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(54) Dispenser.

(57) A dispenser for toothpaste consists of a cylindrical housing 1 having a nozzle 3 and supported on a base in the form of a resiliently compressible cup 5. A rod 13, attached to the cup 5, extends towards the nozzle 3 and a piston 17 is slidable on the rod 13. The piston carries a steel star ring 21 which can grip the rod 13 and the wall of the housing 1.

Compression of the cup 5 causes the rod 13 to move the piston 17 towards the nozzle 3 thereby forcing paste through the nozzle 3, and relaxation of the compression allows the rod 13 to slide back through the piston 17 which in turn remains stationary within the housing 1. A regular amount of paste can be dispensed by each compression of the cup 5.

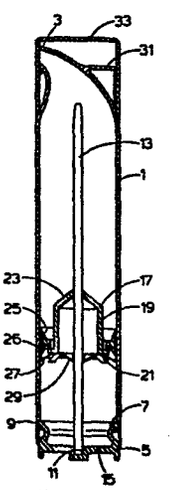

Fig.2

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DISPENSER

This invention relates to a dispenser for paste materials, such as cosmetic creams or toothpastes.

Conventional toothpaste tubes suffer from a number of disadvantages. For example, they are aesthetically unpleasing and cause undesirable waste of toothpaste which becomes trapped in the squeezed tube during use.

Free-standing toothpaste dispensers are known, in which the paste is discharged from a nozzle by applying manual pressure to a discharge valve adjacent the nozzle. However, it has been found that paste material becomes trapped between the valve and the nozzle outlet, and that drying out of this excess paste tends to cause undesirable blockage of the nozzle.

By means of the present invention it is possible to provide a free-standing dispenser which does not rely on a discharge valve for controlling the flow of paste material from the nozzle, and which thereby reduces the problem of blockage caused by drying out of the material.

According to the present invention, there is provided a free-standing dispenser for paste material, comprising a housing for the material and an outlet orifice communicating with the housing, a piston

axially movable in the housing towards the orifice and provided with restraining means to prevent axial movement in a direction away from the orifice, and a resilient, compressible member connected to the housing at the end thereof remote from the orifice and arranged so that compression of the member causes movement of the piston towards the orifice, thereby pumping paste material out of said orifice, and release of the compression on the member causes the piston to remain stationary relative to the adjacent walls of the housing.

Preferably, the housing is generally cylindrical and is free-standing on a base which consists of or includes the compressible member. Paste material may be ejected from the orifice by applying hand pressure to the housing against the resilience of the compressible member.

The compressible member may be a spring loaded pad, but preferably it comprises a resilient plastics cup having a flexible wall attached to the housing, the wall being deformable under the action of a compressible force.

The piston may have a centrally located passage through which passses an elongate guide rod attached to the compressible member, and frictional engagement between the rod and piston is designed to prevent movement of the piston away from the orifice. In addition, frictional engagement between the piston and wall of the housing may be provided which prevents movement of the piston away from the orifice.

In order to minimise wastage of paste material, the piston may be shaped to conform substantially to the internal shape of the upper end of the housing, so

that when the piston reaches its uppermost position little paste material is trapped between the piston and housing.

The housing and compressible member may, if desired, be encased in an outer shell, and the housing will suitably be a sliding frictional fit in the shell. This enables the dispenser to be used either freely in the hand or when standing on a horizontal surface, in addition to improving the aesthetic appeal of the dispenser.

The invention is now described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a front elevation of a toothpaste dispenser.

Figure 2 is a section along A-A of Figure 1, additionally showing a cover for the dispenser, and

Figure 3 is a vertical section through an alternative embodiment of toothpaste dispenser.

Referring to Figures 1 and 2 of the drawings, a toothpaste dispenser comprises a cylindrical plastics housing 1 having a curved nozzle 3 and supported on a base in the form of a resilient plastics cup 5. The cylindrical wall 7 of the cup 5 is curved inwardly and the rim of the wall is received in an annular groove 9 formed in the housing 1.

The base of the cup 5 has a socket 11 in which a plastics rod 13 is located and retained therein by friction or by a suitable adhesive. The base of the cup 5 also has a small passage 15 formed therein to permit the flow of air between the interior of the housing 1 and the exterior during use.

A piston 17 is slidably mounted on the rod 13, and consists of a plastics moulding 19 attached to a steel star ring 21. The moulding 19 has a domed upper portion 23 and a pair of outwardly flared cylindrical walls 25, 26, which contact the wall of the housing 1. The star ring 21 includes eight inclined, radially extending tangs 27 spaced circumferentially and equidistantly around the ring and which are designed so as to bite into the inner wall of the housing 1, when the piston 17 is forced towards the base of the housing thereby preventing downward movement of the piston. When the piston 17 is forced towards the nozzle 3, the tangs 27 can bend slightly downwardly to reduce the diameter of the circle circumscribing the tangs and hence permit the piston 17 to move up the housing.

The ring 21 also includes four inwardly directed, inclined tangs 29 which are spaced circumferentially around the rod 13. The tangs 29 grip the rod 13 and when the rod is pushed towards the nozzle 3 the grip increases due to the reduced inclination of the tangs and the piston 17 is thereby carried up the housing 1 by a distance equal to the longitudinal movement of the rod. When the rod 13 is moved in the opposite direction, the gap between the tangs 29 opens slightly to permit unobstructed movement of the rod 13 through the piston.

It will be appreciated that repeated upward movement of the rod 13 will cause the piston 17 to climb gradually up the housing 1 towards the nozzle 3.

Attached to the nozzle 3 is a projecting shoulder 31 which can receive downward pressure from a thumb or finger during operation of the dispenser. The dispenser is also provided with a cap 33 which clips over the nozzle 3 and helps to prevent the contents of the dispenser from drying out.

Referring to Figure 3 of the drawings, where like reference numbers have the same significance as in Figures 1 and 2, the housing 1 is slidably mounted in an outer cylinder shell 35, which also includes an internal annular groove 37 at its lower end to receive an annular locating rib 39 on the cup 5. The shell 35 is provided with a shoulder 41 to receive and locate the cap 33 on the dispenser.

In order to dispense paste material, it is necessary merely to apply downward manual pressure on the housing 1 against the resilience of the cup 5. This pressure causes the flexible wall 7 to bend inwardly, thereby permitting the rod 13 to move upwardly relative to the nozzle 3 and to carry the piston 17 towards the nozzle. The piston thus forces paste material out of the nozzle 3, the amount of material being determined by the degree of compression of the cup 5 and hence the distance travelled by the piston 17. On relaxing the pressure on the cup 5, the flexible wall 7 regains its original shape and the rod 13 moves downwardly relative to the nozzle while the piston 17 remains stationary relative to the nozzle 3. The net effect is that the piston will travel up the rod 13 by a distance equal to the longitudinal distance of compression of the cup 5.

It will be appreciated that the cup 5 can be replaced by other types of spring loaded devices which will function in a similar manner.

CLAIMS

1. A free-standing dispenser for paste material, comprising a housing (1) for the material and an outlet orifice (3) communicating with the housing (1), characterised in that a piston (17) is axially movable in the housing (1) towards the orifice (3) and is provided with restraining means (21) to prevent axial movement in a direction away from the orifice (3), and a resilient, compressible member (5) is connected to the housing (1) at the end thereof remote from the orifice (3), the member (5) being arranged so that compression of the member (5) causes movement of the piston (17) towards the orifice (3), thereby pumping paste material out of said orifice (3), and release of the compression on the member (5) causes the piston (17) to remain stationary relative to the adjacent walls of the housing (1).

2. A dispenser according to claim 1, characterised in that the housing (1) is free-standing on a base which comprises the compressible member (5).

3. A dispenser according to claim 2, characterised in that the compressible member (5) comprises a resilient plastics cup having a flexible wall (7) attached to the housing (1), the wall being deformable under the action of a compressible force.

4. A dispenser according to any one of claims 1 to 3, characterised in that the piston (17) has a centrally located passage through which extends an elongate guide rod (13) attached to the compressible member (5).

5. A dispenser according to claim 4, characterised in that the rod (13) and piston (17) engage frictionally to prevent movement of the piston away from the orifice (3).

6. A dispenser according to claim 5, characterised in that the frictional engagement is provided by spring metal tangs (29) attached to the piston (17) which grip the rod (13) when the rod (13) moves in a direction towards the orifice (3).

7. A dispenser according to any one of claims 1 to 6, characterised in that the housing (1) is encased in an outer shell (35), the housing (1) being a sliding frictional fit within the shell (35).

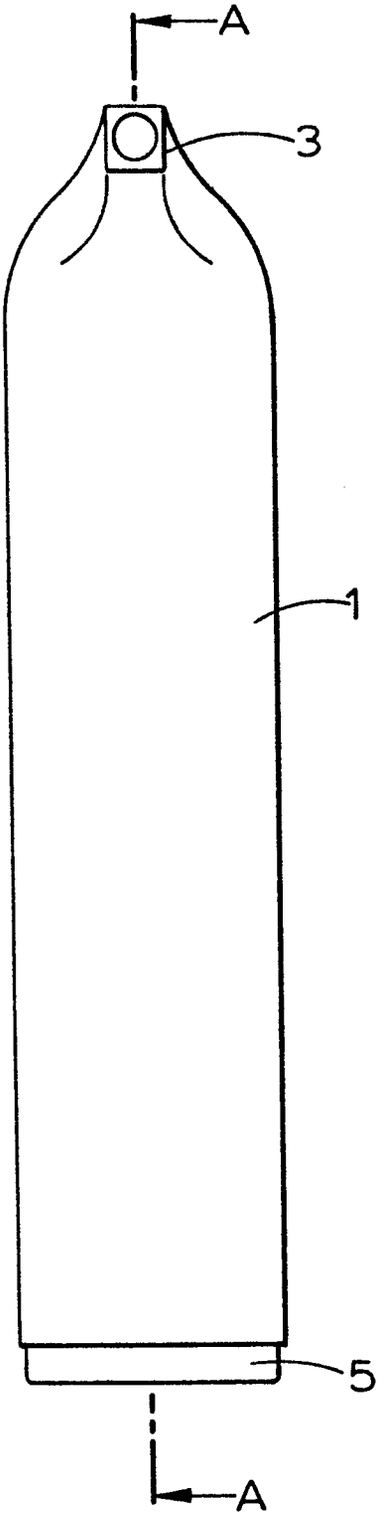

Fig.1

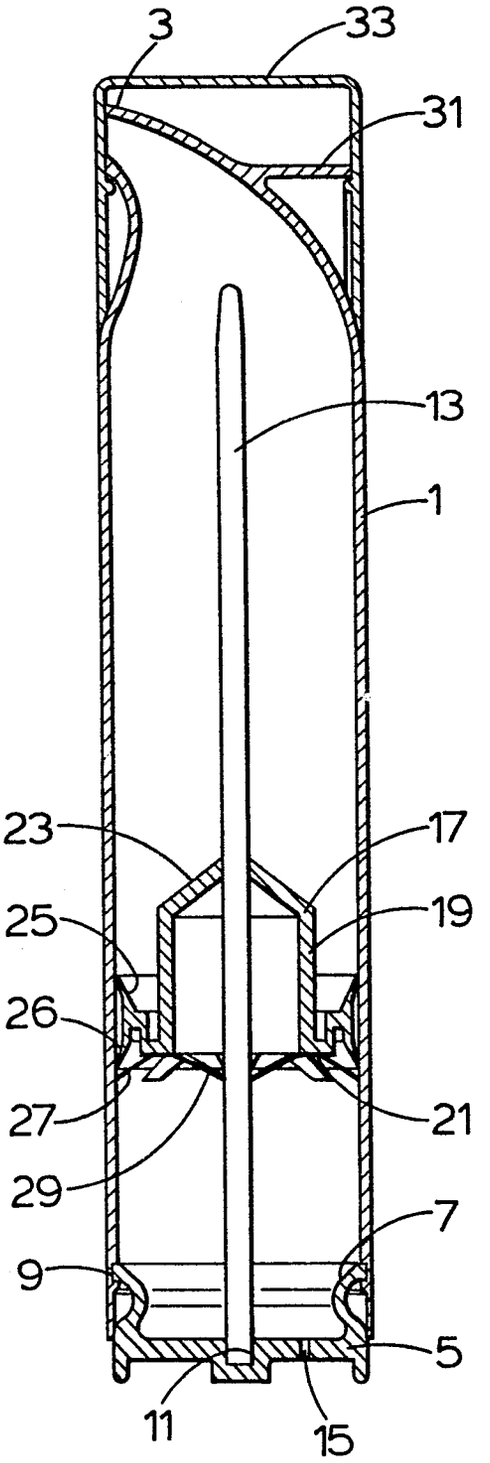

Fig.2

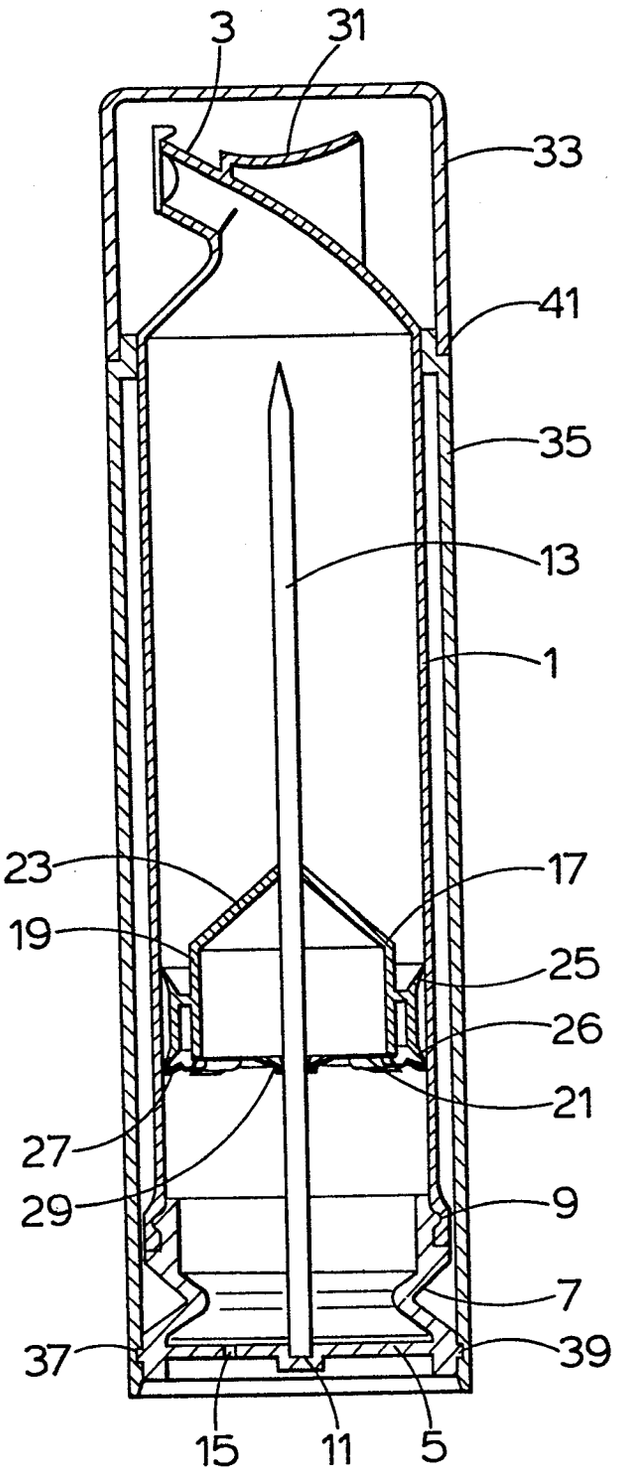

Fig.3