

(No Model.)

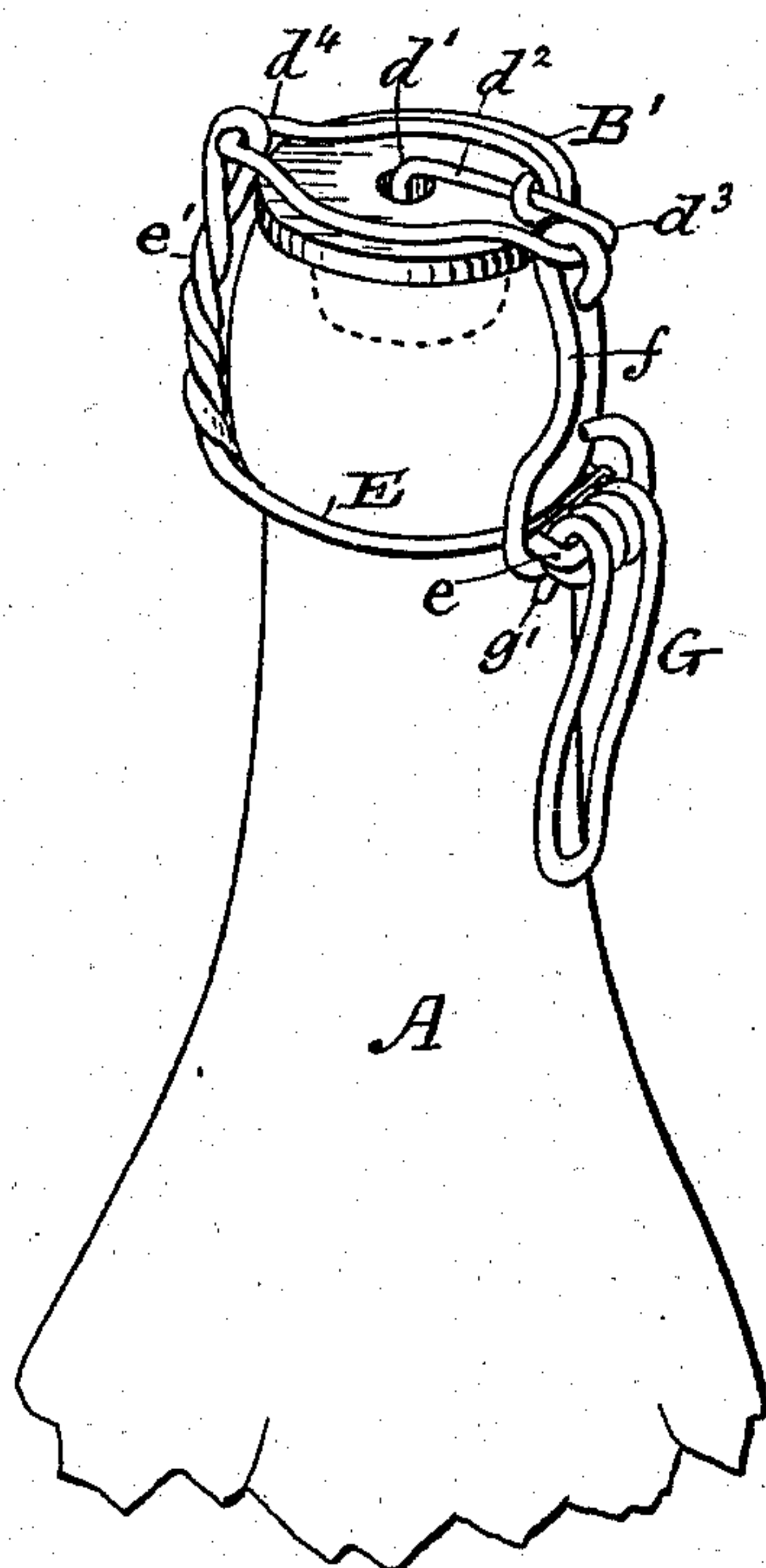
G. S. NORRIS.

BOTTLE STOPPING DEVICE.

No. 272,081.

Patented Feb. 13, 1883.

*Fig. 1.*



*Fig. 2.*

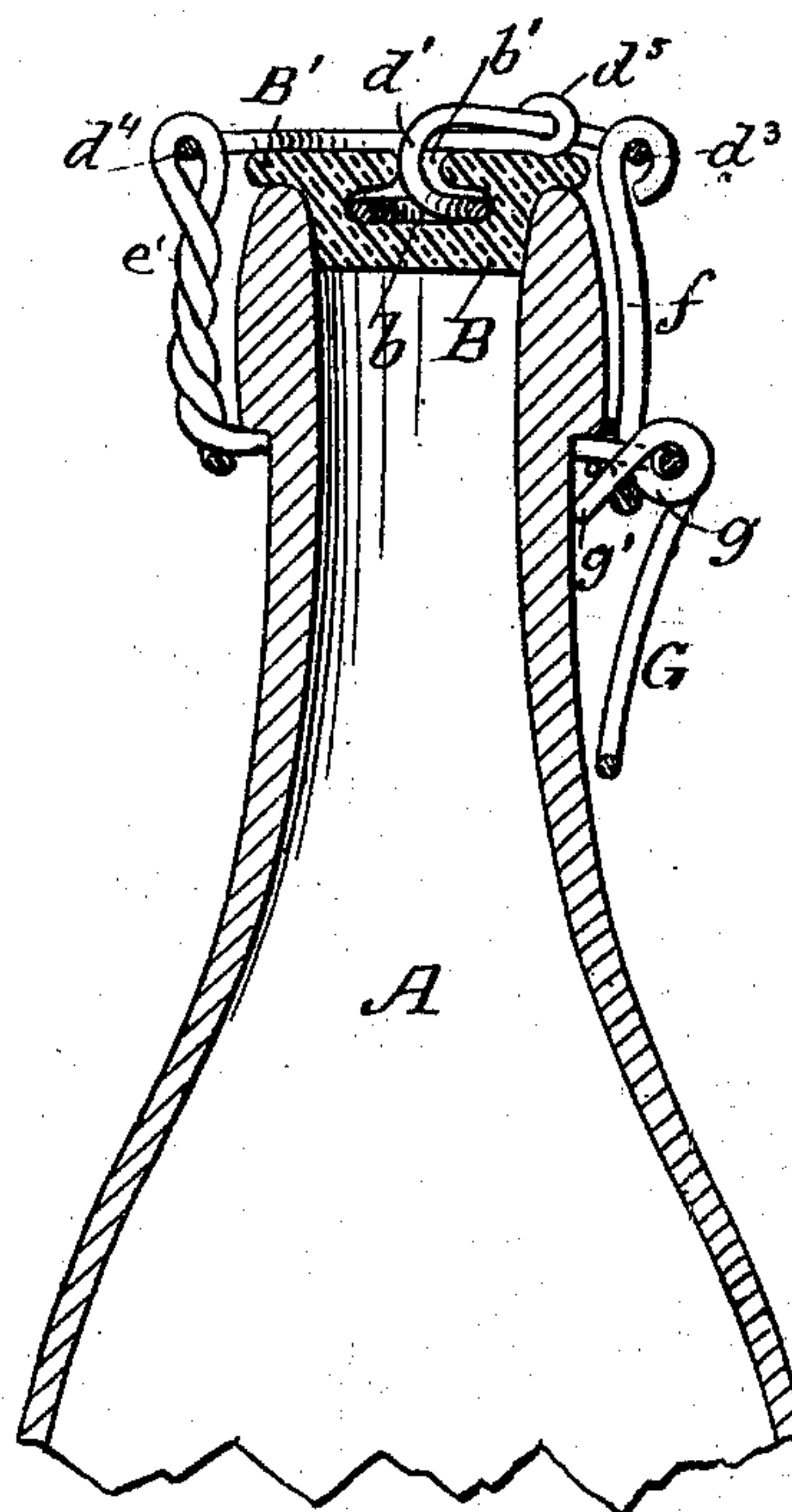


Fig. 3.

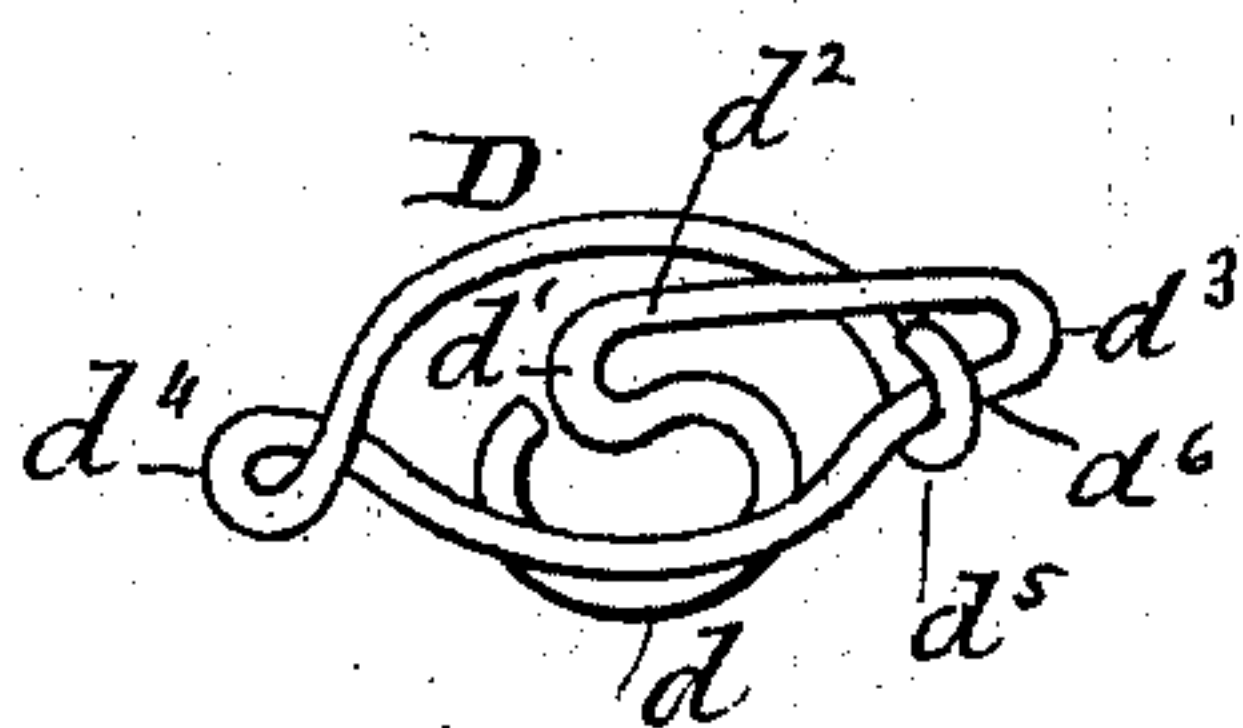


Fig. 4.

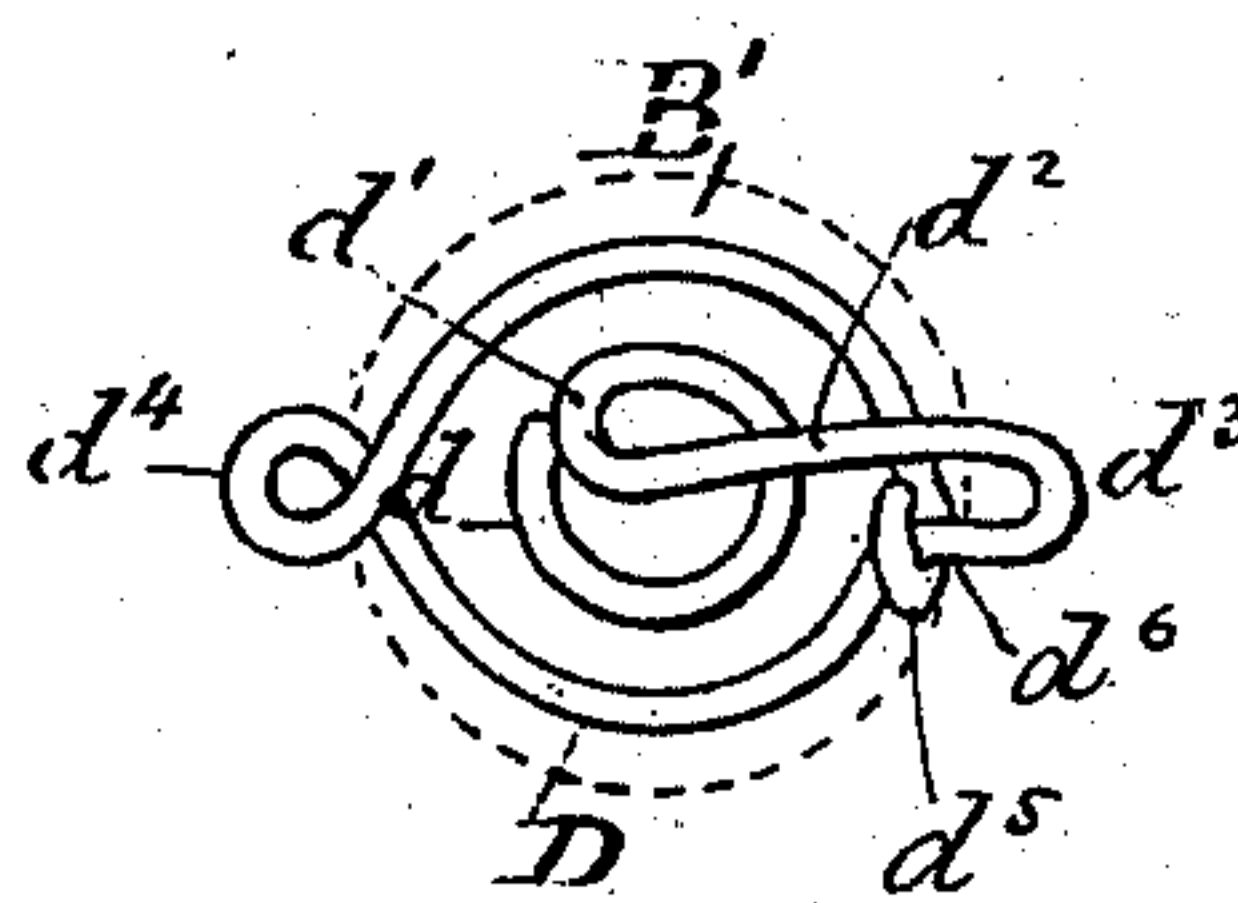
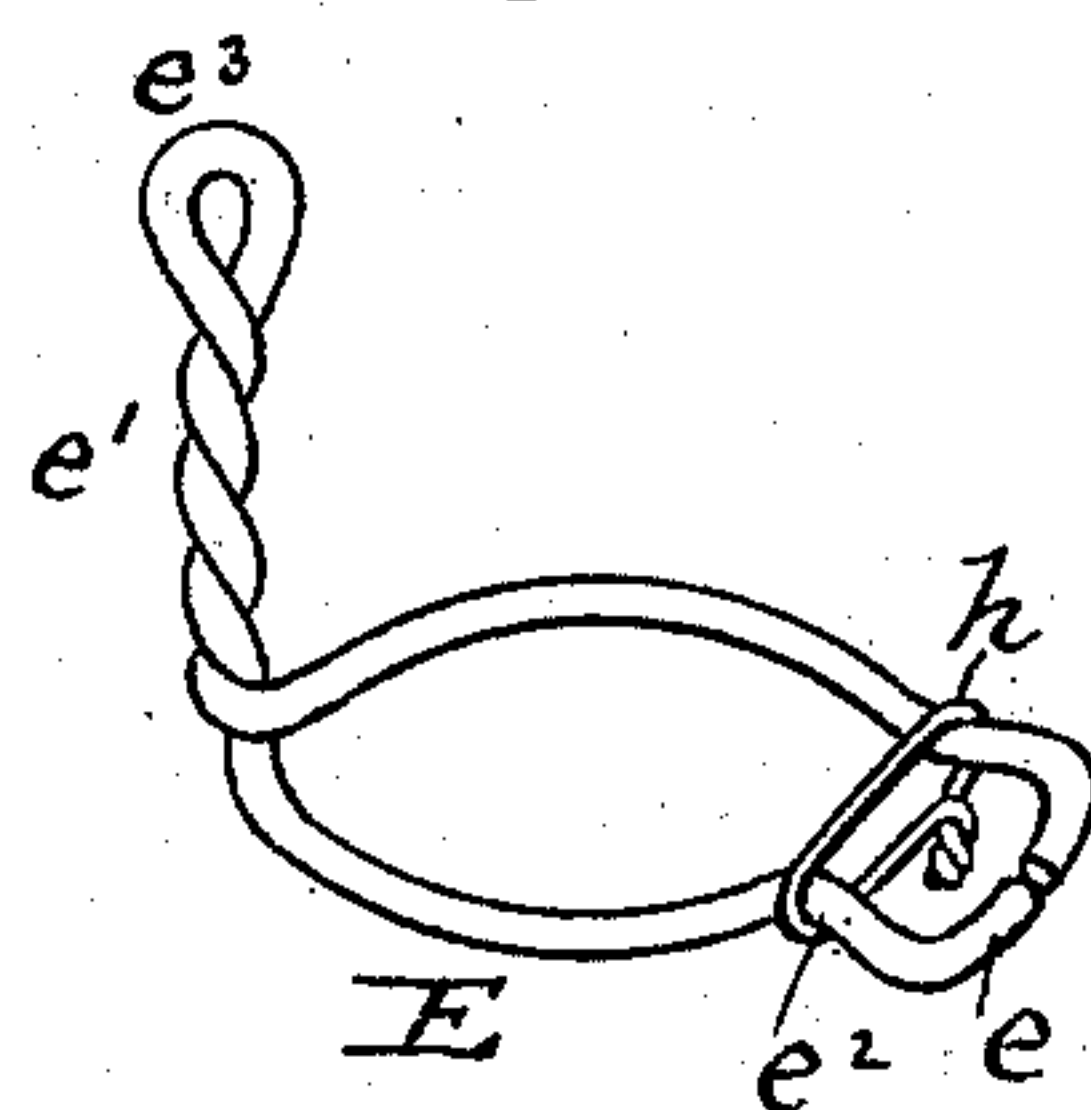
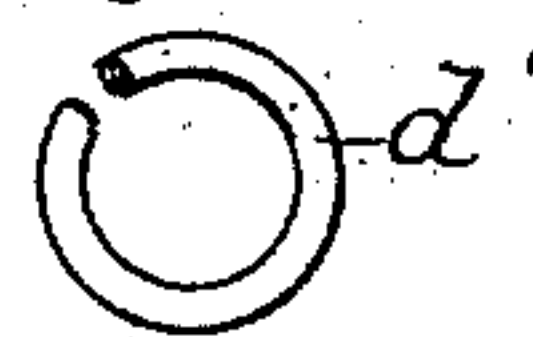


Fig. 5.



*Fig. 6*



Witnesses.

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# UNITED STATES PATENT OFFICE.

GEORGE S. NORRIS, OF BALTIMORE, MARYLAND.

## BOTTLE-STOPPING DEVICE.

SPECIFICATION forming part of Letters Patent No. 272,081, dated February 13, 1883.

Application filed December 5, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE S. NORRIS, a citizen of the United States, residing in Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Bottle-Stopping Devices, of which the following is a specification.

My invention relates to bottle-stopping devices in which a rubber plug is compressed over and within the mouth of a bottle by means of a combined stopper cap and bail adapted to be connected at one end by means of a link and a hinged lever to a band secured to the neck of said bottle, and the other by means of a branch or extension projecting upward from said band; and the objects of my improvement are, first, to provide a rubber plug with a collar to rest upon the edge of the bottle, and a cavity to receive a metallic spring constructed in the form of a transversely-slotted ring, capable of expanding the plug laterally after being inserted therein; and, second, to combine with the plug a fastening therefor, made of a piece of spring-wire suitably bent to form a skeleton cap for the plug, two loops to be connected with the neck-band, and an annular spring to be inserted within the cavity of the plug to expand its walls and retain it united to the stopper-fastenings. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my improvement applied to the neck of a bottle. Fig. 2 is a vertical section of the same. Fig. 3 is a perspective view of the skeleton or wire cap and its spring. Fig. 4 is a top view of the same, and Fig. 5 is a perspective view of the neck-band. Fig. 6 is a top view of a ring open on one side and adapted to be used within the stopper-plug.

In said drawings, A represents the neck of a bottle, and B the rubber plug. It is made with a collar, B', to rest upon the edge of the bottle-mouth, and has a hole, b', in its top surface, leading into a larger cavity, b, in the center of the plug. To connect the plug with the stopper-fastenings and furnish it with an elastic support, to press against the walls of its central cavity, I use a skeleton cap, D, made of a suitable length of spring-wire, as follows: One end of said wire is first coiled around a mandrel until a nearly-complete ring, d, is formed. The long-

est end of the wire is then bent upward at d' at an angle of nearly ninety degrees with said ring, and then bent again at d<sup>2</sup> about parallel with the plane or top surface of said ring, the bent portion d', adjoining said ring, being intended to remain in and project through the hole b' in the top of the plug. The horizontal portion d<sup>2</sup> is kept straight and caused to project beyond the edge of the plug-collar before it is bent upon itself to form a loop, d<sup>3</sup>, adapted to receive one of the links used to retain the stopper connected with the bottle. The wire forming the cap D is then bent in a form nearly resembling a circle to rest upon the top of the rubber plug within the limits of its surface, but having its bent-over end d<sup>4</sup> projecting over the edge of said surface, as shown in Fig. 4, in which the dotted circle B' represents the periphery of the plug-collar. The end of the wire is then looped around and secured at d<sup>5</sup> to the straight portion d<sup>2</sup> thereof, as shown in Figs. 1 and 2, or to the portion d<sup>6</sup>, as shown in Figs. 3 and 4, and thus completes the skeleton cap. The extremity of the wire forming the ring d is left unfastened, so that said ring can be contracted by a peripheral pressure and resume its size as soon as the pressure is removed, thus giving to the rubber plug inclosing it the support desired to form an air-tight stopper for bottles containing aerated liquids. With a fastening having a ring, d, open in this manner, the hole b' in the plug may be much smaller than usual, and the free end of the ring d be inserted first within the cavity, and said ring or its plug given one turn to seat the whole ring within the cavity b. By means of the metal spring d, capable of expanding circumferentially and sustaining the interior of the plug, said plug can be made of softer rubber than heretofore and a closer fit of the bottle-neck be obtained. An independent ring, d, of this form, as shown in Fig. 6—that is, with an open transverse cut in its periphery—may also be placed within the cavity b, under the ring d of the cap, to circumferentially sustain internally and in a yielding manner the walls of said cavity.

To secure the stopper to the bottle the latter is provided with a neck-band, E, made of a piece of wire bent first at e<sup>3</sup> in the middle of its length, and its branches twisted together adjoining said bent portion, as shown at e',



and each branch bent in a semicircle to fit the neck of a bottle, and, furthermore, bent outwardly at  $e^2$  to form a bearing for the link  $f$ , and again bent inwardly to form a journal,  $e$ , for the locking-lever  $G$ . The portions of the wire between the bend  $e^2$  and the journal  $e$  are bent down so as to form an angle of about ten degrees with and below the plane of the neck-band, to insure the transfer of the lower loop of the link  $f$  over the cylindrical bearing-surface  $g$  of the operating-lever  $G$ ; and to further facilitate this transfer the width of the loop or length of the journal  $e$ , formed by the extreme ends of the wire, is made somewhat larger than opposite the bends  $e^2$ . After the neck-band has been placed around the neck of a bottle and the ends thereof have been made to enter the bearing  $g$  of the lever  $G$  the latter is securely retained thereon at the same time that the neck-band is secured to the bottle-neck by passing a light wire,  $h$ , around the neck-band wire at the contracted portion  $e^2$  thereof and twisting its ends together.

To unite the wire cap  $D$  to the loop  $e^3$  of the neck-band, the end  $d^5$  of said cap is first passed through said loop before it is sufficiently bent over to clasp the straight portion of said cap between the bends  $d^2$  and  $d^3$  or the portion  $d^6$ . The link  $f$  may be first completed and then passed in the same manner over the cap-wire; or its upper loop may be left partly open and afterward secured to the loop  $d^3$  of said cap. The lower loop of the link  $f$  is made of such width as to pass easily over the bent ends of the neck-band. The operating-lever  $G$  is formed of suitable size wire bent upon itself in the middle of its length, and coiled adjoining to the ends thereof to form the cylindrical bearing  $g$ , adapted to receive the ends of the wire of the neck-band. The ends  $g'$  of the lever project inwardly to engage with the lower loop of the link  $f$  and force it from the seat under the neck-band when the bottle is to be opened. The slight difference between the form of the skeleton frame or cap  $D$  shown in Figs. 1 and 2 and the cap shown in Figs. 3 and 4 consists in the bent-over portion  $d^4$  and in the end  $d^5$  of the wire that is fastened on either one of the branches of the loop  $d^3$ .

In Patent No. 257,746, granted to me May 9,

1882, the apparent configuration of the wire neck-band is nearly the same as the band  $E$ , above described; but it differs in these particulars, that in the former invention the terminal ends of the band are not within the coil or bearing of the lever  $G$ , but are on the opposite side of the bottle's neck, and consequently there is no wire tie, as  $h$ , to retain the ends of the neck-band together, while with the present invention the wire  $h$  is required to insure the retention of the neck-band to the bottle.

Having now fully described my invention, I claim—

1. A bottle-stopper cap consisting of a wire bent in a circular form to rest flatly upon the stopper-plug, and having its looped portions  $d^3 d^4$  projecting over the edge of said plug, and one end coiled as a ring and adapted to be contracted under lateral pressure, substantially as and for the purpose described.

2. The combination of the neck of a bottle, its rubber plug provided with a cavity,  $b$ , a spring-wire ring open on one side and inserted within said cavity, and a cap connected with said plug, with a neck-band, links connecting said neck-band with the cap, and an operating-lever pivoted upon the neck-band, substantially as and for the purpose described.

3. In a bottle-stopper, the combination of an elastic plug, and an internal circumferentially-yielding metallic ring provided with a transverse cut or unconnected portion in its periphery, substantially as and for the purpose described.

4. The combination of a wire locking-lever,  $G$ , provided with an annular bearing-surface,  $g$ , and a neck-band of wire bent in the middle of its length to form a loop,  $e^3$ , a twisted cable portion,  $e'$ , semicircles to embrace a bottle-neck, a contracted portion,  $e^2$ , and its ends  $e$ , abutting together, with the surrounding wire  $h$ , whereby the ends of the neck-band form the journal for the locking-lever to revolve upon, substantially as described.

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Witnesses:

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W. B. MASSON.