

No. 631,000.

Patented Aug. 15, 1899.

J. A. SYMONDS.
COLLAPSIBLE TUBE BRUSH.

(Application filed Feb. 27, 1898.)

(No Model.)

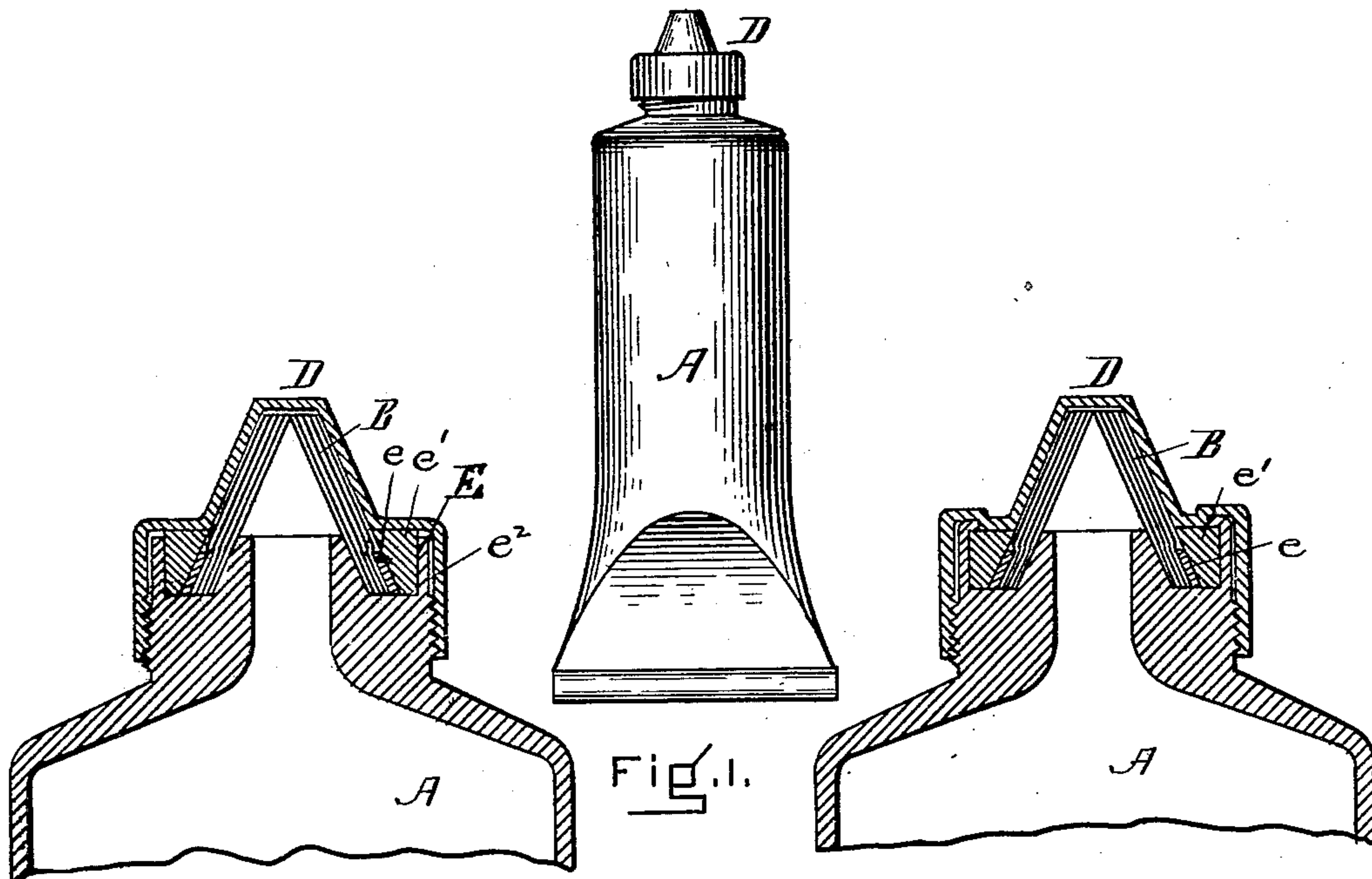


Fig. 1.

Fig. 3.

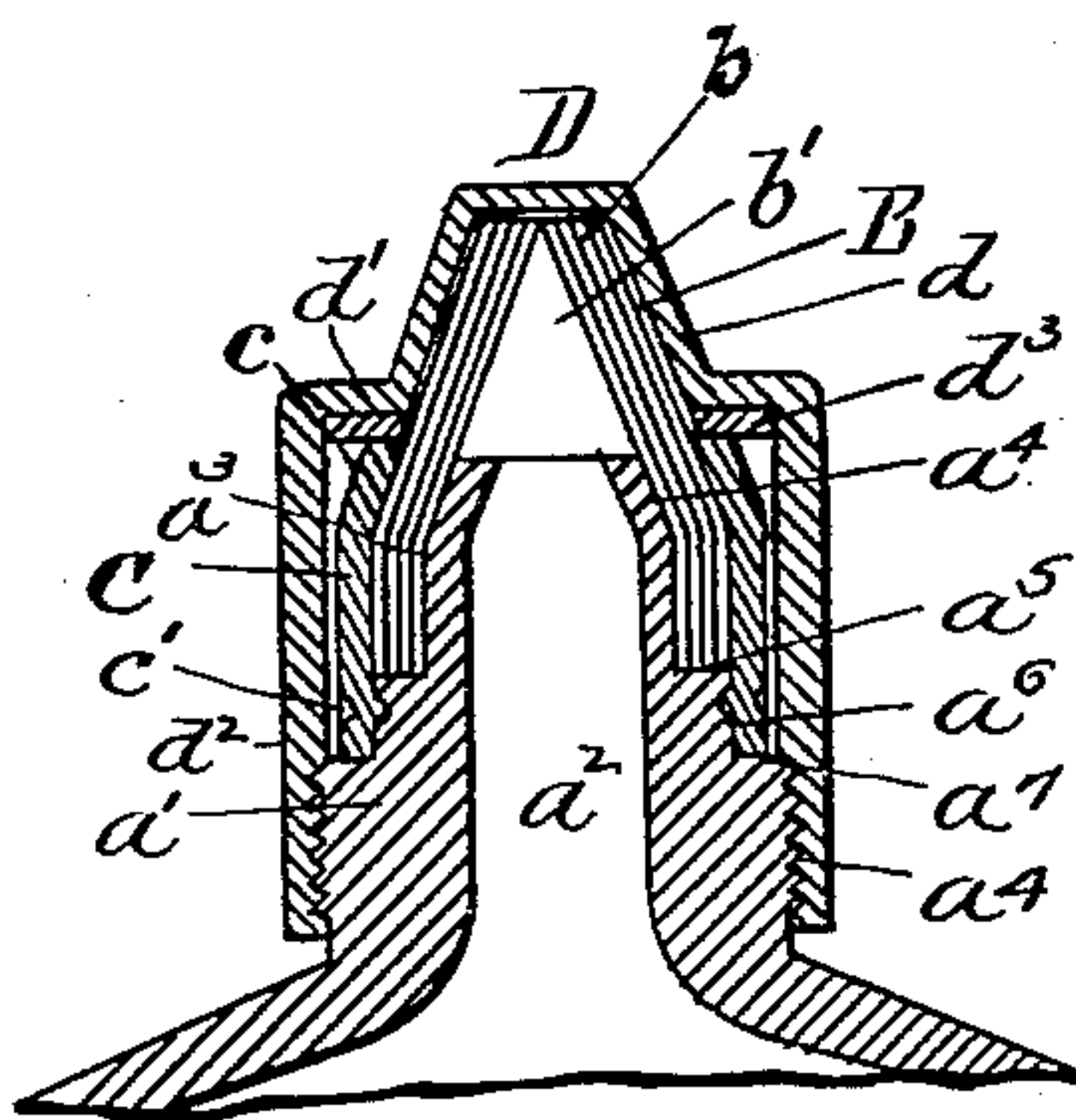
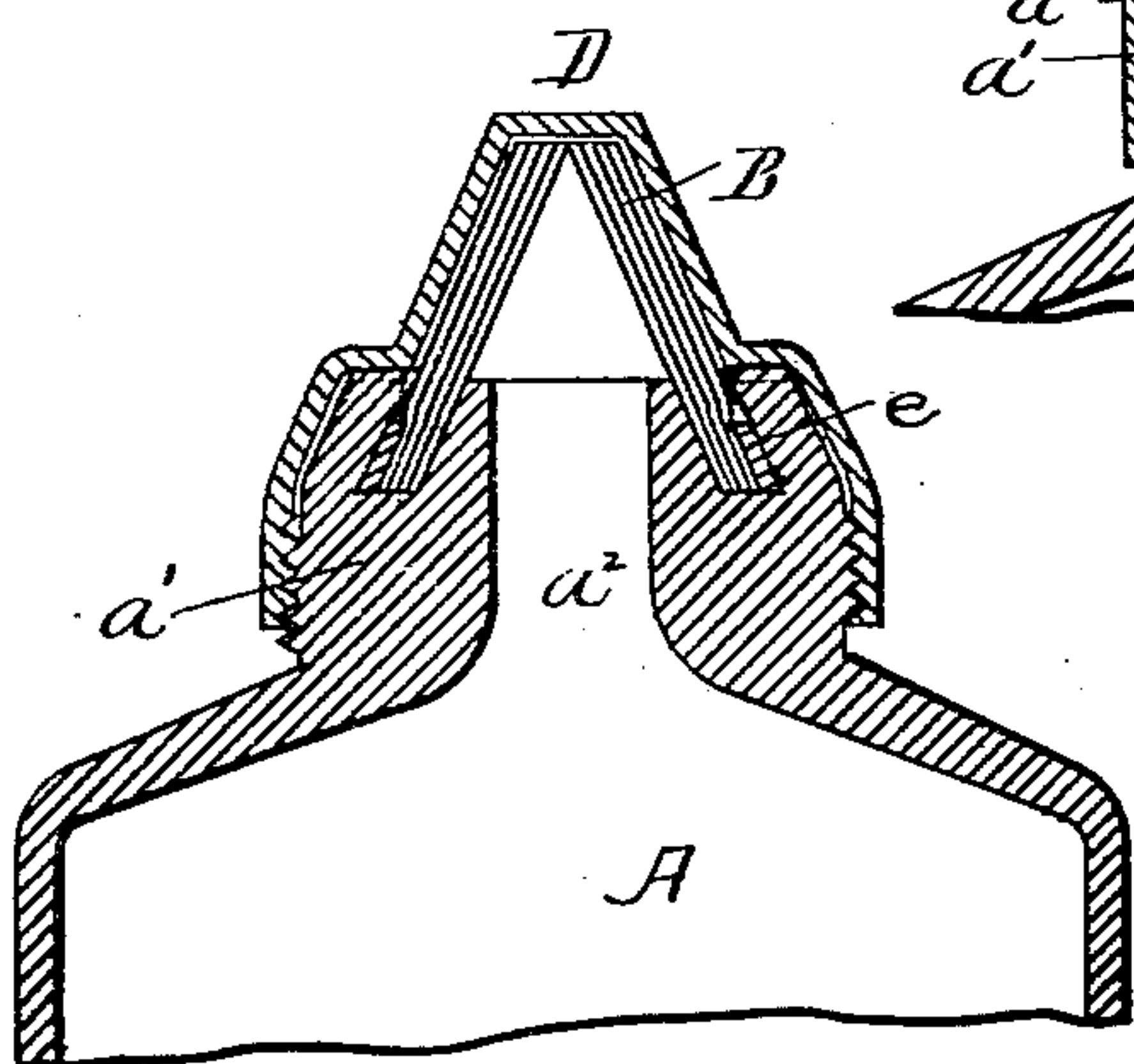


Fig. 4.

Fig. 2.

WITNESSES

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Fig. 5.

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COLLAPSIBLE-TUBE BRUSH.

SPECIFICATION forming part of Letters Patent No. 631,000, dated August 15, 1899.

Application filed February 27, 1896. Serial No. 581,043. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. SYMONDS, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Collapsible-Tube Brushes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a collapsible tube having secured to its delivery end bristles held and arranged in a conical form over an outlet-opening in the neck of the tube and also to the means employed for so holding the bristles and also to a cap for maintaining the bristles in shape and closing the tube.

I will describe the invention in detail in connection with the drawings, wherein—

Figure 1 is a view in elevation of a collapsible-tube brush having the features of my invention. Fig. 2 is a view enlarged in vertical central section of the neck of the tube, the brush and the cap being shown as applied to the neck and covering the brush. Figs. 3, 4, and 5 are similar views representing modified forms of the invention and to which reference will hereinafter be made.

The form of the invention which I consider the most desirable is that shown in Fig. 2. The collapsible section A of the tube or package is made of the metal usually employed for such purpose and is of the usual shape of such collapsible tubes, the lower end a being sealed or closed by being flattened and folded and turned upon itself in the usual manner of closing the ends of such tubes. At the other end of the tube there is a neck a' , having a central hole a^2 , forming an outlet from the cavity of the tube. The neck has formed upon it the straight surface a^3 , extending to the inclined surface a^4 and rising from a shoulder a^5 . Below this shoulder is a section a^6 of greater diameter than the section a^3 and which rises from a shoulder a^7 , and below this shoulder is the threaded section a^4 of greater diameter than the section a^6 .

The bristles forming the brush B are arranged in the form of a hollow cone, the upper or outer ends of the bristles coming together at the apex b over the outlet a^2 , and a small chamber b' is formed above the upper

end of the neck by the converging bristles. The bristles are secured in their conical form against the tapering section a^4 of the neck and the straight section a^3 , preferably as represented in Fig. 2—that is, by means of a ring C of a size to slip over the section a^6 of the neck and of a form to compress the lower ends of the bristles against the surfaces a^3 a^4 of the neck, the upper part c of the sleeve being conical, as represented in Fig. 2. The bristles are locked together and to the sleeve and neck by glue or other adhesive material, and the sleeve C is united to the neck below the bristles by prick-punching, as represented at c' or in any other desired way.

By shaping the upper part of the neck as described and forming the ring as specified the bristles are securely attached in conical form to the neck and in small compass or space, so that a slightly and desirable finish is provided. The tube is closed by means of a cap D, having a conical section or top d of a size to hold the bristles in their conical form when applied thereto. This conical section extends to a shoulder d' , which is so arranged as to come in contact with the upper edge of the section c of the sleeve, and from the shoulder there extends the cylindrical section d^2 , which is of a size and length to cover the ring C and screw upon the section a^4 of the neck, the section d^2 of the cap having an interior screw-thread to engage the threaded section of the neck.

It is desirable when the cap is applied that the corner where the shoulder d' joins the conical section should bear against the bristles, or, in other words, there should be no space or cavity between this point, the bristles, and the upper edge of the ring C. I prefer to provide the cap with a packing d^3 of cork, rubber, or other elastic or resilient material, placed within it to bear against the shoulder, as represented in Fig. 2, and held therein by a groove or recess or any other desired way.

In Fig. 3 the neck is represented as having a recess extending inward from its upper end, the inner wall of which is conical and the outer wall of which is straight, and in this recess the bristles in their conical form are secured by means of a conical ring which surrounds the bristles at their base and binds

them against the conical surface of the neck, and there is also used a packing-piece, which is placed within the recess, surrounds the conical sleeve, extends above it to bear against the bristles, and forms a seat upon which the shoulder of the cap may rest when screwed to place. Substantially the same construction is represented in Fig. 4, the only variation being that the outer wall of the neck is bent inward upon the surface of the packing-piece. The construction shown in Fig. 5 varies from that of Figs. 3 and 4 in that the packing-piece is dispensed with and the entire outer wall of the neck is bent or turned inward upon the sleeve and the bristles.

In Figs. 3 to 5, inclusive, E represents the recess in the neck of the tube e , the conical binding sleeve or ring e' the packing-piece, and e'' the outer wall of the neck, within which the recess is formed. These parts, however, are not essentially different from corresponding parts found in Fig. 2.

It is desirable whichever form of construction is employed that the cap or cover be so shaped that its conical section conform to the shape of the bristles and its shoulder come into contact with the packing-piece or its equivalent at its juncture with the bristles, and thus serve to completely seal the neck at that point.

It will be observed that by supporting the inner surface of the assembled bristles at their lower end upon a conical surface and that by binding them to said tapering surface by a tapering sleeve or sleeve-section the bristles are brought to assume a conical shape, and thus provide a structure in which the shape of the brush is always maintained by the pressure of the bristles toward each other and especially toward the point. The object of this part of the invention is to provide a brush having a small pointed end, through which the contents of the tube may be passed and by which the said contents may be more accurately placed than where the brush is of the ordinary type. The structure also provides a brush which will not break down in use, the bristles cooperating to sustain the shape of the brush, as above specified. Another advantage arises from the fact that the brush is not only shaped conically, but its shape is maintained in use, and it thus always readily enters the cavity of the cap and receives it without breaking down.

It will be seen that the device as completed has an applying end which is conical in shape, having a hollow central passage communicating with the interior of the tube, and that the contents of the tube are forced by compressing the tube through said passage and through the conical applying end.

It will be seen that the brush is in the shape of a short frustum of a cone having a broad base, that the bristles are of the same length, which provides a flat outer end, that this forms a brush which is short, stiff, maintains its shape, and serves because of its stiffness to

prevent the escape of the contents of the chamber in the brush and the tube except when pressed therefrom, the sides of the brush upon the application of pressure to the fluid contents in the cavity of the brush resiliently opening to permit the escape of a small quantity of the liquid during the application of pressure from the center of the end and then immediately closing upon the removal of the pressure to close the chamber.

I am aware of the patent to J. B. Davids, No. 226,500, dated April 13, 1880, and disclaim anything therein shown and described.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A collapsible tube or package A having a neck provided with an outlet and with a conical exterior surface or section surrounding said outlet and a brush of bristles in the form of a short, broad, stiff cover, the base of which is applied to said conical section or surface and held thereto by an exterior binding-ring or holder, and the said binding-ring or holder, the inner surface of which is also conical and which is adapted to secure the lower edge of the brush to said conical section or surface and to cause the bristles to take and maintain a conical form, and the outer end of which brush is flat, whereby a brush with a small outer end is obtained and the bristles which form it caused to sustain each other, as and for the purposes described.

2. In a collapsible-tube brush of the character specified, the collapsible tube, its neck having an outlet and a conical outer surface or section surrounding said outlet, a brush of bristles in the form of a short, broad, stiff cone with a flat top, a binding-ring having an interior conical surface covering said brush of bristles at its base and fastening them to the conical surface of said neck and a cover having an interior conical cavity and flat top of the size of the conical brush, a shoulder extending therefrom at the base of the conical section, and a packing upon said shoulder adapted to be held between it and the upper edge of the outer binding-ring of the brush, and also adapted to bear against the conical side of the brush adjacent to the surface of said binding-ring, as and for the purposes set forth.

3. A collapsible-tube brush or package having a collapsible section and a hollow conical applying device at one end of said section, the sides of which conical applying device are practically of the same thickness throughout, and the chamber of which conical applying device is connected with the interior of the collapsible tube through an opening in one end thereof, as and for the purposes described.

4. A cap for a collapsible-tube brush or package having a conical central cavity and flat top to receive and contain the conical sides and flat top of the brush, a shoulder d' , a packing d'' thereon, and a cylindrical section d''' extending from the shoulder, in combination with the hollow conical brush, its holding-neck and

collapsible tube, as and for the purposes described.

5 A brush end having a conical support or surface a^4 , a short and broad cone of bristles having a flat top and a binding-sleeve for securing said bristles to said conical support or surface having a conical inner surface which surrounds the base of the cone and binds it to the said tapering surface, whereby the
10 bristles are held in a stiff inclined relation to each other in the shape of a frustum of a cone,

an interior cavity b' being formed and the shape of the conical end being maintained by the outer ends of the bristles extending toward a common center, whereby the outer
15 bristles throughout their length reinforce the inner ones, as and for the purposes described.

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Witnesses:

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