

(No Model.)

C. BOOKER.

DEVICE FOR PREVENTING REFILLING OF BOTTLES.

No. 596,472.

Patented Jan. 4, 1898.

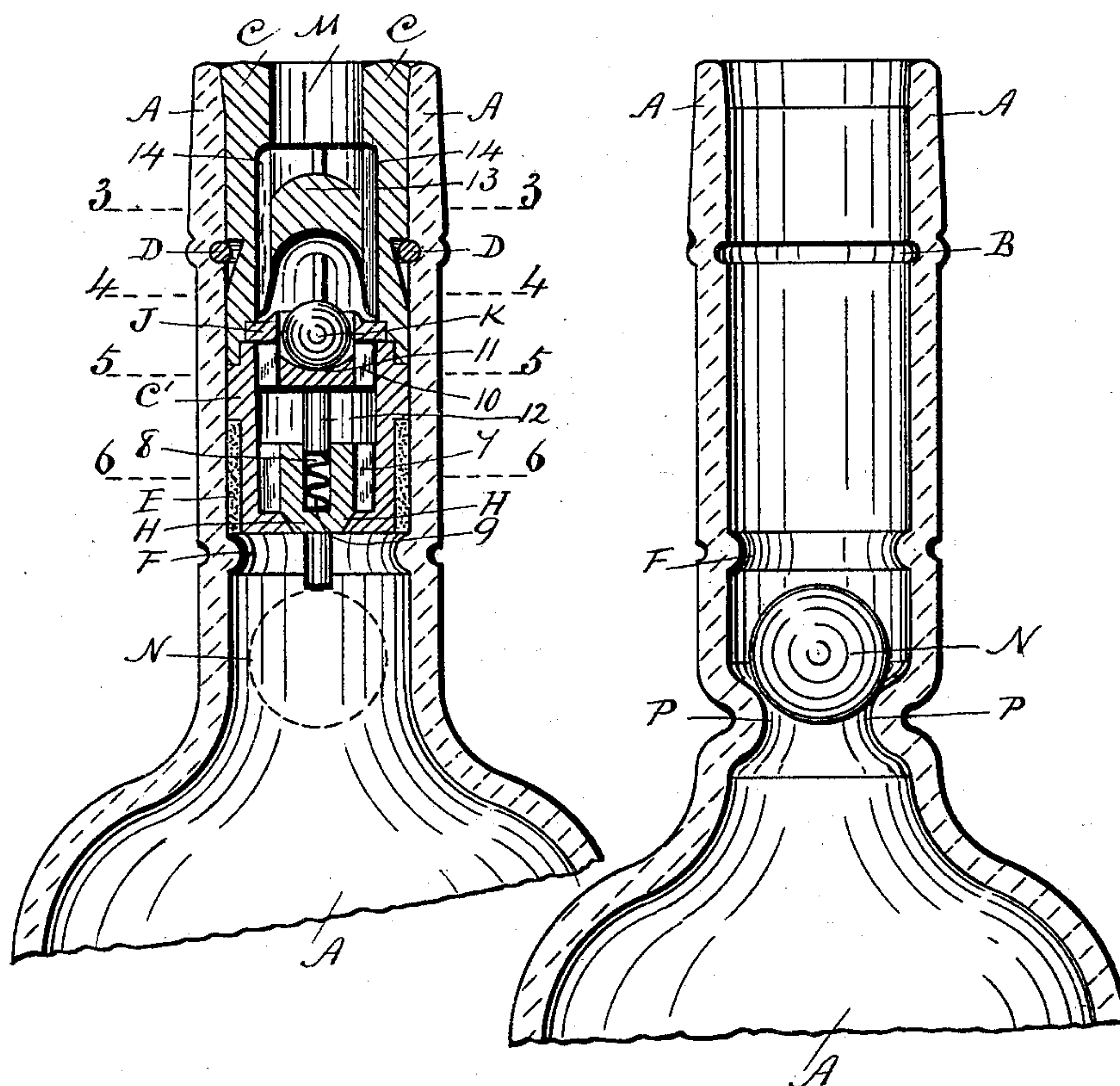


Fig. I.

Fig. II.

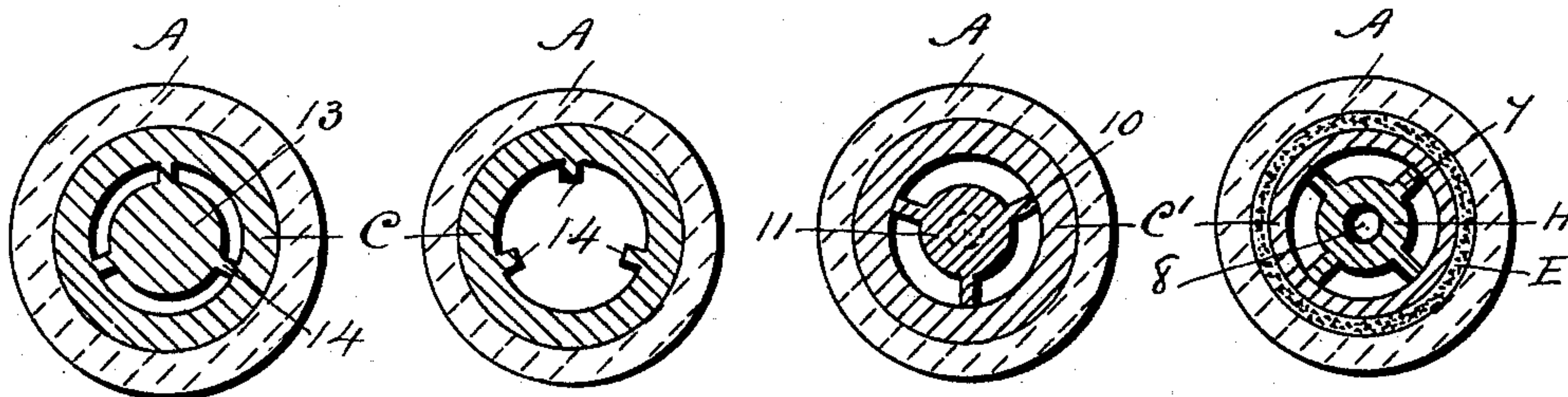


Fig. III.

Fig. IV.

Fig. V.

Fig. VI.

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DEVICE FOR PREVENTING REFILLING OF BOTTLES.

SPECIFICATION forming part of Letters Patent No. 596,472, dated January 4, 1898.

Application filed October 1, 1896. Serial No. 607,539. (No model.)

To all whom it may concern:

Be it known that I, CHARLES BOOKER, a citizen of Canada, and a resident of Toronto, in the county of York, in the Province of Ontario, Canada, have invented new and useful Improvements in Devices for Preventing Refilling of Bottles, of which the following is a specification.

My invention relates to an improved device to prevent the refilling of bottles, consisting of a stopper of suitable material located and secured in the upper part of the neck of a bottle. This stopper is supplied with a split spring-ring which fits in an annular groove in the upper part of the outer body of the stopper and in a groove in the neck of the bottle, thus retaining the stopper in position. This stopper is constructed in two parts, upper and lower, which are cemented together, and is supplied in its interior with a lower spring-valve having four wings and a lower tapered part which fits into the lower tapered opening of the stopper and a lower shank for engagement with a loose ball. Also, a rigid guard, provided with a loose ball, is centrally situated in the interior of the stopper to prevent tampering with the said lower spring-valve.

The objects of my invention are, first, to provide a bottle with stopper which will allow the contents or liquid to be poured out and prevent refilling; second, to afford facilities for the proper insertion and securing of the stopper into the neck of the bottle, and, third, to prevent any possible means of entrance into the bottle from the upper exposed part of the stopper and of the introduction of any mucilage, so as to interfere with the proper functions of the operating parts. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of the whole device as seen inserted in position in the neck of a bottle, the part of the bottle below the curve of the neck being broken and of ordinary shape. The broken circular lines indicate the loose ball when engaging the shank of spring-valve. Fig. 2 is a sectional elevation of the neck of a bottle, the lower part of said neck having a separate yet open chamber for the purpose of confining the lower ball,

which engages with lower end of the shank of the previously-mentioned spring-valve, the neck of the bottle above this chamber being identical with the neck of bottle in Fig. 1 of the drawings, also with the lower part of the bottle below its broken line. Fig. 3 is a section of the bottle neck and stopper through the horizontal and broken line 3 3 of Fig. 1. Fig. 4 is a section of the same through the horizontal and broken line 4 4 of Fig. 1. Fig. 5 is a section of the device through the horizontal line 5 5 of Fig. 1; and Fig. 6 is a section of that part of the device consisting of the neck of bottle, lower part of stopper, with cork ring and spring-valve through the horizontal and broken line 6 6 of Fig. 1.

Similar letters and figures refer to similar parts throughout the several views.

In the drawings the bottle, with its upper vertical neck, is indicated by A, and its upper circular interior groove in said neck by B.

C is the upper half of the stopper, and C' is the lower half, which is in two parts, upper and lower, to facilitate the insertion of the interior component parts of the stopper, all being constructed of suitable material of a non-corrosive nature. The upper half of this stopper has an annular recess with upper shoulder at right angle to the vertical stopper, the said recess formed as an acute angle, and in which is placed the circular split ring D. When this ring is pressed into position, the stopper is enabled to enter the bottle-neck to position. Then the ring will increase in diameter and partially fill both the groove in the neck and the recess in the stopper against its right-angled shoulder and retain said stopper in position. This upper right angle of this annular recess assists very materially in entering the said circular ring into the neck of bottle and is a very important element in the construction thereof.

Previous to inserting the stopper, with its internal parts, the two component halves are cemented together, the lower end being supplied with a cork ring E, which fits the neck very snugly. The lower part of this cork ring rests upon a circular seating F, formed in the neck of the bottle. The lower interior part of this stopper has an interior flange having a central tapered opening as a seat

for the valve H to rest in, thus closing said opening. This valve has a lower vertical shank projecting through the valve-seat, also four outer wings 7, which fit the inner part of the stopper, also a central vertical socket 8, in which is placed a slight spiral spring 9. Immediately above this valve is a rigid guard J, having three wings 10, the upper circular flange of which rests upon the upper part of the joined and cemented end of the lower half C' of stopper and also fits snugly into and against the lower shoulder of the lower end of the upper half C of stopper. The lower central concaved part 11 of this guard is connected to its body part by the said wings 10 and has a lower central vertical shank 12, which is capable of engaging with the spiral spring in the central socket of the lower spring-valve referred to. The circular cavity formed on the top of concaved part 11 of this guard and by its wings and upper flange is for the purpose of supporting a small loose ball K, which rests upon the said concaved part and closes the outlet which is formed by the said three wings 10, the wall of stopper, and the central opening in the upper flange of the guard J, which admits the ball. The function of this ball is to prevent any possible tampering with the lower spring-valve. It will be observed that there is sufficient upper space allowed for this ball to enter when the bottle is tipped for purpose of pouring. This space referred to, immediately above this ball, is formed in the lower inner part of the upper half C of the stopper and where the ball may enter as far as the under cavity of the central disk 13, which is connected to the upper half C of the stopper by means of the three wings 14, which, with the said central disk, forms a part of the upper half of stopper. These wings extend downward as far as the upper part of the separate guard J and upward as far as the inner circular upper body of the upper half of stopper, there terminating, where a central opening M is formed for the insertion of a common cork.

Observe that the four wings referred to on the spring-valve and the three wings of the centrally-located guard and the three wings of the upper central disk project from their respective body parts in order to afford openings between these said body parts and the inner part of the wall of the stopper for the liquid to flow through when pouring out.

The ball N represented by broken circular line in Fig. 1 of the drawings and as a ball in Fig. 2 is identically the same ball.

In Fig. 1 the said ball is allowed to play loose in the body part or bottle proper, and in Fig. 2 the said ball is allowed to play loose, though confined in an open chamber formed in the neck of bottle by means of the inner circular contraction P, which must be less in diameter than the diameter of the ball, and the opening in stopper-seating F must be larger in

diameter than the ball in order to admit the same.

The stopper is identically the same no matter in which of the two bottle-necks it is inserted. also the operation and function of the ball N, which acts the same in either neck, both of which have preference and may be constructed with or without the inner and lower circular contraction P, as shown in Fig. 2.

In order to pour out of the bottle, it is necessary to fully tip the same. The ball N then engages with the end of the lower vertical shank of the spring-valve H. The pressure of the ball presses the spiral spring, thus opening the valve. The liquid then passes through the valve-seat opening, through the four openings between the wings of said valve, and on through the three openings formed by the wings of the rigid guard, thence into the space which the small ball K occupies in the drawings, thence through the three openings formed by the wings of the upper central disk, and out through the upper central opening M of the stopper. It will be perceived that in pouring out the small ball K rolls out of its present position into the space formed immediately above.

This device is so constructed and arranged, as set forth, that it is impossible to refill the bottle, the spiral spring always pressing the valve in its seat even if the bottle is held in an inclined position, the weight of the lower ball N being requisite to open the valve.

Any attempt to probe through the device is frustrated on account of the peculiar construction of the device. All of the wings of the parts referred to, and therefore all the openings, are out of vertical line, this part also being very important, this feature being illustrated in the cross-sectional figures of the drawings.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a bottle to prevent refilling, a stopper composed of upper and lower parts, the lower part having a lower interior flange with central tapered opening for valve H, which has four outer wings and a lower shank, and upper vertical socket 8, for spiral spring to engage with rigid guard having wings and supporting a loose but confined ball K, which rests upon a concave part of said rigid guard, in combination with a lower ball N, in bottle, to engage with the shank of valve H, substantially as described.

2. A combination to prevent refilling of bottles, of a stopper composed of upper and lower parts, the lower part having a lower interior flange with central tapered opening for valve H, which has four outer wings and a shank, and upper vertical socket 8, for spiral spring to engage with rigid guard having wings and supporting a loose but confined ball K, which rests upon a concave part of said rigid guard, and a lower ball N, in neck

of bottle to engage with shank of valve and confined by a lower circular contraction of the bottle-neck substantially as described.

5 3. The ball K in combination with the central rigid guard having a central recessed support for said ball, and wings to form openings, and a lower vertical shank to engage with a spiral spring in the valve having a

lower tapered shank in opening of stopper to engage with the ball N, in neck of bottle, substantially as described and set forth. 10

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Witnesses:

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