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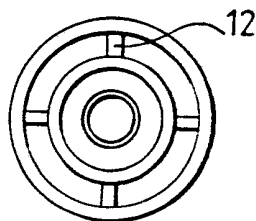
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**B6P PAFG  
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(56) Documents cited  
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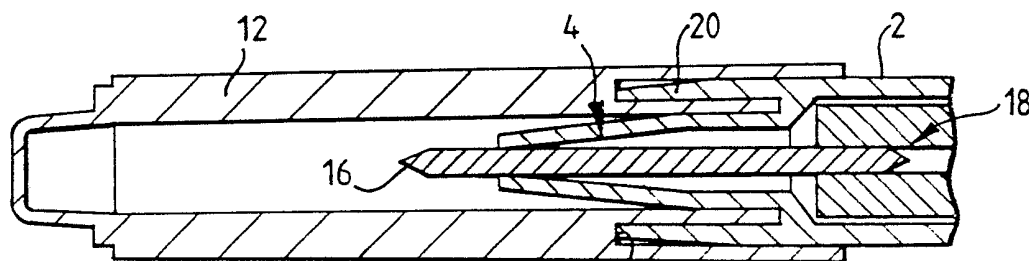
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UK CL (Edition J) **B6P PAFG, B8T TCA TCC TCM  
TCP**  
INT CL<sup>4</sup> **B43K, B65D**

(54) **Pen or container with detachable safety cap**

(57) A pen or container for a liquid or paste product, has a barrel 2 with a tip portion 4, and a cap 12. The cap comprises inner and outer bodies (8, 10, Fig. 5) which are secured together in a spaced-apart manner by a plurality of webs 12 which extend from the top of the cap towards the base of the cap, terminating at an intermediate position of the cap. The barrel has a collar 20 surrounding the base of the tip portion 4. When the cap 12 is on the barrel, the collar 20 is located in the space between the inner and outer bodies, giving firm engagement. Should the cap be drawn into the trachea, for example of a child, air can be drawn through the cap, via the passages between the webs 12.



*Fig. 2.*



*Fig. 4.*

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1982.

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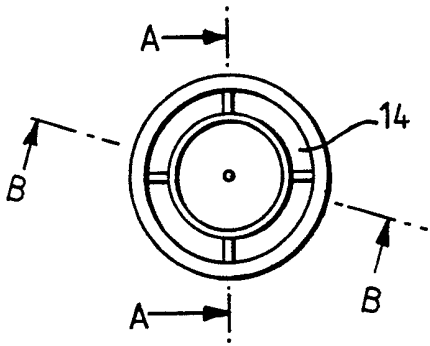


Fig. 1.

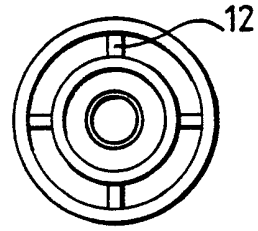


Fig. 2.

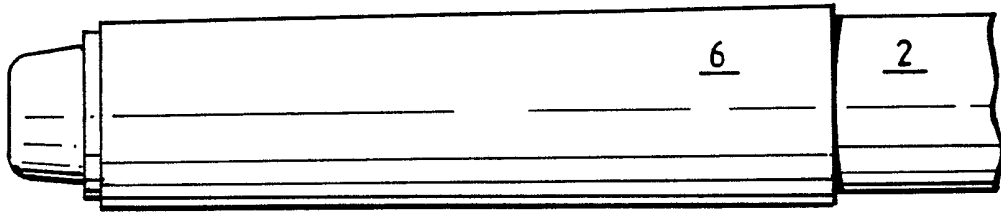


Fig. 3.

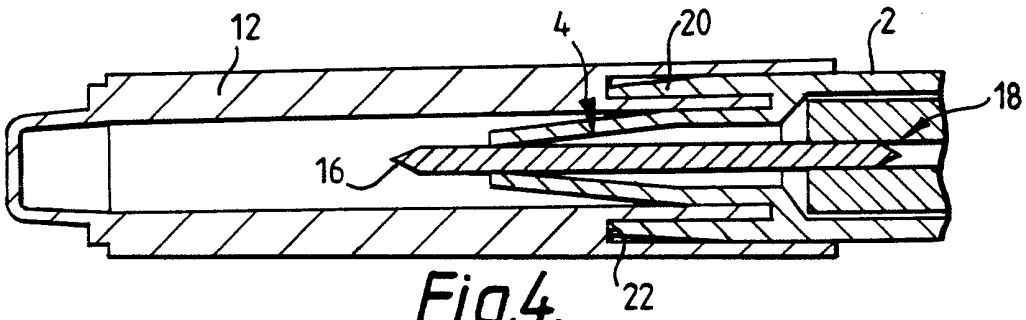


Fig. 4.

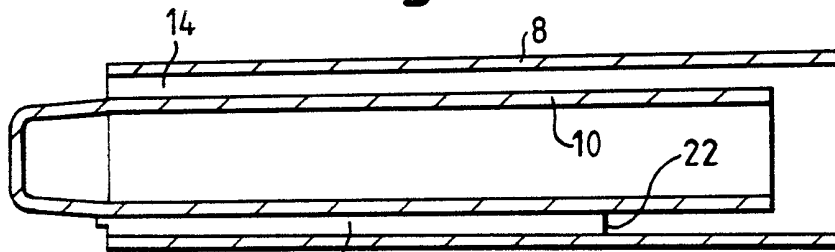


Fig. 5.

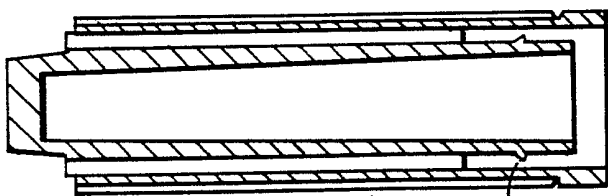


Fig. 6.

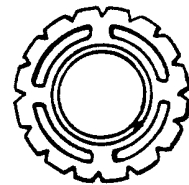


Fig. 7.

CONTAINER

This invention relates to a container for a liquid or paste product, for example a pen, a toothpaste tube, or a lipstick, having a detachable closure cap.

The most common type of detachable closure cap for such a container has a body open at one end only, to receive the tip portion of the container. When the cap is "on", the tip portion is sealed from the surrounding environment. However, such caps are hazardous, especially to children, since they can be drawn into and block the trachea.

In accordance with the present invention there is provided a container for a liquid or paste product, the container having a container body and a cap, the container body having a tip portion of relatively small cross-section, a barrel portion of relatively large cross-section, and a collar which extends from the end of the barrel portion which adjoins the tip portion, around the part of tip portion which adjoins the barrel portion, but spaced therefrom, the cap comprising an inner body for sealing over the tip portion, facing towards the base of the cap, and an outer body around the inner body, the cap having a space between the inner and outer bodies through which air can pass from the top of the cap to the base of the cap when the cap is off the container body, the collar being located within the space when the cap is on the container body.

Thus, when the cap is placed on the container body firm securement is assisted by virtue of the location of the collar in the space between the inner body and the outer body. Moreover should the removed cap become lodged in a trachea air can be drawn through the

cap, between the inner and outer bodies.

Preferably, the inner body and outer body are concentric, substantially circularly cylindrical bodies.

To assist location, the said collar preferably tapers towards its end, as does the tip portion.

Preferably, the end of the barrel portion remote from the tip portion is so shaped that the cap may be located on it. Preferably, that end of the barrel portion has a collar which engages between the inner and outer bodies of the cap, when the cap is located thereon. To assist location, the collar of that end of the barrel portion preferably tapers towards its end.

Suitably the cap may engage on the barrel portion in a snap-fit manner, by provision of a recess or projection on one part co-operating with a projection or recess on the other part.

The invention is of particular interest and utility in relation to pens.

In a cap of a container in accordance with the invention a substantial area may be available for the passage of air. For example, in a pen cap the end of the cap may typically have 10-30mm<sup>2</sup> available. The proportion of the overall cross-section of the cap which is available for the passage of air may be substantial. It may, for example, be 50% of the area, although in a pen cap the provision of 10 - 30% of the overall cross-sectional area as an air passage is sufficient for safety purposes.

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

Fig.1 is an end elevation of the top of a pen cap;

Fig.2 is an end elevation of the base;

Fig.3 is a side elevation;

Fig.4 is a cross-section along the line A-A shown in Fig.1 ;

Fig.5 is a cross-section along the line B-B shown in Fig.1;

Fig.6. is a cross-section of an alternative pen cap; and

Fig.7. is an end elevation of the end of the cap of Fig.6.

The drawings show a fibre tip pen having a barrel 2, a tip portion 4 and a cap 6.

The cap 6 has an outer, generally cylindrical body 8 and an inner, generally circularly cylindrical body 10, which is concentric with the outer body. The inner and outer bodies are not perfectly cylindrical in that they have a slight taper towards the top of the cap. The cap is moulded in one piece, the inner and outer bodies being connected together by four webs 12 which extend from the top of the cap to a position approximately 2/3 of the distance towards the base of the cap. Between the inner and outer parts and adjacent webs 12 are quadrant-section passages 14 which permit the passage of air between the top of the cap and its base.

Referring to Fig.4, the barrel 2 of the pen is circularly cylindrical. The tip portion 4 extending from the end of the barrel tapers towards the exposed fibre tip 16. The fibre tip 16 is in contact with a hollow ink-impregnated body 18 located in the barrel, in

standard manner. Extending from the end of the barrel adjacent the tip portion, to surround the part of the tip portion adjoining the barrel, is a collar 20. The collar is generally circularly cylindrical, but has a slight taper towards its end.

On location of the cap on the pen the tip portion is located within the inner body, the surface of the tip portion adjacent the barrel forming a seal against the inner surface of the inner body. The sleeve 20 locates between the inner and outer bodies, the outer surface of the inner body and the inner surface of the outer body engaging the inner and outer surfaces of the collar. Location is assisted by the taper of the tip portion and the taper of the collar. The position of the cap on the pen is determined by the engagement of the end of the collar 20 against the ends 22 of the webs 12.

In the event of the cap becoming lodged in a trachea the passages 14 are free for the passage of air. In this embodiment the cross-sectional area of the passages at the top of the cap, (where the area is smallest because of the presence of the webs) is approximately  $15\text{mm}^2$ , about 20% of the overall cross-section of the cap.

The end (not shown) of the barrel remote from the tip portion has fitted into it a collar piece of similar shape to the collar 20, so that when the cap is removed in order to use the pen, it may be placed on the other end of the barrel, the collar piece locating between the inner and outer bodies of the cap. The collar piece tapers towards its end, whereby engagement of the cap is assisted.

Figs. 6 and 7 show an alternative embodiment, of a pen cap in which the outer surface on the outer body is fluted, and the outer and inner surfaces of the outer body, and the outer surface of the inner body, do not taper. The outer surface of the inner body carries a raised, circular, co-moulded bead 24, which engages in snap-fit manner with a corresponding recess on the cap, when the cap is "on".

The invention is not restricted to the details of the foregoing embodiment. The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings).

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings) may be combined in any combination, except combinations where at least some of such features are mutually exclusive.

CLAIMS

1. A container for a liquid or paste product, the container having a container body and a cap, the container body having a tip portion of relatively small cross-section, a barrel portion of relatively large cross-section, and a collar which extends from the end of the barrel portion which adjoins the tip portion, around the part of tip portion which adjoins the barrel portion, but spaced therefrom, the cap comprising an inner body for sealing over the tip portion, facing towards the base of the cap, and an outer body around the inner body, the cap having a space between the inner and outer bodies through which air can pass from the top of the cap to the base of the cap when the cap is off the container body, the collar being located within the space when the cap is on the container body.

2. A container as claimed in Claim 1, wherein the collar tapers towards its end.

3. A container as claimed in Claim 1 or 2, wherein the end of the barrel portion remote from the tip portion has a collar engaging between the inner and outer bodies of the cap whereby the cap may be located on that end.

4. A container as claimed in any preceding claim, wherein the cap may engage on the barrel portion in a snap-fit manner.

5. A container as claimed in any preceding claim, being a pen.

6. A container as claimed in Claim 5, wherein the pen is a fibre-tipped pen.



7. A container as claimed in Claim 5 or 6, wherein the minimum cross-sectional area available for the passage of air between the inner and outer bodies of the pen cap is in the range 10-30mm<sup>2</sup>.

8. A container substantially as hereinbefore described with reference to the accompanying drawings.