

April 28, 1959

J. B. BIEDERMAN

2,884,151

BOTTLE CAP

Filed Nov. 1, 1956

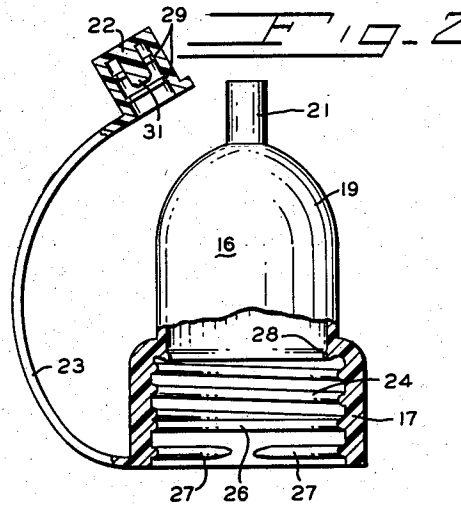
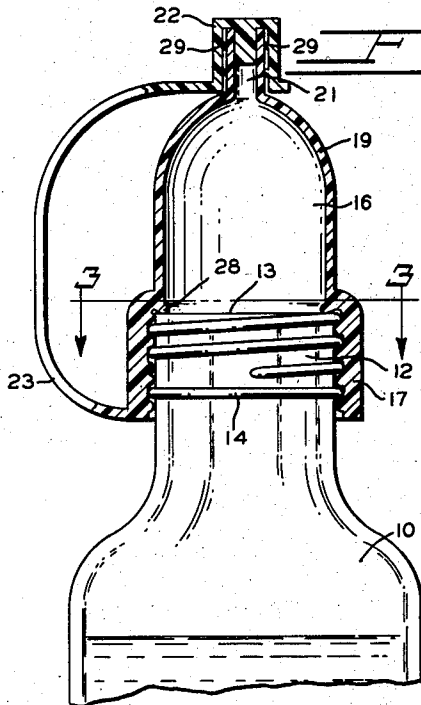


Fig. 3

Fig. 4

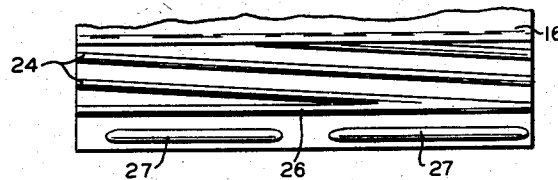
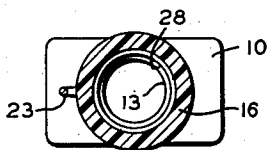
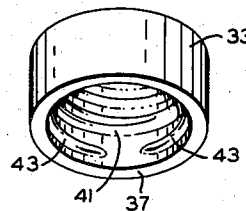
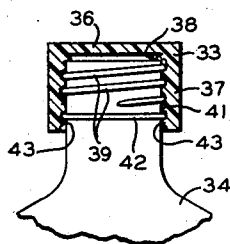


Fig. 5

Fig. 6



INVENTOR.
JOSEPH B. BIEDERMAN

BY *Jugelter & Jugelter*
Attys.

1

2,884,151

BOTTLE CAP

Joseph B. Biederman, Cincinnati, Ohio

Application November 1, 1956, Serial No. 619,706

1 Claim. (Cl. 215—41)

This invention relates to caps for containers.

An object of this invention is to provide a one-piece cap for a container having a threaded neck and an open mouth which can be formed of polyethylene plastic, or the like, and which forms a good seal at the mouth of the container.

A further object of this invention is to provide a cap of this type having a skirt which is engaged by the mouth of a container such as a bottle and is deformed sufficiently to produce a tight seal between the cap and the bottle.

A further object of this invention is to provide a cap of this type in which separate seals are formed at the mouth of the container and at a bead on the neck of the container.

Threaded articles of polyethylene plastic material and the like may tend to come loose from glass bottles or the like. A further object of this invention is to provide a cap of this type having spaced ribs or flanges which engage the underside of the transfer bead of the container to hold the skirt in sealing engagement with the mouth of the container and prevent inadvertent untwisting thereof.

A further object of this invention is to provide a cap of this type having a spout and an auxiliary cap which can close the spout, the auxiliary cap having portions which engage both the inside and the outside of the open end of the spout to seal the open end.

A further object of this invention is to provide a cap of this type having a spout and an auxiliary cap which are unitary with the main portion of the cap.

The above and other objects and features of the invention will be apparent to those skilled in the art to which this invention pertains, from the following detailed description, and the drawing, in which:

Figure 1 is a view partly in section and partly in side elevation, showing a container on which is mounted a one-piece cap constructed in accordance with an embodiment of this invention.

Fig. 2 is a view partly in side elevation and partly in section of the cap removed from the container.

Fig. 3 is a view in section taken on the line 3—3 in Fig. 1;

Fig. 4 is a fragmentary developed view of the lower part of the cap;

Fig. 5 is a view partly in side elevation and partly in section of a container on which is mounted a cap constructed in accordance with another embodiment of this invention; and

Fig. 6 is a perspective view of the cap shown in Fig. 5 removed from the container.

In the following detailed description, and the drawing, like reference characters indicate like parts.

In Fig. 1 is illustrated a container 10 which may be a bottle having a threaded neck 12 and an open mouth 13. A transfer bead 14 is formed on the neck of the container below the threads.

A cap 16 is mounted on the neck of the container. The cap 16 is formed of a single molded piece of poly-

2

ethylene plastic or the like and includes a lower substantially cylindrical portion 17, a dome-shaped upper portion 19, a spout 21 (see Fig. 2), an auxiliary closure cap 22, and a unitary strap 23 which links the auxiliary cap to the base of the cylindrical portion.

The cylindrical portion is provided with internal threads 24 (Fig. 4) which are adapted to co-operatively engage the threads on the neck of the bottle, as indicated in Fig. 1. A continuous internal bead or flange 26 is disposed immediately below the threads of the threaded portion. The flange 26 engages the bottle between the threads and the transfer bead to control any leakage which may reach the threads. The rib 26 may also be engageable with the upper edge of the transfer bead of the bottle to form an additional seal at the transfer bead. In addition, spaced ribs 27 are mounted on the interior of the cylindrical portion below and parallel to the bead 26. The ribs 27 are adapted to pass over the transfer bead and engage the underside of the transfer bead and to engage the bottle below the transfer bead.

A seal at the mouth of the container is formed by an annular skirt 28. The skirt 28 is integral with and mounted on the interior of the cylindrical portion above the threads and below the dome-shaped portion. The skirt 28 extends downwardly and inwardly and is of substantially frusto-conic shape. When the cap is screwed down on top of the container to the position as shown in Fig. 1, the skirt engages the mouth of the container and may be deformed as the ribs 27 pass below the transfer bead. In the deformed position shown in Fig. 1, the skirt engages the mouth 13 of the container, and forms a seal therewith. The skirt 28, as shown, is substantially thinner than the cylindrical portion so that the skirt may readily be deformed sufficiently to form a seal at the mouth of the container.

The dome-shaped portion 19 may be thicker than the skirt but preferably is substantially thinner than the cylindrical portion so that the dome-shaped portion may be resiliently deformable. The spout 21 is tubular and communicates with the interior of the dome-shaped portion, so that, when the bottle is inverted material from the interior thereof may be ejected through the spout.

When the container is not in use, the auxiliary cap 22 is disposed over the spout to close the spout. As shown most clearly in Fig. 2, the auxiliary cap 22 has a hollow body and is provided with inwardly directed annular ribs 29 which engage the exterior of the spout. In addition, a pin or plug 31 is formed on the interior of the cap and extends into the interior of the spout. The plug is of substantially the same diameter as is the interior of the spout (see Fig. 1) so that the plug closes the interior of the spout and holds the exterior surface of the spout in firm engagement with the ribs 29. As shown, the auxiliary cap 22 and the lower edge of the cylindrical portion of the cap are integrally formed and connected by the strap 23. Thus, the entire cap including the strap 23 and the auxiliary cap 22 are molded as a single piece.

In Fig. 5 is illustrated a cap 33 which is mounted on the neck of a bottle 34. The bottle 34 may be constructed in the same manner as the bottle already described. The cap 33 is generally similar to the cap already described, except that the cap 33 is provided with a flat top plate 36 which closes the upper end of a cylindrical portion 37. A skirt 38 is mounted on the interior of the cylindrical portion between the top plate and the threads and is engageable with the mouth of the bottle 34 to form a seal at the mouth. Threads on the interior of the cylindrical portion 37 engage threads 39 on the neck of the bottle 34. The lower portion of the cap 33 is similar to the cap already described and includes an annular inwardly directed bead 41 which

3

may engage the upper face of a transfer bead 42 and a plurality of spaced flanges 43 which engage the lower face of the transfer bead and the sides of the neck below the transfer bead to hold the cap in place with the skirt engaging and in sealing relation with the mouth of the bottle.

The construction of the skirts of the present caps makes it possible to use polyethylene in a closure even though there may be some variation in the size and shape of the containers or bottles to be closed thereby. Where there are variations in the dimensions of the containers to be closed, the skirt accommodates such variations by moving inwardly or outwardly across the mouth of the container on which the cap is mounted.

The caps described above and illustrated in the drawing are subject to structural modification without departing from the spirit and scope of the appended claim.

Having described my invention, what I claim as new, and desire to secure by Letters Patent is:

A one-piece cap of resilient deformable material for a container having an externally threaded neck and an open mouth and a transfer bead spaced from the open mouth and below the threads, which comprises a substantially cylindrical portion having internal threads for co-operative engagement with the threads of the container, an upper end portion closing one end of the cylindrical portion spaced from the threads, and an annular skirt

4

member mounted inside the cylindrical portion on the inner side wall thereof between the upper end portion of the threads and the upper end portion of the cap and above the top of the container, said skirt being substantially thinner than the cylindrical portion and projecting substantially horizontally transversely of said container and having walls sloping downwardly and inwardly to an edge which engages with the upper edge of the wall of the mouth of the container, and inwardly directed spaced flanges on the cylindrical portion engageable with the underside of the transfer bead of the container to hold the skirt in sealing relation with the outer face of the mouth of the container, said skirt engaging the top edge of the container with a line contact spaced more or less from the inner wall of the container depending on the distance between the lower edge of the transfer bead and the top of the container.

References Cited in the file of this patent

UNITED STATES PATENTS

2,038,858	Sachs	Apr. 28, 1936
2,345,044	Hall	Mar. 28, 1944
2,599,472	Miller	June 3, 1952

FOREIGN PATENTS

686,884	Great Britain	Feb. 4, 1953
---------	---------------	--------------