

Dec. 11, 1956

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2,773,722

AEROSOL DISPENSER

Filed March 2, 1955

Fig-1-

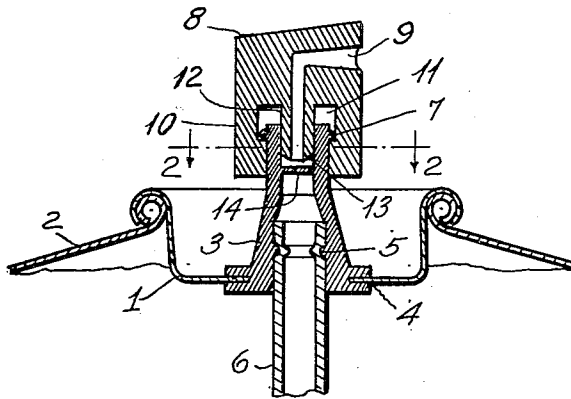


Fig. 2.

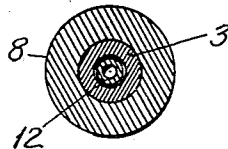


Fig.3.

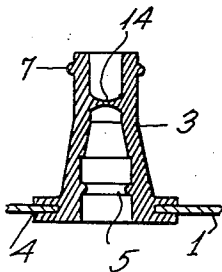
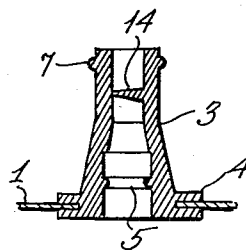


Fig-4-



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2,773,722

AEROSOL DISPENSER

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Application March 2, 1955, Serial No. 491,566

3 Claims. (Cl. 299—95)

This invention is an aerosol dispenser and, while adapted to dispense aerosols generally, was primarily conceived for the dispensing of fire extinguishing aerosols.

Ordinarily, aerosol dispensers are provided with dispensing valves which may be opened from time to time to dispense relatively fractional quantities of the contents of the container as and when required. However, in a fire extinguisher, it is desirable and entirely practical to dispense the entire contents of the container at one time and the present invention is constituted for such an operation.

The object of the present invention, therefore, is to provide an aerosol dispenser which is normally sealed, but is provided with a push button and associated discharge nozzle, the push button being so constituted that, when manually operated, it will break a seal and thus permit the entire contents of the container to be discharged therefrom.

Speaking generally, the present invention comprises an appropriate container to the top of which is attached a tubular outlet having a central passage normally blocked by a disruptable diaphragm seal which serves to hermetically seal the contents of the container. The usual dip tube is associated with the lower end of the tubular outlet and a push button, provided with an appropriate nozzle, is slidably associated with the upper end of said outlet. The push button has a plunger extending into the upper end of the outlet and adapted, when forcibly pressed against the diaphragm seal, to rupture the latter and permit the discharge of the contents of the container. The push button and tubular outlet are so associated that, when the seal is broken, the pressure within the container serves to produce a tight joint between the tubular outlet and the push button, to preclude leakage at this point and confine the discharge of the material to the nozzle.

Features of the invention, other than those adverted to, will be apparent from the hereinafter detailed description and appended claims, when read in conjunction with the accompanying drawing.

The accompanying drawing illustrates different practical embodiments of the invention, but the construction therein shown is to be understood as illustrative, only, and not as defining the limits of the invention.

Fig. 1 is a central section through a dispenser embodying the present invention.

Fig. 2 is a transverse section on the line 2—2 of Fig. 1.

Figs. 3 and 4 are central sections through tubular outlets showing seals of different forms.

Referring to the drawing, 1 indicates a cup, such as commonly used on aerosol dispensers. Such cups are generally made of metal, the upper edge of which is adapted to be rolled to form a hermetic seal with the upper portion of the body 2 of the container.

In accordance with the present invention, I mount upon this cup a tubular outlet 3 preferably in the form of a molded plastic and inasmuch as it must be rigidly secured to the cup, the cup is provided with a central perfora-

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tion and the lower end of the tubular outlet is molded in place on the cup as shown, to provide a permanent mounting therewith as shown at 4. Within the lower end of the tubular outlet 3 is formed an annular ridge 5 adapted to hold in place the upper end of the usual dip tube 6 which extends to the bottom of the container body. The upper end of the tubular outlet is provided with an external bead 7 extending entirely around its periphery.

Mounted for sliding movement on the tubular outlet is a push button 8, provided with an axial discharge duct merging into a laterally directed nozzle 9. The push button is provided at its lower end with a skirt 10, undercut as shown at 11. The diameter of the undercut portion is substantially the same as the outer diameter of the bead 7, while below the undercut portion the internal diameter of the skirt is substantially the same as the outer diameter of the tubular outlet. The push button is pressure molded from an appropriate plastic, such as an acetate, and embodies sufficient resiliency to permit the lower portion of the skirt to be sprung downwardly over the bead 7, so that the bead may be positioned within the undercut portion 11, which is made sufficiently deep to permit of vertical sliding movement of the push button on the tubular outlet.

Arranged coaxially of the skirt and extending downwardly from the push button so as to project into the passage of the tubular outlet is a tubular plunger 12, the lower end of which is chamfered as shown at 13. Immediately below the lower end of which plunger the passage through the tubular outlet is closed by a diaphragm seal 14 in the form of a partition molded integrally with the tubular outlet. This seal may be of any appropriate form. In Fig. 1 it is shown as having parallel upper and lower planes. In Fig. 3, it is tapered to its center, while in Fig. 4, it is tapered to one side. The present invention is not limited to the particular shaping, the criterion being that, when the push button is pressed to force the lower end of the plunger against this seal, the latter will be broken to release the contents of the container. In practice, this seal may be relatively thin because the passage through the tubular outlet is of relatively small diameter and the pressure actually exerted thereon by the pressure packed material in the container can be readily withstood by a diaphragm seal sufficiently thin so that it can be readily disrupted by finger pressure applied on the upper end of the push button.

The parts are so proportioned as to normally occupy the relative positions shown in Fig. 1 with the lower end of the plunger resting lightly upon the diaphragm or slightly spaced above the same.

When it is desired to discharge the contents of the container, it is only necessary to press downwardly upon the push button 8 with sufficient force to rupture the diaphragm seal 14. As soon as this occurs, the material in the container is released and is discharged upwardly through the dip tube, through the tubular outlet 3, through the discharge duct of the push button and out through the nozzle.

After the diaphragm has been broken and the material starts to flow, the finger pressure on the push button should be discontinued to permit the gaseous pressure within the container to act upon the push button and force it upwardly, so that the base of the undercut portion 11 will tightly seal against the under side of the bead 7 and form therewith a sufficiently tight joint to preclude leakage at this point. When the entire contents have been discharged, the container is discarded for it is adapted for single use purposes.

An important feature of the present invention resides in the simplicity of the structure and its ease and in-

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fallibility of operation. There are no valves to clog or fail to operate for, when the seal is broken, there is an unobstructed outlet provided for the pressure packed material. All of the parts entering into the structure may be manufactured by quantity production and at low cost and assembled without difficulty by automatic machinery.

The foregoing detailed description sets forth the invention in its preferred practical forms, but the invention is to be understood as fully commensurate with the appended claims.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

1. An aerosol dispenser comprising: a container closure cup having an opening in its base, an upstanding tubular outlet provided with an annular channel embracing the margin of said opening to permanently mount the outlet rigidly on the cup, a disruptable seal closing the passage through the tubular outlet intermediate the ends of the latter, an external bead on the tubular outlet near the free end thereof, and a push button permanently mounted on said outlet and having a skirt closely embracing the

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outlet below the bead and undercut to house the bead and permit axial movement of the push button relative to the tubular outlet, said push button being provided with a plunger extending into the passage of the outlet and adapted to disrupt the seal therein when the push button is pressed to permit the passage of liquid from an associated container through a discharge duct formed in the push button.

2. An aerosol dispenser according to claim 1, wherein both the outlet and push button are plastic moldings.

3. An aerosol dispenser according to claim 2, wherein the channel of the tubular outlet has a molded-in-place bond with the margin of the opening of the cup.

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