(No Model.)

A. E. RICH.

BOTTLE STOPPER.

No. 262,904. Patented Aug. 15, 1882.

Fig. 1.

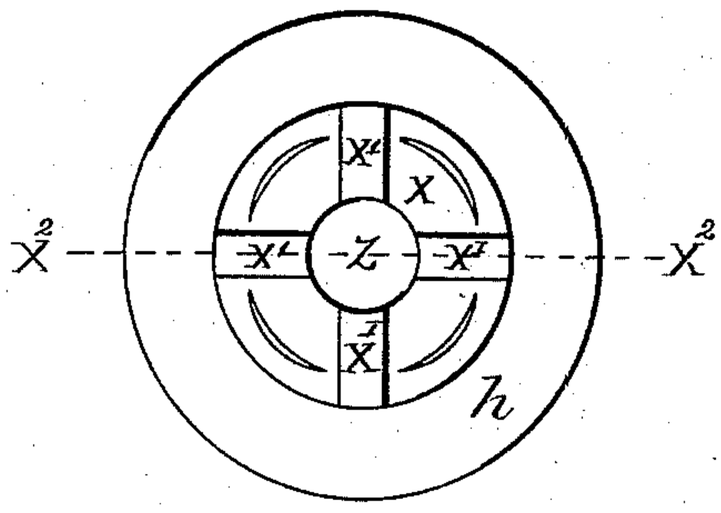

Fig. 3.

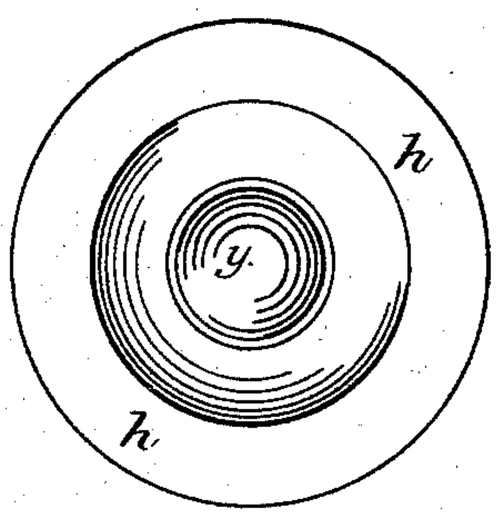

Fig. 2.

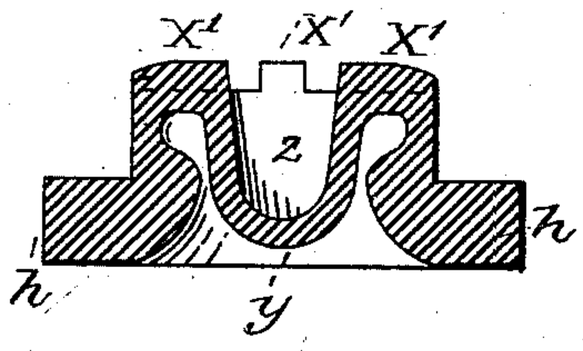

Fig. 4.

WITNESSES

Bourdon S. Parker

Willard C. Fogg

INVENTOR

Augustus E. Rich

by his attys

Clarke & Raymond

UNITED STATES PATENT OFFICE.

AUGUSTUS E. RICH, OF FALL RIVER, MASSACHUSETTS.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 262,904, dated August 15, 1882.

Application filed January 9, 1882. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS E. RICH, of Fall River, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Bottle-Stoppers, which improvement is fully set forth in the following specification and accompanying drawings, in which similar letters indicate corresponding parts.

Figure 1 represents the metal top of the stopper, having a projection upon its under side, *c*, and an induct through the top of the same, *d*. Fig. 2 represents the upper side of the flexible part of the stopper, *y* being the teat. Fig. 3 represents the under side of the elastic part of the stopper, *h* being the rim, which is intended to fit down upon the mouth of the bottle, and *z* is a hollow extending into the teat. Fig. 4 represents a cross-section of the flexible part of the stopper across a line drawn through x^2, as seen in Fig. 3.

This particular invention has special reference to those bottle-stoppers in which a valve is used, and this present invention is an improvement upon the valve portion of the stopper described in my application for Letters Patent filed August 9, 1881.

I use the same or a similar cap-piece as in my former invention referred to, though this may be varied in form. Said cap-piece B, having a downward projection, *c*, is formed so that the rubber or elastic portion of the valve-stopper may be slid over the lower end of the projection *c*. The hole *d* is made tapering, so that when the rubber or elastic portion is put on, the teat *y* fits securely into the hole *d* and the part *h* fits snugly up to the under side of the cap-piece. In my former invention this teat was made solid and supported by cross-bars upon the bottom. This construction for certain purposes works efficiently; but in bottling certain aerated liquids and soda the pressure is so great within the bottle as to render this form sometimes unreliable. I therefore make the valve in this to consist of a hollow teat and support the teat by sections of cross-bars upon the bottom, although the cross-bars are not essential, as the ordinary thickness of the rubber or other material will hold the teat in place. By this construction the valve-teat is not only supported in its position by the sections of cross-bars, but the pressure within the hollow teat makes it impossible for any air or gas in the bottle to escape through the slits *x x*, which are made through the rubber for the purpose of allowing the liquid or gas to enter the bottle when used in connection with a bottling-machine, as fully described in my former application to which reference has been made.

x' represents the sectional cross-bars upon the bottom of the valve.

The general form and appearance of the elastic portion of the valve-stopper, it will be seen, is very similar to my former invention, the only difference being in the hollow teat and the shortening of the cross-bars in consequence of this hole in the bottom. The teat fits well the hole *d* in the projection of the cap-piece, having the pressure from the inside of the bottle to aid in supporting the teat in the hole, and also in pressing upon all sides of the teat upon the inside, thus causing the largest continuous surface-pressure. In practical operation this form works so perfectly that it will not only retain the ordinary pressure under which bottles of aerated liquid and soda are filled, but it will hold atmospheric air or gas where there is no moisture, or substantially none, which comes in contact with the valve. I am not aware that this has ever been accomplished before by any valve-stopper.

I intend to use this new valve-stopper in connection with a similar cap-piece and fastening device as that described in my former application heretofore referred to; but it is not essential that I should do so, as this form of flexible valve-stopper, placed upon a metal cap-piece having a downward projection and an induct through it, can be connected by any suitable fastening device to a bottle-neck.

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

1. A flexible stopper consisting of a rim to fit the mouth of a bottle and an upwardly-projecting hollow valve-teat, all molded or formed in one piece, substantially as described.

2. The metal cap-piece B, provided with suitable means for connecting the same with a bottle-neck, in combination with a hollow teat flexible valve-stopper, arranged substantially as and for the purposes set forth.

3. A flexible stopper consisting of a hollow valve-teat, the teat being supported by sec-

tions of cross-bars upon the bottom, substantially as and for the purposes set forth.

4. In a flexible stopper, a valve consisting of an upwardly-projecting elastic hollow teat, said teat made to fit the hole in a downwardly-projecting metal top, all arranged substantially as and for the purposes described.

5. In a flexible stopper, an elastic hollow teat, upwardly projecting and fitting a metal cap-piece having an aperture, substantially as and for the purposes set forth.

6. A flexible stopper having the parts *h y x' x*, and having the hole *z*, provided with a metal top having a downward projection, *c*, and tapering induct *d d*, all substantially as shown and described, and for the purposes specified.

AUGUSTUS E. RICH.

Witnesses:
B. F. WINSLOW,
W. M. BUDDINGTON.