(No Model.)

W. PAINTER.

BOTTLE STOPPER.

No. 438,709. Patented Oct. 21, 1890.

Fig. 1

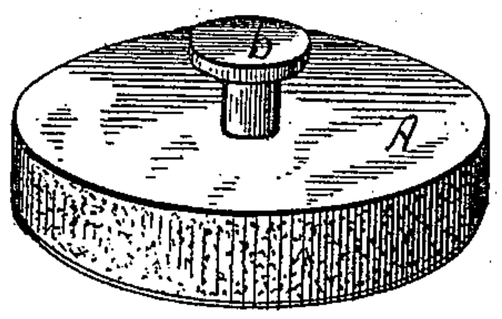


Fig. 2

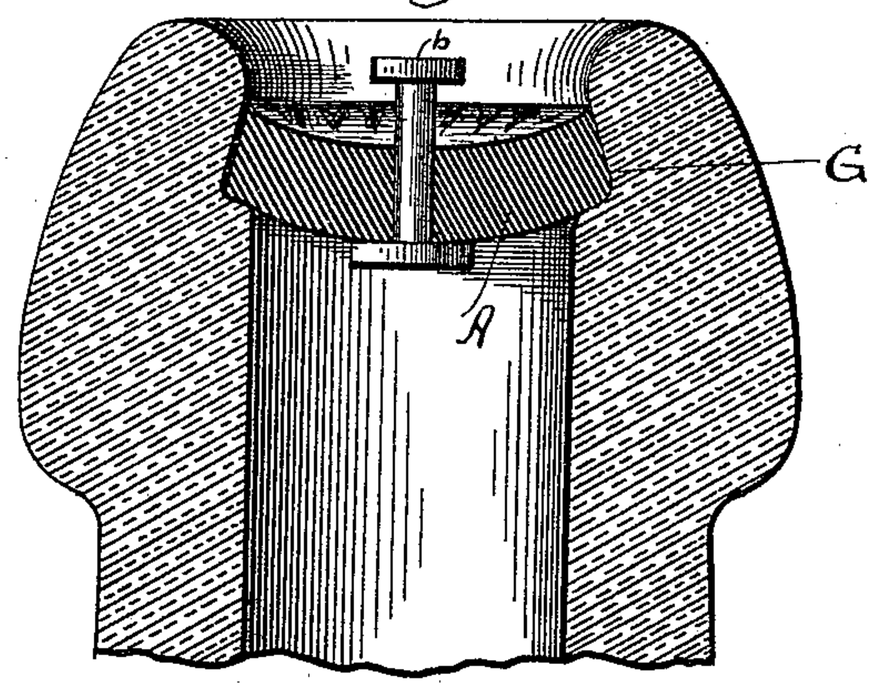


Fig. 3

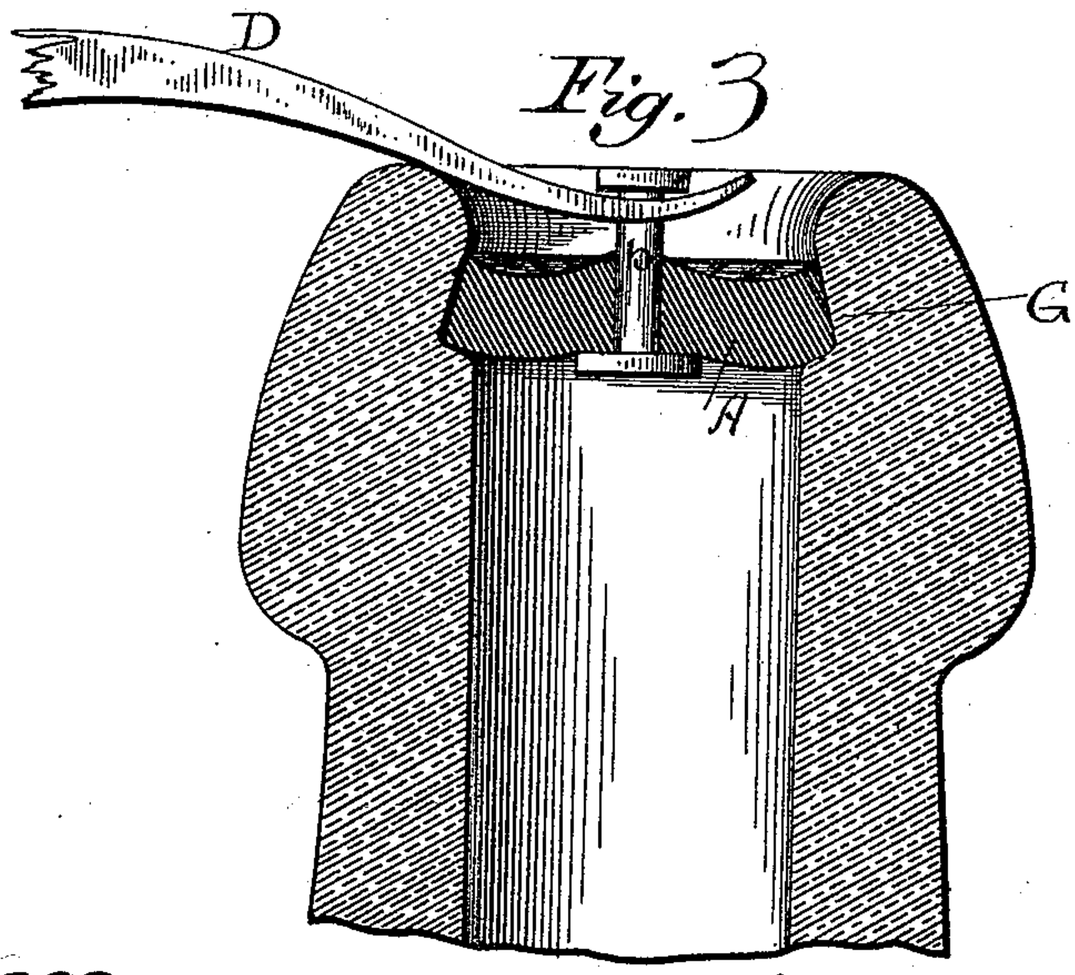
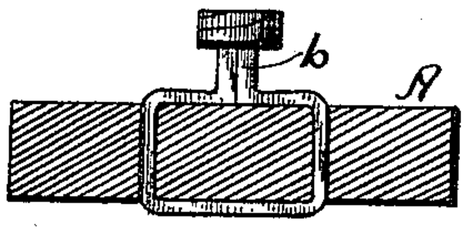


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM PAINTER, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE BOTTLE SEAL COMPANY, OF SAME PLACE.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 438,709, dated October 21, 1890.

Application filed October 1, 1887. Serial No. 251,172. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM PAINTER, of Baltimore, in the State of Maryland, have invented new and useful Improvements in Bottle-Stoppers; and I do hereby declare that the following is a full and accurate description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a perspective view of my stopper as prepared for use. Fig. 2 is a vertical section of a bottle-neck, showing my stopper in place therein. Fig. 3 is a similar elevation showing the manner of removing the stopper. Fig. 4 is a transverse section showing the manner of applying a stud made of wire.

In Letters Patent No. 327,099, granted to me September 29, 1885, my bottle-stopper and the principles of its operation are described and claimed. Therefore nothing herein is to be understood as claiming anything as to the form or function of an inverted dome or cup shaped stopper having its edge seated against the walls of the bottle-mouth G with lateral pressure.

My present improvement has reference only to means for the ready extraction of the stopper. In my said patent three ways of extraction are illustrated: first, by means of a pointed instrument which would penetrate the substance of the stopper and then lift it out, inverting its arch; second, by rotation under pressure applied to one edge of the stopper; third, by means of an ear or flap attached to one edge of the stopper. The first of these is inferior to my present improvement because, first, it destroys the stopper; second, it is less rapid and certain; third, stoppers which have been long in the bottle lose their cohesive strength and are liable to tear instead of retroverting. The second is inferior to my present improvement because it requires more skill and strength to rotate the stopper by pressure on one edge, and because such rotation is very difficult when the groove in the neck is deeper or more abrupt than usual. The third is inferior because it has been found in practice that the ear or lip will tear off frequently, especially after the stopper has been in place a considerable time. To avoid the difficulties alluded to and to extract the stopper quickly and without injury, even when it has been in the bottle very long, I attach to the stopper at its center a headed stud, to which a tool can be applied with great facility and precision and the stopper extracted with ease. The stud may be in the form of a straight shaft, which passes through the disk-stopper, and is provided with a head at each end, or it may be made of a wire staple, which passes through the disk and has its ends twisted together to form a hold for the extracting-instrument.

In the drawings, A represents the disk, and *b* represents the metallic stud, in one case formed of a wire with an expanded head at each end, and in the other case it is formed from a wire staple, the ends of which are twisted together at their extremities to form a hold for the extracting-tool D, which, seizing hold of said stud and resting on the mouth of the bottle as a fulcrum, pulls the stopper out without difficulty, first reversing its arch. When the stopper-disk A presents an edge of raw rubber to the glass, there is after a time a tendency to adhere, and this adhesion may be and sometimes is sufficient to cause the stopper to split under the pull of the removing-instrument. This liability is completely avoided by coating the stoppers with paraffine, beeswax, and other similar lubricant, which being interposed between the material of the stopper and the surface of the glass completely prevents adhesion.

Having described my invention, I claim—

1. In combination with a bottle, a cup-shaped stopper of flexible material seated in the mouth thereof with its convex side inward and its concave side outward, and provided at or near its center with a projection, whereby it may be retroverted and withdrawn from the bottle.

2. In combination with a bottle, a cup-shaped stopper of flexible material seated in the mouth thereof with its convex side inward and its concave side outward, and pro-

vided with a metallic attachment, whereby it may be retroverted and withdrawn from the bottle, substantially as set forth.

3. In combination with a bottle, a cup-shaped stopper of flexible material seated in the mouth thereof with its convex side inward and its concave side outward, and provided with the metallic stud *b*, adapted to be seized by the extracting-tool to forcibly retrovert the stopper and withdraw it, substantially as set forth.

WILLIAM PAINTER.

Witnesses:
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