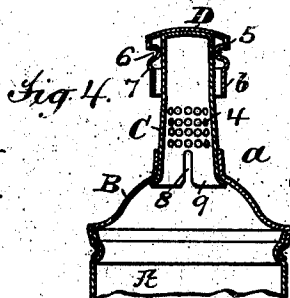
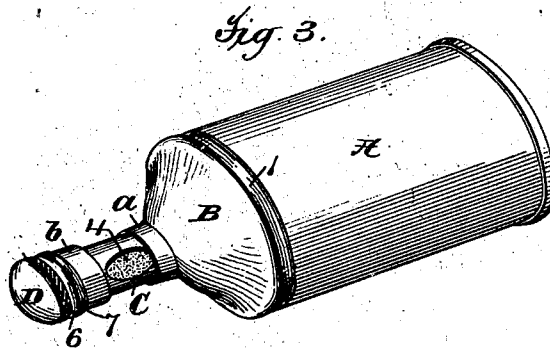
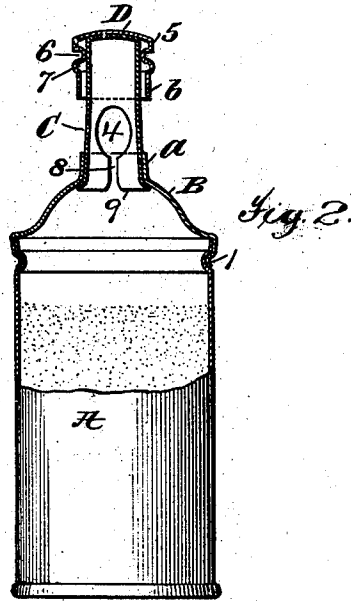
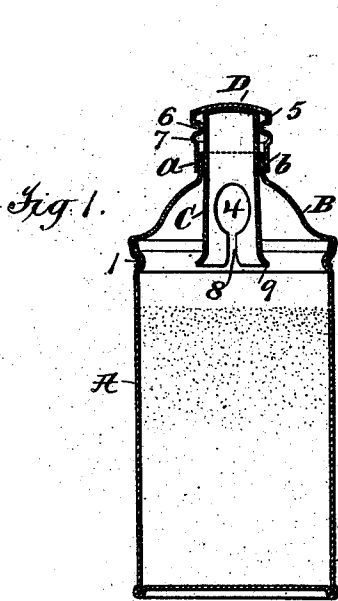


E. H. LYON.
POWDER BOX.

No. 577,767.

Patented Feb. 23, 1897.



Attest
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Atty's

UNITED STATES PATENT OFFICE.

EDWARD H. LYON, OF ENGLEWOOD, NEW JERSEY.

POWDER-BOX.

SPECIFICATION forming part of Letters Patent No. 577,767, dated February 23, 1897.

Application filed October 7, 1896. Serial No. 608,101. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. LYON, a citizen of the United States, residing at Englewood, county of Bergen, and State of New Jersey, have invented certain new and useful Improvements in Powder-Boxes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to powder-boxes of that class used for tooth-powder and similar material, in which the powder is discharged from the box, as desired, through one or more side openings in a discharge-tube, which tube is drawn out from the box for discharging the powder and pushed in to close the box, as, for instance, in the tooth-powder box shown and described in United States Letters Patent No. 445,067, dated January 20, 1891, the especial object of the invention being to provide a simple, cheap, and durable construction for this purpose in which the box shall be efficiently closed against the escape of powder, except as desired, through the opening in the tube, and the tube efficiently held in position both when drawn out for the discharge of the powder and pushed in for closing the box.

For a full understanding of the invention a detailed description of constructions embodying all the features of the same in their preferred form will now be given in connection with the accompanying drawings, forming a part of this specification, and the features forming the invention then specifically pointed out in the claims.

In the drawings, Figure 1 is a longitudinal section of the box closed, the box shown being adapted especially for tooth-powder. Fig. 2 is a similar view, partly in elevation, showing the box open for the discharge of powder. Fig. 3 is a perspective view of the same box open, as in Fig. 2. Fig. 4 shows a box with sprinkling-discharge, the box being shown open, as in Fig. 2.

Referring to the drawings, A is the box, preferably cylindrical, as shown, but which may be of any suitable form, having a cover B closing the top of the box and which is preferably permanently secured thereto, being shown as secured by spinning the cover-flange and top edge of the box together to

form a rib-and-groove connection 1. In the center of the cover B is an opening having an outwardly-extending neck *a*, shown as formed by a short tube open at the outer end and which is preferably integral with the cover, and the exterior surface of this neck is preferably inclined slightly, as shown, so that the neck increases in outside diameter from its outer end. Within this neck *a* slides the discharge-tube C, open at its inner end and closed at its outer end, and which is provided with one or more discharge-openings 4 at the side, so as to form a side discharge-tube, which opening or openings are outside the outer edge of the neck *a* when the tube is withdrawn for the discharge of the powder and wholly inside the outer edge of the neck when the tube C is pressed in to close the box, as shown clearly in the drawings. In the construction shown in Figs. 1 to 3 a single discharge-opening 4 is shown, this opening being oblong, as is preferable in the case of boxes used for tooth-powder. The number of discharge-openings may be increased, as desired, in accordance with the use to which the box is to be put.

In Fig. 4 the box illustrated is of a form suitable for face and similar powders where a sprinkling action is desired, the discharge portion of the tube C being perforated with a large number of small discharge-openings 4, which may extend through the whole or any part of the circumference of the tube. It will be understood, therefore, that the term "tube" as applied to the discharge member C is intended to cover any construction providing suitable discharge opening or openings on the side and supports by which said opening or openings may be moved into and out of the box.

The tube C carries outside the discharge-opening 4 a collar *b*, which is offset slightly from the body of the tube, which collar *b* when the box is closed by pushing in the tube, as shown in Fig. 1, fits tightly over the neck *a* of the cover B. It will be seen that this construction secures the tight closing of the box A against the escape of powder when the tube C is pushed in and holds the tube firmly in place in this position, and in the preferred construction, with the neck inclined, as shown, this inclined surface of the neck secures the

taking up of all wear, so that the box may be used for a long time with a tight closure. The collar *b* may be formed in any suitable manner, but is preferably a part of cap D, as shown, which cap also forms a convenient handle for operating the tube. The cap and collar may be formed in a single piece or in two or more pieces, but the construction shown, in which the cap and tube are each formed of a single piece, is preferred, and in itself forms a part of the invention; the cap in this construction being formed and secured to the tube C as follows:

The cap D has at the top an expanded knurl 5, preferably with a roughened surface, which knurl forms the handle by which the tube is drawn out, and below this knurl is a depressed ring 6, formed by spinning the metal of the head inward, this ring 6 and the knurl 5 preferably being formed at a single operation, so that the depression of the metal in the ring is compensated for by the expansion in the knurl. Below the depressed ring 6, in the construction shown, is an expanded ring 7, which is formed in the operation of spinning the ring 6 and knurl 5 and is not an essential feature of the construction so far as its use is concerned, but is ornamental and desirable for that purpose. Below this ring 7 is the collar *b*, previously referred to. The cap D and tube C are preferably combined by being forced together under heavy pressure, the tube C being then held firmly in position by the depressed ring 6. This depressed ring 6 thus performs two important functions in the construction shown, in that it holds the tube C when the cap D and tube C are forced together, as above described, and, further, it forms a gage-ring and determines the space between the collar *b* and tube C, so that by making the cap D and tube C to accurate measurement and spinning the ring 6 to an exact depth the proper relation between the collar *b* and tube C for coaction of the collar with the neck *a* on the cover B is assured.

The construction thus far described secures the tight closing of the box and holds the tube C firmly in its position when the box is closed, as shown in Fig. 1, and this construction may be used without the provision of means for holding the tube in position when drawn out for the discharge of the powder, or with any suitable means for this purpose. I have provided, however, a novel, efficient, and durable construction by which the tube C is held firmly in position when drawn out and a tight closure between the tube C and the interior surface of the neck *a* secured and wear resulting from the movement of the tube C in the neck *a* compensated for. In this construction the inner end of the tube C is split by one or more slots 8, one being shown and preferred, so as to form a spring inner end on the tube C, moving within the neck *a*. It will be understood that the spring action should be sufficient to hold the tube C in position when drawn out, secure a tight

closure between the tube and neck, and compensate for wear due to the movement of the tube, thus enabling the box to be used for a long time with efficient action, and that the slot or slots 8 should be of such width that the tube cannot be sprung inward by pressure sufficiently to destroy the set of the spring and cause the loss of the spring action. The inner end of the tube C is provided with a stop of some form to prevent the tube being drawn out of the cover, and this result is preferably secured by spinning the inner end of the tube outward, as shown, to form an outwardly-projecting flange or shoulder 9, serving as a stop for the tube when it is drawn out, which not only prevents the tube being accidentally drawn out of the cover, but strengthens the tube.

The permanent powder-tight connection between the cover and body of the box is not absolutely essential, but secures several important results, as follows, and in connection with other features of the construction forms a part of the invention:

It will be seen that the drawing out of the tube C for the discharge of the powder exerts a direct pull upon the cover, tending to draw it off the box, and this pull is strong on account of the tight fit of the tube and collar *b*, and the sudden stop of the tube at the limit of its outward movement tends also to jerk the cover off. The permanent connection between the cover and box, however, prevents the cover being thus accidentally drawn off the box, which has been an objectionable feature in similar powder-boxes as heretofore constructed, especially on account of the resulting spilling of the powder. By such a powder-tight connection between the cover and box, moreover, the dusting out of the powder between the cover and box is prevented, it being found in practice that such dusting out occurs with the ordinary friction-held covers.

The tendency of the powder to dust out is very great, because the pushing in of the tube causes an air-pressure inside the box, which will force the powder through even a very fine opening. This feature is especially important, because these tooth-powder boxes are carried largely by travelers and the dusting out of the powder on the clothing and other effects of the owner is very objectionable. A further advantage of this permanent connection, and especially the form of connection shown, is to prevent the convenient refilling of the box, so that the box shall not be sold or used with other powders than those of the manufacturer or dealer by whom the box is originally filled. The rib-and-groove connection shown is especially desirable for this purpose, because it is impossible to remove the cover for refilling without damaging the box, so as to practically make it unsalable and show that the box has been opened.

It will be found in practice that my inven-

tion provides a very efficient and durable construction of powder-box by which the box is tightly sealed against the escape of powder except through the discharge-opening, as desired, the discharge-tube held firmly in both positions even after long use of the box, and the other advantages above pointed out secured. It should be noted that these results are attained also by a construction which does not necessitate the use of a tube of any peculiar shape. A perfectly cylindrical tube may be used, therefore, which is desirable, because the most convenient withdrawal of the tube is secured by partially rotating it as it is pulled out.

What I claim is—

1. A powder-box having a neck, a side discharge-tube sliding in said neck, and a collar carried by said tube and fitting the neck when the discharge-tube is pushed in to close the box, substantially as described.

2. A powder-box having a neck provided with an exterior inclined surface, a side discharge-tube sliding in said neck, and a collar carried by said tube and fitting over the inclined surface on the neck when the discharge-tube is pushed in to close the box, substantially as described.

3. A powder-box having a neck, a side discharge-tube sliding in said neck, and a collar carried by said tube and fitting the neck when the tube is pushed in to close the box, said tube being provided with a spring inner end coacting with said neck to close the space between the tube and neck and hold the tube in position, substantially as described.

4. A powder-box having a neck provided with an exterior inclined surface, a side discharge-tube sliding in said neck, and a collar carried by said tube and fitting over the inclined surface on the neck when the tube is pushed in to close the box, said tube being provided with a spring inner end coacting with said neck to close the space between the tube and neck and hold the tube in position, substantially as described.

5. A powder-box having a side discharge-tube moving longitudinally in an opening in the box to open and close the box, said tube being formed with a spring inner end coacting with the wall of the opening to form a tight closure and hold the tube in position, substantially as described.

6. A powder-box having a side discharge-tube moving longitudinally in an opening in the box to open and close the box, said tube being formed with a spring inner end coacting with the wall of the opening to form a tight closure and hold the tube in position, and a stop to prevent the withdrawal of the tube, substantially as described.

7. A powder-box having a side discharge-

tube moving longitudinally in an opening in the box, said tube being split at its inner end to form a spring-tube and provided with an outwardly-projecting stop-flange at its inner end, substantially as described.

8. A powder-box having a cover secured to the box by a powder-tight joint constructed to hold the cover against being drawn off the box, a side discharge-tube moving longitudinally in an opening in the cover, and in a direction exerting a direct pull upon the cover tending to draw the cover off the box, and coacting with the cover to form a powder-tight closure of the opening in the cover when the tube is pushed in to close the box, and a stop to prevent the tube being drawn out of the cover, substantially as described.

9. A powder-box having a neck, a side discharge-tube sliding in said neck, and a cap on said tube formed separately from the tube and carrying a collar inclosing the tube and fitting over the neck when the tube is pushed in to close the box, substantially as described.

10. The combination with tube C, of cap D formed in a single piece and having the depressed gage-ring 6 and collar b inclosing the tube, substantially as described.

11. The combination with tube C, of cap D formed in a single piece and having the expanded handle-knurl 5, gage-ring 6, and collar b, substantially as described.

12. A powder-box having cover B provided with neck a, side discharge-tube C, and cap D formed in a single piece and having the expanded handle-knurl 5, gage-ring 6 and collar b, substantially as described.

13. A powder-box having cover B permanently secured to the box, neck a, side discharge-tube C, collar b fitting over the neck a when the tube is pushed in to close the box, said tube being slotted to form a spring inner end coacting with the neck to form a tight closure and hold the tube in position when withdrawn and having an outwardly-projecting stop-flange on its inner end, substantially as described.

14. A powder-box having cover B secured by a rib-and-groove connection 1, and side discharge-tube C, sliding in the cover and pulling directly upon the cover when drawn out for discharge of the powder, said tube being slotted to form a spring inner end fitting tightly in the cover, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD H. LYON.

Witnesses:

A. L. KENT,
G. M. BORST.