(No Model.)

# W. W. & E. F. PRESTON.

## DROPPING STOPPER FOR MEDICINE BOTTLES.

No. 412,788. Patented Oct. 15, 1889.

Fig. 1.

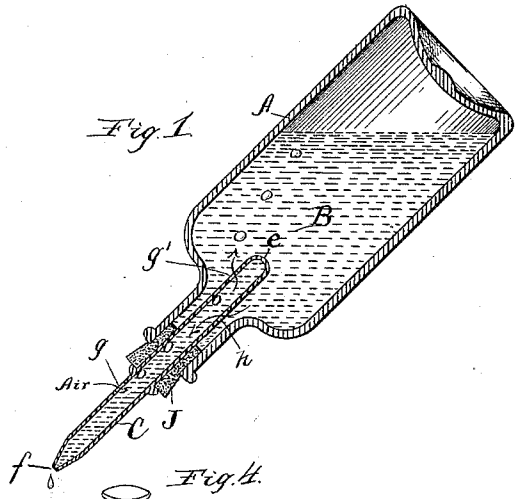



Fig. 4.

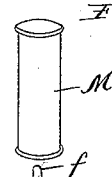



Fig. 2.

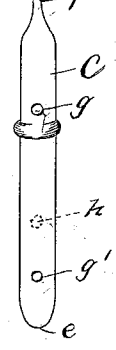



Fig. 3.




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# UNITED STATES PATENT OFFICE.

WILLIAM W. PRESTON AND EDWARD F. PRESTON, OF BISMARCK, MICHIGAN, ASSIGNORS TO THE PRESTON ICE CREEPER COMPANY, OF CHICAGO, ILLINOIS.

## DROPPING-STOPPER FOR MEDICINE-BOTTLES.

SPECIFICATION forming part of Letters Patent No. 412,788, dated October 15, 1889.

Application filed December 3, 1888. Serial No. 292,578. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM W. PRESTON and EDWARD F. PRESTON, citizens of the United States, residing at Bismarck, in the county of Eaton and State of Michigan, have invented a new and useful Improvement in Dropping-Stoppers for Medicine-Bottles, of which the following is a specification.

This invention relates to a dropping-tube for bottles applicable to any ordinary bottle and contrived of a single glass tube, so that the operation of the liquid within the same is visible, the glass tube being so constructed that it can be inserted through any ordinary cork and covered with a cap when not in use.

In the accompanying drawings, which form a part of the specification, and in which similar letters of reference indicate like parts, Figure 1 is a sectional view of a bottle provided with my improved dropping apparatus, the whole being shown in section and in the act of dropping. Fig. 2 is a view of the glass dropping-tube upon a somewhat larger scale. Fig. 3 shows the perforated cork, and Fig. 4 the cap for covering the tube.

In the drawings, A represents a common medicine-bottle partly filled with the liquid, as at B.

C is the glass tube having a single bore or passage. The end which is inserted in the bottle is closed entirely, as at *e*. The outer end is drawn together to form a fine discharge-opening, (indicated at *f*.) Air-holes are provided for inlet of air at *g* at a point outside of the bottle and near the cork, and at *g'* for exit from the tube into the bottle. The port for the admission of the liquid to the dropping-tube is located in said tube at a point within the bottle, as at *h*, and nearer to the cork than the opening *g* and oppositely located on the tube.

The stopper or cork, which may be made of cork or rubber or other suitable material, is shown at J, and is perforated for the passage of the tube. A suitable cap for covering the nozzle of the stopper when not in use is shown at M.

The operation is as follows: When the bottle is tipped into the position shown at Fig. 1, the liquid flows down into the tube through the opening *h*, and at this time some liquid may also enter through the opening *g'*, so that the tube is filled. When the tube is filled and the air displaced from it by the liquid, other air begins to enter at the exterior port *g* and pass in bubbles along the upper side of the tube, escaping into the bottle through the aperture *g'*, and the liquid begins to discharge in regular drops from the nozzle *f*. The passage of these bubbles of air is visible through the sides of the transparent tube and transparent bottle, and the operator can count the drops and regulate his operations accordingly. The inner end of the tube beyond the opening *g'* and at the part marked *e* forms an air-chamber, where a portion of the air always collects and remains during the operation of dropping. This portion of air thus confined in the tube, when the bottle is turned down into position for dropping, forms a cushion to receive the entering bubble of air, and prevents the liquid from flowing into the air-aperture *g'* to interfere with the regularity of the dropping. When the dropping is finished, it is stopped by simply reversing the position of the bottle, and then, to prevent evaporation, the cap M will be placed over the tube, inclosing it from the air.

The construction of our improved dropping-tube is so simple, requiring no partitions, valves, or double tubes, that it can be readily made of glass, and thus rendered transparent, so that the whole operation of dropping is visible to the operator, and he is able more readily to govern the same. Moreover, this material is less liable to corrosion, is more cleanly, and easily cleaned.

It has also been our intention in this invention to devise a dropper which could be used only as such, and which necessarily delivers the fluid in drops instead of a stream, as this peculiarity enables the use of the device with little care and by persons lacking the steadiness of hand required in dropping from a large opening or tube. To this end the dropping-aperture at the point is made so minute as to give slow emission to the fluid.

Our dropper is, we believe, the first in which a single-bore dropping-tube of such small

diameter as to insure its being entirely filled with the liquid when the bottle is tipped has been used as a passage for both the air and the fluid.

We claim—

The combination, with a medicine-bottle and its stopper, of a dropping-tube passing through the cork and constructed with a single bore, said tube having a dropping-aperture at its outer point and air-inlet port back of its point but outside the cork, a fluid-inlet within the bottle, and an air-outlet near its extreme inner end, such inner end being closed, substantially as set forth.

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