No. 704,820. Patented July 15, 1902.

A. EKLUND.

BOTTLE STOPPER.

(Application filed Jan. 29, 1902.)

(No Model.)

Fig. 1.

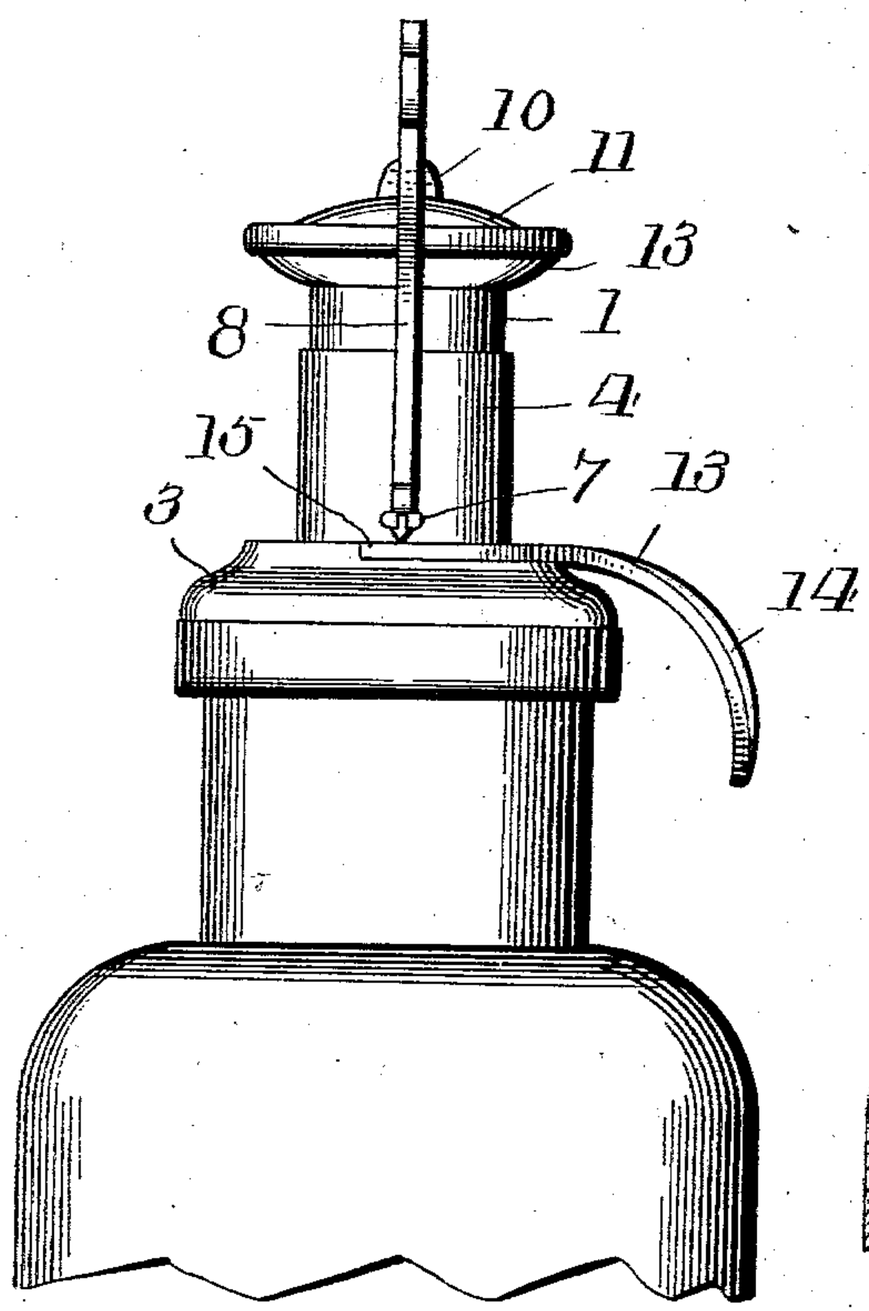


Fig. 5.

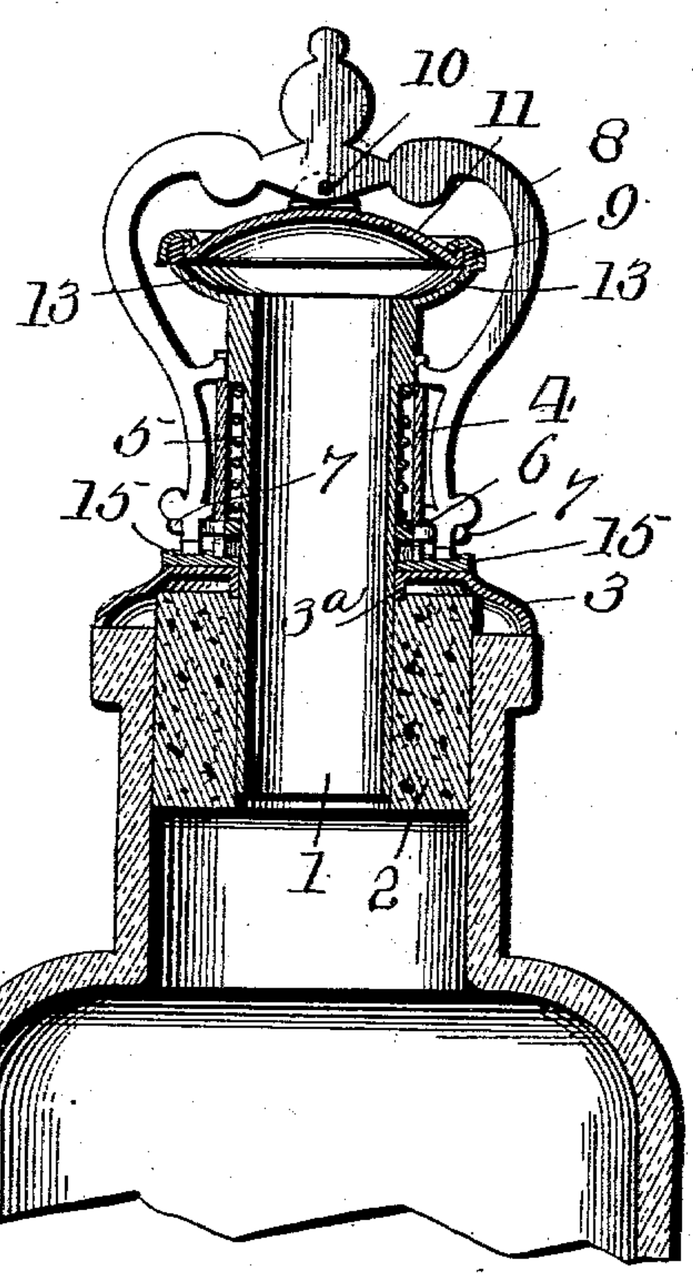


Fig. 4.

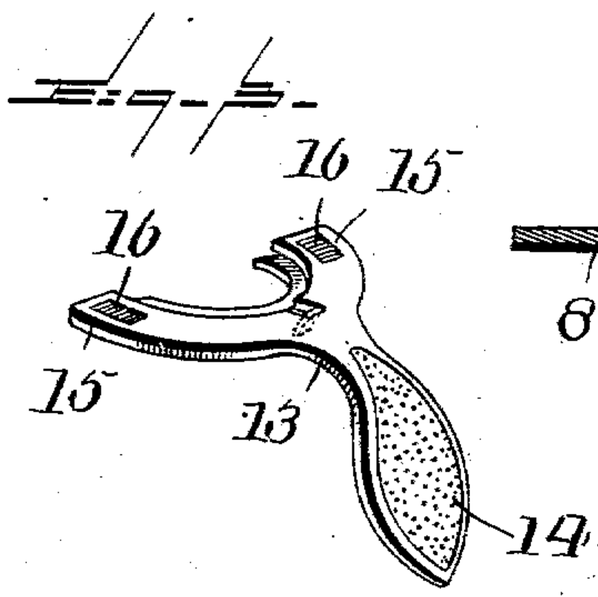
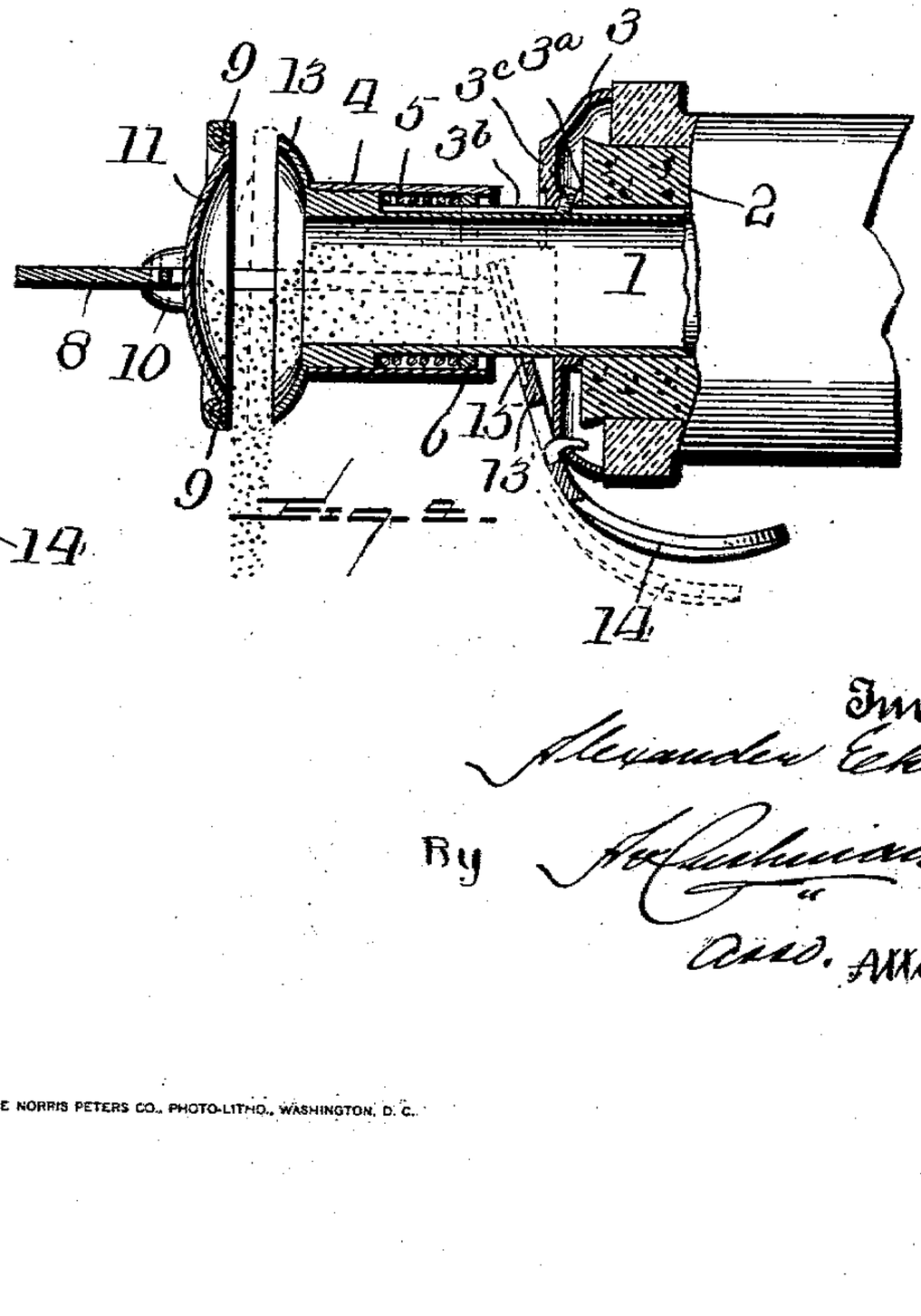


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALEXANDER EKLUND, OF ATTLEBORO, MASSACHUSETTS.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 704,820, dated July 15, 1902.

Application filed January 29, 1902. Serial No. 91,758. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER EKLUND, a citizen of the United States, residing at Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Bottle-Stoppers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to stoppers for bottles, and is intended for use with bottles in which granulated or powdered substances—such, for example, as tooth and toilet powders—are sold.

The object of the invention is to provide a bottle-closing and powder-delivering stopper of such construction that the bottle will be securely closed against the escape of the contents when the stopper is in closed position and which when the stopper is moved to its open position will deliver a fixed amount of powder from the bulk in the bottle, suitable means being provided to normally maintain the stopper in its closed position, while actuating devices to open the stopper and means to insure the discharge of the powder delivered by the stopper are also provided.

In the drawings which accompany and form a part of this specification is illustrated one embodiment of the invention, and in said drawings—

Figure 1 is a side elevation of a bottle with the stopper applied thereto. Fig. 2 is a central vertical sectional view of the stopper shown in Fig. 1. Fig. 3 is a detail view in perspective of the stopper-actuating lever. Fig. 4 is a vertical central sectional view taken at right angles to Fig. 2, showing the stopper in closed position in dotted lines and in open position in full lines to illustrate the action of the same in delivering the powder.

Referring to the said drawings by numerals, like numerals indicating like parts in the several views, 1 indicates the body-tube of the stopper, the lower end of said tube being sheathed in a cork thimble or gasket 2 to insure the proper frictional engagement of the stopper with the bottle, said stopper-tube 1 having a removable body-flange 3, mounted thereon and extending therefrom approximately midway its length, said flange 3 seating upon the top of the bottle when the stopper is in place. The said flange 3 is preferably provided with a lip 3^a, which enters a groove 3^b in the side of the tube 1, a screw 3^c locking the flange in position. Upon the upper end of said stopper-tube 1 is mounted a cylindrical tube-section or sleeve 4, which has a sliding movement on the upwardly-extending portion of the stopper-tube 1, being normally maintained in its lowermost position seated upon the flange 3 of the stopper by means of a spring 5, which is housed between the sleeve 4 and the stopper-tube 1, said spring 5 bearing at its lower end upon a ring 6, provided with projecting eyes 7, to which reference will be made hereinafter, which is secured to the said sleeve 4 at or near its lower end and lies between said sleeve and the stopper-tube 1, while at its upper end the said spring 5 bears against an outwardly-stepped portion or offset 7, formed on the stopper-tube 1. Carried by said sliding sleeve 4 and rising vertically therefrom is an arch or yoke 8 of a substantially inverted-U shape, the limbs of said yoke 8 being secured at their lower ends in the eyes 7 of the said ring 6, which is fastened to the lower end of the sleeve 4. Depending from the center of said yoke 8 and preferably secured thereto by a pivotal connection 10 is a stopper-closing cap 11, said cap 11 being preferably a concavo-convex form in cross-section for a purpose which will presently appear. The said stopper-cap 11 when the tube-section or sleeve 4 and its yoke 8 are in their normal position rests upon an outwardly-projecting concavo-convex flange 13, formed at the upper end of the stopper-tube 1 and preferably of equal diameter with the cap 11, the cap 11 in this position held to its seat by the spring 5, effectually closing the bottle against the egress of powder, the pivotal connection 10 of the said cap 11 with its supporting-yoke 8 insuring accurate seating of the same upon the flange 12 by compensating for any slight inaccuracies in the vertical movements of the sleeve 4 and its yoke 8 relative to the stopper-tube 1. In order to give an air-tight joint and prevent deterioration of the contents of the bottle, I preferably provide the stopper-cap 11 with a ring of rubber or other suitable compressible material 9 on its under side, which ring 9 seats upon the

edge of the flange 12, as clearly shown in the drawings.

Pivoted upon the flange 3 of the stopper-tube 1 is a lever 13, having an overhanging downwardly-turned end which forms a thumb-piece 14, by means of which the said lever 13 may be rocked on its pivot. Said lever 13 is forked at its other end, the two fork members 15 15 embracing the stopper-tube 1 and resting normally upon the flange 3, as shown, the top of said flange being cut away to form a seat in which the forks 15 15 lie, so as to give a smooth surface. The ends of the said lever members 15 15 lie beneath the ends of the limbs of said yoke 8, so that as the said lever 13 is rocked on its pivot by pressing down on the thumb-piece 14 the forks 15 15, acting on the ends of the limbs of the yoke 8, will force the sleeve 4, yoke 8, and cap 11 to the position shown in Fig. 4 and unstopper the bottle.

It will be apparent that if the powder or granulated substance within the bottle be forced forward into the neck of the bottle by inverting the same or by smartly throwing it to volley the contents into the neck a portion of the powder will be received in the pocket formed by the concaved cap 11 and the concave flange 12 of the stopper-tube. Under these conditions if the bottle be held in a horizontal position (see Fig. 4) and the stopper-cap moved to its open position by means of lever 13 acting upon the yoke 8 and sleeve 4 the charge of powder in the pocket between the cap 11 and flange 12 will fall and be delivered upon a tooth-brush or wherever desired, such delivery being facilitated by reason of the concaved faces of the cap 11 and flange 12, which offer but little frictional resistance to the tendency of the powder to fall. To insure the delivery of the charge, however, and to overcome the tendency of finely-pulverized powders to cohere and mass, the ends of the forks 15 15 of the lever 13 are roughened, preferably by providing them with a series of serrated or ratchet-like projections 16, (see Fig. 3,) which ride under the ends of the downwardly-projecting limbs of the yoke 8 as the lever 13 is moved and vibrate or shake the said yoke 8 and its pivotally-pendent cap 11, so that any possibility of the charge of powder sticking between the cap 11 and the flange 12 is obviated.

From the foregoing it will be seen that a simple, efficient, and convenient delivering-stopper for bottles is provided, one which is easy of manipulation, reliable in action, delivering a fixed amount of powder, and one which reduces waste to a minimum.

While I have shown and described a particular construction of my invention, and that the best now known to me, I wish it to be understood that this is but a mere illustrative embodiment of the same, capable of considerable variation within the skill of the mechanician, without departing from my invention, and I do not, therefore, limit myself, except so far as I am limited by the terms of the appended claims, to anything shown and described.

I claim as my invention—

1. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-cap pocket.

2. A bottle-stopper comprising a stopper-tube having a pocket formed at its upper end; a stopper-cap having a pocket formed on its inner face; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

3. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; means for closing said stopper-cap; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-cap pocket.

4. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; automatic means for closing said stopper-cap; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-cap pocket.

5. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; a spring for automatically closing said cap; an actuating-lever for moving said cap to open position; and means for vibrating said cap to discharge the contents of said stopper-cap pocket.

6. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; a spring for closing said stopper-cap; an actuating-lever for moving said cap to open position; and means, carried by said lever, for vibrating said cap to discharge the contents of the stopper-cap pocket.

7. A bottle-stopper comprising a stopper-cap having a concave pocket formed on its inner face; a spring for closing said stopper-cap; an actuating-lever for moving said cap to open position; and means, carried by said lever, for vibrating said cap to discharge the contents of the stopper-cap pocket.

8. A bottle-stopper comprising a pivotally-pendent stopper-cap having a concave pocket formed on its inner face; a spring for closing said stopper-cap; an actuating-lever for moving said cap to open position; and means, carried by said lever, for vibrating said pivotally-pendent cap and discharging the contents of the stopper-cap pocket.

9. A bottle-stopper comprising a stopper-tube having a circumferential pocket formed at its upper end; a stopper-cap having a pocket formed on its inner face seated on said stopper-tube; means for moving said stopper-cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pocket.

10. A bottle-stopper comprising a stopper-tube having a concave circumferential pocket formed at its upper end; a stopper-cap hav-

ing a concave pocket formed on its inner face seated on said stopper-tube; means for moving said stopper-cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

11. A bottle-stopper comprising a stopper-tube having a concave circumferential pocket formed at its upper end; a pivotally-pendent stopper-cap having a concave pocket formed on its inner face seated on said stopper-tube; means for moving said stopper-cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

12. A bottle-stopper comprising a stopper-tube having an outwardly-projecting concave flange at its upper end; a stopper-cap having a concave inner face seated on said flange; means for holding said cap normally in closed position; means for opening said cap; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

13. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; and a stopper-cap pivotally pendent from said yoke.

14. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; a stopper-cap having a pocket formed on its inner face supported by said yoke; means for holding said cap normally in closed position; means for moving said sleeve and yoke and opening said cap; and means for vibrating said cap to discharge the contents of the pocket.

15. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; a stopper-cap having a concave pocket formed on its inner face pivotally pendent from said yoke; automatic means for holding said cap normally closed; means for moving said sleeve and yoke and opening said cap; and means for vibrating said cap to discharge the contents of the pocket.

16. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; a stopper-cap pivotally pendent from said yoke to close said tube; and a stopper-cap-actuating lever pivoted to said tube and engaging said yoke.

17. A bottle-stopper comprising a movable supporting-yoke; a stopper-cap pivotally pendent from said yoke; and an actuating-lever engaging said movable yoke to open said stopper-cap.

18. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke the limbs of which are secured to said sleeve; a stopper-cap pivotally pendent from said yoke; a spring normally holding said sleeve, yoke, and cap in closed position; and a forked stopper-actuating lever pivoted to said stopper-tube and engaging the limbs of said yoke.

19. A bottle-stopper comprising a stopper-tube having a concave flange to form a circumferential pocket at its upper end; a sliding sleeve mounted on said tube; a supporting-yoke the limbs of which are secured to said sleeve; a stopper-cap having a concave inner face seated on said stopper-tube flange; a spring housed between said tube and sleeve to hold said cap normally closed; and a forked stopper-actuating and stopper-vibrating lever having serrated ends engaging said supporting-yoke.

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

ALEXANDER EKLUND.

Witnesses:

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WM. B. GREENOUGH.