No. 647,290. Patented Apr. 10, 1900.

L. H. BROOME.

BOTTLE STOPPER.

(No Model.) (Application filed Aug. 18, 1899.)

Fig. 1.

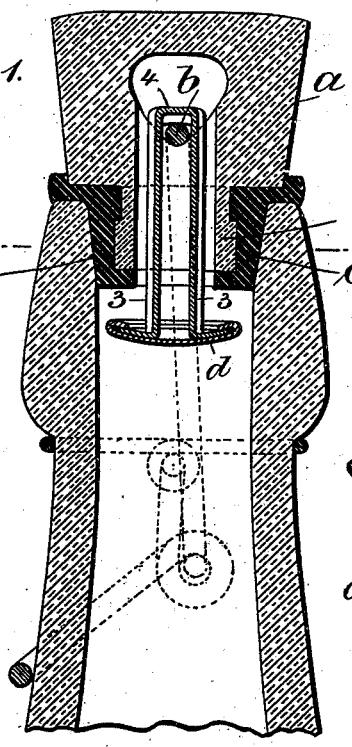


Fig. 3.

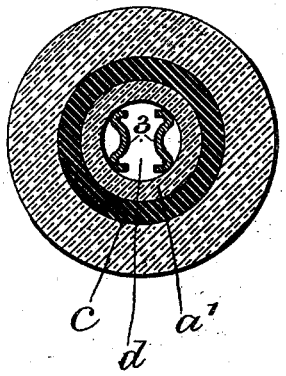


Fig. 4.

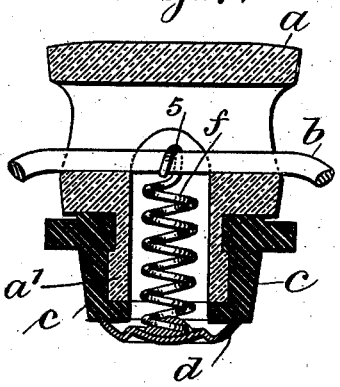
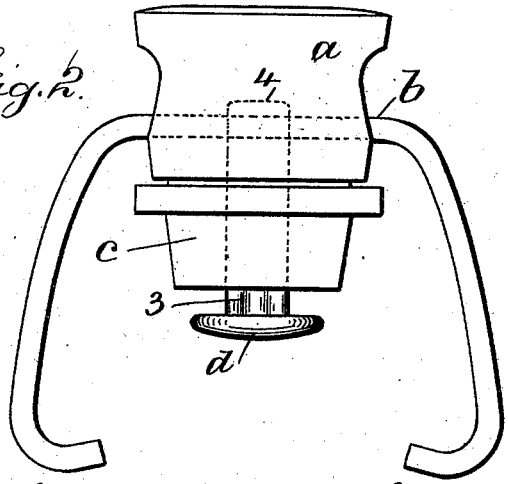


Fig. 2.



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UNITED STATES PATENT OFFICE.

LEWIS H. BROOME, OF JERSEY CITY, NEW JERSEY.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 647,290, dated April 10, 1900.

Application filed August 18, 1899. Serial No. 727,619. (No model.)

To all whom it may concern:

Be it known that I, LEWIS H. BROOME, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented an Improvement in Bottle-Stoppers, of which the following is a specification.

My invention relates to an automatic self-sealing stopper for bottles holding various liquids, in connection with which the bottle is filled by the liquid contents being forced through the stopper in the stoppering-machines usually employed for filling and stoppering bottles, the filling being effected after the stopper has been secured in place upon the bottle.

In carrying out my invention the stopper-plug, of suitable material, is transversely slotted and provided with a tubular portion or stem and a rubber ring around the tubular portion. The bail-wire passes through the transverse slot, and I provide a closure-disk against the lower end of the rubber ring and tubular portion by means of which the bottle is sealed, and there is a part that connects this closure-disk to the bail-wire and through which the bail-wire passes to prevent this closure-disk escaping or becoming detached from the stopper-plug. I prefer to make two portions or arms integral with this closure-disk, the arms being connected at their ends distant from said disk, so that there is a slot between the arms for the reception of the bail-wire, and this closure-disk acts by the accumulated pressure of the gases from the liquid within the bottle and is by them forced and held against the lower end of the rubber ring adjacent to the end of the tubular portion of the stopper-plug to effect the closure of the bottle. The liquid is forced from the stoppering-machine through the transverse slot of the stopper-plug down through the tubular portion or stem and past the closure-disk into the bottle, and when the bottle is sufficiently filled the operation of the filling-machine is stopped and the gases from the liquid at once raise the closure-disk and bring the same against the rubber ring, which forms a seat for the disk in closing the bottle.

In the drawings, Figure 1 is a vertical section representing my improvement. Fig. 2 is an elevation of the stopper-plug and bail-wire. Fig. 3 is a cross-section at $x\ x$ of Fig. 1, and Fig. 4 a vertical section representing a modification.

The stopper-plug a is made of suitable material, preferably porcelain, and the same is transversely slotted for the passage of the bail-wire b, and it is provided with an integral tubular portion or stem a', and the rubber ring c fits around the tubular portion and against the under side of the stopper-plug a, said parts forming a bearing for the rubber ring.

As illustrated in Figs. 1 to 3, inclusive, the closure-disk d is made with upwardly-extending integral arms 3 3, connected at 4 at their ends distant from the closure-disk d, so that there is a slot between the integral arms through which the bail-wire passes, so as to connect the closure device to the stopper-plug to prevent the same becoming disconnected or lost, it being understood that the said arms are longer than the tubular portion of the stopper-plug, so that the arms of said closure-disk can move vertically within the tubular portion a', and the figure formed by said arms is preferably square in cross-section, as will be seen by reference to Fig. 3, with the sides cut away so as to form channels within the tubular portion, down which the liquid is forced by the machine in filling the bottle, the closure device being suspended from the bail-wire in the operation of filling the bottle. These integral arms 3 3 form the part connecting the closure-disk and the bail-wire; but I do not limit myself to the employment of this particular construction, as the device shown in the modification may be advantageously employed. In this modification a helical spring f, smaller than the inner diameter of the tubular portion or stem a', is connected at its lower end to the upper surface of the closure-disk d, and the upper end of the said helical spring is formed as an eye 5, through which the bail-wire b passes. In its normal position this closure-disk is seated against the under edge of the rubber ring c; but it will be apparent that the pressure of the liquid forced into the bottle by the filling and stoppering machine pressing against the closure-disk will cause the helical spring to yield and allow the liquid to pass into the bottle, the said spring contracting when the

pressure is released so as to seat the closure-disk, which seating is made more effective and positive by the action of the gases and the liquid within the bottle.

I claim my invention—

1. The combination with the bottle-neck and the bail-wire and fastening device, of a stopper-plug transversely slotted and having a tubular portion, a rubber ring around the tubular portion and seated against the stopper-plug, and extending slightly beyond the end of the tubular portion of the plug, a closure-disk adapted to be seated against the end of the rubber ring and a connection from the said closure-disk within the tubular portion for engaging the bail-wire passing through the transverse slot, substantially as set forth.

2. The combination with the bottle-neck and the bail-wire and fastening device, of a stopper-plug transversely slotted and having a tubular portion, a rubber ring around the tubular portion and seated against the stopper-plug, and extending slightly beyond the end of the tubular portion of the plug, a closure-disk adapted to be seated against the end of the rubber ring and a device connected to the closure-disk and located within the tubular portion of the stopper-plug, and movable longitudinally therein, and through which the bail-wire passes to prevent the same becoming displaced, substantially as set forth.

3. The combination with the bottle-neck, the bail-wire and its fastening devices, of a stopper-plug transversely slotted and having an integral tubular portion, a rubber ring around the tubular portion seated against the stopper-plug, and extending slightly beyond the tubular portion, a closure-disk, two integral arms connected to and extending upward from the closure-disk within the tubular portion of the stopper-plug and connected at their ends distant from the said closure-disk, so as to form a slot between the arms for the reception of the bail-wire, the said arms being longer than the tubular portion so as to provide a longitudinal movement thereto and the closure-disk, substantially as set forth.

4. The combination with the bottle-neck, the bail-wire and its fastening devices, of a stopper-plug transversely slotted and having an integral tubular portion, a rubber ring around the tubular portion seated against the stopper-plug, and extending slightly beyond the tubular portion, a closure-disk, two integral arms connected to and extending upward from the closure-disk within the tubular portion of the stopper-plug and connected at their ends distant from the said closure-disk, so as to form a slot between the arms for the reception of the bail-wire, the said arms being longer than the tubular portion so as to provide a longitudinal movement thereto and the closure-disk, the said arms collectively and in cross-section forming a substantially-square figure with cut-away sides so as to form channels longitudinally of the tubular portion of the stopper-plug and between the said arms and the walls of said tubular portion to provide channels for the inflowing liquid, substantially as set forth.

Signed by me this 11th day of August, 1899.

L. H. BROOME.

Witnesses:

GEO. T. PINCKNEY,

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