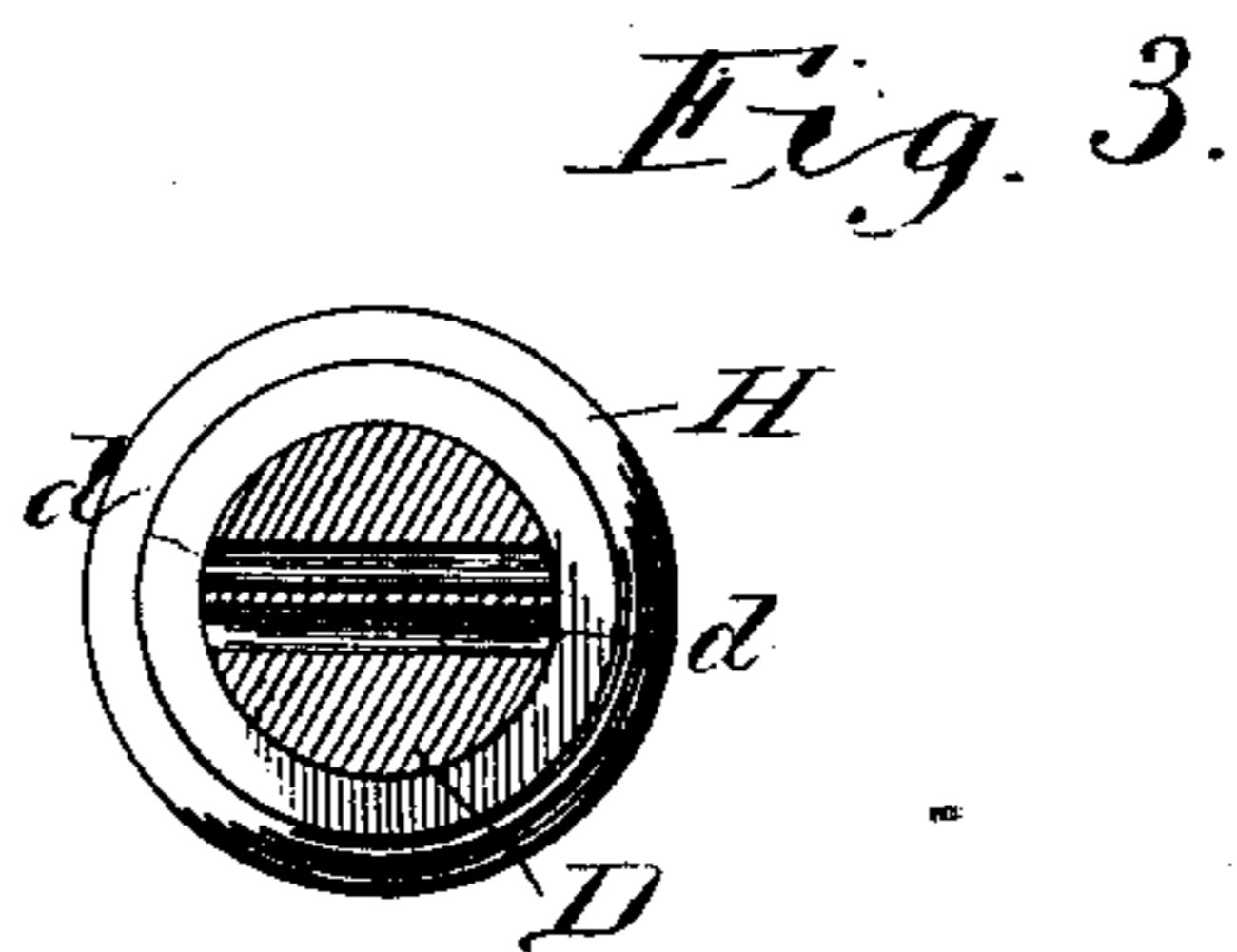
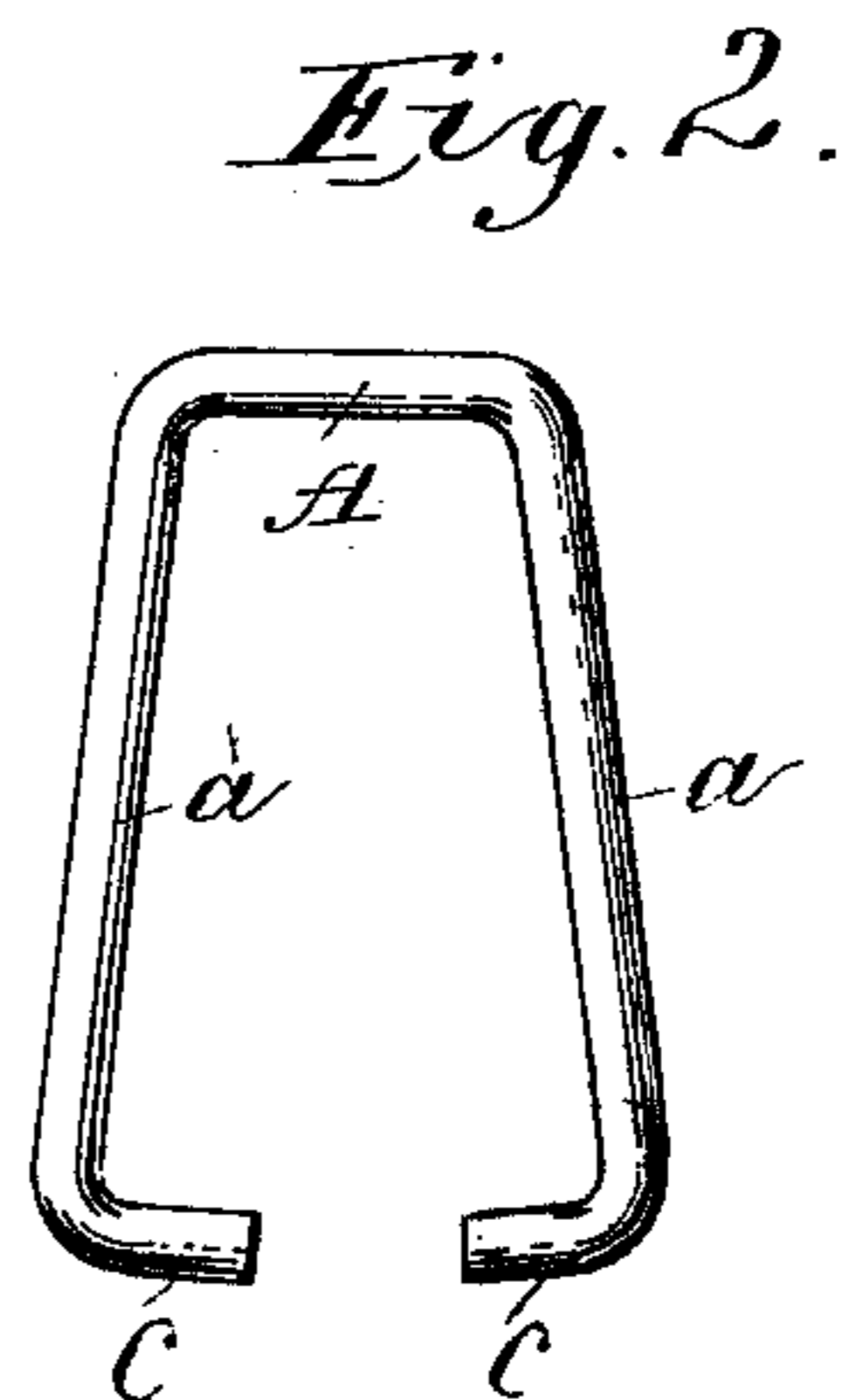
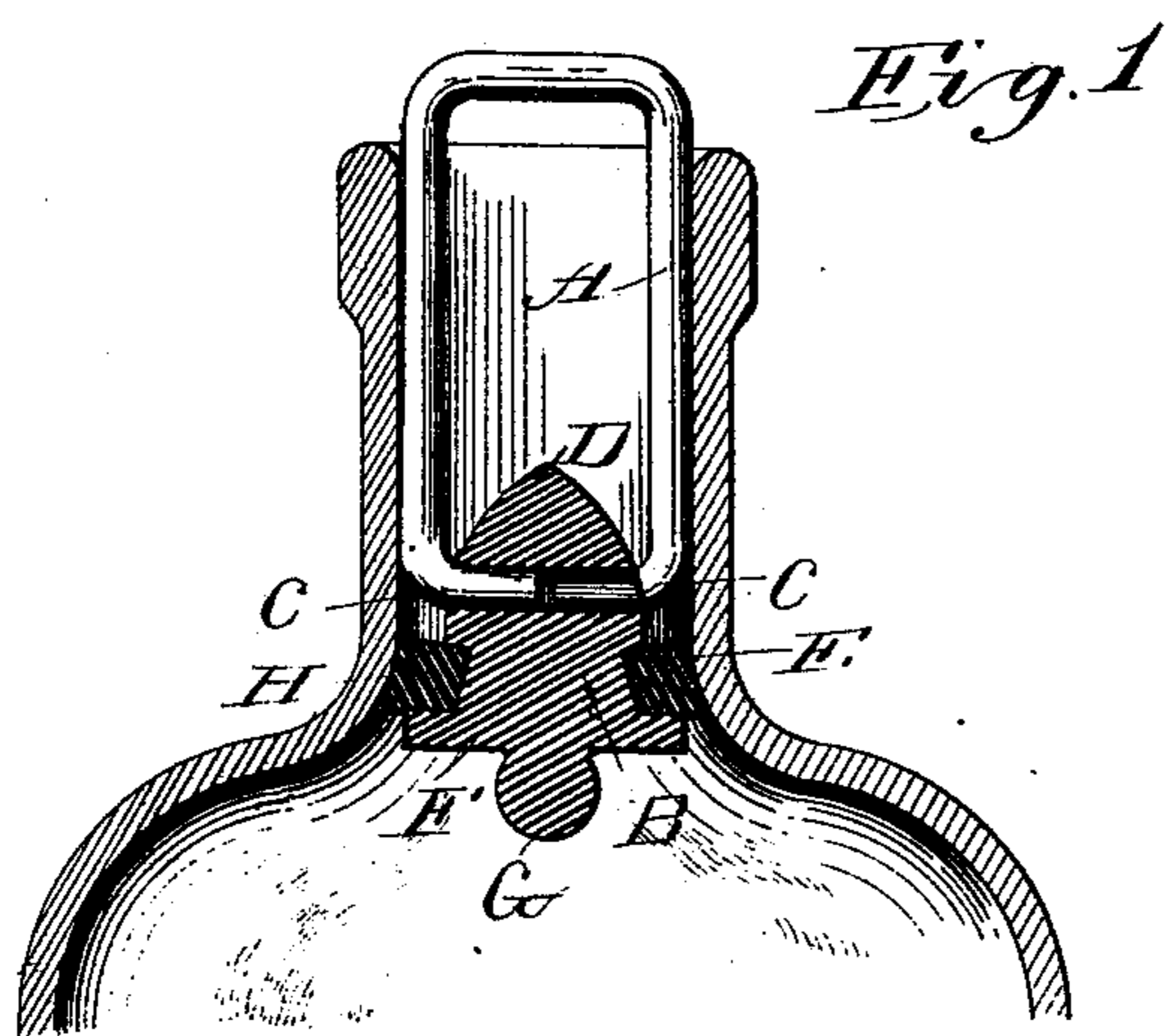


J. ERDMANN.
Bottle Stopper.

No. 229,595.

Patented July 6, 1880.



Witnesses:
Charles D. Hunter

Inventor:
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UNITED STATES PATENT OFFICE.

JULIUS ERDMANN, OF MILWAUKEE, WISCONSIN.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 229,595, dated July 6, 1880.

Application filed December 29, 1879.

To all whom it may concern:

Be it known that I, JULIUS ERDMANN, of the city of Milwaukee, and county of Milwaukee, and State of Wisconsin, have invented certain new and useful Improvements in Bottle-Stoppers; and I 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 a part of this specification.

Figure 1 of the accompanying drawings represents a vertical section of my invention. Fig. 2 represents a side view of the spring detached from the stopper. Fig. 3 represents a horizontal section of the plug through holes *d d*.

The object of my invention is to furnish improvements in that class of bottle-stoppers which are retained upon the inside of the bottle and close the neck of the bottle at its lower end.

My invention consists more particularly in the peculiar construction of the upper part of the stopper and the device by which the spring and stopper are connected together.

I am aware that a variety of kinds of stoppers adapted to be used upon the inside of bottles have been made, some of which have been attached to a single straight rod and others to one arm of a U-shaped spring.

In some cases the stoppers have been attached rigidly to one or both arms of the spring, and in others it has been provided with a hook or eye, through which one of the arms of the spring, which is bent in the form of a hook, is inserted, thus forming a flexible joint and leaving the other arm of the spring free.

It is obvious that when the stopper is thus attached, either rigidly or by a flexible joint, to but one arm of the spring, the stopper is naturally drawn to one side of the center of the spring, when the arms spread apart, and the stopper is retained directly beneath the arm to which it is attached and at one side of the neck.

It is desirable to retain the stopper at all times directly midway between the two arms of the spring, and at the same time leave both

arms of the spring free to be compressed or extended against the inner walls of the neck of the bottle. It is also important to control the movement of the stopper as much as possible by the bail or spring, and at the same time to provide such an attachment as will permit of the vertical arms of the bail being sprung together, or separated, or entirely removed from the stopper. These desirable ends are attained by connecting the respective ends of the bail to the stopper at points slightly apart from each other, so that, by the two bearings, the tendency of the stopper to oscillate is resisted, while it is obvious that were the arms which support the stopper in line with each other, and inserted in the same hole in the stopper, the two arms together would serve as an axis around which the stopper could freely oscillate or revolve.

My invention is further explained by reference to the drawings, in which like parts are indicated by the same reference-letters.

A is a wire spring having straight parallel arms *a a* and arms *c c*, bent at right angles thereto and extending on the same plane parallel to each other, side by side, as shown. B is the stopper, which is constructed of hard wood or metal in the shape shown, consisting of knob D, having two holes, *d d*, extending parallel to each other in a horizontal direction through from one side to the other, and neck E, disk F, and knob G. H is a rubber annulus or gasket, which is expanded and slipped over the knob D before the spring A is attached, when it contracts around the neck E and is retained between the knob D and disk F.

The spring A is attached to the stopper by inserting the arms *c c*, respectively, through the holes *d d*, respectively, from opposite sides of the knob D, as shown.

The arms *c c* are both loosely fitted to the holes *d d*, so that when they are compressed together or spread apart they move freely therein and allow the stopper to remain suspended midway between the arms *a a* and in the center of the neck of the bottle. When the stopper is thus attached at two points to the spring it is retained in a direct line with and between the arms of the spring, while the arms are as free to be compressed as if the stopper were not attached.

When desirous to remove the stopper from the bottle, the arms *a a* are separated until the arms *c c* are drawn from the holes *d d*, thus disconnecting the spring from the stopper, when
5 the spring is readily taken out first, when a hook or tongue is attached to the knob G, and the stopper is inverted and readily withdrawn. By thus inverting the stopper when removing it the rubber annulus or gasket is pressed
10 back against the knob D, in which position it can be drawn through the neck of the bottle.
• Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The stopper B provided with two parallel 15 horizontal holes, *d d*, in combination with the bail or spring A, having two parallel horizontal arms, *c c*, inserted in and loosely fitted to the holes *d d*, respectively, substantially as
20 and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JULIUS ERDMANN.

Witnesses:

JAS. B. ERWIN,
W. SINNOTT.