O. BECHER.

CAN CLOSURE.

APPLICATION FILED JAN. 11, 1910.

975,317. Patented Nov. 8, 1910.

Fig. 1.

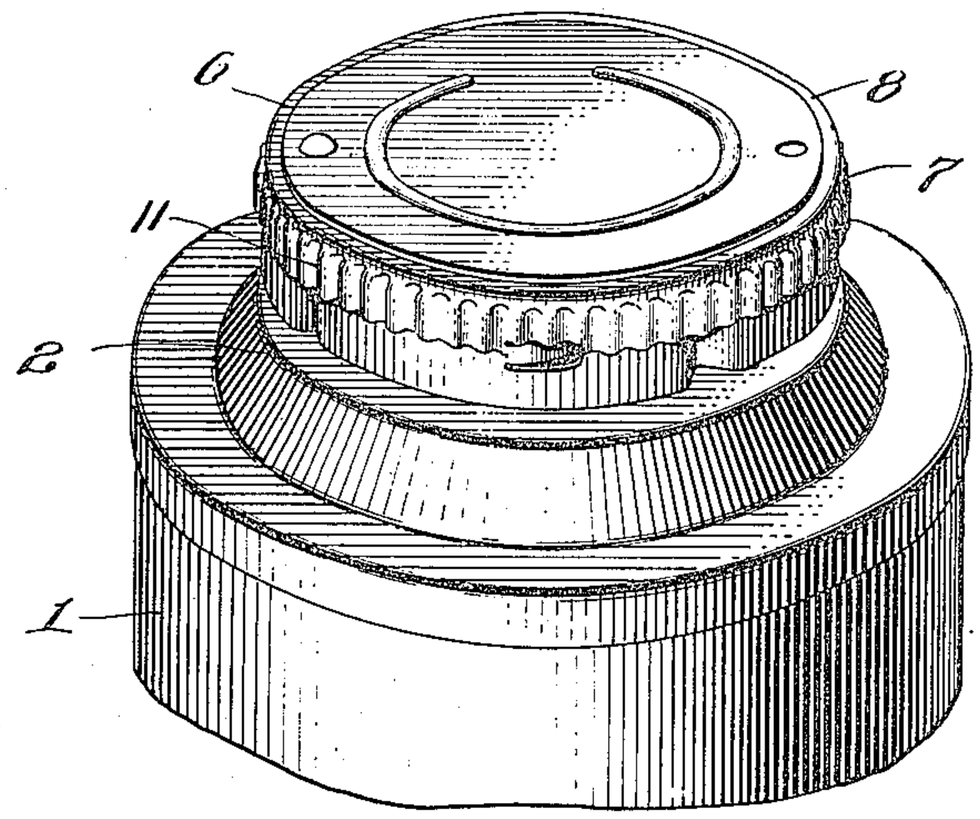


Fig. 2.

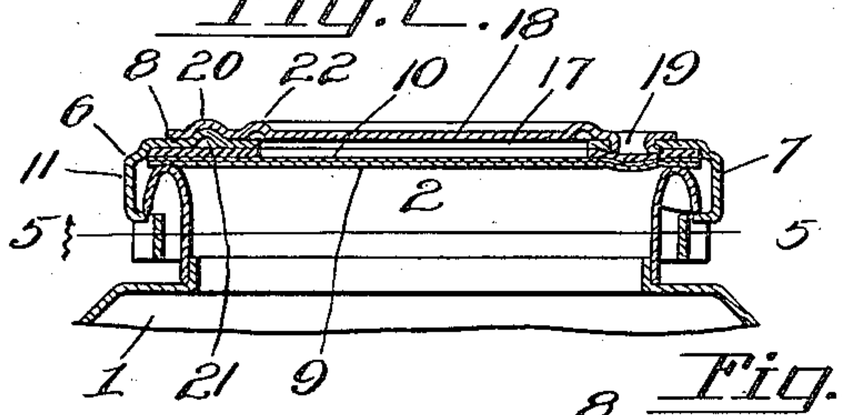


Fig. 3.

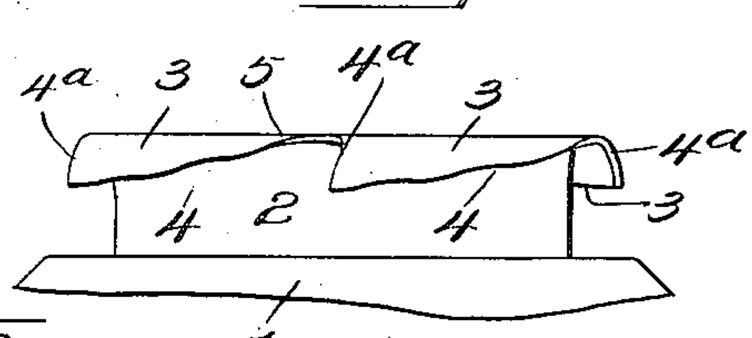


Fig. 6.

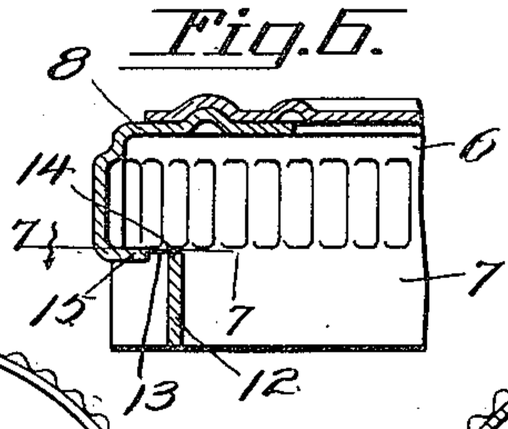


Fig. 4.

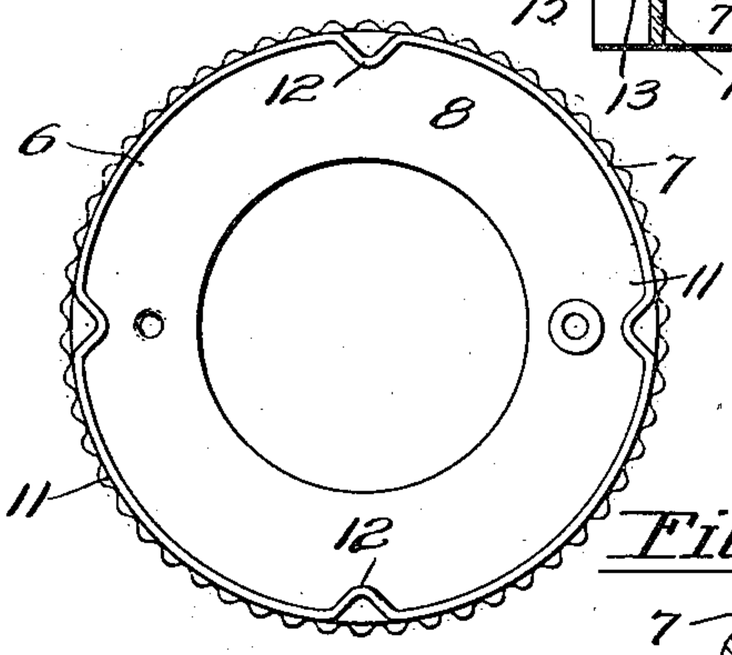


Fig. 5.

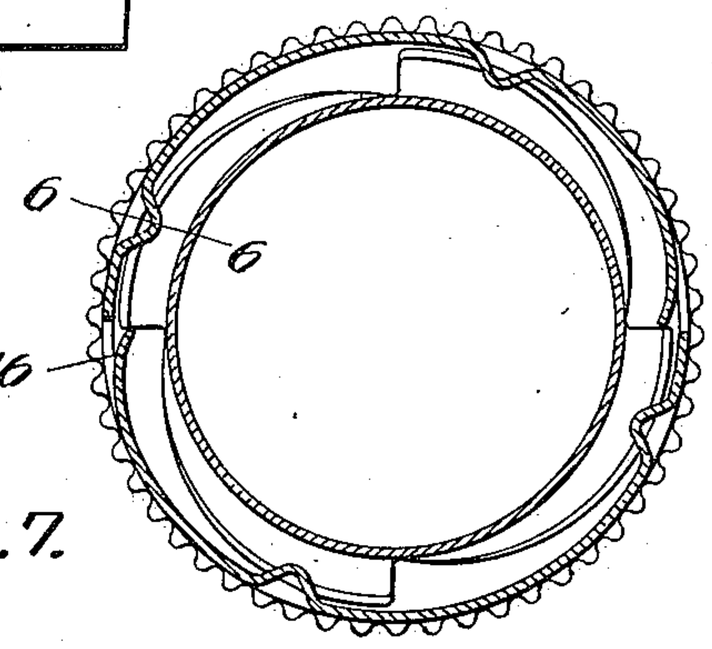
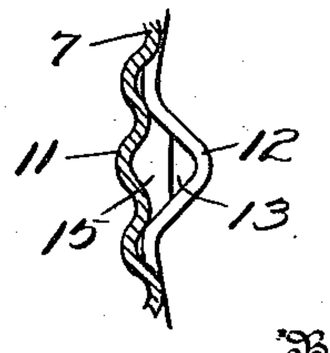


Fig. 7.



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CAN-CLOSURE.

975,317. Specification of Letters Patent. Patented Nov. 8, 1910.

Application filed January 11, 1910. Serial No. 537,569.

To all whom it may concern:

Be it known that I, OTTO BECHER, a citizen of the United States, residing at Copiague, in the county of Suffolk and State of New York, have invented new and useful Improvements in Can-Closures, of which the following is a specification.

This invention relates to tops and sealing caps for cans, bottles, jars and other like receptacles, and particularly to means for securing an interlocking connection between the container and cap, whereby an air or liquid-tight closure may be secured.

The object of the invention is to provide a construction which will afford ready application of the cap to the can and its ready release for removal, and which will secure the production of an absolutely air or water-tight closure, and further to provide a novel construction of cap which will interlock accurately with the container and cannot become accidentally displaced.

A further object of the invention is to provided a cap having lugs or indentations of novel construction to engage inclined flanges or shoulders on the container, which lugs are so formed as to secure maximum strength and to withstand the strain imposed upon them and to enable a cap of thin metal to be produced and a firm binding action obtained without liability of distortion of the cap.

A still further object of the invention is to provide a cap which may be locked permanently to the receptacle so that it can not be removed without mutilating the cap and receptacle, whereby the seal cannot be tampered with without giving visual evidence of such fact.

The invention consists in the features of construction, combination and arrangement of parts hereinafter more fully described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is a perspective view, illustrating the application of the invention to a metallic can. Fig. 2 is a vertical section through the neck or top of the can and the closure cap. Fig. 3 is an elevational view of the top of the can. Fig. 4 is a bottom plan view of the cap. Fig. 5 is an enlarged horizontal section on the line 5—5 of Fig. 2. Fig. 6 is an enlarged, cross section on the line 6—6 of Fig. 5. Fig. 7 is a section on the line 7—7 of Fig. 6.

Referring to the drawing, 1 designates the body of a receptacle, shown in the present instance in the form of a metallic can, having a top or neck portion 2 secured thereto, which neck portion is provided with outwardly and downwardly bent substantially triangular flanges 3, provided with inclined lower or cam-shaped locking edges 4, the edges of the respective flanges being inclined in the same direction. The several flanges terminate in vertical shoulders 4^a and are separated by intervening spaces 5, for a purpose hereinafter described.

The closure employed comprises a sheet metal cap 6 embodying a flange 7 and a top or crown portion 8. The cap is adapted to be used in connection with an ordinary sealing disk 9 and liner 10 of suitable material, to form a close joint between the same and the rim edge of the neck 2, but the sealing disk may be used with or without the liner, as different circumstances may require.

The upper portion of the flange of the cap is provided with an annular series of vertical corrugations 11, forming a milled surface by which the cap may be tightly gripped for application and release. These corrugations are formed by offsetting portions of the flange solely in an outward direction, so that there will be no inwardly extending portions of the corrugations to bind against the cam flanges 3 and interfere with a proper locking action between said flanges and the cap. Below the corrugated or milled surface the flange of the cap is formed at intervals with instruck lugs or projections 12 corresponding in number to the flanges 3 and adapted to pass downward through the spaces 5 and bind against and interlock with the inclined edges 4 of the flanges. Each of these lugs or projections 12 extends between the lower edge of the flange 7 and the lower edges of the adjacent corrugation or corrugations and is composed of a portion of the metal of the flange bent inwardly into substantially V or U-form, so as to provide a lug or projection of maximum strength to resist possible distortion or stretching of the metal during the binding action.

In practice, each lug or projection is formed by horizontally slitting the flange 7, as indicated at 13, and then bending the freed portion of the metal below the slit inwardly, as a result of which construction the lug is provided with a plane upper bearing edge 14 to frictionally engage the inclined surface 4 of one of the cam flanges 3 and interlock therewith with a substantially knife-edged effect, to secure a firm binding action. The slit 13 is preferably arranged slightly below the adjacent corrugation or corrugations, so that in the operation of forming the lug 12, the edges of the metal at the base of the corrugation will be projected inward by the action of the forming die to produce a bracing lip 15 which extends between the walls of the cut-away portion, thus bracing the lug or projection against either transverse or circumferential displacement. This lip, in addition to acting as a bracing element to prevent distortion of the metal, may also exert a binding action on a cam flange to coöperate with the projection in locking the cap securely in position upon the neck.

In the operation of closing the mouth of the container, it will be understood that the cap is arranged to bring the lugs 12 into alinement with the spaces 5 between the cam flanges 3, after which, the cap is forced downward upon the neck until the lugs pass into contact with the inclined edges 4 of the flanges, whereupon the cap is turned in the proper direction to lock it in position, the turning action and contact of the lugs with said inclined edges causing the cap to be drawn down to force the sealing disk 10 closely into contact with the rim of the neck, thus forming an absolutely secure air and liquid-tight closure. As, in this operation, lugs 12 bind firmly on the inclined edges 4, any possibility of the cap being casually turned back to break the seal will be avoided. To release the cap, it is simply necessary to turn it in a retrograde direction until the lugs again register with the spaces 5, whereupon the lugs will be free from the cam flanges and the cap may be withdrawn. Owing to the described manner of constructing the lugs 12, the lugs are rendered of great strength and rigidity, and, hence, the cap may be turned very tightly into engagement with the cam flanges without liability of distorting the flange of the cap, even when the cap is made of very thin material, so as to destroy the effectiveness of the seal.

The cap may be provided with any suitable form of crown portion 8, an ordinary imperforate crown being employed when the cap is designed to be coupled to the container so that it may be removed to allow the contents of the container to be extracted in the usual way through the neck 2. Under some conditions, however, it is desirable to provide a means by which the cap may be locked to the receptacle in such manner that it cannot be removed without mutilating it, and thus giving visual evidence of the fact that it has been tampered with. A cap of this type is desirable to prevent the substitution of inferior goods for those of known quality, and in the event of the use of such a cap, it is necessary to provide some means whereby the contents of the receptacle may be withdrawn through the cap. In constructing a cap to be locked permanently upon the neck, I provide the flange of the cap with circumferentially extending locking tongues 16, equal in number to the flanges 3 and the lugs 12, and preferably disposed equidistantly between the latter. These tongues are formed by slitting the metal of the flange and projecting the freed portion of the metal inwardly on curved lines tangentially to the flange, the free ends of the tongues extending in a direction reverse to that in which the cap is turned in applying it to the receptacle. The arrangement of the tongues is such that their free ends are adapted to ride upon the outer faces of the cam flanges 3 until the cap is fully applied, and then spring inwardly into engagement with the vertical shoulders 4^a of said flanges, at which time they act as detents to prevent retrograde rotation of the cap to remove the cap by turning it backward, the pressure thrown upon the tongues causing them to bend inwardly to a further degree to pass behind the flanges 3, by which the removal of the cap will be absolutely prevented. Such movement of the cap as well as any attempt to bend the tongues outward from locking engagement with the flanges, would result in the mutilation of the cap or flanges or both, thus giving visual evidence of the fact that an attempt has been made to remove the cap from the receptacle. The crown 8 of the cap is provided with an opening 17 which may register with an opening in the liner 10, and which is closed by the disk 9 against communication with the interior of the jar and by the lid or cover 18 against communication with the atmosphere. This lid or cover is pivotally connected at one side of the crown as indicated at 19 so as to be swung outward laterally to expose the opening, and is provided with an indentation 20 adapted to engage an indentation 21 on the crown to secure it in closed position. If desired, the lid may be formed with a rib or projection 22, serving as a finger piece by which it may be manipulated. When it is desired to secure access to the container for the purpose of removing its contents, the lid is opened and the exposed portion of the disk 9 cut away, allowing the contents to be removed through the opening 17.

While I have illustrated my invention in connection with a can top, it will, of course, be understood that it may be employed in conjunction with bottles, jars, or other analogous types of containers.

Having thus described the invention, what is claimed, is:—

1. The combination with a receptacle having its neck portion provided with locking projections having inclined faces, of a cap having locking elements upon its flange to engage said faces, and provided with additional locking members for engagement with said projections to lock said cap against removal.

2. The combination with a receptacle having its neck portion provided with locking members formed with inclined faces, of a cap having its flange formed with locking projections to engage said inclined faces, said locking projections being separated at their upper edges from the flange and comprising substantially V-shaped instruck portions vertically disposed upon the flange with their upper edges horizontally arranged to engage the inclined faces.

3. The combination with a receptacle having its neck portion provided with locking members formed with inclined faces, of a cap having its flange formed with locking projections to engage said inclined faces, each of said projections being separated at its upper edge from the body of the flange and comprising an inwardly offset V-shaped portion, the adjacent portion of the flange above said projection being bent inward to provide a bracing lip located between the side walls of said V-shaped portion.

4. The combination with a receptacle having its neck portion provided with locking members formed with inclined faces, of a bottle cap having its flange formed with an annular row of corrugations and provided below the same with locking projections to engage said inclined faces, said projections being separated from the adjacent corrugations or corrugation and bent inwardly substantially in V-form, the metal at the base of said adjacent corrugation or corrugations being bent inwardly to provide a bracing lip lying between the walls of the projections.

5. The combination with a receptacle having cam-shaped locking members thereon, of a cap provided with projections to engage said locking members and having tongues adapted to interlock with said locking members to prevent removal of the cap.

6. The combination with a receptacle having locking members provided with inclined lower faces and terminal shoulders, of a cap having projections to engage said inclined edges and tongues to interlock with said shoulders, said tongues being arranged to prevent removal of the cap from the receptacle.

7. The combination with a receptacle having cam locking members thereon, said members being provided with inclined lower faces and terminal shoulders, of a cap having projections to engage said inclined edges and also having circumferentially-extending tongues to interlock with said shoulders, said tongues being arranged between said projections and in advance thereof in the direction of the applying movement of the cap for engagement with said shoulders to prevent removal of the cap from the receptacle.

8. The combination with a receptacle having locking members thereon, of a cap provided with locking projections to engage said locking members to secure said cap in position, and integral auxiliary locking members upon the cap bent inwardly therefrom to engage the locking members on the receptacle, to lock the cap against retrograde rotation.

9. The combination with a receptacle having locking members provided with inclined lower faces and terminal shoulders, of a cap having projections to engage said inclined edges and circumferentially arranged tongues having free ends bent inwardly to interlock with said shoulder, said tongues being operative to prevent retrograde movement of the cap and its disconnection from the receptacle.

In testimony whereof I affix my signature in presence of two witnesses.

OTTO BECHER.

Witnesses:

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FRANK M. DALRYMPLE.