

(No Model.)

H. LIGHTWARDT, Jr. & C. F. BACHLER.
BOTTLE STOPPER.

No. 410,421.

Patented Sept. 3, 1889.

Fig. 1.

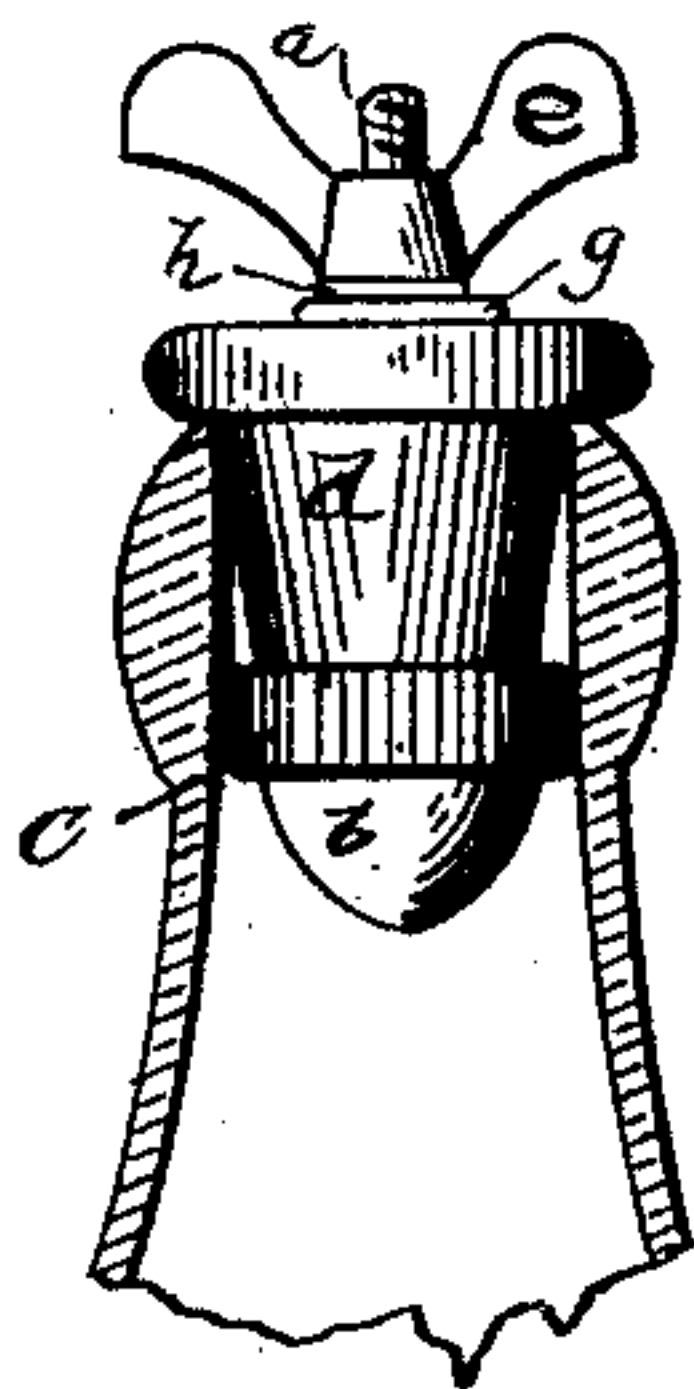


Fig. 2.

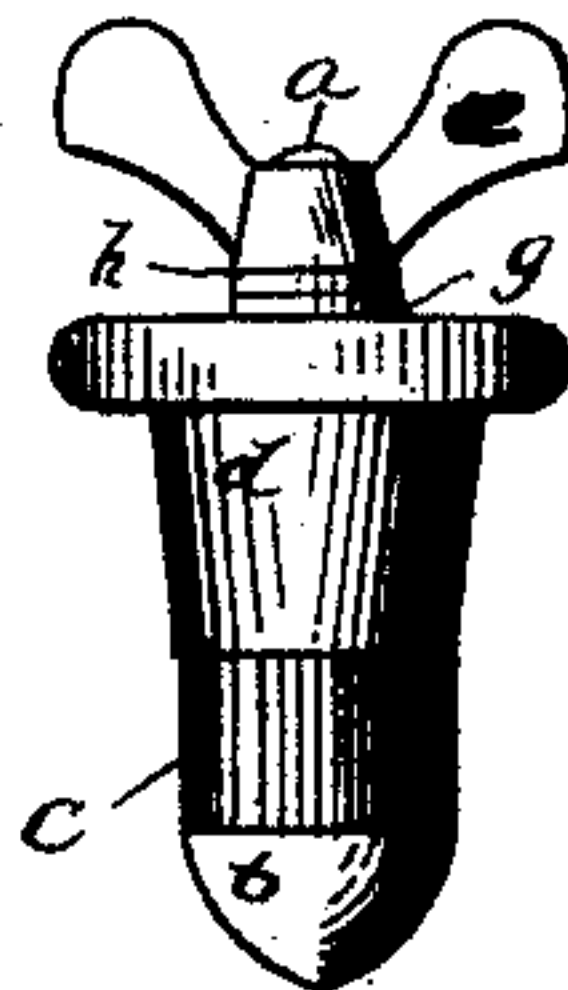


Fig. 3.

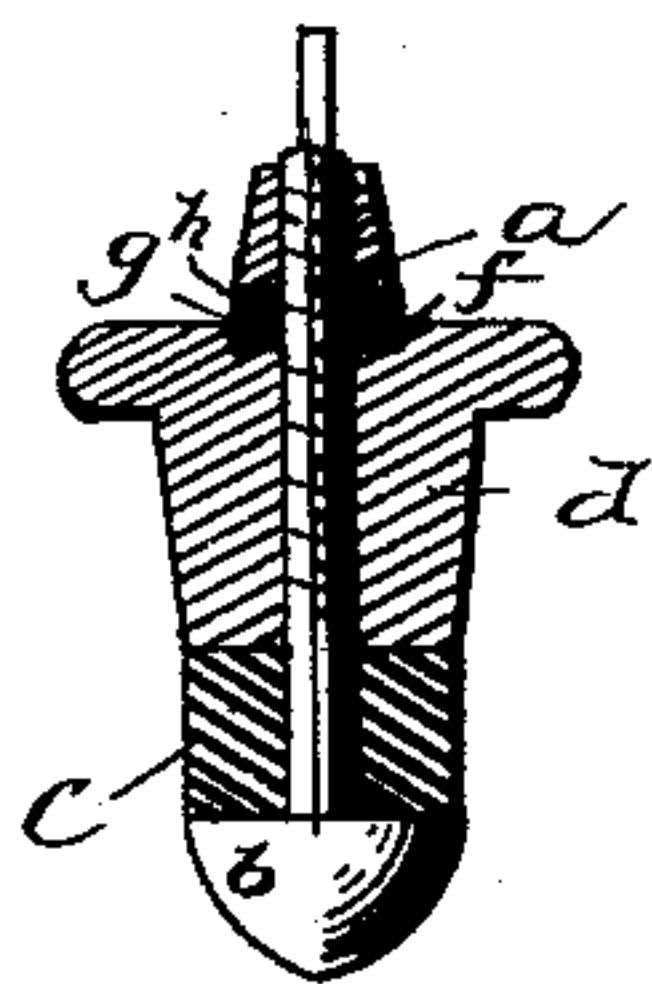
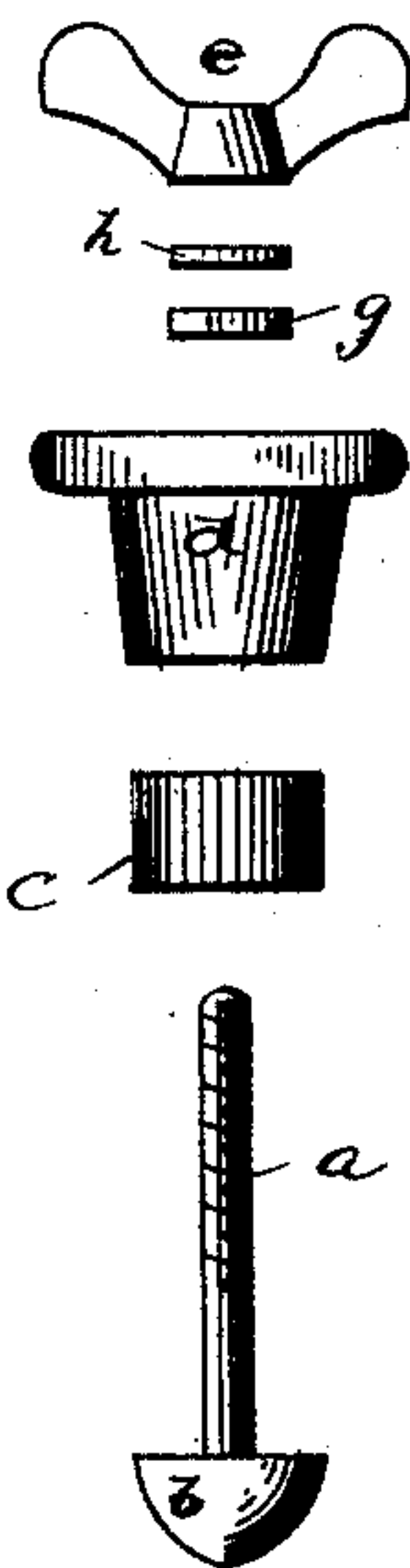


Fig. 4.



Witnesses:
C. C. Duffy
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UNITED STATES PATENT OFFICE.

HENRY LIGHTWARDT, JR., AND CHRISTIAN F. BACHLER, OF PHILADELPHIA,
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BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 410,421, dated September 3, 1889.

Application filed June 20, 1889. Serial No. 314,902. (No model.)

To all whom it may concern:

Be it known that we, HENRY LIGHTWARDT, Jr., and CHRISTIAN F. BACHLER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Bottle-Stoppers; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

Our invention relates to certain improvements in bottle-stoppers.

The object of the invention is to provide an improved expanding bottle-stopper of that class composed of rigid sections and an interposed expansible section, which is exceedingly cheap and simple in construction, and which, while provided with certain improvements to overcome certain defects, is composed of a minimum number of strong durable parts, and can be easily and quickly operated to lock itself in the neck of the bottle or to release itself therefrom.

These objects are accomplished by, and our invention consists in, certain novel features of construction and combinations of parts, more fully described hereinafter, and particularly pointed out in the claim.

Referring to the accompanying drawings, Figure 1 shows the neck of a bottle in section and the present stopper in elevation located therein. Fig. 2 is an elevation of the stopper, showing the expansible section contracted. Fig. 3 is a partial vertical section. Fig. 4 is an elevation of the parts of the stopper separated and in position to be assembled.

The stopper consists of a central stem or metal bolt *a*, upon the lower end of which is a head *b*, formed integral therewith, and having a flat upper face and tapering downwardly therefrom. The upper portion of the central stem is screw-threaded, as shown. An elastic cylindrical section *c*, formed of rubber or the like, embraces the central stem and bears on the flat face of the head on the lower end of the stem. The upper non-flexible

movable section *d* is provided with a central longitudinal opening, through which the stem extends, and with a lower flat face bearing on the upper side of the elastic section, and this section preferably tapers upwardly, and is provided with an annular flange around its upper edge to bear on the upper edge of the mouth or neck of the bottle. The upper section is pressed down to expand the elastic section by the winged nut *e* upon the outer end of the threaded stem. The upper face of the upper section is provided with a depression or recess *f* around the central opening thereof, in which a rubber or elastic washer or section *g* is snugly fitted, embracing the stem and with its upper face located above the upper face of the end section *d*, and a metallic washer or ring *h* embraces the stem, and is located on the upper face of the washer or elastic section *g*, so that when the nut is screwed down tight it presses down on the washer *h*, and thereby expands the elastic section *g* on the outer end of section *d*, thereby causing the same to tightly fill the recess *f* and embrace the stem, so that whatever moisture or liquid that may collect on the upper end of the stopper cannot flow down around the stem and enter the bottle when the stopper is unscrewed. This is a grave defect in the old stoppers now in use, as there is a moisture or liquid which collects on the tops of the stoppers when in the bottles and percolates down through the stopper around the stem, and when the stopper was unscrewed this moisture and liquid would pass down into the liquid in the bottle and spoil the flavor of the same; but this disadvantage is obviated by our stopper.

On account of the small diameter of the central stems of this class of stoppers, in order to insure strength it has generally been found desirable to form the screw-thread thereon of a very low pitch, and consequently the operation of screwing and unscrewing the stoppers has taken considerable time and many revolutions. In order to avoid this difficulty, we form a single screw-thread of a high pitch on the stem and then another parallel thread on the stem between the convolutions of the first thread, thereby forming a

double thread of a high pitch, and the opening of the nut is provided with similar threads. Thus by reason of the high pitch of the threads the movement of the nut on the stem
5 will be very rapid with a minimum number of complete revolutions. It should also be observed that the durability and cheapness of the article is further attained by forming the lower rigid section and the stem integral.

10 What we claim is—

In a bottle-stopper, the combination of a central stem, a rigid lower end section on the end of the stem, a movable upper non-flexible section, an interposed elastic expansible
15 section, means, substantially as described, on the upper end of the stem to force the

upper section down on the elastic section to expand the same, said upper end section having a recess in its upper face around the stem, an expansible elastic section filling and projecting above the recess and embracing the stem, and a metallic washer interposed between said section and said means for expanding the stopper, for the purpose set forth.

In testimony that we claim the foregoing as
25 our own we affix our signatures in presence of two witnesses.

HENRY LIGHTWARDT, JR.
CHRISTIAN F. BACHLER.

Witnesses:

GEORGE W. CLEMENT,
HUGH A. LONER.