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W. P. COHOE

NOVEL CLOSURE CAP

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Fig. 1.

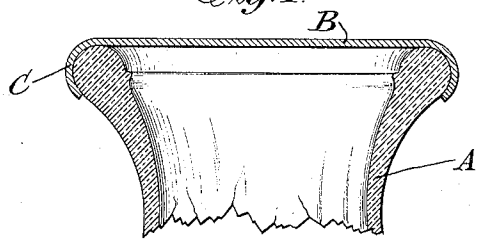
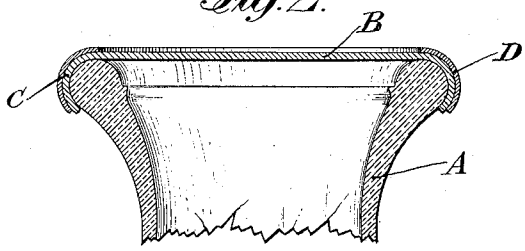


Fig. 2.



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UNITED STATES PATENT OFFICE.

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NOVEL CLOSURE CAP.

Application filed December 11, 1923. Serial No. 679,906.

This invention relates to a novel closure cap for containers, and more particularly to a contractible cap for use on milk bottles.

The ordinary form of milk bottle closure in common use consists of a round disc of heavy paper or fibre material held within an indentation or depression formed in the mouth of the bottle and adapted to hold the disc by friction. While this form of closure is simple and effective in many cases, it is well known that under extreme conditions of temperature or of handling such caps become deformed and permit the milk or other liquid to escape. Furthermore, such constructions have the objection that water and impurities may collect in the depression formed in the mouth of the bottle and thus permit them to run into the contents of the bottle when the cap is removed. A still further objection consists in the easy removability and replacement of said circular discs without knowledge of the purchaser of the milk.

Accordingly it is an object of my invention to overcome these difficulties and objections, and to construct a container closure or cap which shall be positioned over the mouth of the bottle and shall tightly engage the periphery thereof so that no milk or liquid can escape, and more especially so that the cap cannot be removed from the bottle without destruction thereof. It will, therefore, be seen that in accomplishing the latter object the closure will be permanent and non-removable during transit.

In accomplishing these objects I have made a very interesting discovery that when a solution of viscose is spread upon the paper or fibre board of suitable thickness and allowed to dry and coagulate after forming the paper into a desired form, the latter will be retained, and will not tend to assume its normal configuration under ordinary conditions. In order to secure such constructions against distortion by wetting I have, furthermore, discovered that the said viscose coatings may be subjected to a heat treatment and thereby rendered permanent in form, so that the caps cannot be removed without their destruction. In the accompanying drawings, which illustrate the preferred embodiment of my invention,—

Figure 1 represents the upper end and mouth of a milk bottle having the usual construction and provided with a cap constructed according to the principle of my invention, and

Figure 2 represents another similar view showing the outer closure or retaining means formed from the cellulose cylinder.

In said drawings the closure or cap is represented by B and is shown covering the mouth of the bottle and extending around the peripheries thereof to secure a positive and secure gripping effect. This cap B may be made of paper, fibre board, or similar material and will be coated either before its application to the bottle or afterwards, with a viscose solution of suitable density. This solution may be spread either on the inside or the outside or both inside and outside of the cylindrical or depending portion of the cap. The coating is thereafter coagulated by any of the usual methods and the cap is thereupon made to hold its form permanently.

The cap having the viscose thereon suitably coagulated is slipped over the mouth of the bottle in moist condition and allowed to dry, whereupon the viscose films not only contract themselves but cause the cylindrical portion of the cap to which they are attached to contract also. In this manner a tight closure for bottles or other containers is formed and will serve in its present condition to retain the contents of the bottle under certain conditions. If, however, such a cap is wetted after drying it may be again removed; therefore, it is desirable to further treat the film so that wetting will not distort it. I, therefore, have made the further discovery that if the viscose film, which has been coagulated, be heated to a temperature of approximately 100 to 130° C. either over its whole area or over part of its area, then those parts of the film which have been heated lose a sufficient amount of water so as to render them horny in character and incapable when wetted again of expanding sufficiently to allow the cap to return to its former condition. In this manner I have, therefore, made the cap permanent and non-removable so that the ultimate purchaser will easily be able to tell whether or not it has been tampered with. In order to remove the contents of the bottle it will be necessary to destroy the closure.

As a further addition to the construction of my invention I have provided a cap B as

shown in Figure 2 having a cylindrical or depending portion as in the case of Figure 1, and having positioned thereover a gripping member D which is formed from a cellulose cylinder of sufficient diameter, such a cellulose tube or cylinder being described in my Patent 1,070,776. The said tube D is wetted and slipped over the cover B and thereupon allowed to dry, whereupon it will contract similarly to the mode of contraction described above, and thereby hold the edges of the cover B securely against the glass. It will in this case be optional whether or not to provide a viscose film for the cover or cap B.

While the invention is applicable to various forms and designs of containers and various forms of caps or closures, it is particularly valuable when applied to milk bottles inasmuch as it possesses the advantages above enumerated and provides a closure that cannot be tampered with.

Other aqueous solutions of cellulose might be used, if desired, as for example a cuprammonium solution or a zinc chloride solution, etc. Any of the known aqueous solutions of cellulose might be used, if desired, for this purpose.

As many apparently widely different embodiments of my invention may be made without departing from the spirit thereof, it is to be understood that I do not intend to limit myself to the embodiments described except as defined in the following claims.

1. A container closure having its engaging portion coated with an aqueous cellulose solution that has been coagulated, said engaging portion being contracted to seal the container.

2. A container closure having its engaging portion coated with an aqueous cellulose solution that has been rendered partially anhydrous and horny in character so as to be unable to expand when wetted, said engaging portion being contracted to seal the container.

3. A circular bottle cap having its cylindrical portion coated with an aqueous cellulose solution that has been coagulated and made horny in character so as to be unable to expand when wetted, said cylindrical portion being contracted to seal the bottle.

4. A container closure having its gripping portion coated with an aqueous cellulose solution that has been coagulated, said gripping portion being held by a cellulose band shrunk into a gripping position against the container.

5. A container closure having its engaging portion coated with a viscose solution that has been coagulated, said engaging portion being contracted to seal the container.

6. A container closure having its engaging portion coated with a viscose solution that has been rendered partially anhydrous and horny in character so as to be unable to expand when wetted, said engaging portion being contracted to seal the container.

7. A circular bottle cap having its cylindrical portion coated with a viscose solution that has been coagulated, said cylindrical portion being contracted to seal the bottle.

8. A circular bottle cap having its cylindrical portion coated with a viscose solution that has been rendered partially anhydrous and horny in character so as to be unable to expand when wetted, said cylindrical portion being contracted to seal the bottle.

9. A circular bottle cap having its cylindrical portion coated with a viscose solution that has been coagulated and made horny in character so as to be unable to expand when wetted, said cylindrical portion being contracted to seal the bottle.

10. A container closure having its gripping portion held by a cellulose-hydrate band shrunk into gripping position.

11. A container closure having its engaging portion coated with a viscose solution that has been coagulated, said engaging portion being held by a cellulose band shrunk into a gripping position against the container.

12. A container closure having its engaging portion coated with a viscose solution that has been coagulated and made horny in character so as to be unable to expand when wetted, said engaging portion being held by a cellulose band shrunk into a gripping position against the container.

13. A circular bottle cap having its cylindrical gripping portion shrunk into position against the mouth of the bottle and having a cellulose-hydrate band also shrunk into a gripping position around it.

In testimony that I claim the foregoing, I have hereunto set my hand this 29th day of October, 1923.

WALLACE PATTEN COHOE.