

B. F. COLBY.
BOTTLE SEAL.
APPLICATION FILED JAN. 4, 1913.

1,117,792.

Patented Nov. 17, 1914.

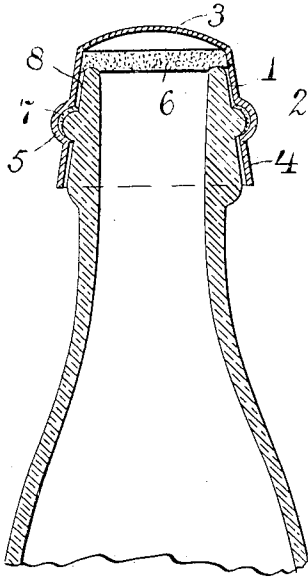


Fig. 1

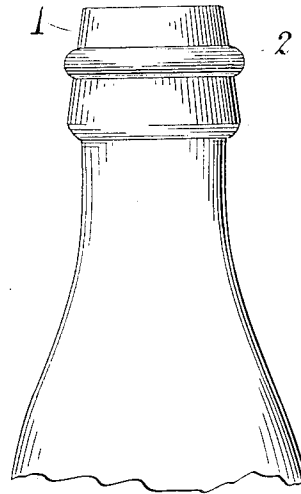


Fig. 2

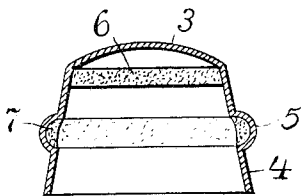


Fig. 3

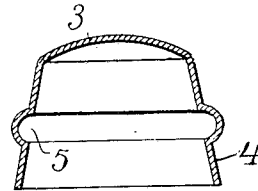


Fig. 4

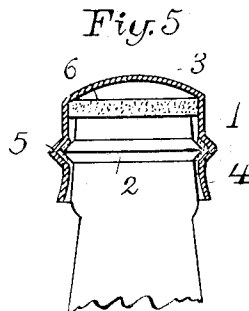


Fig. 5

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UNITED STATES PATENT OFFICE.

BENJAMIN F. COLBY, OF BOSTON, MASSACHUSETTS.

BOTTLE-SEAL.

1,117,792.

Specification of Letters Patent.

Patented Nov. 17, 1914.

Application filed January 4, 1913. Serial No. 740,159.

To all whom it may concern:

Be it known that I, BENJAMIN F. COLBY, a citizen of the United States, and a resident of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Bottle-Seals, of which the following is a full and exact description.

The object of this invention is the construction of improved means for sealing or closing bottles, in order to insure more perfect sealing so that there shall be practically no possibility of leakage; and, secondly, to provide a seal which can be applied by hand and without the necessity for machinery or appliance of any kind. To this end, I have devised the construction hereinafter set forth and illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section of the upper part of a bottle and of my seal applied thereto. Fig. 2 shows the bottle in side elevation. Fig. 3 is a section of the seal alone. Fig. 4 is a similar section of the shell of the seal, showing the same without the sealing fibrous material. Fig. 5 is a similar section of a modification of the bottle seal.

The external surface 1 of the bottle mouth is preferably made somewhat conical, with a bead 2 projecting from approximately half-way down the length of said surface. This bead is preferably half-round, but I do not restrict myself to such shape, as it may be triangular in cross section, as illustrated in Fig. 5.

The shell for the seal comprises a top 3 preferably convex, and a skirt 4 made tapering substantially like said surface 1, but of larger diameter. About said skirt is a bead 5 preferably half-round, presenting its concave face to the said bead 2. A disk 6 composed of wood fiber is inserted in the shell in contact with the top 3, and a ring 7 of fiber is fitted within the concavity of the bead 5, as shown in Fig. 3. Said fiber disk and ring need to be quite yielding in composition, while at the same time as impervious as possible to the passage of liquids and air, in order preferably to perform their sealing function.

In applying this seal to the bottle, the former is placed over the bottle-mouth with the edge of the skirt 4 supported by the bead 2. Then, by means of a blow or heavy pressure upon the top 3, said edge is driven past

said bead and thence down until the rim of the bottle-mouth is forced a slight distance into the yielding disk 6 and said bead reaches the bead or annular recess 5. The thin shell or skirt 4 having been expanded by the passage of the bead 2, now instantly contracts and forces said bead into the fiber ring 7. Such engagement of the bead 2 and fiber ring 7 serves two most important purposes, one being to lock the seal or cap in place, and the other being to more perfectly insure the sealing. In other words, this provides a double seal,—that given by the close contact between the rim of the bottle-mouth and the disk 6, and the one given by the engagement of the bead 2 and the ring 7, while between said sealings is an air space 8. Consequently, should there be any leakage of the bottle's contents past the disk, it will be intercepted by the second seal and retained in said air-space. Indeed, even without the disk 6 the bottle would be sealed with unusual tightness, for the reason that the resilient grip of the ring and bead is stronger and more enduring than can be made to persist between the bottle-rim and the disk 6. Said disk not being composed of resilient material, except to an exceedingly limited extent, after a time the pressure between the disk and rim becomes zero, although said parts may still be in contact, and any extra gaseous expansion within the bottle will force more or less of its liquid contents out past such slight barrier. With the continuous resilient grip of the skirt's pressure of the ring against the bead, and with no possibility of let-up, the condition is far otherwise. The ring is too resistant ever to wholly yield to the indenting effect of the bead 2, so that there remains indefinitely a resilient pressure of the sealing ring against said bead, and consequently a never-failing sealing action.

By having the top 3 convex as shown, the downward pressure thereon applied for the purpose of driving the annular recess 5 into engagement with the bead 2, acts to flatten the convexity and thereby to expand the top's periphery. Such expansion tends to expand the skirt, and so to aid in forcing engagement with the bead 2.

It is not necessary to have the skirt and the annular recess unbroken in circular contour, since even if vertically fluted the sealing ring will be held in place and forced to

exercise its sealing function, while such fluting will permit the skirt to be expanded more easily by the blow upon the seal-top.

For unsealing the bottle, a knife or screw driver can be forced up between the skirt and bottle sufficiently to dislodge and tear the shell therefrom.

It should be noted that the disk 6 being flat, while the top or crown 3 is convex, there is thereby formed an air space, which, when the crown is struck for forcing the seal in place, composes an air-cushion acting to prevent the collapse of said top.

Although I have thus far described the seal as tapered, and have so shown it in Figs. 1 to 4, I do not restrict myself to such shape, inasmuch as it may be substantially cylindrical, with its mouth bell-shaped, as illustrated in Fig. 5; the bell-mouth enabling it more readily to pass the bead 2 when being applied to the bottle.

The reason why I prefer to do away with cork for the sealing members 6 and 7 is that said material can never be depended upon for absolutely insuring an air-tight closure. It is not only cellular in structure, but in thin layers is liable to be porous. So well is

this known among bottlers that they expect to lose two per cent. of their bottled goods on this account. By using a fibrous material suitably treated to render it non-porous, while preserving its yielding nature, I am enabled to provide a bottle seal in which the proportion of loss is reduced practically to nothing.

What I claim as my invention and for which I desire Letters Patent is as follows, to wit:

The combination with a bottle having a bead near its mouth, of a seal therefor comprising a shell having an annular recess and a convex top, a sealing ring of yielding material located in said recess, and a flat sealing disk beneath said convex top, said bead being adapted to be embedded in said sealing ring simultaneously with the engagement of the bottle mouth with said disk.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 2nd day of January, 1913.

BENJAMIN F. COLBY.

Witnesses:

A. B. UPHAM,
JOSEPH W. DOWNS.