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DISPENSING HEAD FOR COLLAPSIBLE TUBES

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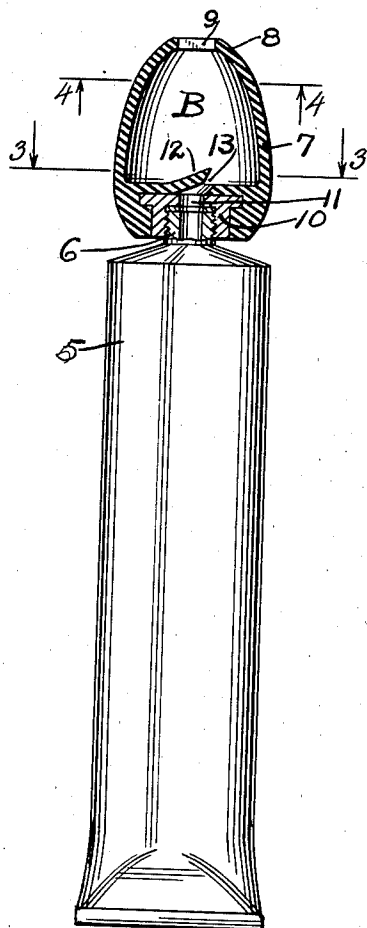


Fig. 1.

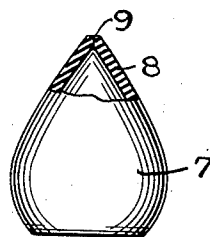


Fig. 2.

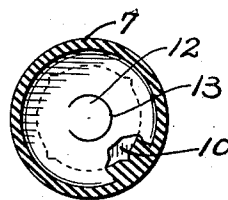


Fig. 3.

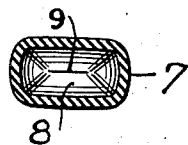


Fig. 4.

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DISPENSING HEAD FOR COLLAPSIBLE
TUBES

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5 Claims. (Cl. 221-60)

This invention relates to improvements in paste dispensing devices and has reference more particularly to an attachment that can be readily applied to and removed from an ordinary collapsible tube of the type in which tooth paste, shaving cream and similar articles are sold.

Pastes of different kinds are frequently dispensed in collapsible metal tubes provided with screw caps and when a portion is desired the cap is removed and the tube squeezed until the required amount of paste is extruded.

Pastes have a way of flowing over the edge of the tubular neck and onto the sides and into the threads, which leaves the whole dispensing end smeared. Caps have a very annoying tendency for getting lost and attempts have been made to anchor them to the tubes when they are not in use. The dispensing opening in the ordinary tube is also quite large with the result that more paste is extruded than necessary, which is wasteful and sometimes annoying.

It is the object of this invention to produce an attachment, in the form of a hollow pear shaped member of rubber or rubber-like material having an internally threaded inlet opening at one end that can be screwed onto the discharge nipple of the collapsible tube. The wall of the chamber is provided with a discharge slit, preferably located at the tip, which is normally closed but which opens in response to internal pressure. A flap valve, or other form of check valve, is provided at the inlet opening and so arranged that it opens to permit paste to enter but closes in response to internal pressure.

Another object is to provide a two compartment paste containing and dispensing container having compartments of different capacities that stores the paste in the larger compartment until the material in the smaller compartment has been dispensed, or until it is desired that more material shall be transferred from the larger to the smaller compartment, and which in addition does not permit material to be transferred from the smaller to the larger compartment.

Another object is to produce a dispensing device of the kind pointed out that will be self sealing and easily kept clean.

The above and any other objects that may become apparent as this description proceeds are attained by means of a construction and an arrangement of parts that will now be described in detail and reference for this purpose will be had to the accompanying drawing in which the invention has been illustrated and in which:

Figure 1 is a view showing the collapsible tube

in elevation and the smaller or dispensing compartment in section;

Figure 2 is a side elevation, partly in section, showing the dispensing container detached from the collapsible tube;

Figure 3 is a section taken on line 3-3 Fig. 1; and

Figure 4 is a section taken on line 4-4 Fig. 1. In the drawing reference numeral 5 designates an ordinary collapsible metal tube having a tubular discharge nipple 6 whose outer surface is threaded. Such tubes are usually provided with screw caps of well known construction. In Figure 1 the usual screw cap has been removed and replaced by the dispensing attachment that forms the subject of this invention and which will now be described.

The dispensing device consists of a hollow member 7 which is preferably made from rubber so compounded and heat treated that it is tough and flexible and has sufficient elasticity to resume its original shape after it has been distorted by external pressure. The hollow member may be of almost any shape and size but has been illustrated as pear shaped, terminating in a wedge like tip 8, somewhat as shown in Fig. 4. The extreme tip is cut with a sharp instrument so as to provide a slit 9 that is normally closed and which acts as a check valve, permitting material to flow outwardly in response to internal pressure but closing more firmly in response to an outside pressure.

Moulded in the base of member 7 is a cap 10 which is shaped like the ordinary screw cap that is used as closures for this kind of tube. Cap 10 may be made of metal, hard rubber, Bakelite, Duprene or any other suitable material, preferably one to which the rubber of member 7 will vulcanize. Cap 10 is provided with an opening 11, which has been shown as of the same size as the opening in the discharge nipple. It will be observed that the material of which the member 7 is made completely covers the outer end of the cap 10 and that a flap 12 is formed by an arcuate bevel cut 13. Flap 12 functions as a check valve and seats in response to internal pressure.

Attention is directed in particular to the check valve construction and to the fact that it operates positively to prevent material from returning to the tube as distinguished from valves that move to open position when pressure is applied to the wall to expel material.

Let us now assume that the tube 5 is filled with a semi-liquid or a paste, the nature of which is

immaterial. After removing the sealing cap the dispensing head illustrated in Fig. 2 is screwed onto the discharge nipple, forming with the tube an assembly like that shown in Fig. 1. The chamber B in member 7 is empty. Pressure is now applied to tube 5, sufficient to transfer material from it to chamber B. Flap 12 opens to allow material to enter chamber B. It is not necessary to completely fill chamber B. Let us now remove the pressure from tube 5 and gently compress member 7. If chamber B is not completely filled with paste, the air will first escape through slit 9, after which paste will be extruded in a flat thin ribbon. If the paste is tooth paste it is deposited directly on the bristles of a tooth brush and all of the paste is wiped from the tip of the dispenser. The pressure on the side of member 7 is now released, whereupon it tends to resume its original form. The slit 9 does not permit air to enter and the wall therefore expands until the difference in the pressure on the inside and on the outside prevents further expansion. Chamber B is hermetically sealed and there is no tendency for its contents to flow outwardly, wherefore the tube can be carried in a satchel along with clothes without any danger of soiling them. Unless chamber B is completely filled with paste a considerable reduction in volume is necessary to extrude any paste therefrom.

The paste in chamber B can be almost entirely used up before any more needs to be transferred from the tube.

Particular attention is directed to the flap or check valve 12 which prevents material from flowing back into tube 5 as this assures a progressive outward flow of the material and also assures that none of it will be returned to the tube. This is particularly valuable if the device is used to dispense mucilage glue or adhesive pastes which have a tendency to prevent the slit from opening, and is desirable with all materials.

It is also possible to fill the chamber B and remove it from the tube 5, which is often a great convenience where the tube 5 is large.

The device described can be manufactured in quantities and sold independently of the tube 5, to which it may be afterwards attached. The cleanliness of this attachment, and the economical manner in which pastes may be dispensed by it recommends it to the users of tooth pastes, shaving creams and analogous articles and also for the dispensing of glue and other adhesives.

Having described the invention what is claimed is:

1. In a dispensing device for pastes, in combination, a collapsible tube having a discharge opening at one end, a hollow dispensing head of flexible material attached to the tube, the dispensing head having a normally closed discharge slit, the interior of the dispensing head being in

communication with the interior of the tube through the discharge opening, and a check valve in the passage from the tube to the interior of the discharge head, said valve permitting material to flow from the tube to the interior of the dispensing head when the tube is collapsed but not in the reverse direction when the dispensing head is compressed.

2. A paste dispensing device comprising two collapsible containers of different capacities, whose interiors are in communication through an opening of restricted area, the smaller container being formed from flexible resilient material, the wall of the smaller container having a discharge opening, and a check valve device in the communicating opening that permits material to flow from the larger to the smaller container when the volume of the larger container is reduced but prevents it from flowing in the opposite direction when the smaller container is reduced in volume.

3. A dispensing head for use with collapsible tubes containing paste-like materials, comprising a hollow member of flexible resilient material, the wall of said member having an inlet opening and spaced therefrom a normally closed outlet opening, and a check valve associated with the inlet opening, the check valve being arranged to permit material to enter and to close when the wall of the hollow member is compressed whereby the contents will be forced to leave through the outlet opening only.

4. A dispensing head for use with collapsible tubes containing a paste-like material and provided with an externally threaded discharge nozzle, comprising a hollow member of flexible resilient material having the characteristics of rubber, one end having an inlet opening having means for effecting a connection with the threaded discharge nozzle, a check valve associated with the intake opening arranged to close in response to internal pressure when the hollow member is compressed, the dispensing head having a normally closed discharge slit arranged to open in response to internal pressure.

5. A dispensing head for use with collapsible tubes containing a paste-like material and provided with an externally threaded discharge nozzle, comprising a hollow member of flexible resilient material having the characteristics of rubber, one end having an inlet opening whose inner surface is provided with threads for effecting a threaded connection with the discharge nozzle, a check valve means associated with the inlet opening which opens to permit material to enter but which closes in response to internal pressure resulting from an inward movement of the wall, the dispensing head having a normally closed discharge slit that opens in response to internal pressure.

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