

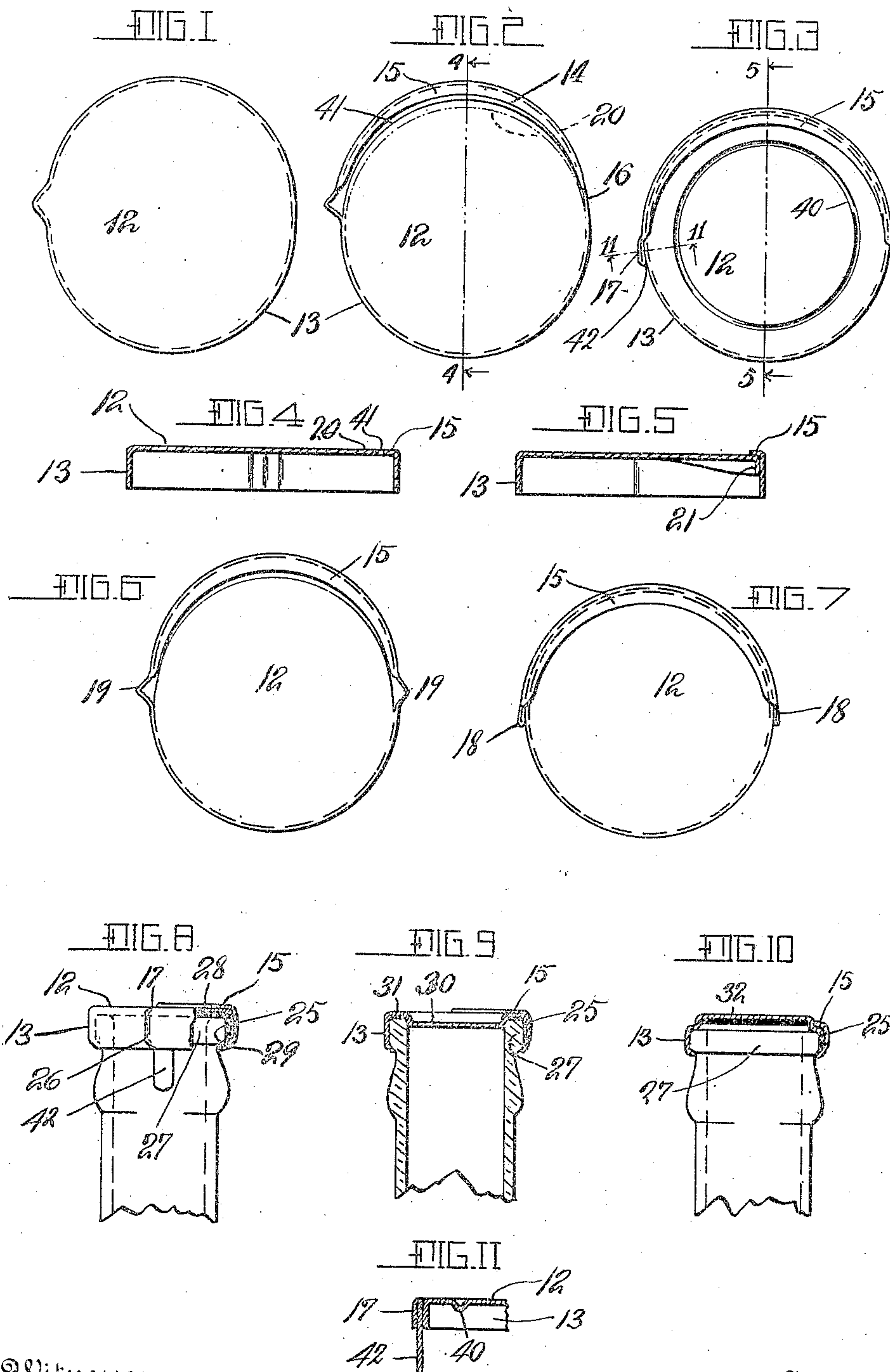
No. 889,214.

PATENTED JUNE 2, 1908

W. H. DODGE.

METALLIC CAP FOR RECEPTACLES AND METHOD OF MAKING THE SAME.

APPLICATION FILED APR. 6, 1907.



Witnesses:  
Joseph Klein  
Ralph Mullane

Inventor  
William H. Dodge  
By his Attorney  
Samuel C. Parby



# UNITED STATES PATENT OFFICE.

WILLIAM H. DODGE, OF VERONA, NEW JERSEY, ASSIGNOR TO DODGE METALLIC-CAP COMPANY, OF MONTCLAIR, NEW JERSEY, A CORPORATION OF NEW JERSEY.

METALLIC CAP FOR RECEPTACLES AND METHOD OF MAKING THE SAME.

No. 889,214.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed April 6, 1907. Serial No. 366,717.

*To all whom it may concern:*

Be it known that I, WILLIAM H. DODGE, a citizen of the United States, residing at Verona, in the county of Essex, State of New Jersey, have made a certain new and useful Invention in Metallic Caps for Receptacles and Methods of Making the Same, of which the following is a specification.

This invention relates to metallic or other caps or closures for receptacles and method of making the same.

The object of the invention is to provide a metallic or other cap for use on receptacles, and particularly designed for use on receptacles containing carbonated gaseous liquids, such as beer or the like.

Another object of the invention is to provide a cap or closure of the character referred to, which is capable of being readily applied to and removed from the receptacle.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and arrangement of parts all as will be more fully hereinafter set forth, as shown in the accompanying drawing and finally pointed out in the appended claims.

Referring to the accompanying drawing and to the various views and reference signs appearing thereon, Figure 1, is a view in top plan of a cap blank employed in the production of a cap or closure. Fig. 2, is a similar view showing the blank after the slit or cut is made therein, to partially detach a portion of the flange from the top or crown part of the cap, and indicating in dotted lines the reinforcing lip bent down into operative position. Fig. 3, is a similar view showing a completed cap or closure embodying the principles of my invention. Fig. 4, is a view in section on the line 4, 4, of Fig. 2, looking in the direction of the arrows. Fig. 5, is a view in section on the line 5, 5, of Fig. 3, looking in the direction of the arrows. Fig. 6, is a view similar to Fig. 2, showing a slightly modified form of blank after the slit or cut has been formed therein. Fig. 7, is a view similar to Fig. 3, showing a complete cap or closure produced from the modified form of blank shown in Fig. 6. Fig. 8, is a broken view of the bottle neck parts in section showing the application of one form of cap or closure embodying the principles of my invention. Figs. 9, and 10, are similar

views, Fig. 9, being in section showing other forms of embodiments of caps or closures in accordance with my invention. Fig. 11, is a broken detail view in section on the line 11, 11, Fig. 3.

The same part is designated by the same reference sign wherever it occurs throughout the several views.

In the manufacture of caps or closures for receptacles such as bottles, jars, cans or the like, it is exceedingly desirable to produce a device which is not only simple in construction and economical to manufacture, but also which is capable of being readily, easily and quickly applied to or removed from the receptacle, while at the same time efficient in hermetically sealing a receptacle when applied thereto. This is a specially desirable object to attain in closures employed for receptacles adapted to contain carbonated or charged liquids, such, for instance, as beer bottles or the like.

In attaining simplicity of structure it is desirable to avoid employing a plurality of parts; in attaining economy in manufacture it is desirable to avoid the necessity for assembling the parts by hand; in attaining efficiency, rapidity and ease in the application of the closure to, or its removal from a receptacle, it is desirable to provide means whereby the effective inclosing or surrounding diameter of the closure may be contractible, and in the case of closures for use on receptacles containing carbonated or charged liquids, it is desirable to provide means whereby the closure can withstand efficiently, without permitting leakage, the pressure of the gas or other charging agent contained within the receptacle.

It is among the special objects and purposes of my present invention to accomplish these various purposes, and to attain the results stated in connection with closures specially designed for use on receptacles containing carbonated or charged liquids, and in carrying out my invention I propose to form the closure from a single piece of material, preferably sheet metal, as tin, although I do not desire to be limited or restricted in this regard.

In practice, I propose to produce from a sheet or plate of the selected metal or material a portion of sufficient size, and of the desired contour to form a blank from which the closure by suitable and proper manipulation



is formed. From this piece of material a blank for the closure is produced by suitable stamping, drawing or otherwise forming the same into substantially the shape of a cup, in the preliminary stage of production of the closure. It is obvious that the plate may be cut from the sheet of material and drawn or stamped or otherwise formed into blank form at one operation, and therefore my invention is in no wise to be limited or restricted in this respect. In drawing, stamping or forming the plate into the blank form substantially in the shape of a cup, the closure is thereby provided with a top or crown portion 12, with a dependent integral continuous flange 13. In drawing, stamping or otherwise forming the blank into cup shape, I prefer to make the same, or the top or crown portion 12, thereof, of oval shape, as clearly shown in Fig. 1, that is, into such shape that the diameter in one direction is longer than the diameter in the other direction. The next step in the operation is to form a slit or cut 14, through the top or crown portion 12, see Fig. 4 to remove a narrow crescent shaped strip therefrom leaving the space 41. This space, as shown in Fig. 2, extends in a line adjacent the peripheral edge of the blank, but sufficiently removed from such edge to leave a portion 15, of the top or crown connected to that portion of the flange 13, which by the slit or cut 14, is separated from the remaining portion of the blank, as clearly shown in the drawing. Preferably, the slit or cut 14, extends about a semi-circumference of the blank, and at the ends thereof said slit or cut approaches more closely the peripheral edge of the blank than at points intermediate such ends, thereby gradually decreasing the width or extent of the lip 15, towards the ends of such slit or cut. The slit or cut may be continued beyond the termination of the lip or flange 15, and in line with the inner surface of the flange 13, as clearly indicated at 16, Fig. 2, thereby providing a short section of flange 19, which either with or without being reduced in width, may be folded into a loop 17, in order to contract the effective inclosing diameter of such flange, and if desired, in order to afford means for readily releasing the closure when the same is to be removed from the receptacle, one of the folds of loop 17, may depend below the edges of the other folds, as indicated at 42, Figs. 8 and 11.

In Figs. 6, and 7, I have shown a slightly modified arrangement wherein the foldable or loop portions 18, are formed at each end of the slit or cut 14, said cut being extended beyond the terminals of the lip 15, as indicated at 19. It is obvious that other modifications and variations as to the number or location of the foldable portions may be embodied without departure from the spirit or scope of my invention. I do not desire,

therefore, to be limited or restricted in these respects. After the cut or slit 14, has been made in the blank, as above described, the next step in the operation is to reduce the top or crown portion to circular shape or contour. This, in accordance with the principles of my invention, is accomplished by bending down, at substantially right angles with reference to the plane of the top or crown portion 12, the bounding edge of the slit or cut 14. I have shown in dotted lines at 20, the line of bend of that portion of the top or crown, which forms the bounding edge of the slit or cut 14. It will be seen that the portion or flange thus bent down from the edge of the slit or cut is of crescent shape, being widest at a point midway between the ends thereof, and tapering from such mid point towards the ends thereof, as clearly indicated. This edge or lip thus bent down is indicated most clearly at 21, in Figs. 5, 8, 9 and 10, and forms a reinforcing lip or flange for that portion of the flange 13, which has been partially separated by the cut or slit 14. The next step in the operation of manufacture of my improved closure for receptacles containing carbonated or charged liquids is to contract the effective inclosing diameter of the flange 13. This is accomplished by forming the loop or fold 17, 18, therein, as above mentioned, thereby drawing the separated portion of the flange into correspondence with the circular contour of the crown portion, to which condition such crown portion has been reduced by bending down supplementary lip or flange 21. In other words, when the lip 21, is bent down, as above described, the crown portion of the closure is not only thereby reduced to substantially circular contour, but is reduced to a smaller diameter than the diameter of the flange, and therefore, by forming the loop or fold 17, 18, the diameter of the flange is correspondingly contracted, and in thus contracting the flange I arrange the lip 15, thereon to engage over the edge of the crown portion formed by bending down the auxiliary lip or flange 21, as clearly shown in Figs. 5, 8, 9, and 10.

From the foregoing description it will be seen that the closure is reinforced by the auxiliary lip or flange 21, along that part thereof where reinforcement is most necessary, namely, along the line of the slit or cut 14. In practice, this auxiliary lip or flange is comparatively short in width as compared with the width of flange 13, adjacent thereto, and hence when the closure is applied to a receptacle this auxiliary lip or flange does not perform any function with reference to clamping or holding the closure upon the neck or mouth of the receptacle, this function being accomplished by the flange 13. At the same time, however, this auxiliary flange 21, is closely inclosed and encompassed by the adjacent portion of the flange 13, thereby pre-



venting any escape or leakage even under the tension of a high pressure carbonic or charged liquid or other content of the receptacle and enabling the cap to form a temporary cover for the receptacle even after the detached portion of the flange has been broken off and thrown away. In practice, and if desired, though to this my invention is not to be limited or restricted, the flange 13, may be reduced in transverse width, as indicated at 26, Fig. 8, in order to enable the fold 17, to be formed therein with facility, and in order to enable the bend or fold of the flange to be loosened whenever it is desired to remove the closure from the receptacle. The provision of this auxiliary lip also prevents the pressure of gas in the receptacle from being exerted against the detached portion of the flange thereby tending to cause the same to open up and which would result in leakage.

If desired the cap may be concentrically scored or grooved, as indicated at 40, which serves as a strengthening and bracing means for the material of the cap and hence permitting the use of thinner and lighter material.

A closure embodying the principles of my invention as above described, may be applied to a receptacle or to the mouth or neck of a bottle, can, jar or the like, in any suitable or convenient manner. Ordinarily, the lower edge of the flange 13, is crimped or bent underneath a shoulder 27, formed on or adjacent the mouth of the receptacle. If desired, the closure may be provided with a disk or washer of suitable packing material, indicated at 28, Fig. 8, and which is designed to rest upon the end surface of the receptacle being pressed there against by the bottom surface of the closure. If desired, the edge of the packing disk or washer may extend beyond the edge of the mouth of the receptacle, and down the exterior surface or side thereof, as indicated at 29, Fig. 8.

In Fig. 9, I have shown a slightly modified form of closure embodying my invention, wherein the central part 30, of the cap or closure, is depressed below the plane of the outer or bounding edge thereof, thereby forming a peripheral channel or groove which receives the edge of the receptacle mouth. In this channel or groove, if desired, may be placed a packing ring or washer 31. In this form of cap or closure and application thereof, the depressed central portion 30, aids in resisting any tendency to leak, while the channel and packing ring or gasket 31, therein, increases the resistance to leakage. This form of cap I have found effective and particularly desirable, though it is to be distinctly understood that my invention is not to be limited or restricted in these respects.

In Fig. 10, I have shown another somewhat modified arrangement wherein, instead of depressing the central portion of the cap,

such central portion 32, of the cap is raised or stamped outwardly.

It is obvious that other forms of closures may also be devised without departure from the spirit or scope of my invention.

The provision of the auxiliary lip or flange 21, arranged in such relation to the flange 13, as to reinforce the latter along the line of the slit or cut 14, and the manner of producing the same I regard as important and valuable features of my invention, and particularly in caps or closures designed or intended for use in connection with receptacles containing carbonated or charged contents.

Having now set forth the object and nature of my invention and various constructions embodying the principles thereof, I desire to be understood that many variations and changes in the details of construction and arrangement might readily occur to persons skilled in the art and still fall within the spirit and scope of my invention, but

What I claim as new and useful and desire to secure by Letters Patent is

1. The method which consists in forming a sheet of suitable material into a shell or cup, having a top or crown and an integral flange, then depressing the center of said top or crown and slitting the same for a portion of its peripheral length then deflecting or bending a portion of the top or crown, to form a lip, and finally contracting the length of the flange.

2. The method which consists in forming a sheet of suitable material into a shell or cup, having a top or crown and an integral flange, then slitting or cutting through the top or crown for a portion of the peripheral length thereof, then bending or deflecting a portion of that part of the top or crown forming the edge of such slit or cut, to form an auxiliary lip, and finally contracting the length of the flange.

3. The method which consists in forming a sheet of suitable material into a shell or cup, having a top or crown and an integral flange, then separating the flange for a portion of its length from the top or crown, then bending or deflecting a portion of the edge of the top or crown adjacent the separated part of the flange, and of decreasing width from the center line to the ends thereof to form a lip, and finally contracting the length of the flange.

4. The method which consists in forming a sheet of suitable material into an eccentric shaped shell or cup, having a top or crown and an integral flange, then separating the flange from the top or crown for a portion of its length, then bending a portion of the top or crown adjacent the separated portion of the flange, and of decreasing width from the center line to the ends thereof to form an auxiliary lip, and to reduce the crown to circular contour, and finally contracting the length of the flange.



5. A cap or closure for receptacles, having a top or crown and a continuous flange formed integrally therewith, said flange being separated from the top or crown for a portion of the circumferential length thereof, said top or crown having a depending lip adjacent the separated part of the flange, said lip being of decreasing width from the center line to the ends thereof and said flange having a foldable portion formed therein.

6. A cap or closure for receptacles, having a top or crown, and a continuous flange formed integrally therewith, said flange being separated from the top or crown for a portion of the circumferential length thereof, and provided with an engaging lip, said top or crown having a portion thereof adjacent the separated part of the flange, and of decreasing width from the center line to the ends thereof bent or deflected to form an auxiliary or reinforcing flange, the separated part of the flange having a foldable portion.

7. A cap or closure for receptacles, having a top or crown, and an integral flange, said flange being separated from the top or crown for a portion of the peripheral length thereof, and provided with a foldable portion, the top or crown having a reinforcing lip or flange adjacent the separated part of said first mentioned flange and extending for a portion only of the peripheral length thereof.

8. A cap or closure for receptacles, having a top or crown, and an integral flange, said flange being separated for a portion of its length from the top or crown, and provided with an engaging lip, the top or crown having its edge adjacent the separated part of the flange and for a portion only of the peripheral length thereof bent or deflected to form an auxiliary flange, said integral flange having a foldable portion for contracting the length of said first mentioned flange.

9. A cap or closure for receptacles, having a top or crown and an integral flange, said top or crown having a depressed center, the flange being separated for a portion of its length from the top or crown, the top or crown having a depending lip formed in the edge thereof, adjacent the separated part of the flange, and for a portion only of the peripheral length thereof, said integral flange having a foldable portion for contracting the diameter of the flange.

In testimony whereof I have hereunto set my hand in the presence of the subscribing witnesses, on this 3rd day of April A. D., 1907.

WILLIAM H. DODGE.

Witnesses:

JOSEPH KLEIN  
S. E. DARBY