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DISPENSER WITH NIPPLE TYPE CONTROL VALVES

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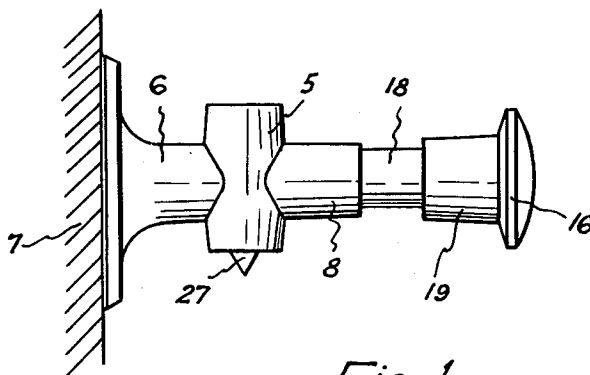


Fig. 1.

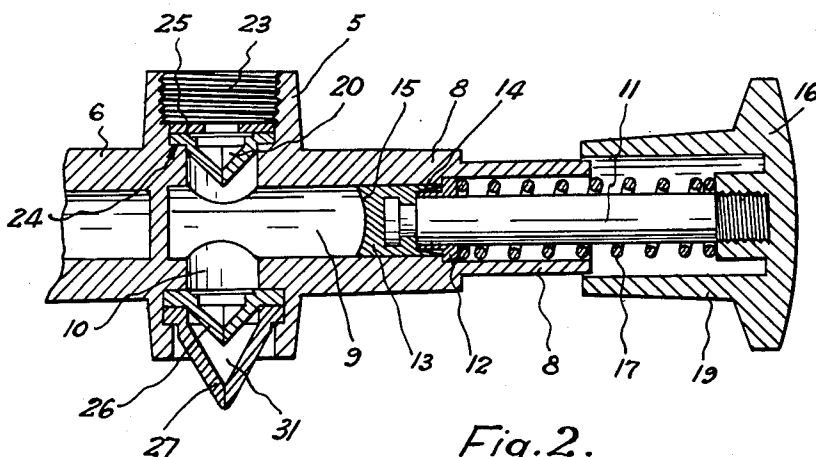


Fig. 2.

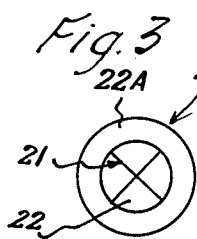


Fig. 3

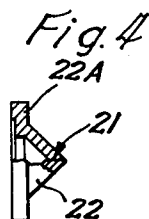


Fig. 4

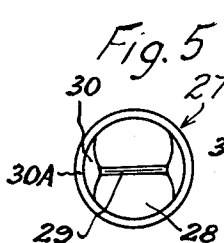


Fig. 5

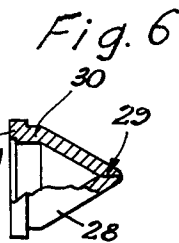


Fig. 6

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DISPENSER WITH NIPPLE TYPE CONTROL VALVES

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1 Claim. (Cl. 222-380)

This invention relates to dispensers whereby fluent materials such as tooth-paste, hand-cream and the like which are customarily packed in collapsible containers may be dispensed from such containers in a convenient manner.

It has been proposed to provide dispensers as aforesaid wherein a resilient bag having nipple-type one-way inlet and outlet valves is put into communication with the interior of the container, and by means of a plunger is squeezed so as to expel material through the outlet valve.

On relaxation of the squeezing pressure the bag expands and a further charge of material is then drawn in through the inlet valve.

Likewise, it is known to provide dispensers comprising a plunger operated piston slidable in a cylinder extending from, and in communication with the interior of, a barrel having inlet and outlet valves and which function in a manner analogous to that of the aforesaid resilient bag type of dispenser. The barrel type dispenser has not previously been fitted with nipple-type valves.

Said nipple-type inlet and outlet valves may comprise a hollow, conical, pyramidal, or wedge shaped member of rubber or resilient plastics material or the like with a slit (or two or more slits) extending across its apex. In use the apex of each valve member points downstream and the members then function as cheap non-return valves. Nipple-type valves of the type under discussion have efficient cut-off and non-return characteristics in regard to the flow of pastes and like fluent materials but their non-return characteristics are not always satisfactory with respect to the flow of air. Thus, relaxation of the plunger sometimes causes air to enter the resilient bag through the outlet valve instead of causing paste to enter the bag through the inlet valve. This leads to inefficient discharge of the fluent material. Obviously the same problem would apply to rigid barrel type dispensers were they fitted with nipple-type valves. Furthermore, the resilient bag of some earlier dispensers incorporating such valves have been objectionable in that they are subject to cracking or rupture with consequent leakage of the material therefrom.

An object of the present invention is to provide a dispenser which utilizes nipple-bag valves but does not include a resilient bag.

Another object of the present invention is to provide more positive and leak-free outlet valve arrangements than those of prior known dispensers using nipple-type valves.

With the above objects in mind a dispenser is provided having a rigid barrel, a nipple-type inlet valve at the inlet ends of the barrel, means to put said inlet end of the barrel in communication with the interior of a collapsible container, at least two nipple-type outlet valves in series at the outlet end of the barrel, a cylinder communicating with the barrel interior intermediate its ends, and a manually operable piston slidable in said cylinder.

By way of example, a dispenser according to one embodiment of the invention is described in more detail hereinafter with reference to the accompanying drawings.

FIG. 1 is a side elevation of the said embodiment of the invention.

FIG. 2 is a sectional elevation through the barrel and

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cylinder of the dispenser of FIG. 1 drawn to an enlarged scale.

FIG. 3 is a view from below of an inlet valve.

FIG. 4 is an elevational view partly in section of an inlet valve.

FIG. 5 is a view from below of an outlet valve.

FIG. 6 is an elevational view partly in section of an outlet valve.

The illustrated embodiment of the invention is intended for dispensing tooth-paste or the like and comprises a barrel 5 having a flanged projection 6 on it whereby it may be fastened to a bathroom wall 7 or the like with the barrel 5 spaced from the wall 7 and with its bore disposed uprightly.

A cylinder 8 is integral with the barrel 5. When the barrel 5 is secured to the wall 7 the cylinder 8 extends horizontally from the barrel 5 away from the wall 7. The cylinder 8 joins the barrel 5 intermediate the latter's ends and the cylinder's bore 9 extends through the barrel wall to communicate with the barrel's bore 10. The barrel 5, projection 6 and cylinder 8 are preferably a one-piece moulding of rigid plastics material, or the like. The flanged projection 6 may be secured to the wall 7 by fastening screws or the like or may be adhered to the wall if so desired.

A plunger 11 extends slidably through a gland ring 12 into the bore of the cylinder 8. The plunger 11 is provided with a piston head 13, which is a neat sliding fit within the bore 9. The piston head 13 may be of nylon or other resilient, wear-resistant material and may be provided with a flange 14 and a flexible lip 15 to provide an effective seal against the cylinder wall.

The plunger 11 has a push button 16 on its exposed end. The push-button 16 and the gland 12 function as abutments for a helical return spring 17 sleeved upon the plunger 11.

The spring 17 is concealed at all times by skirts 18 and 19 on the cylinder 8 and push button 16 respectively.

A nipple-type inlet valve 20 (see FIGS. 3 and 4) is situated at the inlet end of the barrel 5. That inlet valve comprises a hollow pyramidal, resilient, plastics element 22 having a slit 21 extending through the apex of the pyramid. The pyramidal element 22 merges into a circular base flange 22A extending outwardly from the base of the pyramidal element 22.

The inlet end of the barrel 5 has means to put it into communication with the interior of a collapsible container. Those means comprise an internally screw-threaded spigot 23 adapted to receive the screw-threaded neck of a tooth-paste tube or the like. The inner diameter of the spigot 23 is somewhat larger than the diameter of the bore 10 and thus an annular landing 24 is provided upon which the underface of the base flange 22A rests when the inlet valve 20 is in position at the inlet end of the barrel 5. A sealing washer 25 may be provided which is contacted by the end of the neck of the tooth-paste tube when screwed into position, so that the inlet valve 20 is held in position and a sealed connection is established between the bore 10 and the interior of that tube.

Two outlet or nipple type valves 26 and 27 respectively are arranged in series at the outlet end of the barrel 5. The upstream outlet valve 26 may be identical with the inlet valve 20. The downstream outlet valve 27 (see FIGS. 5 and 6) comprising a hollow wedge-shaped resilient, plastics element 28 having a slit 29 extending along the knife-edge of the wedge, and merging into an open-ended cylindrical skirt 30 extending axially from the base of the wedge. The skirt 30 has a circumferential outwardly projecting base flange 30A thereon.

As can be seen in FIG. 2 the two outlet valves assemble together so that their combined base flanges are a "snap-

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fit" into a circumferential retainer groove in the bore of the barrel 5. Accordingly the two outlet valves are held in position and by virtue of the greater dimensions of the downstream valve 27 by comparison with the upstream valve 26 are adapted to trap a charge of fluent material in the closed space 31 between them.

Once the barrel and cylinder are charged with fluent material, inwards motion of the plunger 11 serves to pump a charge of fluent material from the barrel and cylinder bores outwardly through the two outlet valves. As the plunger returns to its illustrated position the mass of material between the two outlet valves, in attempting to flow back into the barrel 5, closes the upstream outlet valve 26 positively, so ensuring that a fresh charge of material is drawn from the collapsible container through inlet valve 20. Also if any air does leak back through the downstream outlet valve 27 the charge of material in the space 31 acts as a barrier therefor.

I claim:

A dispenser for fluent materials adapted to be secured to a wall or the like comprising a rigid barrel having an inlet end, an outlet end, and a bore disposed uprightly connecting said ends, a nipple type inlet valve controlling flow into said barrel, means comprising an internally threaded spigot on the barrel having a larger internal diameter than the bore of said barrel and adapted to receive the externally threaded neck of a collapsible con-

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tainer, a base flange resting on an annular landing at the inner end of said spigot for securing the inlet valve in position, at least one upstream and one downstream nipple-type outlet valve in series controlling flow from the outlet end of said barrel, said outlet valves each having a base flange secured within a single retaining groove in the bore of the barrel and said downstream valve being larger than the downstream valve so as to provide an enclosed space between the valves, a cylinder communicating with the barrel interior intermediate its ends, and a manually operable spring-loaded piston in said cylinder capable of pumping fluent material from the barrel and cylinder bores outwardly through the outlet valves.

References Cited by the Examiner

UNITED STATES PATENTS

1,748,682	2/1930	Smith	222—490
2,216,890	10/1940	Philipps	222—490 X
2,456,504	12/1948	Hammerstein	222—490
2,765,964	10/1956	Hanlon	222—340

FOREIGN PATENTS

50,839 10/1935 Denmark.

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