

C. E. WARSAW & A. P. BALL.
NON-REFILLABLE VACUUM BOTTLE.
APPLICATION FILED JAN. 21, 1911.

1,019,866.

Patented Mar. 12, 1912.

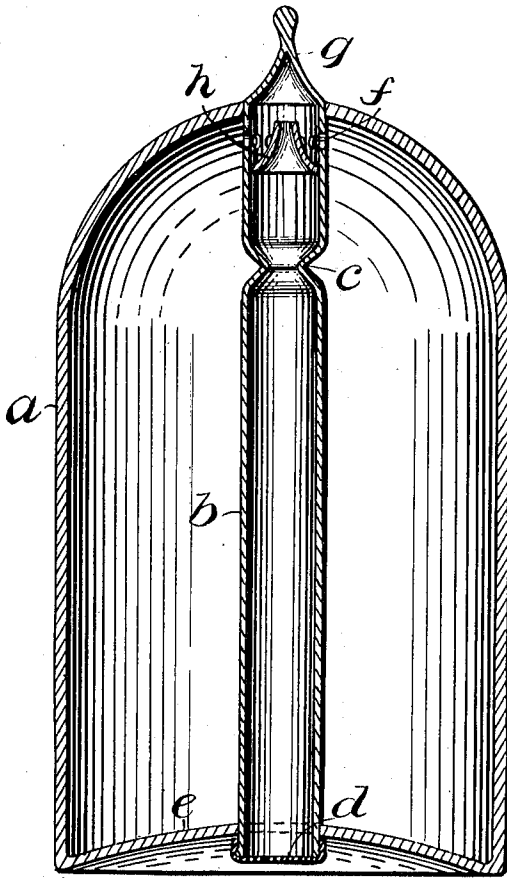


Fig. 1.

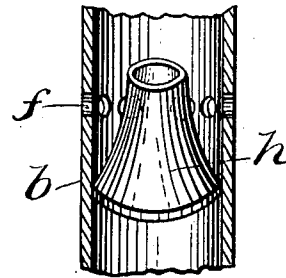


Fig. 2.

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UNITED STATES PATENT OFFICE.

CHARLES E. WARSAW AND ARTHUR P. BALL, OF AMES, IOWA.

NON-REFILLABLE VACUUM-BOTTLE.

1,019,866.

Specification of Letters Patent.

Patented Mar. 12, 1912.

Application filed January 21, 1911. Serial No. 603,884.

To all whom it may concern:

Be it known that we, CHARLES E. WARSAW and ARTHUR P. BALL, citizens of the United States of America, and residents of Ames, Story county, Iowa, have invented certain new and useful Improvements in Non-Refillable Vacuum-Bottles, of which the following is a specification.

Our invention relates to improvements in non-refillable bottles, and the object of our improvement is to devise a receptacle of this type which may when desired be filled through the employment of a vacuum in the same first induced, with proper means for sealing same.

This object we have accomplished by the means which are hereinafter described and claimed, and which are illustrated in the accompanying drawings, in which:

Figure 1 is a vertical central section of our improved non-refillable vacuum bottle, and Fig. 2 is an enlarged broken detail, in partial vertical central section, showing the conical ledge or shelf placed in the inner tube.

Similar characters of reference designate corresponding parts throughout the several views.

Our improved device comprises a bottle or receptacle *a*, which may be of any other form than that shown when desired, but which has openings at either end to receive the closely fitting inner tube *b*, the ends of the latter extending slightly without the bottle, and primarily, being open. The tube *b* has a contracted part *c* for a purpose to be mentioned hereinafter. The bottom *e* of said bottle is arched upwardly at *e* in order to raise the lower end of the tube *b* out of line with the lower angle of the bottle and in order to thus safeguard it against accidental contacts with resulting breakage. The lower end of said tube *b* is closed by a removable cap *d* formed preferably of soft india rubber or similar elastic, strong and impervious material. The upper end of said tube within the bottle is furnished with a plurality of orifices *f*, while just below said orifices, a hollow truncated cone or hollow frustum *h* is introduced into said tube with the lower part of the outside surface of the frustum fitted closely to the tube, as shown in Fig. 2. The open top of this frustum extends preferably somewhat above the level of the orifices *f*. The upper end of said tube *b*, that part which extends out-

wardly of the bottle *a* at *g* is preferably made somewhat thinner than the main body of the tube. The upper end of the tube *b* being open, and the lower end closed by the cap *d*, the air may be exhausted from said tube and bottle in the well-known manner, and the tube then heated till plastic and then sealed as shown in Fig. 1 at *g*. Thus a certain and sufficient degree of air exhaustion is attained within said receptacle. In order to fill said receptacle *a* with fluid, the lower end of the receptacle is immersed in the fluid, the cap *d* then being pierced by any suitable instrument, when the pressure of the atmosphere will cause the mounting of the fluid into the tube *b* and receptacle *a*, filling the latter, and the process may be stopped when the bottle is filled as far as to the orifices *f*. Any fluid remaining in the tube *b* drains off, and it is obvious that the frustal shelf *h* will operate to prevent any leakage or drainage of fluid from the orifices *f* back into the tube *b* below said shelf, or, in other words, such a shelf simply keeps any fluid or liquid which adheres to the tube above the holes *f* from running down the tube *b*, when the bottle is set upright after having poured some fluid out of the bottle. To empty the bottle it is necessary to break open the point *g* of the tube *b*, which its thinness aids, when the vacuum is relieved, and the bottle easily emptied. The tube *b* once broken the bottle cannot be refilled. The contraction *c* of the tube *b* prevents slippage past it of the frustum *h*, also contracts the area of the tube, which is thought convenient when the bottle is used for dispensing by drops, the finger of the operator being then placed over the ruptured cap *d* and lifted slightly for each drop escaping. The contraction aids in the distribution of the air pressure, by limiting its speed of action also the volume transmitted at each time.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is:

1. The combination with a closed receptacle, of a tube passing therethrough and having both open ends projecting therefrom, a removable cap fitted over one end of said tube, the other end of said tube being fusible and adapted for being sealed when fused, the upper part of said tube having ports in communication with the receptacle, and means located with the tube im-

mediately below said ports adapted to intercept and retain drippings oozing into the tube when the latter is inclined.

2. The combination with a closed receptacle, of a tube passing therethrough with air-tight connections, one end of the tube projecting therefrom, more frangible than the rest of the tube and adapted to be fused and sealed imperviously, a removable elastic pierceable cap fitted over the other end of the tube, ports in the upper part of said tube in communication with the receptacle, and an annular frustal hollow projection on the

inside surface of said tube below said ports, and directed upwardly, adapted to catch and retain any drippings oozing inwardly through said ports from said receptacle when the latter is inclined. 15

Signed at Ames, Iowa, this 9th day of Jan., 1911.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
