

No. 875,074.

PATENTED DEC. 31, 1907.

W. E. HEATH.
RECEPTACLE SEALING CAP.
APPLICATION FILED JAN. 14, 1907.

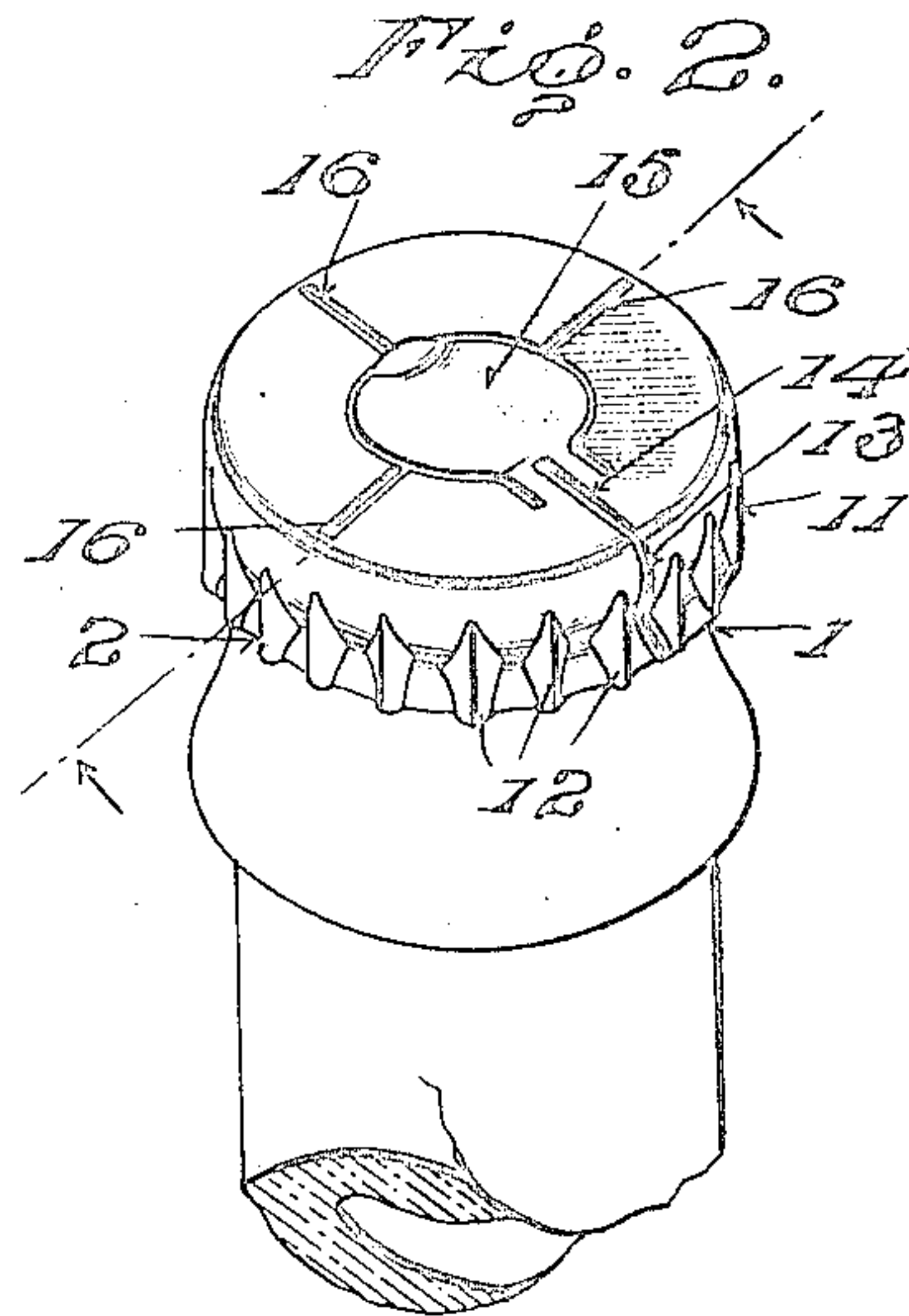
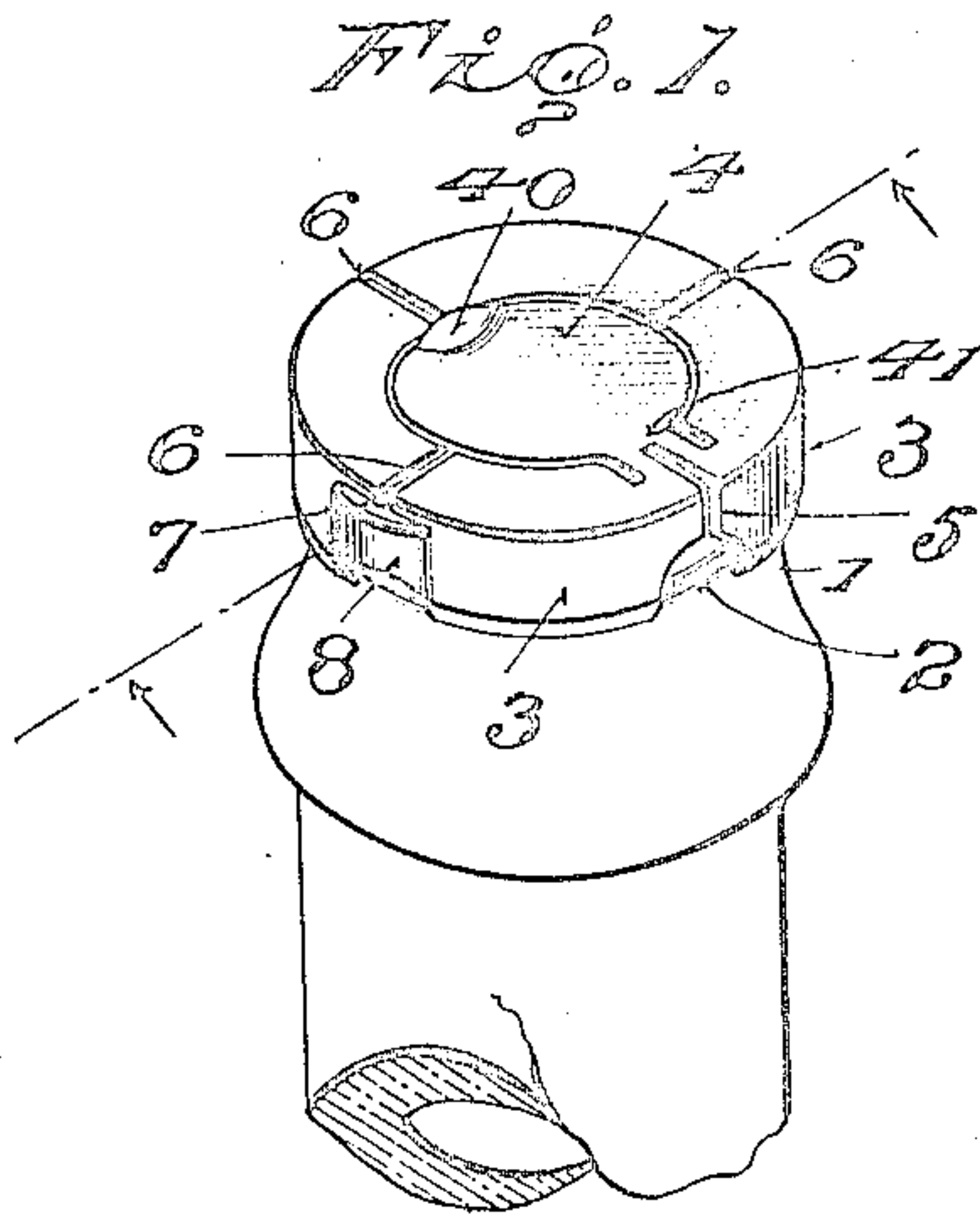


Fig. 3.

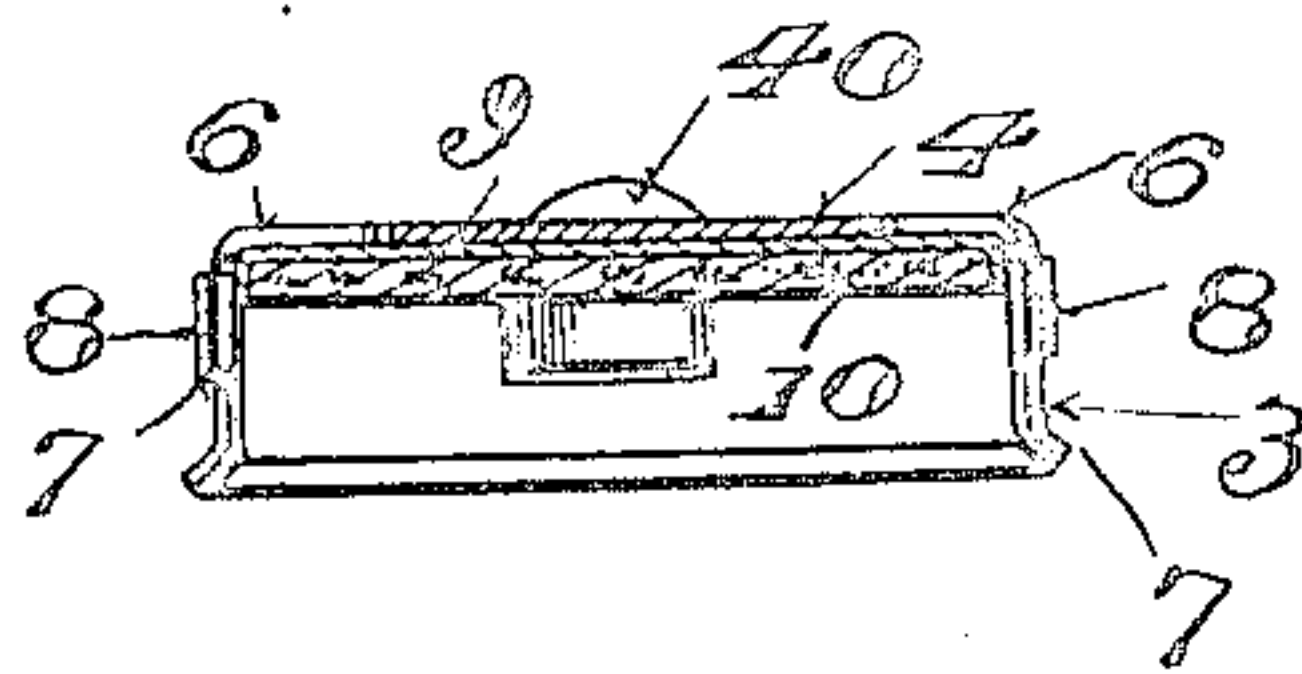


Fig. 4.

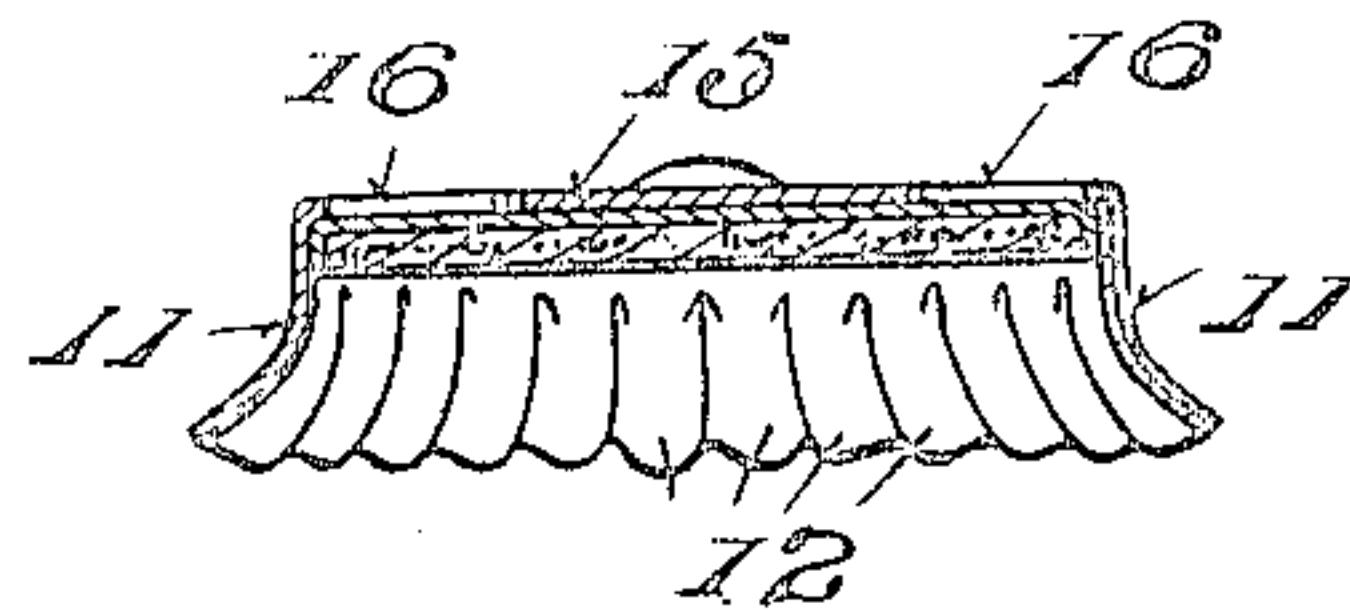
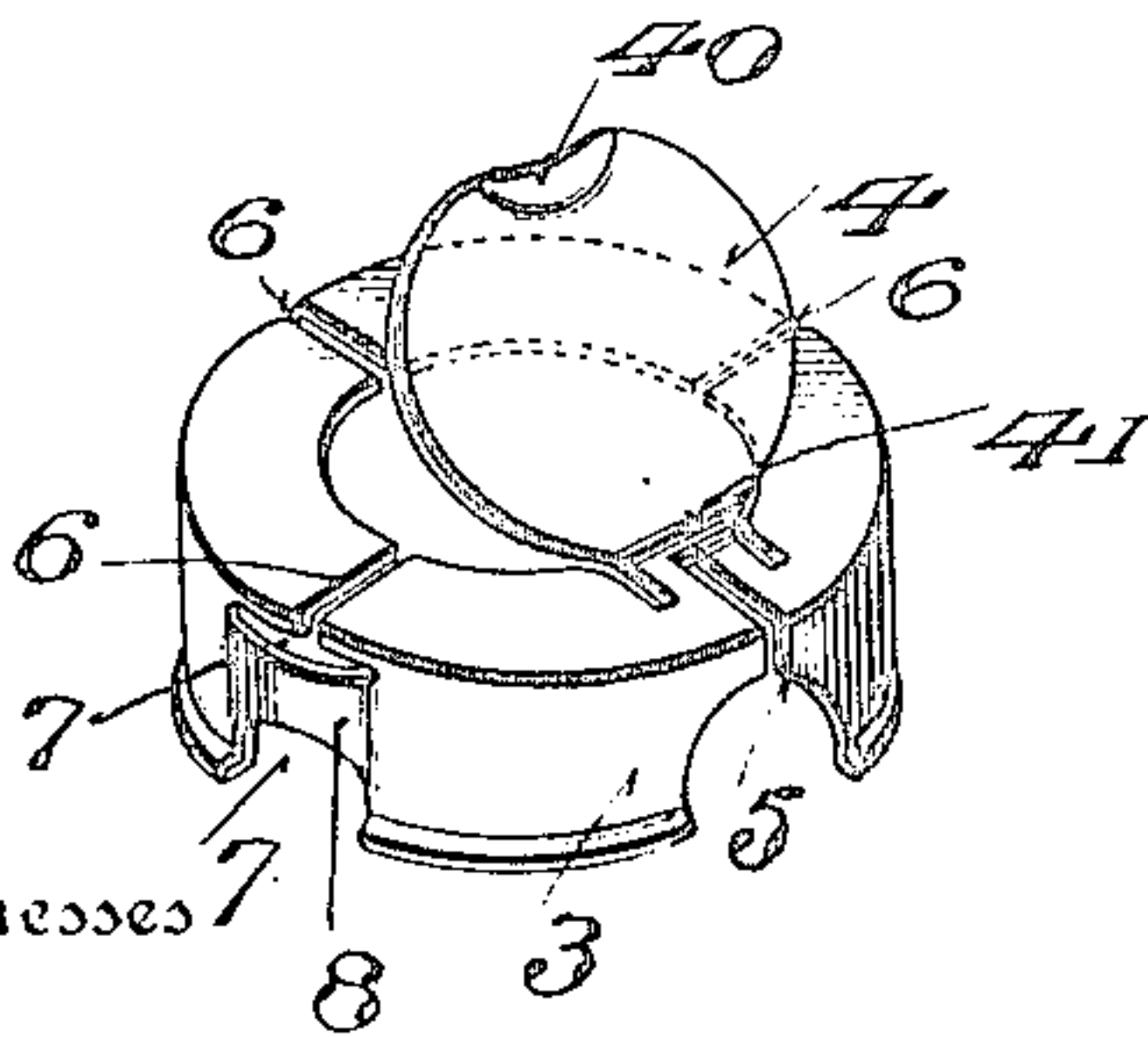


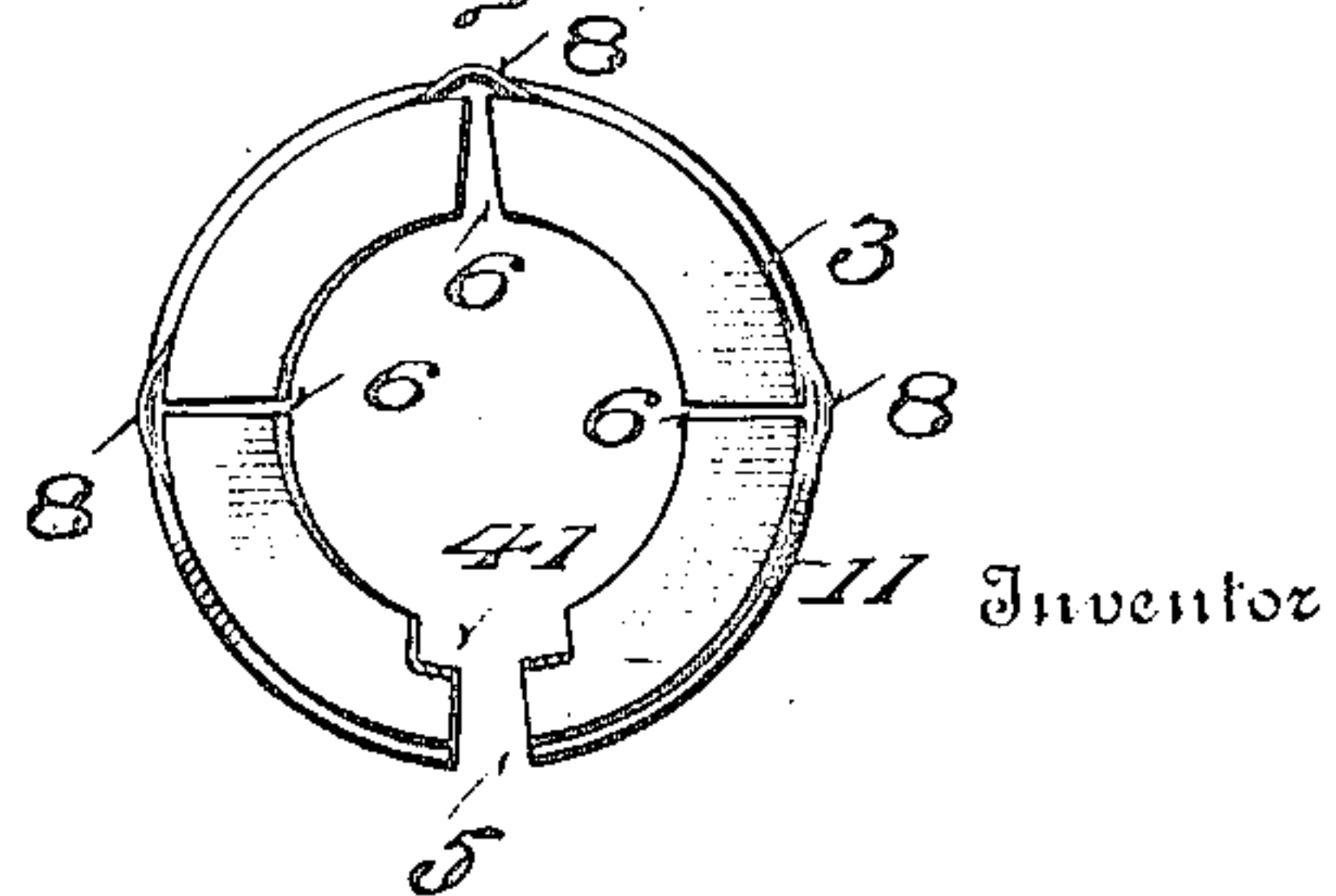
Fig. 5.



Witnesses

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Fig. 6.



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RECEPTACLE-SEALING CAP.

No. 875,074.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed January 14, 1907. Serial No. 352,231.

To all whom it may concern:

Be it known that I, WILLIAM E. HEATH, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Receptacle-Sealing Caps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in bottle sealing caps.

The objects and nature of my invention will be readily understood by those skilled in the art in the light of the following explanations of the embodiments shown in the accompanying drawings as examples from among other arrangements and formations within the spirit and scope of my invention.

An object of the invention is to provide an improved sealing cap capable of being bent into locking contact with a shoulder on the head of a bottle and including by virtue of its construction, means which will enable any one to remove the cap clear of the bottle and thus get at its contents, without the employment of any tool or instrument whatsoever; the fingers alone being all that is required to effect a quick and speedy removal of the cap locked to the head of a bottle.

A further object of my invention is to provide a more economical cap than those now in present use, by eliminating the extra expense due to the purchase of specially constructed openers, which are necessary in order to pry the caps off the bottles, and also in the saving to the trade of bottles which are now broken by the consumer in order to get at the contents when an opener is not at hand; the percentage of bottles so broken being considerable.

A still further object of my invention is to provide an improved sealing cap capable of conforming to bottle mouths varying somewhat in size, and which, when contracted or otherwise locked on the bottle mouth, will be held under tension, or contracted from its normal size or condition, and which is so formed, that without the use of any tool or specially constructed instrument, the fingers can be employed to break or sever the tension of the cap and thereby permit the cap to act on its tendency to rebound, expand, or spring to its normal condition, so that the cap may be removed from the bottle by the fingers alone.

A further object of the invention is to provide certain improvements in details, formations, and arrangements, whereby a highly efficient improved receptacle seal will be produced capable of release from the receptacle mouth without the employment of openers or other instruments.

The invention consists in certain novel features in construction and in arrangements and formations as more fully and particularly set forth hereinafter.

Referring to the accompanying drawings;—Figures 1 and 2, are perspective views of caps constructed in accordance with my invention, locked to the head of a bottle. Fig. 3, is a vertical section through the cap of Fig. 1, before application to the bottle mouth. Fig. 4, is a vertical section through the cap of Fig. 2, before application to the bottle mouth. Fig. 5, is a perspective showing the finger piece bent up preparatory to breaking or detaching the same from the remainder of the cap. Fig. 6, is a top plan of the cap of Fig. 1, showing the same expanded after the detachment of the finger piece.

In the drawings, 1, is the mouth portion of a bottle or other receptacle having the exterior annular locking groove, shoulder or contracted portion 2, a slight distance below the annular top edge of the bottle mouth.

The seal comprises a metal cap adapted to fit over the mouth of the bottle and compress a sealing disk against the top edge of the bottle mouth and having a depending locking flange bent into locking contact with the shoulder 2, which locks the cap, holding said disk compressed, to maintain a tight seal.

The cap of the type illustrated by Fig. 1, is struck up from sheet metal with an approximately flat top and a depending flange 3, adapted to be spun or turned under the locking shoulder of the bottle.

The top of the cap is cut to form a usually enlarged finger piece 4, normally arranged in the plane of the cap and at its free end terminating in upturned edge 40, by which the finger piece can be easily raised. The loop-like cut forming the finger piece has its ends spaced a short distance apart and extended toward the edge of the cap to form the comparatively narrow neck 41, forming the connection between the finger piece 4, and the annular top horizontal flange of the cap, formed by cutting out the finger piece.

The locking flange 3, of the cap is com-

pletely severed by cut or slit 5, which is preferably extended into the cap top and longitudinally into the neck or connecting ligament 41, so that a line transverse of said neck will intersect the slit 5, and the two cuts forming said neck, whereby the uncut portions of metal between cut 5, and the cuts forming the neck 41 hold the cap against spreading at the slit 5.

In view of the fact that when the flange of the cap is bent into locking contact with the shoulder of the bottle, a very stiff and rigid result is attained, it becomes necessary to so slit the top horizontal flange by one or more cuts, that when the final operation prior to the actual removal of the cap has taken place, these cuts will cause the cap to spring away from the locking shoulder, and enable the operator to release the cap from its locking contact with the greatest of ease.

I thereby provide the top of the cap with one or more radial cuts or slits 6, extending from the finger-piece forming cut to or about to the top of the depending locking flange. I particularly provide such a radial slit diametrically opposite the slit 5, and if desired can arrange slits 6, half way between slit 5, and said diametrically opposite slit 6. However, I might employ but one slit 6 or possibly two slits 6.

Without the slotting of the cap flange by the slits 6 it would be impossible to remove the cap with the fingers even after the metal had been broken transversely of the slit 5, for the circumferential rigidity of the cap when locked to the bottle would be so great, that a tool of some kind would have to be employed to pry the flange apart at the slit 5; hence the employment by me of the slits 6. I can also cut away the depending locking flange below and communicating with each slit 6, so as to form the opening or slot 7, communicating with slit 6, leaving said bridged by an expansible circumferential piece or ligament 8, connecting the uncut portions of the flange on opposite sides of the opening 7. This ligament 8 is bulged outwardly at its central portion, and I can provide the locking flange with any suitable number of these bulged circumferential portions, whereby said flange is rendered expansible to properly fit all sizes of bottle mouths in a given series.

The cap is usually drawn to the diameter of the head of the smallest bottle in a given series, and the extreme edge of the flange flared slightly in order to permit it to start down around any size (up to the largest) bottle mouth in the same series, and as the cap is forced down in the act of seating the cork or other sealing medium upon the bottle mouth, the bulged portions will completely or partially straighten out or distend, and thereby allow the cap to expand to just the required extent to enable it to properly seat

itself on the bottle mouth being capped; the slots 6 through the top horizontal flange allowing the depending flange of the cap to expand circumferentially, thus permitting the capping or sealing of different sized bottles.

Whether or not expansion of the cap locking flange is provided for by vertical corrugations, or by bulged portions, such as 8, said flange can expand slightly, where necessary to fit the bottle mouth, by reason of the fact that the flange is cut or divided completely through by slot or cut 5.

After the top and depending flanges of my cap are slotted as shown, there is lacking a certain amount of rigidity on account of the slit 5, through the depending flange of the cap. Therefore, in order to stiffen and restore the cap to a condition of rigidity equal to if not greater than its original condition, I provide a metal disk 9, preferably with a depending flange, which disk fits snugly within the locking cap, and is held therein by friction. The metal disk 9 being made with a flange it is adapted to hold the cork disk 10, or other sealing medium, and by virtue of its flange it renders the locking cap absolutely rigid, thus eliminating completely any weakness which the slotting of the top and flange of the locking cap would ordinarily produce and enabling the cap to be freely handled at any time prior to its being fastened to the neck of a bottle.

The locking cap is held down under pressure to compress the sealing disk on the bottle mouth, and while thus held, the locking flange is spun or otherwise bent under the locking shoulder 2 of the bottle. The act of thus bending the locking flange, places the cap under severe tension; that is the cap is thereby abnormally contracted or bent from its normal inactive condition or position, and the metal of the cap being thus strained, tends to rebound and return to its normal condition when the slotted flange of the cap is allowed to expand by the severing of the metal across the slit 5. The cap is composed of comparatively stiff somewhat elastic material and the spring or resiliency thereof is increased by turning or bending the lower edge of the flange to lock the same, and I render the entire cap resilient or capable of expanding when its annular or ring-like form is severed or broken, by one or more slits in the top thereof, as hereinbefore described. It will hence be apparent, that to release the cap from the bottle, it is only necessary to break or sever the ring-like cap or annulus, and thereupon the cap will spread or spring open sufficiently to enable the locking flange to clear the locking shoulder of the bottle and permit the fingers to easily remove the cap from the bottle.

As a convenient means for severing the ring-like portion or annulus of the cap, I have disclosed the finger piece, hereinbefore

described, although I do not so wish to limit my invention, as other arrangements within the broad features might be employed for this purpose.

5 In the specific example shown in Fig. 1, to release the cap, the finger piece is raised and then bent back and forth several times until the neck thereof into which the slit 5 extends is transversely severed, whereupon the cap
10 springs open or expands at the slit 5, and one or more of the radial top slots 6, so that the cap can be lifted from the bottle mouth with the fingers.

The form of cap shown by Fig. 2, is struck
15 up from sheet metal, with the depending flaring flange 11, formed with the vertical corrugations 12. This cap is locked by contracting the flange so that the corrugations project beneath the locking shoulder 2 of the
20 bottle mouth. I sever the vertical locking flange of this cap by the slit 13, and continue this slit radially into the cap top and longitudinally into the neck 14 by which the finger piece 15, is connected or joined in the
25 cap top as heretofore described. This finger piece 15 is formed in the cap top by a loop-like cut as explained in connection with the construction of Fig. 1. The cap is rendered resilient and expansible by one or more ra-
30 dial slits or slots 16, in the top thereof extending from the finger piece-forming-cut toward and approximately to the juncture between the cap top and the locking flange.

The corrugations of the flange 11 render
35 the cap capable of receiving and being properly locked on bottle mouths, varying in size, and when the flange is contracted and bent into locking contact with the shoulder 2, said cap is thereby contracted and placed under
40 tension; the cap by reason of the slots or slits being made resilient with the tendency to expand to its normal condition as soon as the strain or tension of the metal is relieved. Hence, when the finger piece is bent up and
45 its neck severed or broken, as in the first described construction, the cap will spring open and so loosen on the bottle mouth as to break the seal and permit easy removal of the cap by the fingers.

50 It is evident that various changes and modifications might be resorted to in the parts, and constructions described, or that features or elements might be added or other features or elements eliminated, without departing from the spirit and scope of my invention, hence I do not wish to limit myself to the exact constructions shown.

What I claim is:—

60 1. A sealing cap having an expansible depending locking flange, said cap being partially severed through said flange and across its top and formed with a connecting portion normally preventing spreading of the cap where partially severed, a finger piece for

breaking said portion, said cap being resili- 65 ent and contracting under tension when secured on a receptacle mouth.

2. A cap having a depending locking flange divided by a slot extending into and partly across the top of said cap, the cap top 70 being cut to form a finger piece and a horizontal top flange, said top flange divided by one or more slots.

3. A cap having a locking flange divided by a single slot extending into and partly 75 across the top of said cap, the cap top being cut to form a top horizontal flange divided by one or more slots, and a finger piece integral with said horizontal flange, and a flanged metal disk within said cap. 80

4. A sealing device comprising a stiff metal cap having an expansible depending locking flange, said cap being severed through said flange and partially across the cap top, and finger operated means for break- 85 ing the non-severed portion of the cap top which holds the cap against opening or spreading when bent or locked on a bottle mouth, substantially as described.

5. A sealing device comprising a stiff 90 metal cap having a depending locking flange adapted to be bent under the locking shoulder of a bottle mouth to lock and contract the cap under tension on the bottle, said cap being severed completely across the top and 95 through the flange except for an unbroken connecting portion holding the cap against spreading, and means for severing or breaking said portion, and thereby permitting the cap, when locked on the bottle mouth, to 100 spring open or spread for removal from the bottle by the fingers.

6. A sealing device comprising an inner cap provided with a sealing medium disk, and an outer stiff metal cap having a depend- 105 ing locking flange adapted to be bent under the locking shoulder of a bottle mouth to lock and contract the cap on the bottle under tension, said outer cap being cut or severed completely across the top and at one point down 110 through said flange, except for an unbroken connecting portion holding said cap against opening or spreading while being bent and after being locked on the bottle, said cap being formed with a finger operated portion for 115 severing or breaking said portion and thereby permit the cap to spring open or spread for easy lifting from the bottle by the fingers.

7. A bottle sealing cap having a depend- 120 ing locking flange adapted to be bent under a bottle mouth locking shoulder to lock and contract the cap under tension on the bottle, said cap being severed through said flange and completely across the top to the flange at a point opposite the cut through the flange 125 except for and being formed with a top connecting portion holding the cap against spreading and having a finger piece whereby

said portion can be broken to permit the cap to spread or open on the bottle mouth for easy removal therefrom.

8. A sealing device comprising a stiff metal cap having a depending flaring locking flange adapted to fit bottle mouths of different diameters and be bent under the locking shoulder thereof, said cap being completely severed across the top and through said flange, except for a narrow connecting portion, to form the cap in sections connected by the uncut portion of the flange and by said connecting portion, and formed with means for breaking or severing said connecting portion.

9. A sealing cap having a depending locking flange, said cap being severed through said flange and completely across its top except for a connecting portion normally preventing spreading of the cap whereby said cap is contracted under tension when locked on the bottle mouth, and a finger piece for breaking said portion, whereby when said portion is severed the cap opens or spreads thereby permitting removal thereof from the receptacle mouth.

10. A bottle sealing device comprising an annular locking member formed of one piece of stiff metal having a horizontal top flange and a depending locking flange adapted to be bent under the locking shoulder of a bottle mouth to lock and contract said member under tension on the bottle, said top flange being cut through to the depending flange and at an opposite point said member being cut completely through the top and depending flanges except for a cross connecting portion having a projecting piece whereby said portion can be bent and broken to permit the member to spring or spread for easy removal from the bottle mouth by the fingers, and a cap within said member having a sealing medium.

11. A bottle having an exterior locking shoulder, in combination with a sealing device comprising a stiff metal cap having a depending locking flange bent under said shoulder and contracting the cap under tension and locking the same on the bottle, said cap being severed completely across the top and by a cut through said flange except for a

narrow connecting portion holding the cap under tension and against spreading and a finger piece projecting from said portion for severing or breaking the same and thereby relieve the tension on the cap and permit the same to spring open for easy removal from the bottle.

12. A bottle seal comprising a flanged cap having its top cut to form a finger piece joined in the top by a neck, said cap being cut through its flange and into said neck in the top thereof thereby rendering said flange expansible.

13. A bottle seal comprising a flanged stiff metal locking cap having its top cut to form a finger piece adapted to be bent up and broken therefrom and with a slit extending from said cut about radially through the top, said flange being severed by a cut extending into the top through the portion adapted to be broken by said finger piece.

14. A sealing device comprising a stiff metal flanged locking cap cut through the top to render the same expansible and formed with a top finger piece, said flange being severed by a cut extending into the top, whereby said flange can expand to fit bottle mouths of different diameters.

15. A sealing device comprising a flanged metal locking cap having its depending locking flange cut through except for and formed with a bulged connecting portion bridging said cut, whereby said flange is rendered expansible, substantially as described.

16. A stiff metal flanged bottle sealing cap partially severed to form two sections connected at one point by a portion of the flange, said cap formed with a connecting portion holding the cap against spreading and formed with a finger piece whereby said portion can be broken, said flange being cut and rendered expansible by outwardly bulged portions.

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

WILLIAM E. HEATH.

Witnesses:

D. ARDIN CARRICK,
GEO. W. CARRICK.