Feb. 1, 1966 R. H. GIBSON 3,232,470

DOUBLE SEAL LINERLESS CAP FOR CONTAINERS

Filed May 26, 1964

FIG. 1.

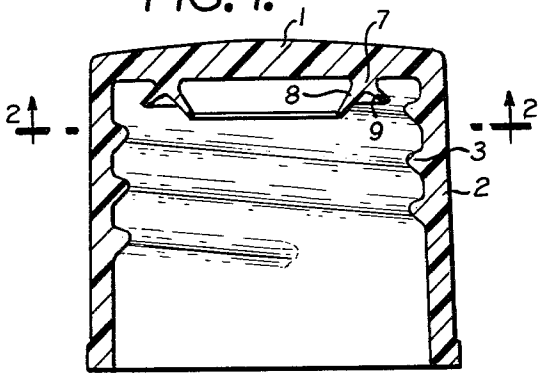


FIG. 3.

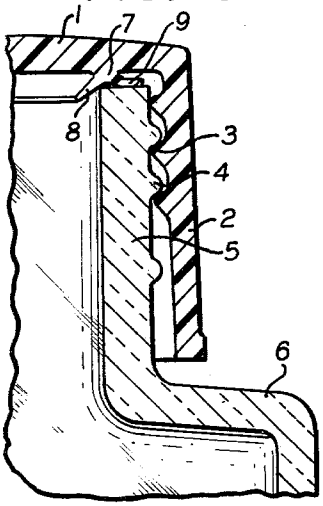


FIG. 2.

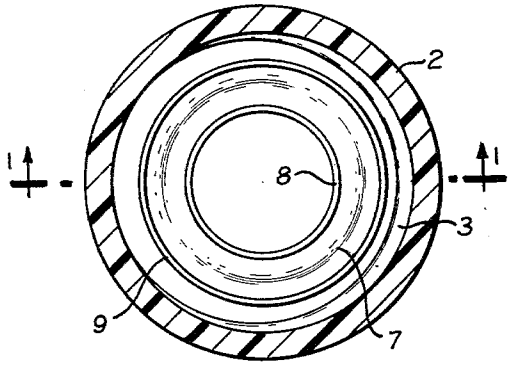


FIG. 4.

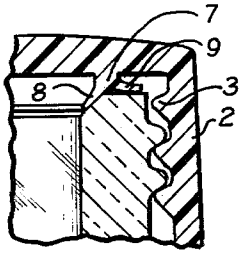


FIG. 5.

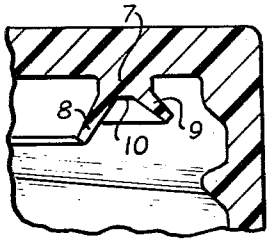
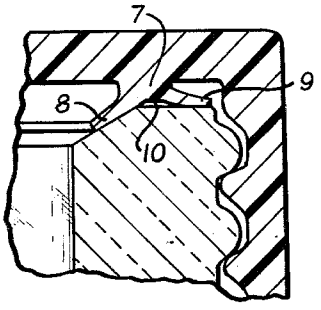


FIG. 6.



INVENTOR

Royal H. Gibson

BY

Emery, Whittemore, Sandoe & Graham

ATTORNEYS.

United States Patent Office

3,232,470

Patented Feb. 1, 1966

3,232,470

DOUBLE SEAL LINERLESS CAP FOR CONTAINERS

Royal H. Gibson, Rumson, N.J., assignor to Gibson Associates Incorporated, Cranford, N.J.

Filed May 26, 1964, Ser. No. 370,207
3 Claims. (Cl. 215—43)

This application is filed as a continuation in part of my copending application Serial No. 309,776, now abandoned, filed September 18, 1963.

This invention relates to a double seal linerless cap for containers.

It is an object of the invention to provide a cap having two separate annular sealing elements so arranged as to engage and seal against two separate areas of the rim of a container neck to thereby provide a double seal.

It is a further object of the invention to provide a cap of the above type in which the sealing elements are adapted to engage and seal against separate areas of the rims of container necks of varying configurations.

Other objects and advantages of the invention will appear hereinafter.

A preferred embodiment of the invention selected for purposes of illustration is shown in the accompanying drawings, in which,

FIG. 1 is a vertical sectional view of a cap embodying the invention on the line 1—1 of FIG. 2.

FIG. 2 is a horizontal section on the line 2—2 of FIG. 1.

FIG. 3 is a vertical section showing the cap as applied to a container in which the rim of the container neck is flat.

FIG. 4 is a vertical section showing the cap as applied to a container in which the rim of the container is chamfered.

FIG. 5 is a vertical section of a modified form of cap.

FIG. 6 is a vertical section showing the modified form of cap as applied to a container in which the rim of the container is chamfered.

Container caps embodying the invention are preferably molded from plastic material which is flexible, resilient and elastic. I prefer to use polypropylene for this purpose because of its strength and durability, but other materials having similar properties may be used.

Referring to FIGS. 1 to 4, the cap comprises a top 1 and an integral depending cylindrical skirt 2, the inner surface of which may be provided with threads 3 adapted to engage threads 4 on the outer surface of the neck 5 of a container 6.

The container may be of any desired size and shape and may be made of plastic, glass, metal or other suitable material.

Depending from the bottom surface of the top 1 and spaced inwardly from the skirt 2 is an annular ring of inverted Y shape, with the stem 7 of the Y defining a rib extending downwardly from the under surface of the top 1. The lower portion of the ring below the rib 7 is split to provide two diverging sealing elements or flanges 8 and 9 constituting the arms of the Y.

The rib 7 is short and of substantial transverse thickness to resist transverse deflection when the cap is tightened on the neck of the container. Preferably the transverse thickness of the rib is greater than its height and the inner and outer surfaces of the rib above the sealing elements are preferably concentric, cylindrical surfaces. As shown in the drawings, the rib 7 of the annular Y-shaped ring is disposed between the rim of the container and the top wall 1 of the cap with the mean diameter of the rib 7 falling between the inner and the outer diameter of the rim of the container.

The inner sealing element 8 extends downwardly and inwardly beyond the inner surface of the rib and the outer sealing element 9 projects downwardly and outwardly beyond the outer surface of the rib. Preferably the inner sealing element 8 is somewhat longer than the outer sealing element 9, particularly when the cap is intended for use with a container neck having a chamfered rim as shown in FIG. 4.

The modified form of cap shown in FIGS. 5 and 6 is generally similar to that of FIGS. 1 through 4, except that the sealing elements 8 and 9 are spaced by a short, horizontal surface or land 10, instead of meeting in an inverted V-shaped notch as shown in transverse cross-section in FIG. 1. The modified form of cap is particularly well adapted for use with container necks having a chamfered rim of the type shown in FIG. 6.

When used in connection with a container neck having a flat rim as shown in FIG. 3, as the cap is screwed down and tightened on the container neck, the sealing element 9 engages an area of the flat surface of the rim and is forced outwardly and upwardly to form a tight seal. At the same time, the sealing element 8 engages the inner corner of the rim and the marginal area of the flat surface of the rim and is forced inwardly and upwardly to form a second tight seal.

When used in connection with a container neck having a chamfered rim as in FIG. 4 or FIG. 6, the sealing element 9 again engages an area of the flat surface of the rim and is forced outwardly and upwardly to form a tight seal. At the same time, the sealing element 8 engages an area of the chamfered surface of the rim and is forced inwardly and upwardly to form a second tight seal.

The container necks shown in FIGS. 3, 4 and 6 are merely illustrative of typical container necks with which the caps of this invention may be used, and it will be understood that such caps may also be used with container necks having rims of other conformations.

It will be understood that the invention may be variously modified and embodied within the scope of the subjoined claims.

I claim as my invention:

1. A double seal, linerless cap for externally threaded containers having an annular rim of substantial width at the mouth thereof, said cap having a top wall and an outer cylindrical skirt depending therefrom, the inside wall of said cylindrical skirt being threaded to engage with the threads on the container, an annular rib depending from the underside of the top of said cap concentric with and spaced radially inwardly from said skirt, said rib being of substantial transverse thickness preventing transverse deflection thereof when the cap is tightened on said container neck, a pair of concentric sealing flanges formed on the lower portion of said rib and having a generally inverted V-shaped configuration as viewed in transverse cross-section, one of said sealing flanges extending downwardly and laterally outwardly beyond the outer surface of the rib, the other of said sealing flanges extending downwardly and laterally inwardly beyond the inner surface of the rib, the mean diameter of said rib falling between the inner and the outer diameter of the rim of said container, said sealing flanges being adapted to engage and seal against only said container rim, whereby, as said cap is tightened on said container, said one sealing flange is forced outwardly and upwardly by said container rim forming therewith an outer seal and said other sealing flange is forced inwardly and upwardly by said container rim forming therewith an inner seal.

2. A double seal, linerless cap for containers as claimed in claim 1 in which the transverse thickness of the rib is greater than its height.

3. A double seal, linerless cap for containers as claimed in claim 1 in which the inner and outer surfaces of the rib above the sealing flanges are concentric, cylindrical surfaces.

References Cited by the Examiner

UNITED STATES PATENTS

3,069,040 12/1962 Corsette ---------- 215—41

JOSEPH R. LECLAIR, *Primary Examiner.*

FRANKLIN T. GARRETT, *Examiner.*