R. L. LARSON.

STOPPER AND DROPPER.

APPLICATION FILED FEB. 26, 1910.

969,291. Patented Sept. 6, 1910.

Fig. 1.

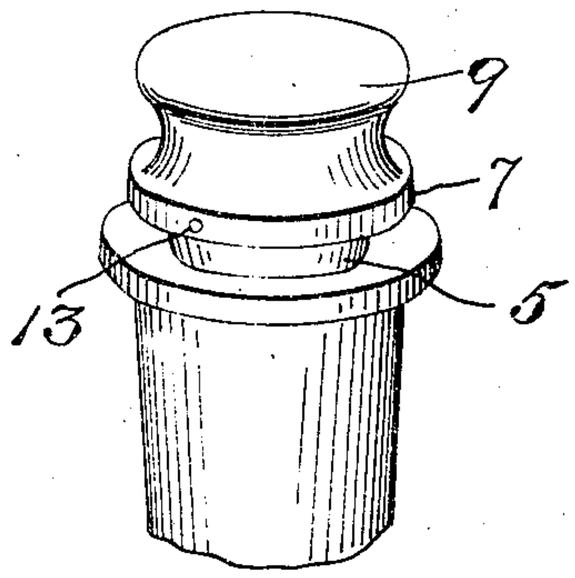


Fig. 2.

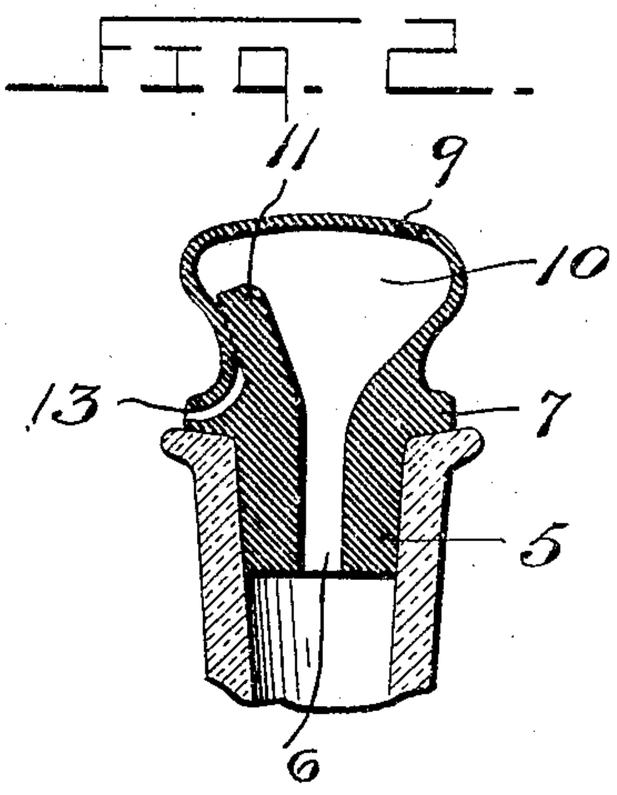
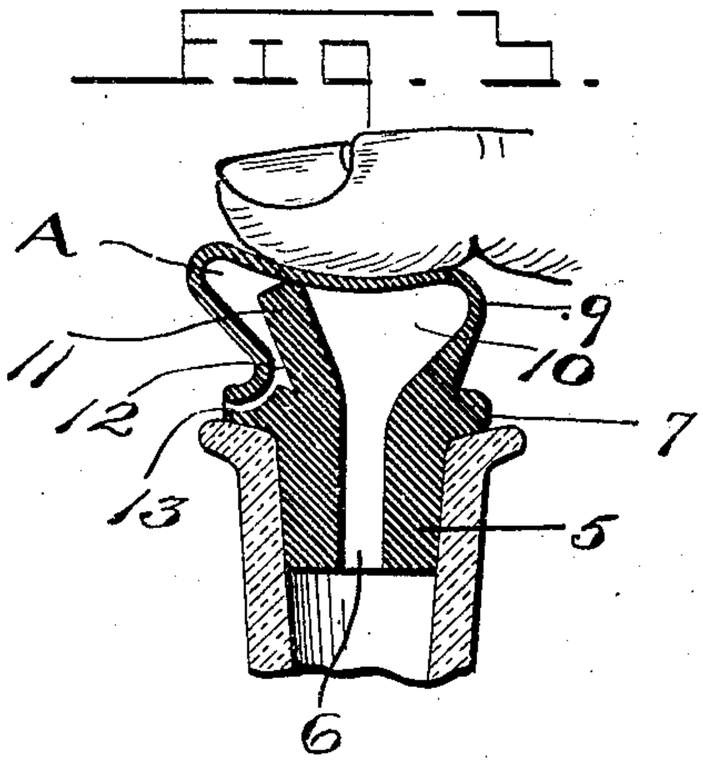


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

RICHARD L. LARSON, OF MINNEAPOLIS, MINNESOTA.

STOPPER AND DROPPER.

969,291. Specification of Letters Patent. Patented Sept. 6, 1910.

Application filed February 26, 1910. Serial No. 546,157.

To all whom it may concern:

Be it known that I, RICHARD L. LARSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Stoppers and Droppers, of which the following is a specification.

This invention relates to bottle stoppers, and has for its object to provide a stopper which will be adapted to normally close a bottle, but which will be so constructed that it may be used as a dropper to permit a small quantity of liquid to escape from the bottle, a drop at a time.

Another object is to produce a stopper which will be of an unusual character, and which will also be such that this unusual nature may be detected through the sense of touch, so that when the stopper is used for poisonous liquids, which are those most generally measured by drops, no mistakes can be made when handling bottles in the dark.

Other objects and advantages will be apparent from the following description, and it will be understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a perspective view of the present stopper engaged in the neck of a bottle, Fig. 2 is a vertical section through the stopper in its normal position. Fig. 3 is a view similar to Fig. 2 showing the diaphragm depressed to form a dropper.

Referring now to the drawings, there is shown a stopper which is formed of rubber, and which includes a body portion 5 arranged for engagement in the neck of a bottle. This body portion is of considerable thickness, but has a central passage 6 formed therethrough. At the upper edge of the body portion, there is formed an outwardly projecting circumscribing rib 7 which is arranged to engage the mouth flange of the bottle to limit the inward movement of the body portion. The upper portion of the passage 6 is enlarged, as shown at 8, so that the walls of the body portion 5 at their upper edges are reduced in thickness, and formed integrally with these upper edges, there is a diaphragm 9 curved upwardly and extending over the upper end of the body portion. There is thus formed a chamber 10 in the upper portion of the stopper. At one side of this chamber, there is an enlargement 11 which projects upwardly toward the diaphragm 9, and which forms a continuation of the adjacent surface of the body portion 5. At the point at which this enlargement 11 meets the edge portion of the diaphragm 9, a slit extends inwardly and downwardly into the enlargement as shown at 12, and this enlargement thus forms what is in effect a thickened tongue extending upwardly over the inner face of the diaphragm. A passage 13 opens at its outer end through the rib 7, and at its inner end communicates with the slit 12 at the lower end thereof, and, as will be observed, the tongue 11 thus normally closes the inner end of the passage 13. As shown in Fig. 3, however, the arrangement is such that, when the diaphragm 9 is depressed, the portion adjacent to the tongue 11 is moved outwardly, so that the slit 12 is spread and liquid is permitted to pass through the passage 13.

When using the device, the bottle is tilted until a portion of the contents thereof runs into the chamber 10. The diaphragm 9 is then depressed and moved laterally, as stated, until it engages the innermost portion of the tongue 11. There is then a small confined space shown in Fig. 3 at A, with which the passage 13 communicates, and the finger of the operator may be pressed against that portion of the diaphragm which forms this space A to force the liquid within this space through the passage 13 a drop at a time. When the finger of the operator is removed, the parts will return to their normal position, and the engagement of the tongue 11 against the adjacent wall of the diaphragm 9 will close the passage 13.

What is claimed is:

1. A bottle stopper comprising a body portion having a passage therethrough and having an integrally formed diaphragm extending over the upper end of the body portion to form a chamber communicating with the passage, said body portion having a tongue formed integrally therewith at one side and resting against the adjacent portion of the diaphragm and extending upwardly into the chamber, said body portion having an outwardly opening passage communicating at its inner end with the portion of the diaphragm against which the tongue rests, said

diaphragm being movable away from the tongue to open the passage and to bring a portion thereof into engagement with the tongue to produce a confined space communicating with the passage.

2. A bottle stopper comprising a body portion arranged for engagement in the neck of a bottle, and provided with a longitudinal passage therethrough, an upwardly curved diaphragm connected with the upper edge of the body portion and extending over the passage to form a chamber, said body portion having a laterally opening passage communicating with the chamber, and a tongue carried by the body portion and extending normally over the inner end of the second named passage to close the latter, said diaphragm being movable to shift the portions adjacent to the tongue away therefrom to open the passage and to bring a portion into engagement with the tongue to produce a confined space communicating with the passage.

3. A bottle stopper comprising a body portion arranged for engagement in the neck of a bottle and having a longitudinal passage formed therethrough, a diaphragm connected with the body portion and extending over the upper end of the passage to form a chamber, said body portion having a laterally opening passage communicating with the chamber and a tongue carried by the body portion and extending upwardly within the chamber and lying normally over the inner end of the second named passage to close the latter, said diaphragm being depressible to engage the tongue and to move the portion adjacent to the second named passage away from the tongue to open the passage.

4. A bottle stopper comprising a body portion arranged for engagement in the neck of a bottle and having a longitudinal passage formed therethrough, a diaphragm connected with the body portion and extending over the upper end of the passage to form a chamber, said body portion having a laterally opening passage communicating with the chamber, and a tongue carried by the body portion and extending upwardly within the chamber and lying normally over the inner end of the second named passage to close the latter, said diaphragm being movable to move the portions adjacent to the passage away from the tongue to open the passage.

In testimony whereof I affix my signature, in presence of two witnesses.

RICHARD L. LARSON.

Witnesses:

S. P. WILSON,

JENNIE ANDERSON.