outside said flexible containers, so that pressurizing fluid is admitted to the dispensing passage in said spout when said spout is in said first radial position.

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