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M. D. CONVERSE.

CLOSURE FOR JARS, BOTTLES, AND LIKE RECEPTACLES.

APPLICATION FILED JAN. 14, 1907.

FIG. 1

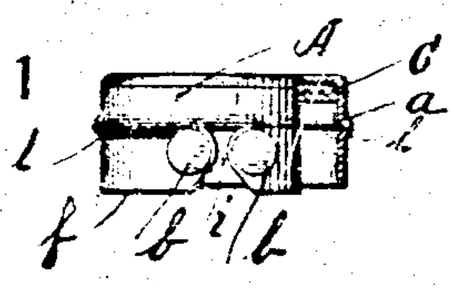

FIG. 4

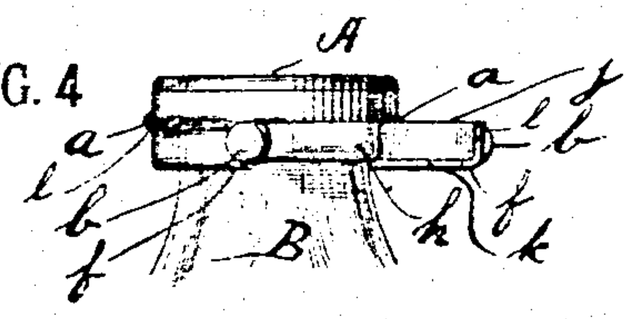

FIG. 2

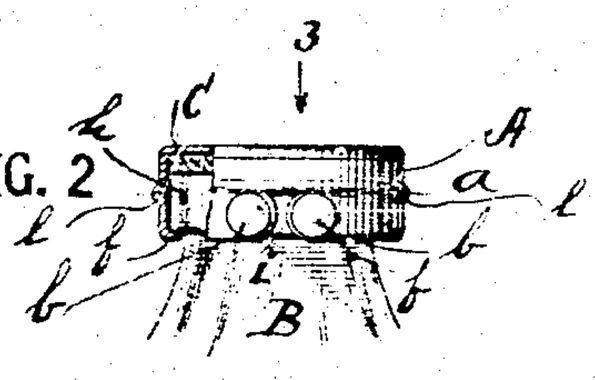

FIG. 5

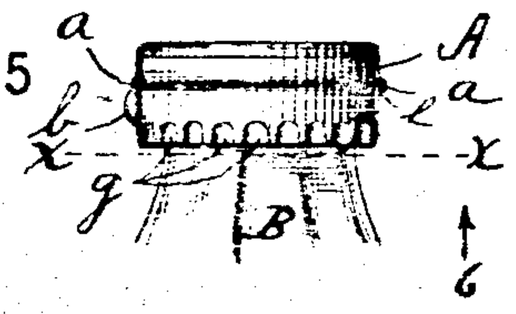

FIG. 3

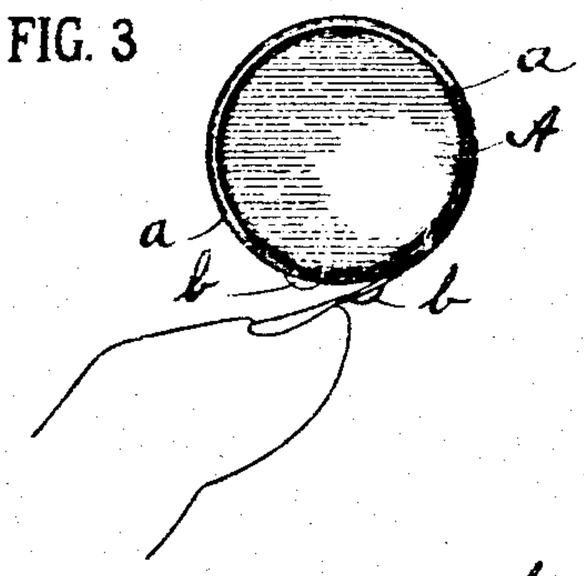

FIG. 6

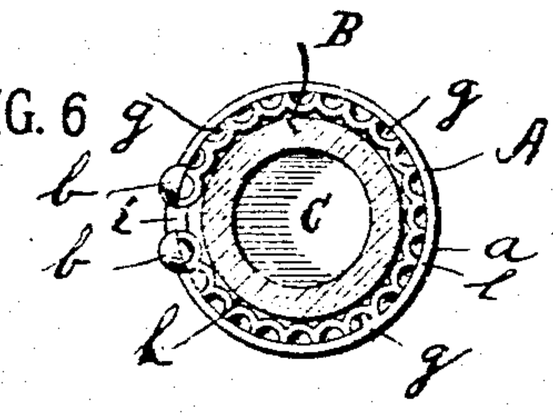

FIG 7

FIG. 8

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UNITED STATES PATENT OFFICE.

MASCHIL D. CONVERSE, OF NEWARK, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HOWLAND METALLIC CAP COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CLOSURE FOR JARS, BOTTLES, AND LIKE RECEPTACLES.

No. 855,695. Specification of Letters Patent. Patented June 4, 1907.

Application filed January 14, 1907. Serial No. 352,201.

To all whom it may concern:

Be it known that I, MASCHIL D. CONVERSE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Closures for Jars, Bottles, and Like Receptacles, of which the following is a specification.

My invention relates to metallic closures for bottles, jars, and other like receptacles, and more particularly to integrally made metallic caps, including a sealing medium of cork or other suitable material, and adapted to have the lower depending edge thereof, by suitable mechanical appliance, turned or bent under the annular shoulder of the bottles, jars or other receptacles in sealing.

The objects of my invention are, to provide as an article of manufacture, an integral metallic cap of this class of great efficiency, not liable to premature rupture or loosening on applying, or after having been applied; to reduce the cost of manufacture of such articles; to overcome further certain disadvantages heretofore experienced in the use of kindred closures, and especially to insure neatness of appearance when applied, and greater safety and facility for its removal in unsealing of the receptacle to which it has been applied, without the use of a key or other implement, and, furthermore, so that no part thereof shall remain attached to the neck of the receptacle; all which is mainly attained by a novel form and construction, incorporating a preferably internally made annular and preferably non-weakening, crease, whereby, in the act of removal, the shear-like margin developed upon the lower portion, in the making of the crease owing to the rigidity imparted by such a form, acts to automatically cut or tear itself away from the upper portion at this predetermined annular creased but preferably unweakened point, leaving, also, the upper portion to be further used as a temporary cover for the mouth of the receptacle from which it is removed.

Further objects and advantages of my invention will hereinafter appear.

My invention consists of an integrally made metallic cap or closure, having certain novel devices in form incorporated, co-operating to insure the foregoing and other objects, all which are hereinafter fully set forth and claimed.

In the drawings: Figure 1, partly sectional, is a side elevation of my invention as a completed article of manufacture (with sealing medium inclosed), before application to a bottle, jar or like receptacle. Fig. 2, partly sectional, shows the same applied in place on a bottle, B, in sealing, with the lower edge thereof, *f*, turned under the annular shoulder of the bottle neck. Fig. 3 (a plan view) and 4 (side elevation), show the manner of removal from the bottle in unsealing, and clearly show the shearing or tearing action of the upper stiffened shear-like margin, *j*, developed on the lower portion along the internal crease, *a*. Figs. 5 (an elevation) and 6 (an underside view) show a modified fluted turning under or crimping of its lower edge in sealing, which my improved cap admits of, and which may be advantageously employed to further carry out my invention by reinforcing or stiffening of the removable lower portion, as well as to enhance the neatness and finished appearance of the cap upon the sealed receptacle. Fig. 7, shows a possible, but less desirable, construction, and Fig. 8 shows a modification of my invention, sometimes desirable to further carry out a principle in the same; all which will hereinafter be fully described in detail.

Like letters indicate corresponding parts throughout the several figures.

The term cap, used throughout this specification, in place of closure, is for convenience, and is considered equally appropriate, since my invention is made in one integral piece.

A, is the cap, which is best made of quite thin and fairly ductile sheet metal. *f*, is the depending lower edge of the same.

a, is an acute annular crease made preferably from the interior, about midway of the depth of the cap, in the depending flange, and preferably made by means of a roll having a thin peripheral non-cutting edge applied from the inside of the cap in its manufacture, or preferably so as to merely crease the metal from the inside without "cutting", "perforating," "reducing the thickness" or "otherwise weakening" of the metal of the cap at that point. Other means or form of tool which will accomplish the same preferred result, to wit: crease acutely without "weak-

ening" the strength of the metal, may be employed.

At the point, *i*, (shown in Figs. 1, 2, 6 and 7) the lower part of the flange up to this crease is slit divided, or cut away, as shown, preferably so as to form a very narrow space or gap, with semi-circular boundaries laterally, and preferably on each side of this gap there is formed, by embossing from the inside, outwardly extended and preferably semi-spherical projections *b*, *b*, the objects of which will be hereinafter shown. Instead of this gap, *i*, a mere vertical cut from the crease line, *a*, downward, may be employed.

In Figs. 5 and 6, *g*, *g*, are flutings or spaced indentations of the lower edge, *f*, of the cap, which, by means of suitable mechanical appliance, I sometimes make use of in applying my improved cap to secure the same to the annular shoulder of receptacles in sealing the same. This form of crimping not only is desirable, as a co-operative auxiliary to the slight outward curvature, *l*, of the crease, *a*, for the purpose of greatly stiffening that portion of the cap below the crease line, *a*, against buckling, bending or breaking in the operation of unsealing, so that in the prying off of this lower portion (see Figs. 3 and 4) the shear like margin, *j*, thus reinforced, may perform its service unfailingly, to cut or tear itself free from the upper portion of the cap, but incidentally gives a neat and finished appearance to the cap when in place upon the receptacle sealed. For a like object (to stiffen the lower portion and reinforce the shear-like margin, *j*) the annular externally depressed groove, *e*, which should be impressed slightly beyond the vertical plane of the depending sides of the cap, I make use of in some cases, locating the same just below the crease line, *a*.

In Fig. 7, there are two parallel annular internal creases, *a*, *a*, and semi-spherical projections, *b*, *b*.

C, in the several figures represents a disk of cork or other suitable sealing medium, to engage the top, *h*, of the bottle, inclosed in the cap.

Bottle caps (closures) of types analogous to the class to which my invention is related, are *in*variably fixed upon the receptacle in the sealing operation by the application of pressure for holding the same with the inclosed cork firmly into contact with the top of the bottle, greatly compressing the cork, while the lower depending edge of a holding band, member or skirt, is turned by mechanical means under the annular shoulder of the neck of the bottle.

I have ascertained by many experiments that caps (closures) so applied cannot be made to be uniformly reliable and efficient and integral, by employment of a "scored", "cut," "perforated," "reduced," or "otherwise weakened" "tearing line" or "tearing strip," for the reason that, if so made, the latent expansive energy of the cork, or other sealing medium, so compressed, will, when the extraneously applied pressure is released, often force the caps to rupture prematurely along these "weakened" "tearing lines," and thus the bottle or other receptacle would not be securely or satisfactorily sealed, and also, that like results attend in case of internal or gaseous pressures from the contents of the receptacle.

My invention wholly obviates these difficulties, and for the reason that I do not, in the preferred construction of my invention, make use of a "cut," "partially cut," "scored," "perforated," "reduced," or "otherwise weakened," "tearing line," or "tearing strip," but instead, retain the entire strength of the metal at the desired point of separation throughout its lineal extent, by employing an annular crease, made from the inner side of the cap, and the principle of a stiffened shear-like margin developed thereby as a concomitant to this preferred and peculiar form of crease line construction in my improved cap, whereby, without "reduction of the thickness," or in any other way "weakening" of the metal, the lower portion of the cap is manually separable and removable from the upper portion annularly, with the greatest ease and facility, and without the use necessarily of a key or other implement, and whereby all the native strength of the metal at the shearing point is retained while upon the receptacle sealed to oppose premature rupture or loosening therefrom.

In the removal or unsealing operation, in the case of a cap made to embody my present invention, as by the thumb or finger-nail (see Fig. 3), at the slit or gap one end or one of the semi-spherical ends, *b*, of the lower portion of the cap is pried off a little way, which is accomplished easily; then immediately the stiff shear-like edge, *j*, (Fig. 4), developed and reinforced on this lower part at the crease, *a*, operates continuously to cut or tear itself free, along this crease, from the upper portion, this shear-like simulation and action being further insured by the auxiliary co-operative stiffness and rigidity imparted to this edge, *j*, and the lower portion of the cap by the underturned flange (*k*, in Fig. 4), or by the special modified fluted or indented edge, *g*, *g*, (Fig. 5), or by the modification employing the external annular indentation or groove, *e* (Fig. 8), in combination with either of the former, operating to the same end, to wit: to keep this lower portion and its evolved shear-like margin, *j*, from buckling, breaking or bending in the operation of forcing it off and unsealing of a receptacle, and so that this lower part acting as a lever is constantly increased in length, and the operation thus instantly facilitated. This unsealing in the preferred construction may be

accomplished from the opposite direction of that shown in Fig. 3, should the operator be left-handed or find it more convenient.

In the modified cap shown in Fig. 7, two of this same sort of creases are employed, with the result, of course, that two shear-like margins are developed, and act in unsealing; but, manifestly, in this form, twice as much force must be exerted (other conditions being equal), in the unsealing act as in the single crease, and by use of this form the extreme lower underturned edge of the flange remains upon the neck of the receptacle.

It will be seen that in these several forms of my invention the automatic or self-cutting or tearing away of the lower from the upper portion at the crease, *a*, leaves a neat cover above for temporary subsequent use on the unsealed receptacle, and that (except in the case of modification shown in Fig. 7, as just stated) no part of the cap remains attached to the bottle after unsealing.

The semi-spherical embossings, *b*, *b*, are employed to prevent the edges of the metal either side of the gap or cut, *i*, from catching anything in handling and packing of the receptacles sealed therewith, which they effectually do by protruding outwardly beyond the vertical plane of said edges, as shown distinctly in Figs. 3, 5, 6 and 8, and presenting a rounded, smooth exterior.

Having differentiated and described my invention, though susceptible of many minor modifications without departing from the spirit thereof, what I claim as new, and desire to secure by Letters Patent, is:

Claims.

1. An article of manufacture of the class described, comprising an integral metallic cap, adapted to inclose a sealing medium and to be applied to receptacles as set forth; having an annular non-weakening crease in its depending flange, and provided with a gap from said crease downward, and with an outwardly protruding rounded projection laterally of said gap and below the crease.

2. An article of manufacture of the class described, comprising an integral metallic cap, adapted to inclose a sealing medium and to be applied to receptacles as set forth, having an annular non-weakening crease in its depending flange, and provided with a gap from said crease downward, and with outwardly protruding rounded projections laterally of said gap and below the crease.

3. An article of manufacture of the class described, comprising an integral metallic cap, adapted to inclose a sealing medium and to be applied to receptacles as set forth, having an annular non-weakening crease in its depending flange, and provided with a dividing cut from said crease downward.

4. An article of manufacture of the class described, comprising an integral metallic cap, adapted to inclose a sealing medium and to be applied to receptacles as set forth, having an annular manually rupturable crease midway the depth of its depending flange, and provided with a dividing cut from said crease downward.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MASCHIL D. CONVERSE.

Witnesses:
J. FRED. CRYER,
RUBY HUSTED.