(No Model.)

J. C. GROUT.

BOTTLE STOPPER.

No. 572,006. Patented Nov. 24, 1896.

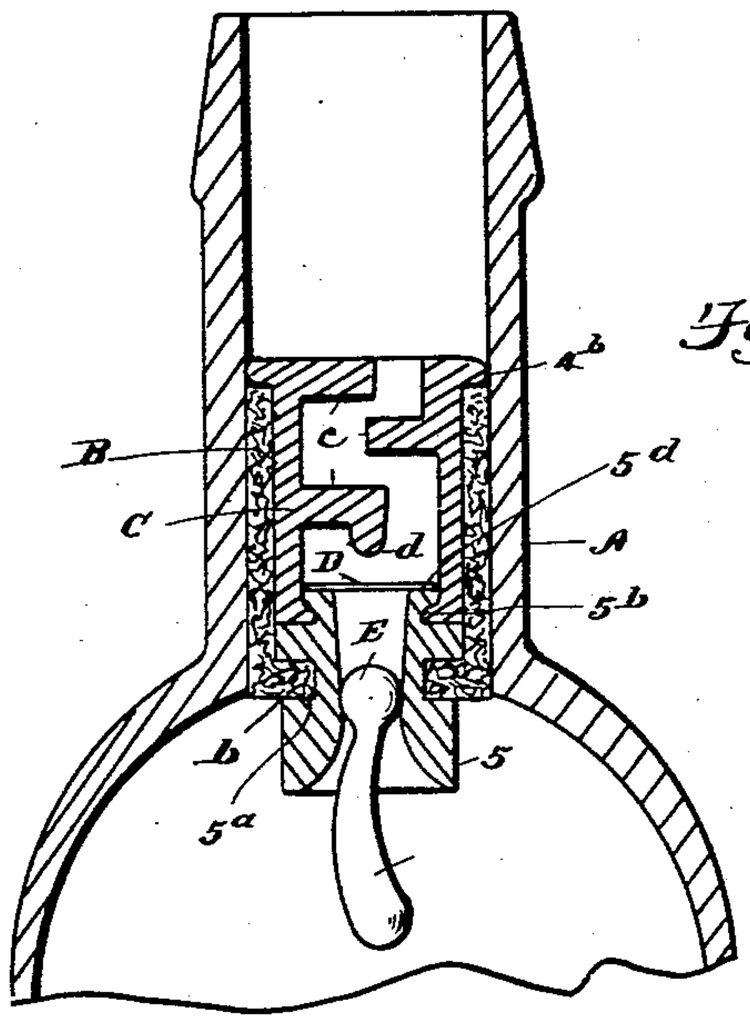


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 3a.

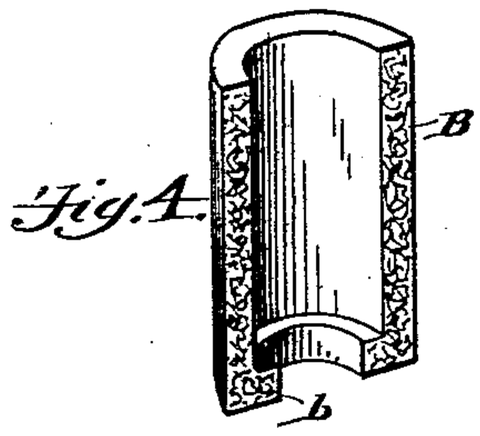
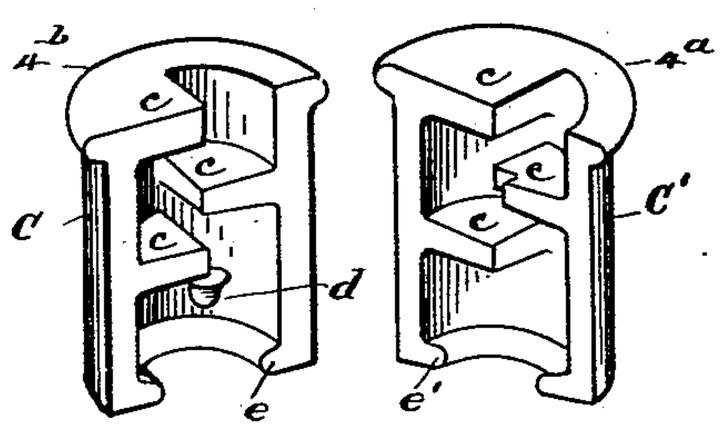


Fig. 4.



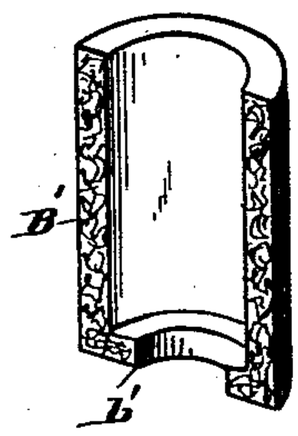
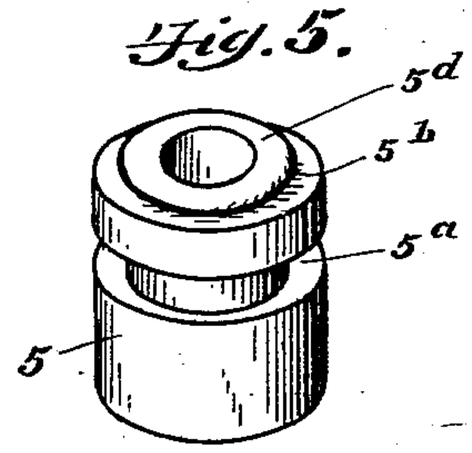


Fig. 4a.

Fig. 5.



WITNESSES

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JOHN C. GROUT, OF BROOKLYN, NEW YORK.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 572,006, dated November 24, 1896.

Application filed September 7, 1895. Serial No. 561,840. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. GROUT, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented a certain new and useful Improvement in Bottle-Stoppers; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to bottle-stoppers of the class intended to prevent the bottle from being refilled after the contents have been once emptied therefrom.

In the drawings, Figure 1 shows the various parts in section as they would appear in place in the neck of the bottle. Fig. 2 shows the lower valve. Figs. 3 and 3ª show the two halves of the holding-shell. Figs. 4 and 4ª show the guard. Fig. 5 shows the valve-seat piece.

A indicates a bottle having a neck that contracts slightly from the mouth to the point where the neck joins the shoulders.

B B′ indicate two half-cylinders made of any suitable material. At that end which is intended to extend farthest into the bottle is a flange *b b′*.

C C′ indicate two halves of a guard-cylinder, from the walls of which extend inward guard-lugs *c c c*, each occupying about a quarter of the circle of the bore of the cylinder, and arranged in staggered order so as to permit the easy passage of liquid between them, but to prevent the passage of anything by which the valves may be tampered with. From the lowermost lug *c*, at about the center of the cylinder, projects downward a lug *d*, and this lug is adapted to engage the valve D, hereinafter referred to. At that end of the cylinder which is intended to project farthest into the bottle is a flange, the two halves of which are seen at *e e′*.

The valve-seat piece is seen at Fig. 5. It is cylindrical in shape, with a bore that is at the top slightly larger than the ball part of the valve E. The bore contracts slightly until it is about half-way from top to bottom (when in place and the bottle upright) slightly smaller than the diameter of the ball of the valve E. It then expands in a wide mouth turned downward. Around the cylinder 5, about midway between the two ends, is a circumferential groove 5ª, and at the top end is a second circumferential groove 5ᵇ, above which the outer wall of the cylinder is smaller in diameter than the main part of the cylinder. The extreme upper end is utilized as a valve-seat for a thin flat valve D.

At the top of each half of the guard-cylinder is an external flange 4ª 4ᵇ.

In assembling the parts the valve E is dropped into the seat-piece 5, with the tail part extending to the lower side, the flat valve D onto the seat 5ᵈ, the two half-cylinders C C′ brought together, with the flanges *e e′* engaging in the circumferential groove 5ᵇ. The two half-cylinders B B′ are next brought together, with the flanges *b b′* engaging in the circumferential groove 5ª. When the parts are thus assembled, they are dropped into the bottle-neck and secured there. When in place, the lug *d* is directly over the center of the flat valve D and spaced from it by a distance so small that the valve D can only be lifted a short distance from its seat.

I have found experimentally that the light thin valve D will adhere so closely to the seat 5ᵈ that liquid coming from within the air-tight bottle will not always drive it from its seat, and there is great difficulty in getting the liquid out, but the ball-valve striking the thin valve drives it from its seat easily. On the other hand, the flat valve serves as a guard to prevent the ball-valve from dropping too far away from its seat when the bottle is inverted.

It will be observed that the tubular portion containing within it the two valve-seats and the tortuous passage formed by the staggered lugs forms a complete stopper, the outside of which is cylindrical and adapted to fit in and close the neck of the bottle to which it is applied. This enables the device to be applied to bottles in common use without requiring the bottles to be made of a special construction. It also enables the stopper to be made in various sizes, so that they can be applied to different size bottles, or the same size stopper can be used for different sizes of bottles by employing a greater or less thickness of sleeve-packing, as may be necessary. It is

apparent that a stopper constructed as I have described possesses many advantages, and that some features of the invention can be omitted without departing from other features thereof, and that while the details illustrated and described are considered the best for the purposes in view, still the invention is not confined to such details except where specifically so defined in the claims.

What I claim is—

1. In a bottle-stopper, a cylindrical portion formed with a seat for a ball-valve and a seat for a flat valve, a second cylindrical portion formed with a tortuous passage and having a limiting-stop located above the flat valve and spaced therefrom and adapted to have the flat valve contact therewith when dislodged from its seat, a circumferential groove formed in one of the cylindrical portions and a flange formed on the other and adapted to fit in said groove, a ball-valve, and a flat valve above and between the ball-valve and said limiting-stop, substantially as and for the purposes described.

2. In a bottle-stopper a cylindrical portion provided at its upper end with a flat-valve seat and having a central bore formed with a ball-valve seat, the bore above the seat being larger than the ball and below the seat extended outwardly, a ball-valve fitted to its seat and having a tail extending through the expanded part of said bore, a second cylindrical portion provided with staggered lugs arranged to form a tortuous passage, and having a limiting-stop located above the flat-valve seat and spaced from a flat valve thereon and adapted to have said valve contact with it when dislodged from its seat by the ball-valve, a circumferential groove formed in one of the cylindrical portions and a flange formed on the other and adapted to fit in said groove, and a packing-sleeve encircling said cylindrical portions and covering the joint between the two, substantially as and for the purposes described.

In testimony whereof I sign this specification in the presence of two witnesses.

JOHN C. GROUT.

Witnesses:
FRANCES BLACKMUR,
JAMES F. WARLOW.