

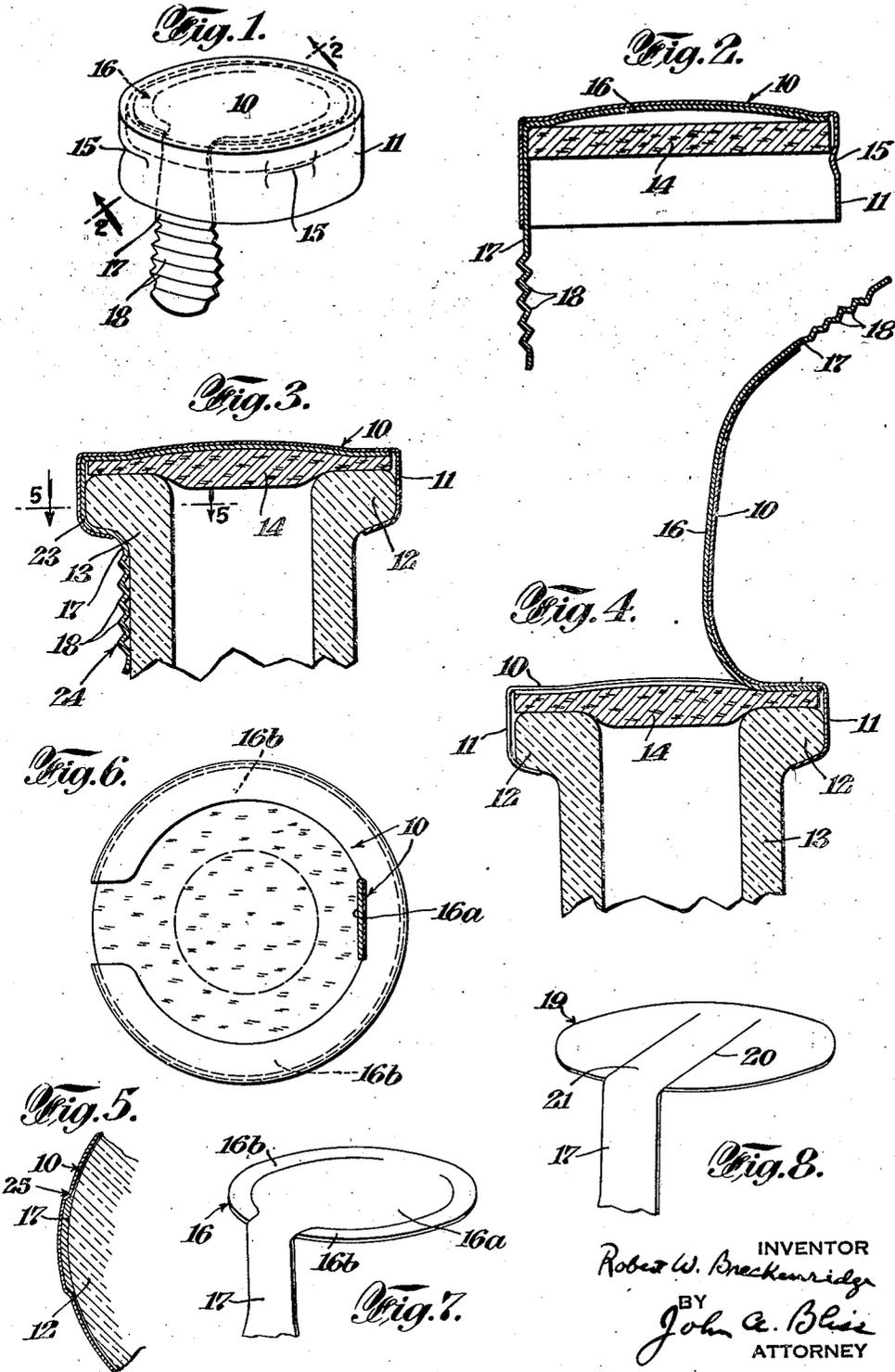
Jan. 19, 1937.

R. W. BRECKENRIDGE

2,068,444

TEAR TAB CLOSURE

Filed Aug. 29, 1936



INVENTOR  
Robert W. Breckenridge  
BY  
John A. Bliss  
ATTORNEY

## UNITED STATES PATENT OFFICE

2,068,444

## TEAR TAB CLOSURE

Robert W. Breckenridge, Ridgewood, N. J., assignor to Reynolds Metals Company, New York, N. Y., a corporation of Delaware

Application August 29, 1936, Serial No. 98,497

5 Claims. (Cl. 215-46)

This invention relates to tear-tab closures adapted to seal the discharge neck of glass or metal containers, which latter may be under substantial internal gas pressures.

5 Heretofore it has been suggested to form light metal foil closures with various types of tear-tabs, or inserts under the foil, so that the closure could be removed by tearing the same; generally, such closures were secondary closures and were 10 auxiliary means to enhance the appearance of the container and to render the same tamper-proof, and such closures were not primarily closures adapted to seal contents within the receptacles under heavy gas pressures. Also it has 15 been proposed to insert various lever or prying means in closures of the well known crown type, but such means relating to levering or prying rather than tearing means. The prying or levering means used in connection with caps of the crown type were found difficult to utilize, expensive to manufacture, and so were never placed in 20 extensive commercial use.

The advantages of sheet metal caps of the type having a relatively elongated annular skirt and adapted to be spun or otherwise positioned in place over a bead upon a container neck, have been long recognized because such caps are cheap to manufacture and easy to apply; however, the difficulty has been in providing suitable means 30 of removing the caps.

Therefore, it is an object of my invention to provide a preformed sheet metal cap of the type having a cork or equivalent liner, adapted to be spun or otherwise mounted over a bead upon a 35 container neck, and having a relatively strong metal insert between the liner and the cap, such metal insert having a depending tear-tab and adapted, because of its design, to easily and conveniently remove the cap, partially by tearing 40 and partially by lifting the same, without the necessity of peeling the edge of the cap from the container neck.

A further object of my invention is the provision of a cap, as described, particularly adapted 45 to hold gas pressures such as are encountered in highly carbonated beverages. As is well known, such pressures often attain 70 or 80 pounds per square inch, and sometimes run higher.

50 These and various other objects and advantages will be readily understood from the following description taken in connection with the accompanying drawing of preferred embodiments of the inventions, in which modifications may be made without departing from the scope of the appended 55 claims.

In the drawing—

Fig. 1 is a perspective view of a cap, a metal insert and a liner, illustrating a preferred embodiment of my invention, with a cork liner and a portion of the metal insert shown in dot-dash 5 line;

Fig. 2 is a cross section taken on the line 2-2 of Fig. 1;

Fig. 3 is a similar section as illustrated in Fig. 2, showing, however, the cap mounted upon a 10 container neck;

Fig. 4 is similar to Fig. 3 but illustrates the cap after a portion of the same has been torn by raising the tear-tab insert;

Fig. 5 is a fragmentary cross section taken on 15 line 5-5 of Fig. 4;

Fig. 6 is a plan view of the structure illustrated in Fig. 4, with parts of the metal insert shown in dot-dash lines;

Fig. 7 is a fragmentary perspective view of the 20 preferred form of metal insert; and

Fig. 8 is a fragmentary perspective view of an alternate form of metal insert.

In these figures, cap 10 is formed with an annular depending flange or skirt 11, of a suitable 25 material adapted for the usual forming operation, and also preferably adapted to be spun over a bead, such as indicated as 12, of a container neck 13. I have found that annealed sheet aluminum .007" thick serves this purpose 30 satisfactorily, but it is obvious that various types and thicknesses of sheet metal may be employed. A liner 14, formed of cork or similar material, is placed within cap 10. Detents such as 35 indicated at 15, may be employed to retain the liner within cap 10.

Interposed between liner 14 and cap 10 is a tearing and lifting means, comprising a disc-shaped flat metal insert 16 and a depending tear-tab arm 17 formed integrally therewith. The 40 lower portion of tear-tab arm 17 may be formed with corrugations 18. The disc insert 16 is preferably circumferentially cut, as indicated in Fig. 7, to provide a substantially circular tearing portion 16a and two crescent-shaped arms 16b 45 adapted to lift the torn cap 10 from bead 12 by means of tear-tab arm 17. In the alternate form of disc insert, indicated as 19, and shown in Fig. 8, the disc 19 may be cut with transverse cuts 50 indicated as 20, so that an elongated strip of material indicated as 21, forms a continuation of tear-tab arm 17, but such cuts do not extend completely across disc 19, so that at all times 55 tear-tab arm 17 and strip 21 are connected with the remaining portions of the disc illustrated as

19, which latter lift the torn cap 10 from bead 12. The tear-tab arm 17 and disc insert 16 can ordinarily be formed of any deformable, pliable sheet metal material of considerably higher tensile strength than that which forms cap 10. I have found that low-tempered sheet steel of .003" thick will operate satisfactorily. If it is desired to make the insert of brass, I have found that sheet brass of .005" or .006" is satisfactory.

10 In capping operations, the cap 10, liner 14, and insert 16, in the form indicated in Fig. 1, may be placed over container neck 13, having a bead 12, and there mounted into position by spinning. The tear-tab arm 17 has a portion indicated as 15 23, which is spun against bead 12, and the lower corrugated portion 24 of tear-tab arm 17 is thereby tensioned against the container neck 13 as indicated. Corrugations 18 not only prevent finger slippage when the bottle user lifts tear-tab 20 17, but also provides spaces under which a fingernail may be inserted to pry the tear-tab arm 17 from the container neck 13. I have found that experimental bottles capped with the closure as described will retain gas pressures running 25 above 100 pounds to the square inch.

In operation, when it is desired to open a container capped in accordance with my invention, tear-tab arm 17 is raised to vertical position as indicated in Fig. 4, with resultant shearing of 30 cap 10 as indicated in Fig. 6. The skirt 11, where it is spun over tear-tab arm 17, is weakened by the spinning operation and two vertical lines in the skirt indicated as 25 in Fig. 5, are formed so that the skirt may be easily ruptured by the raising of tear-tab arm 17. As raising of arm 17 is 35 continued, the inner circular portion 16a bears against cap 10 and makes a circular tear therein, as indicated in Fig. 6. Crescent-shaped arms 16b remain in place, however, between cap 10 and liner 14. When tear-tab arm 17 reaches a 40 vertical position, as indicated in Fig. 4, the seal between skirt 11 and bead 12 has been substantially broken, whereupon upward tension applied to arm 17 results in the displacement of the cap 45 as a whole.

The alternate disc insert shown in Fig. 8 also will operate satisfactorily, but since the cap 10 is torn in its center portion in a narrow strip corresponding to strip 21, the seal between skirt 11 50 and bead 12 is not reduced to such an extent as

when the circular tearing of the cap as indicated in Fig. 6 is accomplished by a tearing element of a shape similar to 16b.

It is to be understood that while the illustrated forms of the invention which I have described 5 represent certain preferred embodiments, I do not wish to limit myself precisely to the details as shown, since it is obvious that the same may be considerably varied without departing from the spirit of the invention as designed and claimed 10 in the appended claims; also it will be apparent that the metal disc insert instead of being cut, as described, might be perforated or scored instead so that tension may break or rupture the same 15 into tearing and lifting portions, and therefore in the appended claims the term "cut" is intended to include "perforations" or "scorings".

I claim—

1. In a tear-tab closure, a sheet metal cap adapted to be mounted in place over a bead upon 20 a container neck and to seal containers having substantial gas pressures, comprising a top and a depending skirt formed integrally, a liner for said cap, and tearing and lifting means positioned between said cap and said liner adapted 25 to tear and to lift said cap including a tear-tab arm having a portion extending below said depending skirt and a metal disc integral therewith, said disc being cut so as to provide a tearing portion and a lifting portion. 30

2. A closure as defined in claim 1 wherein said tear-tab arm is corrugated.

3. A closure as defined in claim 1 wherein said tearing and lifting means is formed of metal having greater tensile strength than said cap. 35

4. A closure as defined in claim 1 wherein said cap is formed of sheet aluminum about .007" thick and said tearing and lifting means is formed of low-tempered sheet steel about .003" thick.

5. In combination, a preformed sheet metal 40 cap having an integral cover and a depending skirt adapted to be mounted over a bead upon a container neck, and means associated therewith adapted for tearing and for lifting the cap from place when capped upon a container, said means 45 comprising a tear-tab arm and a sheet metal disc integrally connected with said arm, said disc being cut to form a central tearing portion and a marginal lifting portion.

ROBERT W. BRECKENRIDGE. 50