Aug. 5, 1969 MIMPEI ITOH 3,459,320

ELASTIC CAP AND STOPPER SEAL

Filed June 3, 1968

FIG. 1.

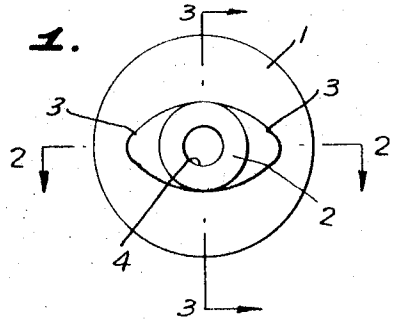


FIG. 2.

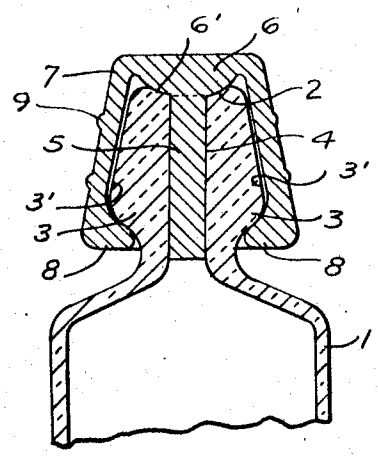


FIG. 3.

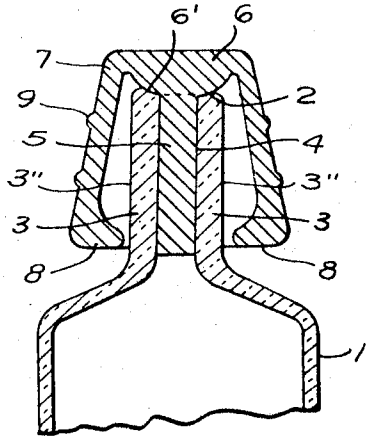


FIG. 4.

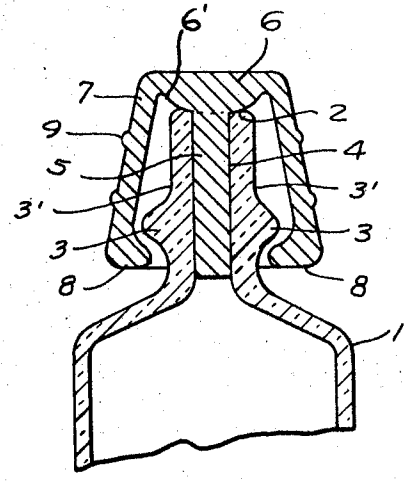
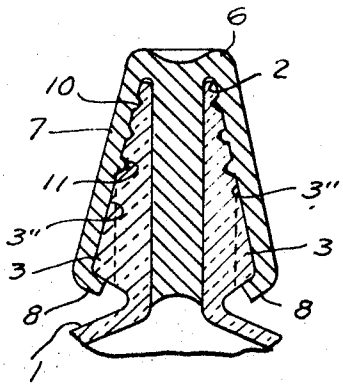


FIG. 5.



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United States Patent Office 3,459,320
Patented Aug. 5, 1969

3,459,320

ELASTIC CAP AND STOPPER SEAL

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Filed June 3, 1968, Ser. No. 734,167
Claims priority, application Japan, June 3, 1967, 42/46,721
Int. Cl. B65d 39/00, 41/22
U.S. Cl. 215—47 4 Claims

ABSTRACT OF THE DISCLOSURE

The present vessel closure is for capping the mouth of a vessel with an elastic cap which has a plug detachably insertable in the mouth of the vessel and a truncated skirt with inturned bottom flange for engaging the neck of the vessel for detachably retaining said cap on the vessel neck effecting a reliable sealing of the vessel.

Summary of the invention

The present invention is concerned with a vessel closure including a tubular vessel neck having a concave top around the mouth thereof and slanting side projections on opposite peripheral portions of said neck and an elastic cap having a convex inner top face for mating with said neck top, a plug extending from said inner top face and capable of being inserted in the vessel mouth for closing the same and a truncated skirt with inwardly turned bottom flange positioned for extending inwardly below said neck projections.

Background of the invention

Conventional vessel closures have a cap, a bottom side of which is fitted tightly on ring ridges provided on the periphery of the mouth of the vessel or a cap, a lower part of which is screwed tightly on threads provided in the periphery of the mouth of the vessel.

Such conventional closures, however, are not easy to cap or uncap relative to the vessel, means for tightening up the cap is required and the manufacture of such caps involves many steps of production.

Description

The present invention is concerned with a detachable vessel closure.

The principal object of the present invention is to provide a cap which can be easily installed on a vessel providing reliable sealing of the vessel mouth and will not become loosened once it is applied to a vessel.

A further object of the invention is to provide a cap for being mounted on the mouth of a vessel for closing the same and yet can be easily deformed by the application of pressure on the sides of the cap to permit the simple detachment of the cap.

In the accompanying drawing in which several embodiments of the invention are shown;

FIGURE 1 is a top view of a vessel capped in accordance with the present invention,

FIGURE 2 is a cross-sectional view taken on line II—II of FIGURE 1,

FIGURE 3 is a cross-sectional view taken on line III—III of FIGURE 1,

FIGURE 4 is a cross-sectional view similar to FIGURE 2, but showing a modified form of vessel, and

FIGURE 5 is a cross-sectional view similar to FIGURE 2, but of a further modified form of vessel and cap.

Referring now more particularly to the accompanying drawing, in which like and corresponding parts are indicated by similar reference characters, vessel 1 has a concave mouth 2, a neck having diametrically opposite projections 3, 3 whose longitudinal edges 3', 3' taper outwardly from said mouth and then curve inwardly to said neck with the remainder 3'', 3'' of said neck being cylindrical and a cylindrical passage 4 extending longitudinally of said neck from said mouth to the interior of the vessel.

Cap 6 has a convex top inner face 6' capable of mating with mouth 2, a plug 5 extending from said cap top inner face and capable being closely inserted in passage 4 for closing the same, a truncated skirt 7 spaced from and surrounding plug 5 and an inwardly extending annular flange 8 at the open end of said skirt whose inner face is laterally curved to mate with the lower curved ends of projections 3, 3 for preventing loosening of the cap on the vessel. Cap 6 also has projecting ridges 9 to prevent a users fingers from slipping thereon.

Cap 6 including plug 5, skirt 7 and flange 8 is made of an elastic material such as rubber, synthetic resin or the like.

To cap vessel 1 plug 5 is inserted into passage 4 until inner face 6' mates with mouth 2. During such insertion flange 8 will ride on edges 3', 3' expanding the adjacent portion of skirt 7 and then extend under the curved ends of said projections. Also during such insertion the portions of skirt 7 between projections 3, 3 will contract inwardly. Thereby the gap between the neck portions 3'', 3'' and the corresponding inside surfaces of skirt 7 will dimish to a certain extent, but an appropriate clearance will remain.

When flange 8 passes the tops of projections 3, 3, the portions of wall 7 opposite to the projections 3, 3 will elastically contract sharply along the lower surface 3'' of said projections 3, 3, while the portions of wall 7 across said projections will elastically expand to restore their original position, thereby enlarging the gap to the periphery of the vessel neck.

Such contraction and expansion to the original position of flange 8 will press the bottom inner face 6' of cap 6 to the mouth 2 of vessel 1, thereby preventing any leakage of the contents from said vessel as well as keeping the interior of said vessel airtight.

To uncap vessel 1, the projection-free portions of skirt 7 are pressed inwardly so that the portions of skirt 7, adjacent projections 3, 3 will expand sufficiently to permit the ready removal of cap 6 by pulling the same upwardly.

The modified form of the invention shown in FIGURE 4 is similar to that described for FIGURES 1 to 3 except that projections 3, 3 have their slanting edges 3', 3' starting to slant outwardly from an intermediate portion of the neck instead of mouth 2.

In the embodiment illustrated in FIGURE 5, ridges and grooves 10 are provided on the inside surface of skirt 7 of the cap shown in FIGURES 1 and 2 and they mate with corresponding ridges and grooves 11 provided on the periphery of the vessel neck, thereby assuring increased holding power and airtightness.

I claim:

1. A vessel closure comprising a vessel having a tubular neck with a concave mouth, a longitudinal passageway extending from said mouth to the interior of said vessel, and a pair of diametrically opposite projections extending laterally from said neck, said neck projections having edges slanting outwardly from said neck and then inwardly towards said neck, a cap of elastic material having an inside surface for mating with said mouth, a plug extending from said cap inside surface capable of plugging said passageway, a truncated skirt spaced from and surrounding said plug and an annular flange extending inwardly from said skirt and capable of extending beneath said neck projections.

2. A vessel closure as claimed in claim 1, wherein said cap inside surface is spherical and said plug extends from the center of said cap inside surface.

3. A vessel closure as claimed in claim 1, wherein said projection edges slant outwardly from said mouth.

4. A vessel closure as claimed in claim 1, wherein said skirt has ridges and grooves on the inside thereof and said neck has ridges and grooves capable of matching with those provided on said skirt.

References Cited

UNITED STATES PATENTS

2,704,100	3/1955	Freeman	215—47 XR
3,025,990	3/1962	Pancrazi	215—47

GEORGE T. HALL, Primary Examiner

U.S. Cl. X.R.

215—31, 41