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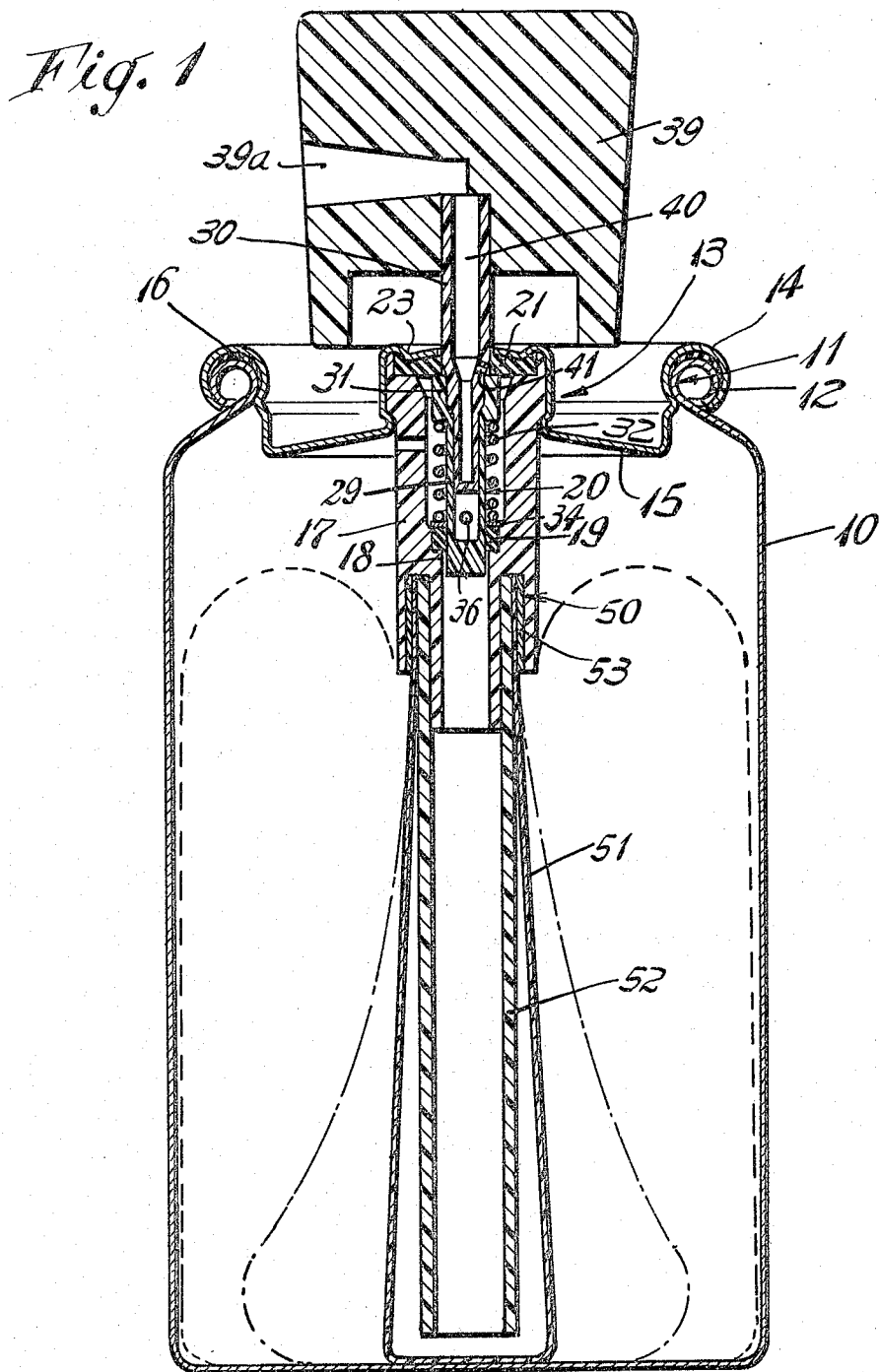
P. MESHBERG

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DISPENSING MEANS AND VALVE MEANS THEREFOR

Filed Sept. 13, 1965

2 Sheets-Sheet 1



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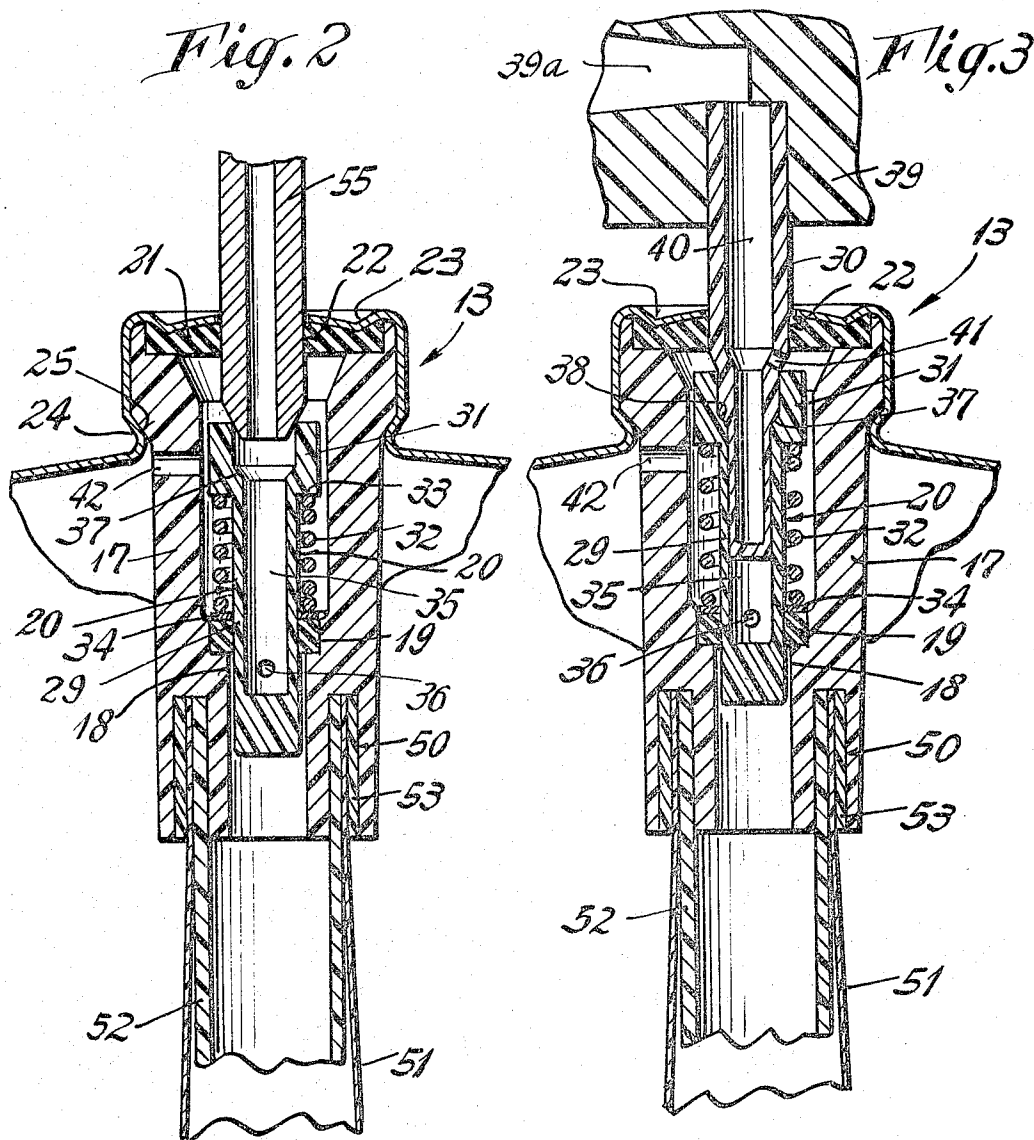
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DISPENSING MEANS AND VALVE MEANS THEREFOR

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The present invention relates to a new package for dispensing material and particularly to a package having pressure means separate from the material to be dispensed and valve means controlling the pressure means and the dispensing of the material therefrom.

Because of the nature of the material to be dispensed it is impossible or impractical to have the propellant material in contact with said material to be dispensed. Efforts to accomplish this have been through the use of piston dividers in the container or by separate bags disposed within the container both having their own valves, usually on the bottom of the container by which they are charged. Both of these constructions add substantial cost to the manufacture of the package.

It is an object of the present invention to overcome these disadvantages and to provide a package having a simple and efficient valve means by which the pressure means, separate from the material in the container, can be charged after the material has been inserted into the container and which valve means also controls the dispensing of the material from the container under the pressure in said pressure means.

It is a further object of the invention to provide a novel valve structure capable of controlling the charging and sealing of a separate pressure means and also the dispensing of material from the package on which it is mounted.

Other features and advantages of the invention will be apparent from the specification and claims when considered in connection with the accompanying drawings in which:

FIGURE 1 is a longitudinal sectional view of the package of the present invention with the valve in normal position.

FIG. 2 is an enlarged sectional view of the valve in position for charging the pressure means.

FIG. 3 is a view similar to FIG. 2 showing the valve in position to dispense material from the container.

Frequently because of the nature of the material to be dispensed it is required or desired to keep it separate from the propellant. This is true of some foodstuffs, pharmaceuticals or the like and also of some materials the viscosity of which would be altered by the propellant. This is accomplished in accordance with the present invention by having a container equipped with a novel valve means for controlling the dispensing of the material from the container and for controlling the charging and sealing of a separate pressure means within the container.

While the present invention may be employed to dispense material under pressure from various types of containers, in the herein illustrated form of the invention the container comprises a can 10 having an opening 11 at one end provided with a bead 12 therearound. The material to be dispensed is put into the can through the opening and a valve unit 13 is thereafter mounted on the can by having the edges 14 of the mounting cup 15 thereof rolled into sealing relation with the bead. If desired a sealing compound 16 can seal the join therebetween.

The valve cup 15 carries the valve mechanism comprising a housing 17 having a bore 18 therethrough. Intermediate the ends of the housing there is provided a sealing washer 19 forming a seal for the bore 18 of the housing when cooperating with a valve stem 20 inserted in the bore. The outer end of the housing is closed by a

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sealing washer 21 having a bore 22 through which a portion of the valve stem projects, which sealing washer is clamped in sealing relation by the valve cup which is crimped at 23, 24 into engagement with the washer and into engagement with a shoulder 25 on the housing.

In accordance with the preferred form of the invention the valve stem 20 is a two part stem. The inner part 29 is disposed within the housing and has the inner portion thereof slidable in the sealing washer 19 and an enlarged head 31 at the outer end thereof which is normally pressed into sealing relation with the undersurface of the sealing washer 21 by an urging means. The urging means, as herein illustrated, comprises a spring 32 mounted within the bore in the housing and bearing on a shoulder 33 on the undersurface of the enlarged head 31 of the inner valve part and having the other end bearing on a washer 34 engaging the sealing washer 19 in the housing. The inner part has a passage 35 therein opening in the outer end and extending to a point spaced from the inner end thereof, as shown in the drawings, and a lateral passage 36 connecting the passage 35 to the outside of the inner valve part.

The outer part 30 of the stem has its inner end inserted with a tight fit into the passage 35 with a shoulder 37 in the passage 35 cooperating with a shoulder 38 on the outer part to limit the insertion thereof. The outer portion of the stem extends through the bore 22 of the sealing washer 21, as shown in FIG. 1, and projects from the container to receive the usual actuator button 39. The outer portion has a central passage 40 communicating with the button 39 and has one or more lateral passages 41 therein located adjacent the head 31 to be normally sealed by the washer 21 and, when the stem is moved inwardly, communicates the passage 40 in the outer portion of the valve stem with the bore 18 of the valve housing.

The valve housing has one or more passages 42 in the side wall communicating with the interior of the container adjacent the top thereof and through which the material in the container can pass during the dispensing of the material from the container under pressure as will be explained.

In order to provide a pressure means for dispensing the material from the container without having the material in the container contaminated by any pressure forming means, the present invention provides an annular recess 50 in the inner end of the housing surrounding the bore 18 and into which is secured the end of a flexible, expandable impervious bag member 51. Preferably a tube 52 is disposed within the bag and the tube and bag member are of a length to terminate adjacent the bottom of the container as shown in FIG. 1 and have their upper ends suitably sealed to the housing by a gasket 53 disposed in the annular recess. The tube is preferably a substantially stiff tube so as to insure that the bag will be moved into its position adjacent the bottom container as shown in FIG. 1 when the valve unit is inserted after the container has been filled with the material to be dispensed.

After the valve housing and the flexible bag have been inserted in the material, it is desired to charge the flexible bag with a pressure forming material. In accordance with the present invention this is accomplished, as shown in FIG. 2, before the outer part of the valve has been inserted in the inner part. A filling nozzle 55 of any suitable filling machine (not shown) is inserted through the bore 22 of the sealing washer 21 and into sealing relation with the head 31 on the end of the inner valve member. Pressure is applied to the ejection nozzle to move the inner valve stem inwardly against spring 32 to the position shown in FIG. 2 in which the lateral passage 36 on the inner part of the valve stem is disposed below the inner seal 19 on the housing. A propellant of pressure forming material in the form of a liquid or an ex-

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pandable gas under pressure is inserted by the filling nozzle into the impervious bag and causes the bag to be pressurized to the required amount so that when the material therein is fully expanded, substantially all of the material in the container will be dispensed therefrom.

During the filling of the bag, the material in the container to be dispensed therefrom will not be dispensed even though under pressure from the material in the bag because of the sealing relation between the washer 21 and the filling nozzle and the filling nozzle and the enlarged head 31.

As soon as the filling of the bag is completed, pressure on the nozzle is released and the inner part of the valve stem moves upwardly under the urge of the spring to a point wherein the lateral passage 36 in the stem is sealed by the inner seal 19, thus sealing the pressure forming medium in the bag. The valve therefor seals both the material in the container and the charged bag. The outer stem member, with or without the button 39, is then assembled with the inner member 29. It will be noted that the inner end of the passage 40 of the outer stem member is closed so that there is no communication to the atmosphere from the expansible bag even though the stem might be pushed to cause the lateral passage 36 to move below the seal during the operation of the valve.

When it is desired to dispense material from the container, the valve stem is moved by the actuator button to the position of FIG. 3 in which the lateral passages 41 communicate with the bore 18 so that the material, under pressure of the propellant in the bag, passes through the side passage 42 in the housing and outwardly through the passages 41 in the stem to the button or actuator 39 mounted on the end of the stem to be dispensed therefrom through a suitable nozzle 39a. As the material is dispensed from the container, the bag will expand first to the position shown in dot and dash lines in FIG. 1 and then to the position shown in dash lines, thus forcing the material in the container therefrom during the operation of the valve. The bag 51 is preferably slightly larger at the inner end, as shown in the drawings, and is of such a character that it will expand more readily at the inner end than upwardly of the bag so as to insure that the material will be forced out of the container from the bottom of the container and progressively upwardly as the bag expands, thus insuring the dispensing of all of the material in the container.

If for some reason it should be desired to recharge the bag with expandable material before all of the material has been dispensed from the container, this can be readily achieved by merely removing the outer part of the stem and applying the filling nozzle to the inner part of the stem and repeating the charging operation.

Also by adjusting the number and size of the passages 40, 41 and 42, materials of various viscosity and rates of discharge can be readily accommodated.

It will be seen, therefore, that with a single simple valve unit of the present invention a highly desirable dispensing package can be provided.

Variations and modifications may be made within the scope of the claims and portions of the improvements may be used without others.

I claim:

1. A dispensing device comprising a container having a material therein to be dispensed therefrom, a reciprocating valve unit mounted on the container and having means communicating with said container to control the dispensing of the material therefrom, and a flexible, expansible bag disposed in said container and connected to said valve unit, said valve unit having a removable portion providing means to connect said bag to an external source of pressure producing material to be charged therefrom and to thereafter be replaced to seal the bag in dispensing position of said valve unit whereby pressure produced in said bag is applied to said ma-

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terial in the container to expel said material from the container under control of said valve unit.

2. A dispensing device comprising a container having a material therein to be dispensed therefrom, a valve unit mounted on the container and having a housing provided with means communicating with said container and a slidable reciprocating valve stem having means to control the dispensing of the material therefrom, and a flexible, expansible bag disposed in said container and connected to said housing, said slidable valve stem having a portion to temporarily connect said bag to an external source of pressure producing material to be charged therefrom and a portion to thereafter permanently seal the bag whereby pressure produced in said bag is applied to said material in the container to expel said material from the container under control of said valve unit.

3. A dispensing device comprising a container having a material therein to be dispensed therefrom, valve means mounted on the container, said valve means comprising a tubular housing having a bore therethrough and having passages connecting said bore with said container, a two part valve stem having an inner part disposed within the bore in the housing, an outer seal closing the outer end of said housing and having a hole therein slidably sealing an outer part of said valve stem projecting from said container and having dispensing passages therein, said outer part of said valve stem having its inner end insertable into a longitudinal passage in said inner part, said inner part having an enlarged outer end normally urged by spring means into sealing engagement with the undersurface of said outer seal, said housing having an inner seal cooperating with said inner valve part to seal the other end of said bore in the housing, a flexible, expansible bag disposed in said container and connected to the inner end of the bore of said housing to communicate with said bore inwardly of the inner seal, said longitudinal passage in the inner part of the valve stem having a lateral passage communicating therewith and normally disposed above said inner seal, said lateral passage being adapted to communicate said longitudinal passage, when moved below the inner seal, with said bag whereby an external source of pressure producing material may be applied to the longitudinal passage before the outer part is inserted therein to charge the bag therefrom and to thereafter seal the bag whereby pressure produced in said bag is applied to said material in the container to expel said material from the container under control of said valve means.

4. A dispensing device comprising a container having a material therein to be dispensed therefrom, a single valve unit mounted on the container, and a flexible, expansible bag disposed in said container and connected to said single valve means, said single valve unit having means communicating with said container to control the dispensing of material therefrom and a portion to temporarily connect said bag to an external source of pressure producing material to be charged therefrom and a portion to thereafter permanently seal the bag whereby pressure produced in said bag is applied to said material in the container to expel said material from the container under control of said valve unit.

5. A dispensing device for a container having a material therein to be dispensed therefrom comprising a valve unit to be mounted on the container and having means communicating with said container to control the dispensing of the material therefrom, and a flexible, expansible bag connected to said valve unit to be disposed in said container when said valve unit is mounted thereon, said valve unit having a portion to temporarily connect said bag to an external source of pressure producing material to be charged therefrom and a portion to thereafter permanently seal the bag whereby pressure produced in said bag can be applied to said material in

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the container to expel said material from the container under control of said valve unit.

6. A dispensing device for a container having a material therein to be dispensed therefrom under pressure from an expansible bag therein comprising valve means 5 mounted on the container and including a tubular housing having a bore therethrough, a two part valve stem having an inner part slidably disposed within the housing, an outer seal closing the outer end of said housing and 10 having a hole therein slidably sealing an outer part of said valve stem projecting from said container and having dispensing passages therein and having the inner end insertable into a longitudinal passage in said inner part, said inner part having an enlarged outer end normally 15 urged by spring means into sealing engagement with said outer seal, said housing having an inner seal cooperating with said inner valve part to seal the other end of said bore in the housing in all positions of said inner part, said housing having means adjacent the outer end communicating said bore with said container, a flexible, ex- 20 pansible bag connected to the inner end of said housing to communicate with said bore inwardly of the inner

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seal, said inner part of the valve stem having a lateral passage communicating with said longitudinal passage therein and normally disposed above said inner seal, said lateral passage being adapted to communicate said longitudinal passage when moved below the inner seal with said bag whereby said bag can be connected by said inner part of the valve unit, before the outer part is inserted in the passage therein, to an external source of pressure producing material to be charged therefrom and to thereafter seal the bag whereby pressure produced in said bag is retained to be applied to said material in the container to expel said material from the container under control of said valve means.

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