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COLLAPSIBLE TUBE FOR OINTMENTS AND THE LIKE

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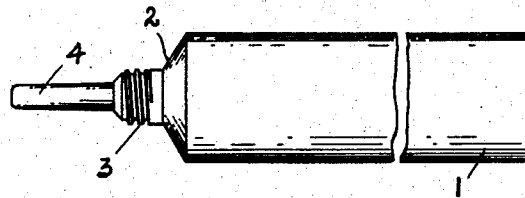


Fig. 1.

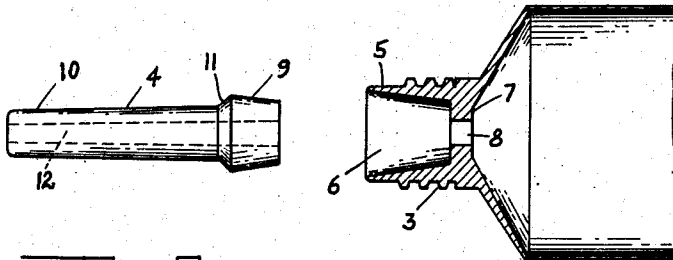


Fig. 2.

Fig. 3.

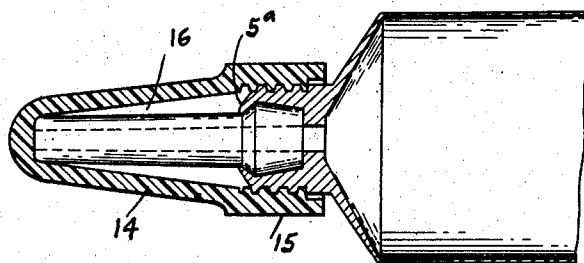


Fig. 4.

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COLLAPSIBLE TUBE FOR OINTMENTS AND THE LIKE

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2 Claims. (Cl. 222—566)

This invention is for an improvement in collapsible tubes, and is for a metal tube having a plastic nipple especially intended for the dispensing of medicinal ointment. It is, however, applicable for any material to which a tube of this kind is adapted.

Collapsible tubes having long tapered nozzles at the discharge end are widely used for the dispensing of medicinal preparations. Ophthalmic ointment for example is commonly dispensed in small tubes having a long tapered extension at the discharge end, the extension having a small bore or passageway therethrough through which the ointment is discharged when the tube is squeezed. In use the metal end of the nozzle is placed close to the eyeball so that the contents of the tube may be discharged directly into the eye. There is always a hazard from the fact that a tiny fragment of metal may lodge in the neck of the tube during the manufacture of the tube, and be expelled into the eye along with the ointment. There is also a mental element of fear in bringing a rigid metal object of this kind so close to one's eye.

According to the present invention there is provided a metal collapsible tube of more or less conventional form, but instead of having a tapered metal nozzle at the discharge end, the tube is provided with a polyethylene or similar pliable plastic discharge nozzle, this nozzle being sealed into the end of the tube in such manner that volatile oils or other ingredients of the ointment cannot escape while permitting the cap to be screwed onto the metal neck of the tube in the conventional manner.

As the discharge nipple is formed of plastic, metal fragments cannot get into it during manufacture. Should there be any small metal fragment in the tube, it would be dislodged during the process of handling the tube between the time of its manufacture and the time when the plastic nipple is inserted. The invention therefore not only eliminates the hazard from stray metal particles, but the more pliable plastic nipple can be brought closer to the eye without engendering fear. Such a tube is also useful in the treatment of mastitis in farm animals where a rigid metal discharge spout on the tube is objectionable, and for other medication requiring the insertion of the tube nozzle into a wound or orifice.

While my invention has especial utility for use with ointments and medicaments, it is adapted for any use where a long dispensing nozzle at the end of the tube is desirable, especially a flexible one.

My invention may be more fully understood by reference to the accompanying drawings, in which:

Fig. 1 is a side elevation of a tube assembly involving my invention;

Fig. 2 is a side elevation on a larger scale of the plastic nipple or nozzle;

Fig. 3 is a longitudinal vertical section through the neck end of the collapsible tube showing the construction of the tube before the insertion of the nipple; and

Fig. 4 is a longitudinal section through the discharge end of the tube assembly with the nozzle in place and showing the cap in position.

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In the drawings, 1 designates the body of a collapsible tube, 2 is the shoulder portion of the tube, 3 the exteriorly threaded neck portion, and 4 is the plastic nozzle or nipple.

The body and shoulder of the tube are of more or less conventional construction, but the threaded neck portion 3 is provided beyond the threads with an extension 5. Within the neck portion 3 there is a tapered socket 6 which decreases in diameter from the distal end of the neck toward the shoulder. There is a partition 7 integrally formed in the tube forming the bottom of the socket 6 and having a central opening 8 therein.

The nozzle or nipple 4 is formed integrally of plastic, a relatively pliable plastic such as polyethylene being preferable. It comprises a tapered base portion 9 shaped to have a tight fit in the conical socket 6. It has a spout or nipple portion 10 of smaller diameter than the base, and these is an inclined shoulder 11 at the juncture of the base and the nipple portion 10. There is a longitudinal passageway 12 extending throughout the length of this element.

The assembled tube is shown in Fig. 4. In this view the base member 9 is fitted into the socket 6 with the inner end of the base member seated against the partition 7 that forms the bottom of the socket. The lip or extension 5 on the neck is pressed in over the shoulder 11 of the plastic nipple member with the nipple portion 10 projecting beyond the end of the tube. The turned-in lip is designated 5a in Fig. 4 and it holds the plug or base 9 tight in the recess or socket 6. The inner end of the passageway 12 through the nipple element registers with the port 8 in the partition 7, and the contents of the tube can be exuded through the nipple directly from the interior of the tube.

A tapered cap 14 has an internally threaded portion 15 that engages the threads on the outside of the neck while the interior of the cap has a conical recess 16 which is of such length that when the cap is screwed onto the neck of the tube, the end of the plastic nipple will be wedged into and sealed against the end of the cavity 16.

The invention thus provides a composite tube assembly having a soft metal tube and a plastic nipple or nozzle sealed into the neck of the tube. The fit of the tapered base in the socket 6 is such as to secure a tight seal. This sealing effect is increased by reason of the fact that the material of which the nipple is formed is slightly pliable and elastic and hence may be compressed in the socket 6 while the turned-in flange 5a of the neck keeps the sealing engagement tight. The tube can be formed in the conventional way by impact extrusion, and the plastic nipple element 4 can be economically molded, while the fitting of the parts together and the spinning or turning of the end 5 of the neck inwardly to form the curved retaining portion 5a can be rapidly effected by machine operation.

The tube is of course capable of being made in various sizes, and the nipple portion 10 of the plastic member can be of any desired length, and it can be relatively stiff or flexible, as may be required, and depending upon the characteristics of the plastic selected for the purpose. The tube is ideally adapted as a container for ophthalmic ointment and for medications used in the treatment of mastitis in dairy cattle and other farm animals. Likewise the plastic nipple is ideally adapted for the dispensing of nasal jellies and other medications to be applied orifically. Since the cap screws onto the metal neck of the tube, the plastic nipple element is not subjected to twisting or torque by the application and removal of the cap, and hence is not loosened in its socket when the cap is turned. The threaded neck is removed from the discharge end of the nipple, and so does not become smeared with the contents of the tube.

I claim:

1. A collapsible tube comprising a tubular body with a shoulder at one end, a neck at the center of the shoulder, the neck having threads on the exterior thereof and having a tapered socket therein of inwardly decreasing diameter, said socket having the base thereof defined by a partition wall extending transversely of said neck, and a separate resilient plastic nipple member having a tapered plug-like base portion and a nozzle portion of less diameter than the base portion with a shoulder at the junction of the nozzle portion and the base portion, the base portion being received in the socket of the neck upon said partition wall and being of a size and tapered shape to form a tight plug in said socket, the neck having a lip extending beyond the threads and turned in over the shoulder on the nipple member, the nipple member having an axial discharge passage therethrough and the neck of the tube having an opening through said partition wall

at the inner end of the socket through which the contents of the tube may flow into said discharge passage.

2. A collapsible tube as defined in claim 1 in which the nipple element is formed of a resilient plastic with the nozzle being flexible and the base portion being conformable to the interior of the socket to assure a tight fit and an elongated cap with a threaded skirt for engagement with the threads on the tube neck, the cap enclosing the nipple with the end of the nipple abutted against the interior end of the cap when the cap is screwed down onto the neck of the tube.

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