(No Model.)

C. DE QUILLFELDT.

BOTTLE STOPPER.

No. 357,909. Patented Feb. 15, 1887.

Fig. 1

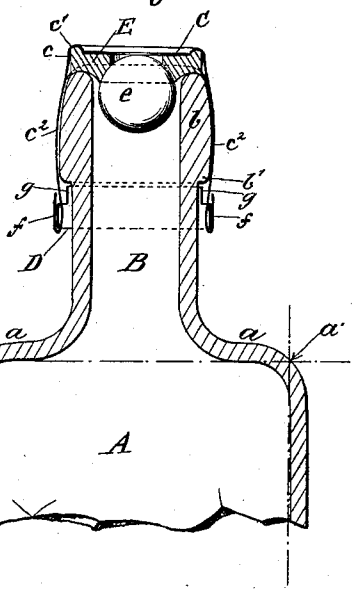


Fig. 3

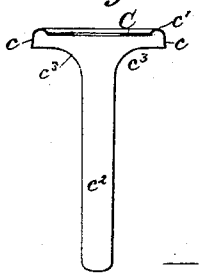


Fig. 7

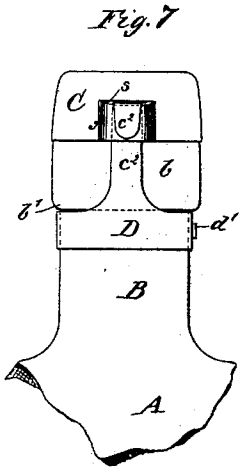


Fig. 4

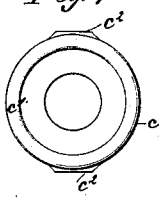


Fig. 5

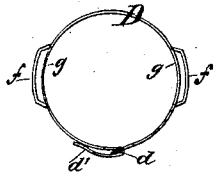
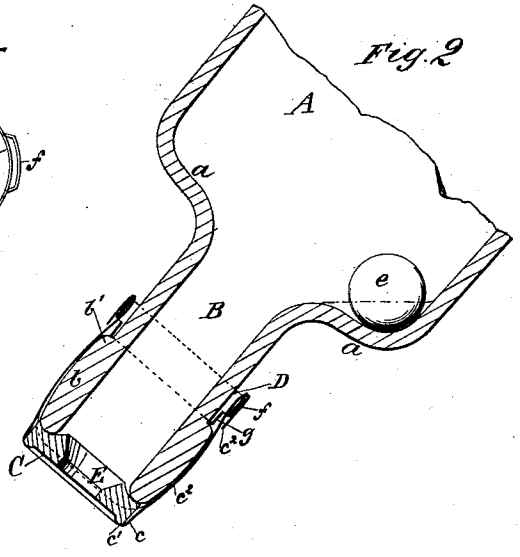


Fig. 2



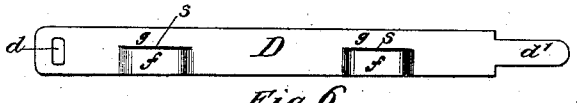


Fig. 6

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UNITED STATES PATENT OFFICE.

CHARLES DE QUILLFELDT, OF NEW YORK, N. Y.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 357,909, dated February 15, 1887.

Application filed January 29, 1886. Serial No. 190,161. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DE QUILLFELDT, a citizen of the United States, and a resident of New York, in the county and State of New York, have invented new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

My invention relates to bottle-stoppers of that class in which a ball permanently retained within the bottle acts as a valve, and by the pressure of the gas from the liquid or beverage contained in the bottle is kept closed tightly against a rubber valve-seat held by a metallic cap upon the mouth of the bottle.

As a sample representing the present state of the art in this connection, I refer to Patent No. 320,189, dated June 16, 1885. The metallic cap, as constructed in the said patent, consists of a flat piece of thin metal having three downward-projecting arms inclosing the bottle-neck and held to the latter by means of a surrounding wire, the cap being held in place against outward pressure by bending up the ends of the aforesaid three arms around the said wire band. To keep the flat cap from bending out of shape by the outward pressure, it is found that no less than three arms can be used, which necessarily causes a great waste of material in stamping the blank for a cap with the arms thereon. It is also found that the wire band and the curved bend of the arms around the same yield frequently to the inside pressure, whereby the valve-ring becomes loose and the stopper leaky. Instead of a round neck-band a flat band may be used to receive the ends of the cap-arms; but as hitherto constructed it is impracticable for this purpose, on account of the large amount of time wasted in fastening the cap to the band, owing to the fact that when the band is tightened upon the arms around the bottle-neck it makes angular bends in the said arms against the shoulder of the bottle-head, which makes it impossible afterward to pull down the cap tightly by the arms; and to enter them when the band is tightened around the neck is also prevented by said shoulder.

In bottle-stoppers of the kind mentioned annoyance is generally experienced in pouring out the contents of the bottle, from the fact that the valve-ball, particularly when a gravity-ball, rolls down into the inclined neck of the bottle and lodges on the valve-seat, thus preventing the liquid from running out. To prevent this, inward projections have been formed in the glass to retain the ball; but these are very objectionable, as they interfere with the cleaning of the bottle.

The object of my present improvements is to obviate the said difficulties, cheapening the construction, improving the appearance of the cap, and facilitating its attachment to the neck-band.

The improvements will be hereinafter fully described, and specifically pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 represents a vertical section of a bottle and stopper constructed according to my present improvements. Fig. 2 is a similar section of the same in an inclined position, showing how the stopper-ball is retained in the breast of the bottle while pouring out the contained liquid. Fig. 3 is a vertical central section of the cap, the section being taken at right angles to that shown in Fig. 1. Fig. 4 is a top view of the cap. Fig. 5 is a top view of the neck-band closed. Fig. 6 is a side view of the neck-band displayed. Fig. 7 is a side view of a modification.

A is the body, B the neck, and *b* the head of the bottle.

E is the rubber ring, which forms a valve-seat for the ball-valve *e* loose within the bottle.

C is the metallic cap, and D the neck-band by which the valve-seat E is secured and kept tight upon the mouth of the bottle.

Instead of the ordinary gradual tapering which generally forms the breast of the bottle the junction between the neck B and body A is formed of a shoulder, *a*, at right angles to the body, as indicated by the dashed and dotted lines in Fig. 1, the point *a'* of the angle being rounded off to improve the appearance and facilitate the ordinary cleaning by the brush. The radius of the inner curve at the point *a'* of the said angle does not exceed that of the radius of the ball *e*, so that when the bottle is inclined for pouring out its contents the ball even at a very steep inclination of the bottle will lodge in the annular groove thus formed between the shoulder and body

a A, and is thus temporarily suspended and prevented from rolling down into the neck and closing against the valve-seat while the bottle is being emptied. Its operation is readily understood with a glance at Fig. 2.

The metallic cap C, instead of being flat and with three arms, as heretofore, is provided with a downward-projecting annular flange, *c*, joining the perforated flat portion preferably by a bead, *c'*, and continuous with the said flange project downward two diametrically-opposite flat arms, c^2, a fillet, c^3, being left at the junction between the arm c^2 and the flange *c*, so as to still further strengthen the cap.

The just above-described annular bead *c'*, formed at the junction of the annular flange *c* and the perforated flat portion, increases the strength of the cap, avoids a sharp edge at the circumference, and adds to the neatness of appearance.

The band D is secured around the bottle-neck in a usual manner by a strip, *d'*, at one end entering a slot, *d*, at the other end, and then bent back upon itself, as shown in Fig. 5. Corresponding to the location of the two arms c^2 the band D is provided with diametrically-opposite slits *s*, the metal strip *g* above the slit being narrower than that below the slit and bearing, together with the rest of the upper edge of the band, against the shoulder *b'* at the lower end of the head *b*. The portion *f* below the slit *s* is pressed out or raised from the main surface of the band D, so as to form ears projecting from the band, as shown in Figs. 1, 2, and 5.

It will readily be seen that this construction extremely facilitates the attachment of the cap, as the arms c^2, even after the band is secured to the bottle-neck, may be inserted from above through the openings formed between the band and the said ears *f*, and the cap being pressed down tightly the ends of the arms c^2 are then bent back with a sharp bend around the edge of the ears *f* and flattened down upon their outer sides. This provides a very strong and secure fastening, making it impossible for the pressure to unbend the curve of the arms c^2 around the band, the bend of the latter being so sharp that it must be cut off before yielding.

The modification shown in Fig. 7 presents the same general features, the only difference being that the flange *c* of the cap is deeper than in the other figures, and the slit and ear *s f* are formed in the cap instead of in the band, and the arms c^2 are formed upon the band instead of upon the cap. The manner of fastening is entirely the same.

For the sake of using waste strips of metal it is sometimes advantageous not to make the arms in one piece with the cap or band, but to make the aforesaid slit and ear *s f* on both of them, and the arms of separate pieces, fastened to the cap and band in like manner at both ends.

It should be observed that by leaving fillets c^3 at the junction between the arms c^2 and the flange *c* of the cap C the rigidity of the cap is greatly increased, thereby rendering it feasible to make the arms c^2 much narrower than otherwise would be the case and also much neater in appearance.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a permanent bottle-stopper, the combination of a cap, C, and neck-band D, one of them having a slit, *s*, and a raised portion, *f*, adjoining said slit, and the other having arms c^2, adapted to be entered through the slit and bent back upon the outside of the said raised portion, substantially as specified.

2. In a permanent bottle-stopper, the combination of a cap and a neck-band, the said cap having an annular flange, *c*, and annular bead *c'*, joining the said flange with the upper flat surface, and at opposite sides two arms, c^2, projecting from the said flange, and adapted to be entered between the said band and the bottle-neck and bent back upon the said neck-band, substantially as specified.

3. In a permanent bottle-stopper, the combination of a cap and a neck-band, the said cap having an annular flange, *c*, and annular bead *c'*, joining the said flange with the upper flat surface, and at opposite sides two arms, c^2, projecting from the said flange and joining the said flange by strengthening fillets c^3, the said arms being adapted to be entered between the said band and the bottle-neck and be bent back upon the said neck-band, substantially as specified.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 26th day of January, 1886.

CHAS. DE QUILLFELDT.

Witnesses:
A. W. ALMQVIST,
T. M. CROSSMAN.