

No. 676,090.

Patented June 11, 1901.

W. E. HEATH.
BOTTLE SEAL.

(Application filed Apr. 7, 1900. Renewed Feb. 25, 1901.)

(No Model.)

Fig. 1.

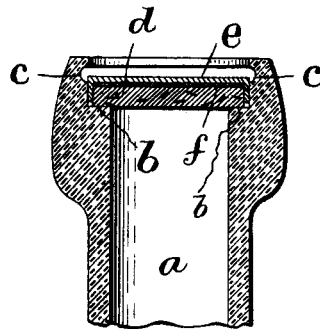


Fig. 2.

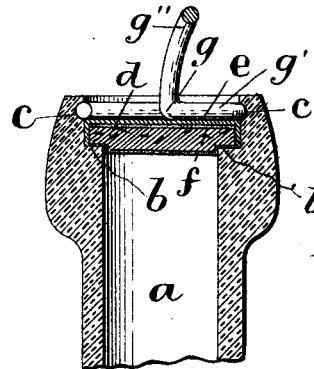


Fig. 3.

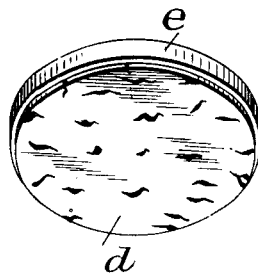


Fig. 4.

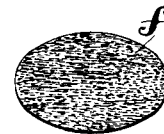
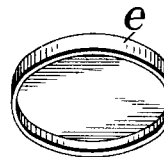
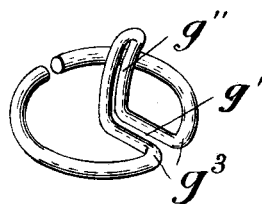


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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BOTTLE-SEAL.

SPECIFICATION forming part of Letters Patent No. 676,090, dated June 11, 1901.

Application filed April 7, 1900. Renewed February 25, 1901. Serial No. 48,843. (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, in the 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 internal-plug bottle-seals; and the objects and nature of my invention will be clearly understood by those skilled in the art in view of the following explanations of the accompanying drawings.

The invention consists in certain novel features in construction and in combinations and arrangements of parts, as more fully and particularly pointed out and specified hereinafter.

Referring to the accompanying drawings, Figure 1 is a sectional view through a bottle-mouth, showing the sealing plug or disk seated and before the same is compressed and locked by the insertion of the spring-retainer. Fig. 2 is a corresponding view showing the sealing-plug held compressed and locked by the spring-retainer. The sealing-washer, however, is shown in this view with impervious sheets both above and below the same. Fig. 3 is a detail perspective view of the sealing plug or disk. Fig. 4 is a detail perspective view of the parts which can be employed to compose the plug separated from each other. Fig. 5 is a detail perspective view of the spring-retainer.

In the drawings, *a* is a bottle-neck having the internal annular sealing sheet or shoulder *b* a short distance below its open upper end. The diameter of the liquid-passage from its top open end down to said seat is sufficient to permit the ready insertion of the sealing disk or plug into the bottle-neck, the formation being such that the disk will rest on and downward passage thereof will be prevented by said seat. A short distance above said seat the annular groove *c* or enlargement is formed in the inner cylindrical face of the bottle-neck or liquid-passage. The groove *c* is usually so located that a short cylindrical portion of the liquid-passage of the bottle-neck intervenes

between the top face of seat *b* and groove *c*. The sealing plug or disk is composed of a comparatively thin flat imperforate washer or disk *d*, formed of any suitable somewhat soft or elastic material. Among other materials cork might be used for this purpose. This flat sealing-disk is fitted snugly in a cylindrical metal cup or cap *e*. This cap is struck up from thin sheet metal and has the closed flat upper end and the short depending flange. The sealing-disk fits against the flat end of the cup, and its peripheral edge is surrounded by the flange of the cup. The sealing-disk is of greater thickness than the depth of the cup, so that the disk projects a sufficient distance below the cup to allow for the compression and possible lateral expansion of the sealing-disk without permitting the metal cap to come in contact with the sealing-seat of the bottle. The sealing-disk fits snugly in the cap and can be held therein by friction.

As the flexible or elastic material of the disk is very apt to be pervious to a certain extent and as it is desirable to keep the liquid contents of the bottle from soaking through the sealing-disk to contact with the metal cap and also destroying the effectiveness of the seal, I preferably coat a flat face of the disk with an impervious paraffin or wax (or its equivalent) sheet or layer *f*. I prefer to employ a flexible sheet of paraffin fabric for this purpose, which can be located within the cap and between the same and the disk. The under face of the disk can be so coated, or such sheets can be located on both flat faces of the disk. The sealing-plug thus described is dropped into the bottle-mouth, and the lower face of the sealing-disk rests on the sealing-shoulder of the bottle, the flat upper end of the metal cap projecting above or into the plane of the locking-groove in the liquid-passage and the metal cap snugly yet loosely fitting the cylindrical portion of the bottle-neck between the groove *c* and seat *b*. A suitable implement then applies downward pressure to the sealing-plug and compresses the sealing-disk between the cap and sealing-seat and approximately entirely into the cap. The disk is forced down below the plane of the locking-groove *c*, and then a spring locking-ring *g* is inserted in the bottle-mouth onto

the flat upper end of the metal cap and is then released and allowed to expand into the locking-groove *c*, and thus hold the plug tightly down with its elastic disk compressed and forming a liquid-tight seal.

The retainer is separate from the sealing plug or disk and rests thereon and is preferably composed of a single piece of comparatively heavy spring-wire bent to form the expansible ring by bringing its two ends together or approximately together. The central portion of the wire at the portion of the ring diametrically opposite said ends is bent to form a loop, which is deflected inwardly at *g'* toward the open center of the ring and is then deflected or bent upwardly to form the lever thumb-piece *g''*, projecting upwardly a sufficient distance above the bottle-mouth, and the two wire plies forming the loop are usually spread to constitute a comparatively wide bearing-surface for the thumb of the operator. On the application of sufficient lateral pressure against said projecting lever thumb-piece in a direction toward the two ends of the ring the side of the retainer-ring to which said thumb-piece is joined will be sprung from the locking-groove and the retainer can then be tilted from the bottle-mouth, thereby releasing the flat sealing plug or disk. The two plies of the wire forming the loop are usually separated at the inward bends *g³ g³* from the curvature of the ring a sufficient distance to permit the contraction of the ring necessary for the initial release of the ring at said bends from the locking-groove when the proper lateral pressure is applied to the thumb-piece. Certain material advantages are attained by thus connecting or applying the thumb-piece at an intermediate portion of the ring between the two ends. The radial or horizontal portion of the loop or deflection usually extends almost if not to the center of the ring, although the invention is not so limited, nor do I wish to limit the invention to the specific retainer in connection with my peculiar advantageous construction of flat internal sealing-disk.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The internal bottle-seal consisting of the flat thin elastic sealing-disk, the cup-shaped cap fitted on the disk, the disk projecting a

distance below the lower surrounding edge of the cap, and the separate spring-retainer arranged to rest on the flat top end of the cap and to expand in a groove in a bottle-mouth holding said disk compressed within the cup, substantially as described.

2. A bottle having an annular sealing-shoulder in its mouth and a groove or enlargement a distance above said shoulder in combination with a flat flexible sealing-disk resting on or opposing said shoulder and a metal cup enclosing said disk and having the approximately flat upper end, and the spring-retainer expanded in said enlargement and resting on the upper end of the cup and holding said disk compressed up into the cup, substantially as shown.

3. A sealing-plug, and a separate spring-retainer ring at an intermediate portion in its length having the inwardly - deflected loop with its end extended upwardly within the ring and forming the thumb-piece or lever, the two inward bends from the ring being separated to permit contraction of the ring, substantially as described.

4. In a bottle-seal, a sealing-plug, and an expansible spring - retainer ring therefor formed from a length of spring metal at an intermediate portion in its length formed with an inwardly and upwardly projecting loop constituting the lever thumb-piece of two plies with a space for contraction at the point where said plies are deflected inwardly from the circle of the ring, substantially as described.

5. A bottle-seal comprising a sealing-plug adapted to rest on a sealing-shoulder within a bottle-mouth, and comprising a cup-shaped cap and a sealing-disk inserted therein, and a split spring-retaining ring adapted to rest on said cap and expand into a locking-seat in the bottle-mouth and hold said cap down with said disk compressed between the same and said shoulder, said ring provided with a rigid upwardly - projecting lever thumb - piece formed by a loop, substantially as described.

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

WILLIAM E. HEATH.

Witnesses:

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CHAS. C. HEATH.