No. 775,652. PATENTED NOV. 22, 1904.

W. E. HEATH.

BOTTLE SEAL.

APPLICATION FILED NOV. 12, 1902. RENEWED MAY 23, 1904.

NO MODEL.

Fig. 1.

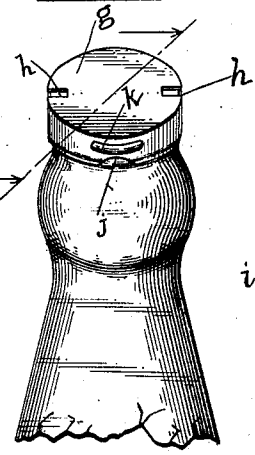


Fig. 2.

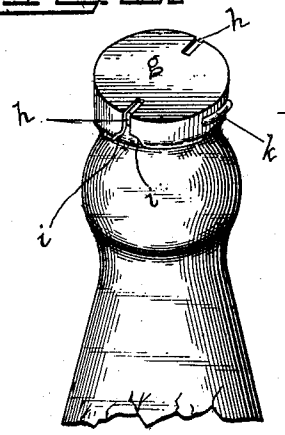


Fig. 3.

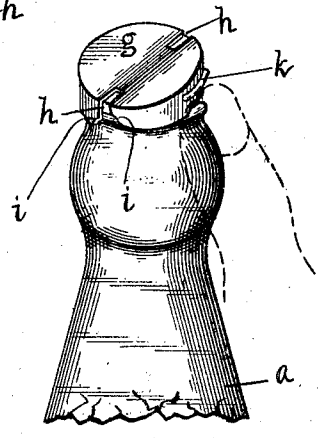


Fig. 6.

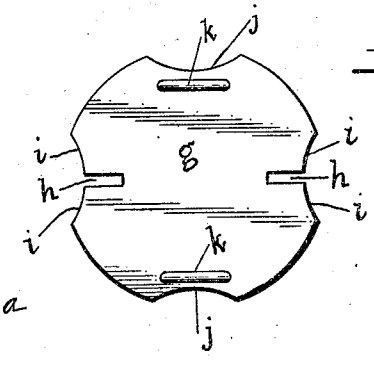


Fig. 4.

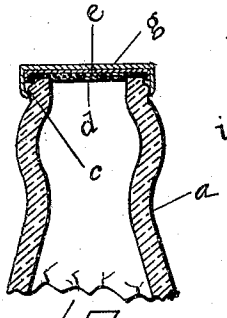


Fig. 5.

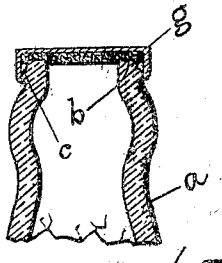


Fig. 8.

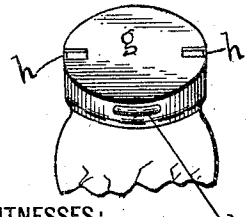


Fig. 7.

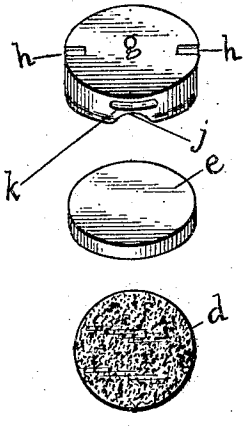
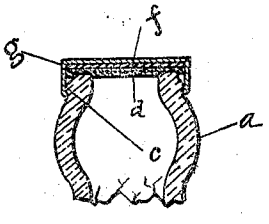


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM E. HEATH, OF BALTIMORE, MARYLAND.

BOTTLE-SEAL.

SPECIFICATION forming part of Letters Patent No. 775,652, dated November 22, 1904.

Application filed November 12, 1902. Renewed May 23, 1904. Serial No. 209,317. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HEATH, a citizen of the United States, residing at Baltimore, State of Maryland, have invented certain new and useful Improvements in Bottle-Seals; 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 sealing devices, and more particularly to cap-sealing devices for bottles; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanations of the constructions shown in the accompanying drawings merely as examples for purposes of illustration of devices, among others, within the spirit and scope of my invention.

An object of my invention is to provide a durable, economical, and an exceedingly efficient exterior cap-sealing device of an improved construction, whereby the cap can be readily removed and the seal broken, if need be, without the employment of tools or other extracting or releasing instruments.

With these and other objects in view my invention consists in certain novel features of construction and in combinations and arrangements of parts or details, as more fully and particularly pointed out and described hereinafter.

Referring to the accompanying drawings, Figure 1 is a perspective view of an upper portion of a bottle sealed by devices in accordance with my invention. Fig. 2 is a view corresponding to Fig. 1, but looking at the bottle from a different angle or position. Fig. 3 is a perspective view of the upper portion of a bottle provided with the sealing device shown in the preceding figures, the cap being shown partially removed, dotted lines indicating a thumb in the act of removing the cap. Fig. 4 is a vertical section in the plane of the dotted line indicated by arrows, Fig. 1. Fig. 5 is a sectional view in the same plane as the section of Fig. 4, but showing the sealing-medium disk fitted directly in the exterior locking-cap without being provided with the metal cap or disk of Fig. 4. Fig. 6 is a plan view of the exterior locking-cap flattened out. Fig. 7 is a detail perspective view of the seal, the parts thereof being shown separated, the sealing-medium disk being shown in elevation. Fig. 8 is a perspective view of the upper portion of the bottle sealed by a cap in accordance with my invention, having the lower end of its flange locked or spun in below the thumb-piece or projection. Fig. 9 is a sectional view corresponding to Fig. 4, but showing the sealing medium provided with a metal disk without an edge flange.

In the drawings, *a* is the bottle, having the flat angular top edge around its mouth and the usually rounded or beveled annular bead, shoulder, or projection *c* around the exterior of the bottle-mouth a short distance below the top edge *b*. It will be noted that the exterior diameter of the portion of the bottle-mouth between the bead or shoulder *c* and the top edge *b* is less than the exterior diameter of the bottle-mouth at the shoulder or bead *c*.

d is a flat circular disk of compressible or soft, preferably impervious, sealing medium, such as cork, or a suitably-prepared fabric or its equivalent. The sealing-medium disk *d* is usually imperforate and of an external diameter greater than the external diameter of the bottle-mouth at its top edge, so that the disk projects beyond the top edge of the bottle-mouth. This disk can be secured to a flanged metal or other stiff material cap or disk *e*, as shown in Figs. 4 and 7, or it can be secured to the flat circular metal disk *f*, Fig. 9, without the depending flange.

The sealing-medium disk is held tightly compressed on the top edge of the bottle-mouth to maintain a tight seal by an exterior metal cap *g*, preferably drawn from suitable non-elastic sheet metal or thin sheet metal having a permanent flexion or of a ductile nature. This external cap has a flat top or body portion and a circumferential depending flange. The internal diameter of the cap *g* is approximately equal to the external diameter of the flanged metal cap *e* or metal disk *f* or to the external diameter of the sealing-disk *d*, so that said metal cap *e*, disk *f*, or sealing-disk *d* can fit therein within the depending flange of

the cap *g* and so that said flange of the cap *g* can extend down around the bead *c* and project below the widest portion thereof.

When the sealing-disk has been placed on the top edge of the bottle-mouth and the cap *g* on the sealing-disk, the straight cylindrical flange of the cap *g* projects below the bead *c*. The necessary pressure is then applied to the flat upper surface of the cap *g* to tightly compress the sealing-disk between said cap and the top edge of the bottle-mouth, thereby forcing the top edge of the bottle-mouth into the sealing medium and causing the same to lap down around the exterior of the bottle-mouth and also down around the interior of the bottle-mouth, as clearly shown in Figs. 4, 5, and 9, thereby forming sealing-lines at the top edge and annularly around the inner and outer faces of the bottle-mouth. While the exterior cap *g* is thus held down under pressure, with the sealing medium compressed, as described, a suitable tool or implement spins or bends the lower end of the depending flange of the cap under the shoulder or bead *c*, and thereby tightly and firmly locks the exterior cap on the bottle-mouth, holding the sealing-disk compressed and maintaining the tight seal of the bottle.

In order to render the external cap readily removable without reducing its capacity or function of maintaining a tight seal when locked, I provide diametrically opposite portions of the flange of the cap with the vertical cuts or slots *h* completely therethrough throughout the length of the flange and continue the slots or cuts inwardly and radially of the flat top of the cap for a short distance. The lower end of each slot *h* is preferably flared downwardly by beveling or cutting off the edges of the flange of the cap at both sides of each slot, as indicated at *i*.

A portion of the flange of the cap midway between the two slots *h* is shown notched or cut away at *j*, the notch *j* being of such size or dimensions as to prevent the flange at that portion being spun or locked under the shoulder *c*.

I provide the cap immediately above the notch *j* with a projection or shoulder *k* of such form or size as to afford a finger or thumb hold. If desired, the projection or shoulder *k* can be formed by pressing a rib or corrugation in the flange of the cap just above the notch or other non-locking portion of the flange of the cap between the two slots.

If desired, the cap can be provided with but one notch *j* and releasing-shoulder *k*, or, if desired, the cap can be provided with two releasing-shoulders and notches arranged diametrically opposite, as shown in Fig. 6. If desired, the cap might be formed with a releasing-shoulder *k* in the flanged portion thereof without the notched or non-locking portion of the flange below the releasing-shoulder, the flange being allowed to remain unbroken and locking beneath the releasing-shoulder, as shown in Fig. 8. However, as I am at present advised by experience with my invention, I prefer that the flange be not locked immediately under the releasing-shoulder and midway between the two slots, as the cap is thereby rendered more easy for initially releasing the same when the necessary upward pressure is applied against the releasing-shoulder *k*.

The diametrically opposite slots *h* in the exterior cap permit the top wall of the cap to readily bend on a diametrical line between the inner ends of the two slots (see Fig. 3) when sufficient pressure is applied to thumb-piece *k* to release one half or section of the cap and swing the same upwardly from the bottle-mouth. As said half of the cap is released it moves up from the bottle-mouth, the cap bending along said diametrical bending-line between the inner ends of the two slots. As soon as the lower edge of the released section of the cap is free of the locking-shoulder *c* of the bottle-mouth the cap can be moved bodily backwardly or laterally, and thereby slide the lower spun end of the flange of the other section of the cap rearwardly from the bottle-mouth to entirely remove the cap from the bottle.

The ready removal of the cap is facilitated by having the lower end of each slot *h* widened or the flange of the cap adjacent to the lower ends of said slots so formed as not to lock under the locking-shoulder *c* of the bottle-mouth. The initial release of the cap is also rendered more easy and is greatly facilitated by having the flange of the cap immediately under the point of application of upward opening force so formed as not to lock under the shoulder *c* of the bottle.

Advantages are attained, as hereinbefore pointed out, by forming the sealing-disk of greater diameter than the exterior diameter of the top edge *b* of the bottle-mouth, and consequently the cap, with an internal diameter to snugly yet not tightly (preferably) receive the sealing-disk and greater than the external diameter of the top edge *b* of the bottle-mouth. The sealing-disk is brought to its proper position on the top edge of the bottle-mouth by the depending flange of the exterior cap engaging the shoulder or bead *c*.

I do not wish to limit my invention to extending the slots *h* inward along the top wall of the cap, as the diametrical bending-line can be otherwise formed in the cap. For instance, the cap might be weakened or otherwise formed to readily bend along a diametrical line between slots *h*. I also do not wish to limit my invention to a cap locked by spinning under a shoulder of the bottle, as the cap might be otherwise formed or bent for locking. Also I do not wish to limit myself to the peculiar releasing or thumb piece or shoulder shown.

The holding or seal-maintaining qualities of

the cap are not lessened or decreased by the slots or weakened diametrical bending-line, as upward pressure against the flat top wall of the cap when the cap is locked would tend to slightly bulge the central portion of the cap upwardly, and hence more tightly draw the flange of the cap inwardly or radially against the exterior of the bottle-mouth and cause the cap to more tightly grip or lock on the exterior of the bottle.

Having thus fully described my invention, I call attention to the fact that various modifications and changes might be resorted to 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—

1. A sealing device comprising a metal sealing-cap provided with a locking-flange, opposite portions of said flange being divided, said cap having a bending-line between said divided portions, substantially as described.

2. A sealing device comprising an exterior metal cap formed with a depending flange adapted to be bent inwardly under a shoulder of the bottle to lock the cap, said cap formed with a diametrical weakened bending-line, substantially as described.

3. A metal sealing-cap having a divided depending flange adapted to be bent inwardly for locking the cap, said cap formed with a shoulder approximately midway between said divided portion, substantially as described.

4. An exterior bottle-sealing cap formed with a depending flange adapted to be bent inwardly to lock the cap on the bottle, diametrically opposite portions of the cap being divided for purposes substantially as described.

5. An exterior bottle-sealing cap formed with a depending flange adapted to embrace the exterior of the bottle-mouth and be bent inwardly to lock the cap, said cap being diametrically weakened to divide the same into two halves or sections one of which can be bent upwardly independently of the other, substantially as described.

6. An exterior bottle-sealing cap having a depending flange adapted to be bent inwardly to lock the cap on the bottle-mouth, opposite portions of the flange being divided by slots, a portion of the flange at a point approximately midway between said divided portions being notched to prevent locking of the flange at that point, substantially as described.

7. An exterior bottle-sealing cap formed of ductile metal and having a depending flange, opposite portions of the flange being divided or severed by slots, the flange at a point approximately midway between said slots being formed with a shoulder or thumb-piece for the purpose substantially as described.

8. An exterior metal bottle-sealing cap hava flat top and depending flange, the flange being divided by two slots opposite each other, the cap at its edge being formed with a releasing-shoulder about midway between said slots, the flange of the cap immediately beneath said shoulder being so formed as to prevent locking of the flange at that point, substantially as described.

9. In combination a bottle having an exterior locking-shoulder and a top edge around the bottle-mouth, a sealing-disk comprising compressible sealing material adapted to be compressed on said edge, and an exterior sheet-metal cap receiving the sealing-disk and compressing the same against said edge and having a depending flange embracing the exterior of the bottle-mouth and adapted to be turned under said locking-shoulder, said cap having a releasing thumb-piece or shoulder and formed to bend along a diametrical line, substantially as described.

10. A bottle having an exterior locking-shoulder adjacent to its mouth, in combination with an exterior metal sealing-cap, and a compressible sealing-disk held within said cap, said cap having a divided depending flange capable of locking engagement with the shoulder of the bottle and formed to bend on a line between the divisions of said flange, substantially as described.

11. A bottle having an exterior locking-shoulder adjacent to its mouth, in combination with an exterior sealing-cap, and a compressible sealing-disk frictionally held within said cap, said cap having a divided depending flange capable of locking engagement with the shoulder of the bottle; said flange formed with means whereby the cap is released form the locking-shoulder, substantially as described.

12. A bottle having an exterior locking-shoulder adjacent to its mouth, in combination with a flanged metal disk containing a compressible sealing medium, and an exterior metal sealing-cap having a divided depending flange capable of locking engagement with the shoulder of the bottle, said disk frictionally held in said cap, substantially as described.

13. A bottle having an exterior locking-shoulder adjacent to its mouth, in combination with a flanged metal disk containing a compressible sealing medium, and an exterior metal sealing-cap having a divided depending flange capable of locking engagement with the shoulder of the bottle, said flange provided with means whereby the cap is released from the locking-shoulder, said disk frictionally held in said cap, substantially as described.

14. A bottle having an exterior locking-shoulder adjacent to its mouth, in combination with a flanged metal disk containing a compressible sealing medium, and an exterior metal sealing-cap formed with a diametrical bending-line, and having a divided depending flange capable of locking engagement with the shoulder of the bottle, said disk held within said cap, substantially as described.

15. A bottle having an exterior locking-

shoulder adjacent to its mouth, in combination with a disk, a compressible sealing medium under said disk, and an exterior metal sealing-cap formed with a bending-line, and having a divided depending flange capable of locking engagement with the shoulder of the bottle, said flange being notched to facilitate the removal of the cap, and provided with a shoulder above the notched portion, substantially as described.

16. A sealing device comprising an exterior metal sealing-cap partially divided along a transverse bending-line, whereby a portion of the cap can bend upon said line for releasing the cap from the bottle-mouth.

17. A bottle-cap consisting of a disk, depending gripping members arranged on the periphery of the disk, said members being separated from each other and slots in the disk opening between the gripping members.

18. A bottle-cap consisting of a metal disk, integral semicircular flanges depending from the disk, with their vertical edges adjacent to each other, notches in the disk opening into the spaces between the approaching ends of the semicircular flanges, and a thumb-piece formed on one of the semicircular flanges.

19. A cap for a bottle consisting of a disk formed with a depending annular flange and having diametrically opposite slots extending through the flange and into the body of the disk.

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

WILLIAM E. HEATH.

Witnesses:
A. C. Bell,
Harry C. Weinpahl.