

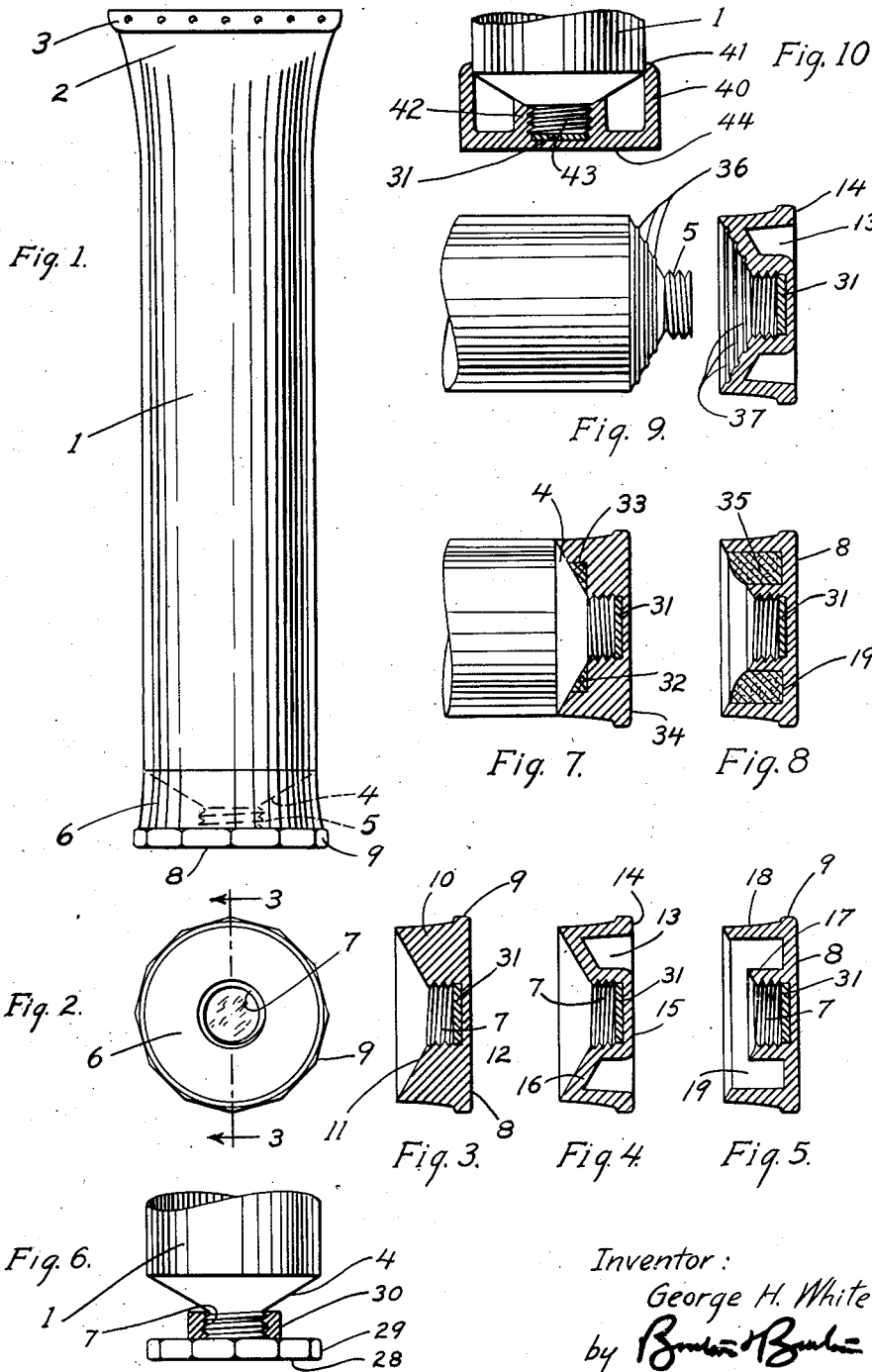
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CLOSURE CAP

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CLOSURE CAP

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This invention relates to containers of the collapsible tube type, and its purpose is to provide a closure cap for such a tube which shall improve the appearance of the tube and which is easy to manipulate when applied or removed, and which is especially formed and adapted to serve as a base to support the tube in upright position. The invention consists in certain features of construction in combination, as herein shown and described and as indicated by the claims.

In the drawing:

Figure 1 is a side elevation of a collapsible tube fitted with a cap embodying this invention.

Figure 2 is a plan view of the cap as it appears when removed.

Figure 3 is a transverse section taken as indicated at line 3-3 on Figure 2.

Figure 4 is a sectional view similar to Figure 3, showing a modified form of the invention.

Figure 5 is also a sectional view similar to Figure 3, but showing another modification.

Figure 6 is a partial side elevation showing a further modification of the cap as applied to a standard type of tube, and with a part of the cap shown in section.

Figure 7 is a side view of one end of the tube fitted with a cap comprising another modification of the invention, the cap being shown in section.

Figure 8 is a diametral section of a cap similar to that shown in Figure 5, and fitted with an absorbent packing material.

Figure 9 is a disassembled view of one end of a tube and a cap therefor, embodying this invention, and including inter-engaging features on the cap and tube for more perfect sealing.

Figure 10 is a fragmentary side elevation of a tube fitted with a further modification of the cap, shown in section.

In the drawing, Figure 1 shows a conventional type of collapsible tube or container comprising a body portion, 1, which is usually cylindrical when filled, and which is flattened at one end, as seen at 2, where it is closed by means of a folded strip of metal, 3, pinched onto the flattened end portion. At the opposite end the body, 1, terminates in a frusto-conical wall, 4, formed with a central threaded outlet, 5, to which a closure cap is usually secured.

The present invention provides a closure cap which may be screwed onto the threaded outlet, 5, and will form a broad flat surface sufficiently large to serve as a base for the tube, so that it may stand upright in the position shown in Figure 1, with its flattened end uppermost. Thus,

it may be stored on a shelf with other toilet accessories or medicines in the same manner as a bottle or can, or similar receptacle. Heretofore, a collapsible tube, lacking a flat end or bottom wall, and having only the thin folded edge of the clip, 3, at one end, and a relatively small cap at the other end, must be laid on its side when out of use, thus occupying a disproportionate amount of shelf room, and being unsightly as well as difficult to arrange in an orderly fashion with other articles. The cap, 6, shown in Figures 1 and 2, is of a diameter to extend flush from the cylindrical side wall of the body, 1, and is provided with a central threaded bore, 7, to screw onto the threaded outlet, 5, of the tube. Its transverse wall, 8, is flat, and of a diameter preferably as great as that of the tube body, 1; in Figure 1 it is shown as slightly larger, with a polygonal margin at 9, forming a convenient finger grip by which the cap may be readily turned in applying or removing it.

When applied to the tube, as shown in Figure 1, the cap, 6, appears merely as an extension of the body, 1, terminating in an ornamental rim, 9, at the base, and providing a relatively broad, flat supporting surface at 8, on which the tube will stand alone.

Internally the cap 6, may be solid, as indicated at 10, in Figure 3, with a conical recess, 11, to fit snugly over the conical end wall, 4, of the tube, and with a central recess threaded, as already described, at 7. The usual gasket, 12, of cork or other compressible material, is lodged in the bottom of the threaded recess.

An alternative construction is shown in Figure 4, in which a portion of the material is removed, forming an annular recess, 13, in the outer side of the cap, so that the bottom wall is not continuous, but consists of a rim portion, 14, and a central area, 15, closing the central threaded bore, 7. These parts are connected by the conical portion, 16, which fits over the conical end wall, 4, of the tube.

Figure 5 shows another modification in which the continuity of the bottom wall, 8, is maintained, and, externally, the cap has exactly the same appearance as that shown in Figure 3. However, the threaded recess, 7, is formed in an annular boss, 17, which projects inwardly or upwardly from the bottom wall, 8, and adjacent the rim, 9, an annular side wall or skirt, 18, extends for flush connection with the side wall of the tube body, 1. This leaves a clear, annular space or channel at 19 inside the skirt, 18, thus avoiding contact of the cap with the

entire conical surface of the end wall, 4, which may be desirable, particularly when the tube is made with lettering or other embossing on this conical surface.

5 Both for the purpose of providing ample strength, and for enhancing the appearance of the article, I prefer to form the cap so that its side wall shall meet the cylindrical wall of the tube, 1, in the flush relation indicated in Figure 1, but in some instances it may be preferable to omit this feature. Figure 6 shows a construction in which the cap consists of a broad disk-like member having a flat bottom, 28, with a polygonal rim, 29, but having upstanding from 10 this base portion a smaller cylindrical part, 30, containing the threading, 7, which fits upon the threaded outlet, 5, of the tube. The base, 28, being approximately as large as the cross-section of the cylindrical tube body, will provide 15 a stable surface upon which the tube will stand in inverted position.

In all the forms of the invention herein illustrated I have shown the usual sealing washer or gasket, 31, which is clamped against the end 25 of the threaded discharge neck, 5, of the tube. With the cap extended to the full diameter of the tube in accordance with the present invention there is opportunity for additional sealing means between the conical surfaces of the tube and cap. Figure 7 illustrates such means in the 30 form of a compressible washer, 32, which may be approximately triangular in cross-section and is seated in a suitable groove or channel, 33, in the cup, 34. If the conical surface, 4, of the tube be smooth, the washer, 33, will measurably 35 improve the sealing effect, and, if desired, may be cemented into the groove, 33, to ensure its retention in the cap.

Figure 8 shows a cap of the same form as that of Figure 5 having its deep annular channel or recess, 19, filled with an absorbent packing material, 35, which will bear against the conical end wall of the tube itself when the cap is applied. This will be of particular value in 40 preventing wastage by evaporation of moisture from the contents of the tube if the gasket, 31, does not seal it perfectly. The packing, 35, may be more or less saturated with a liquid corresponding to the liquid ingredient of the material 45 contained in the tube to ensure that it will not inter-act with such liquid, and to keep a mist or vapor of this ingredient present in any crevices through which evaporation might otherwise take 50 place. Any excess of such liquid will be retained in the cap, which acts as a cup when serving as a base for the tube in its normal upright position.

Figure 9 illustrates another method of taking advantage of the conical surfaces of the tube and cap for ensuring better sealing than is obtained between the threaded portions alone. In 60 this case the conical end wall of the tube is provided with upraised annular ribs, 36, and the mating wall of the cap is formed with annular channels or grooves, 37, adapted to inter-member 65 with the ribs when the cap is screwed home. Otherwise, the cap may be of the same general form as that shown in Figure 4, having an outwardly opening annular recess, 13, encircled by a skirt portion which includes the rim, 14, or it 70 might be of the solid form shown in Figure 3.

Figure 10 shows a cap structure which relies 75 mainly upon the gasket, 31, for sealing the tube, and in which the outer annular portion or skirt, 40, instead of seating against the tube, 1, tele-

scopes over the body portion, as seen at 41. The smaller annular part, 42, is threaded to fit the neck, 43, of the tube, and the outer end wall of this cap has a flat surface, 44, somewhat larger in area than the cross-section of the tube body and thus providing a stable base upon which it will stand upright.

Thus it will be seen that I have devised an improved form of cap which provides a broad base for the tube on which it will stand upright, 10 permitting of more convenient disposal than is possible with present tubes of the collapsible type. The cap has various other advantages, including improved sealing qualities, as well as 15 added convenience in manipulation because of its relatively large size in proportion to the diameter of the threaded portion. Such a cap is not readily misplaced or lost, and, in addition, it tends to enhance the ornamental appearance 20 of the tube.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and re-arrangements of the parts may be made without departing from the 25 spirit and the scope of the invention and that the same is not limited to the particular form herein shown and described except in so far as indicated by the appended claims.

I claim:

1. A closure cap for a container which has a tubular body terminating in a reduced threaded outlet neck, said cap including a central threaded annular wall to fit over the neck of the container and a larger annular skirt portion of approxi- 35 mately the same diameter as said tubular body and formed to be clamped against the end wall of the body in sealing engagement therewith when the cap is screwed onto the neck, the cap having an annular channel between said central wall and said skirt portion open toward the end 40 wall of the tube.

2. A closure cap for a container which has a tubular body terminating in a reduced outlet neck, said cap including a central annular wall 45 to fit over the neck of the container and a larger annular skirt portion of approximately the same diameter as said tubular body and formed to engage the end portion of the body, and a filling of absorbent material disposed in the annular 50 channel between said central wall and said skirt portion.

3. A closure cap for a collapsible tube which has a body terminating in a reduced outlet neck, said cap including a central bore to fit the neck 55 of the tube and having an outer end surface upon which the tube will stand upright, the outer end of the cap being dimensioned to cover an area at least as great as the cross-sectional area of the tube, said tube having a conical end wall, 60 and the cap having a conical surface surrounding its central bore to seat against said end wall of the tube, and a sealing gasket carried in a channel in said conical surface of the cap.

4. A closure cap for a container which has a tubular body terminating in a reduced threaded outlet neck, said cap including a central threaded annular wall to fit over the neck of the container and a larger annular skirt portion with a compressible packing material disposed in the annular channel between said central wall and said skirt portion.

5. A closure cap for a container which has a tubular body terminating in a reduced outlet neck, said cap including a central annular wall 75

to fit over the neck of the container, and a larger annular skirt portion, said cap and container being threaded for mutual engagement with a compressible packing material disposed in the annular channel between said central wall and said skirt portion.

5 6. A closure cap for a collapsible tube which has a body terminating in a reduced threaded outlet neck, said cap including a threaded central bore to fit the neck of the tube and having
10 an outer end surface upon which the tube will stand upright, the outer end of the cap being dimensioned to cover an area at least as great as the cross-sectional area of the tube, said cap
15 having a conical surface surrounding its central bore to seat against the end wall of the tube, said tube and cap being adapted for sealing engagement of their conical portions by means of

features which include an annular channel in said conical surface of the cap.

7. A closure cap for a collapsible tube which has a body terminating in a reduced threaded outlet neck, said cap including a threaded central bore to fit the neck of the tube and having
5 an outer end surface upon which the tube will stand upright, the outer end wall of the cap being dimensioned to cover an area at least as great as the cross-sectional area of the tube, said tube having a conical surface surrounding
10 its central bore to seat against said end wall of the cap, the cap and tube being adapted for sealing engagement of their conical portions by means of features which include an annular
15 channel in said conical surface of the cap, and an annular rib on the end wall of the tube dimensioned to engage in said channel.

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