(No Model.)

J. ROGGINGER.

BOTTLE STOPPER.

No. 525,470. Patented Sept. 4, 1894.

Fig. 1.

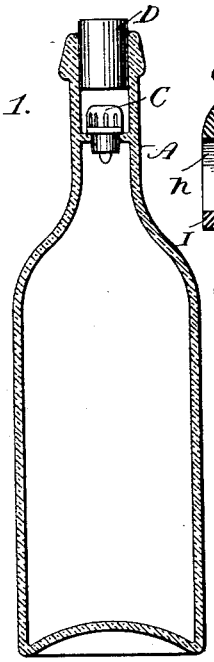


Fig. 7.

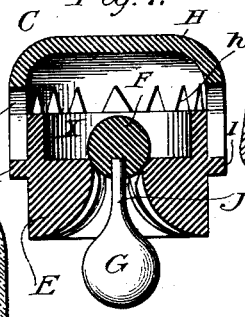


Fig. 2.

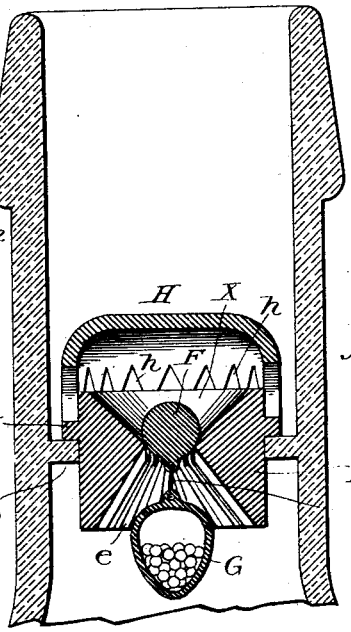


Fig. 6.

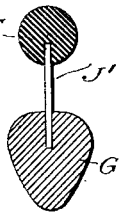


Fig. 3.

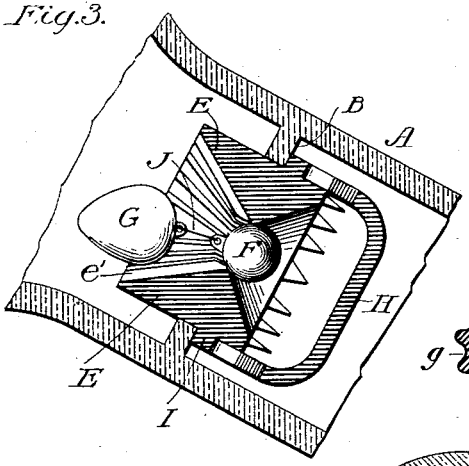


Fig. 4.

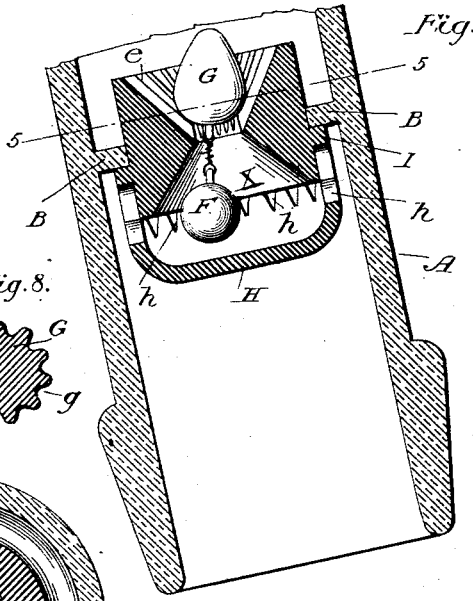


Fig. 8.

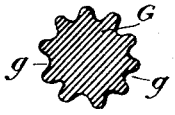
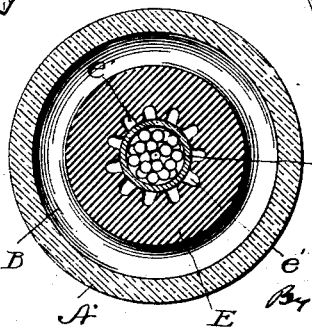


Fig. 5.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN ROGGINGER, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES N. BRISCO AND JOHN F. MUCHMORE, OF SAME PLACE.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 525,470, dated September 4, 1894.

Application filed September 30, 1893. Serial No. 486,861. (No model.)

To all whom it may concern:

Be it known that I, JOHN ROGGINGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification.

The present invention relates to that class of automatically operating stoppers for bottles which will permit the contents of the bottle to be discharged and yet effectually prevent the refilling of the bottle, and the object of said invention is to provide an improved stopper of this class.

The invention consists in certain features of novelty that are particularly pointed out in the claims, and in order that it may be fully understood I will describe it with reference to the accompanying drawings, which are made a part hereof, and in which—

Figure 1 is a vertical central section of a bottle and a side elevation of the improved stopper applied thereto. Figs. 2, 3, and 4 are vertical central sections of the neck of a bottle and the improved stopper in place therein, the parts being shown by Fig. 2 in the positions that they occupy when the bottle is in upright position, and by Figs. 3 and 4 in the positions that they occupy when the bottle is inverted, Fig. 3 showing it before and Fig. 4 after it has reached the point where the valve is unseated. Fig. 5 is a transverse section on the line 5—5, Fig. 4. Figs. 6 to 8, inclusive, are views showing the improved stopper, or parts thereof, under modifications.

A represents the neck of the bottle, which is provided on its interior with an annular flange or shoulder B, and C represents the improved stopper, which is located within the neck A, and a sufficient distance from the mouth thereof to permit the use of the customary cork or other stopper D.

The improved stopper C, in its preferred form, consists of a ring E, a valve F, a weight G suitably connected with the valve, and a cap H for concealing the valve, each of which parts has the characteristic hereinafter described.

The ring E is of such diameter that it fits snugly the opening left by the internal shoulder or flange B, and it is provided on its exterior, some distance from its opposite ends, with a radial flange I, which rests upon the flange B and is secured thereto so that it cannot be removed without breakage. It is the intention that the parts E, F, G, and H shall be made of glass, in which case a glass cement may be used for securing the stopper in place. When the ring is in place, communication between the interior of the bottle and the atmosphere can only be had through the opening of the ring, and around the opening the margin of the ring is dressed off to form a suitable seat for the valve F, and from this seat the valve flares outward. Preferably, the part of this valve which comes in contact with the seat is of spherical shape, so that the valve may be tilted from side to side without in the least unseating it.

In Figs. 2, 3 and 4 the ring is shown as flared outward from the valve-seat, but this construction is not absolutely essential to the proper operation of the stopper. The advantage of it is that it directs the movement of the valve and causes it to find its seat when it is attempted to force liquid into the bottle for the purpose of refilling it. In Fig. 7 I have shown the ring without this flaring portion. In Figs. 2, 3, 4 and 7 the ring is shown as provided on its under side with a downward flaring portion *e*, and this is essential.

The weight G, which is of such size that it cannot pass through the opening of the ring E, is located beneath the valve-seat, and is connected with the valve F by any suitable means. In Figs. 2, 3, and 4 they are shown connected by a silken thread J, for which purpose each of them is provided with a perforated ear or lug through which the thread is passed and tied; or, instead of a silken thread, they may be connected by a piece of wire passed through their perforated lugs and secured in such manner as to permit the weight to move relatively to the valve; or, they may be connected by a piece of wire J′ having its ends embedded in them, respectively, as shown in Fig. 6; or, they may be connected by a rigid stem J^2, as shown in Fig. 7. I prefer, however, to use a connection of such a nature that the weight is capable of a movement independent of the valve, so that when the bottle is moved far enough from an up-

right position the weight will come in contact with the flaring portion *e* of the ring without shifting the valve.

In Fig. 3 the bottle is in such position that the (for the time being) bottom side of the flaring portion *e* of the ring (upon which the weight is resting) is about in a horizontal position. It will of course be seen that the tendency of the weight is to roll toward the lowest point of this flaring portion, and hence it will be seen that so long as the bottom side of the larger end of the flaring portion is at a lower level than the bottom side of the smaller end, the weight will tend to fall inward, and will thereby hold the valve upon its seat. As soon, however, as the bottom side of the flaring portion is inclined in the opposite direction, the weight will roll outward, toward the valve-seat, and into the position shown in Fig. 4, permitting the valve to fall away from its seat and open the neck of the bottle for the passage of the liquid.

It will be seen that if the flaring portion *e* of the ring and the weight are of the same cross-sectional shape, when the weight comes to the position shown in Fig. 4 it would stop the passage through the ring and cut off the flow of liquid. But when the flaring portion of the ring and the weight are of different shapes in cross-section, a channel, or channels, is left between them when the weight comes to the position shown in Fig. 4. There are a number of ways in which such a channel, or channels, may be formed.

As shown in Figs. 2, 3, 4 and 7, the weight is smooth on its exterior, while the flaring portion *e* of the ring is provided with a number of grooves *e'*, as shown more clearly in Fig. 5; or, instead of forming these channels by grooves in the ring E, they may be formed by grooves in the external surface of the weight, as shown at *g* in Fig. 8, the effect in either instance being the same. It is only necessary, in order to form the desired channels, to make the flaring portion *e* of the ring and the weight of different shapes in cross-section. Any channel, however formed, that will permit the fluid to pass the weight is within the scope of my invention.

In Figs. 2, 3, 4 and 7 of the drawings the weight is shown as consisting of a hollow shell partially filled with shot *g'*, or with some other movable weighting substance, the advantage being that the center of gravity of the weight shifts as the bottle is tipped, and the movement of the weight which liberates the valve is thereby postponed.

It will be seen that whenever the bottle occupies such a position that liquid will flow into it, the neck is effectually closed by the valve F, so that when the bottle has been once emptied of its contents it is not possible to refill it, and thereby perpetrate a fraud upon the original bottler and the public.

It is of course manifest that unless access to the valve be prevented it would be possible to so manipulate it as to permit the refilling of the bottle. Hence I employ the cap H, which completely conceals the valve and prevents the admission of a wire or any other implement by which it can be manipulated. In order to permit the escape of the liquid from this cap, it is provided with a number of notches extending from its margin a sufficient distance to leave openings *h* around the top of the ring E after the cap is secured in place thereon. The cap is permanently secured in place by a suitable cement, and is of sufficiently less diameter than the interior of the neck A to leave around it a space for the discharge of the liquid and the admission of air.

It will be seen that in all of the several forms shown in the drawings, the cap and ring form between them a chamber X in which the valve is located.

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

1. The combination with a bottle having in its neck a contracted passage, a valve-seat surrounding said passage, and a portion flaring inward from said seat, of a valve and weight located upon opposite sides of said seat, and a connection between the valve and weight of such length that when the bottle is tipped the weight will come in contact with said flaring portion, substantially as set forth.

2. The combination with a bottle having in its neck a contracted passage, a valve-seat surrounding said passage, and a portion flaring inward from said valve-seat, of a valve and weight located upon opposite sides of the valve-seat, a connection between the valve and weight of such length that when the bottle is tipped the weight will come in contact with said inward flaring portion, and a channel for the passage of the fluid when the weight is in contact with said inward flaring portion, substantially as set forth.

3. The combination with a bottle, of the ring E having a contracted passage, a valve-seat surrounding said passage, a valve and weight located upon opposite sides of said valve-seat, a connection between said valve and weight, and a cap H embracing the ring and fitting it tightly, said cap having notches extending from its margin to a point beyond the margin of the ring, leaving openings *h* for the passage of air and liquid, substantially as set forth.

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