J. B. FESLER.

FOUNTAIN BRUSH.

APPLICATION FILED AUG. 8, 1914.

1,170,744.

Patented Feb. 8, 1916.

Fig: 1.

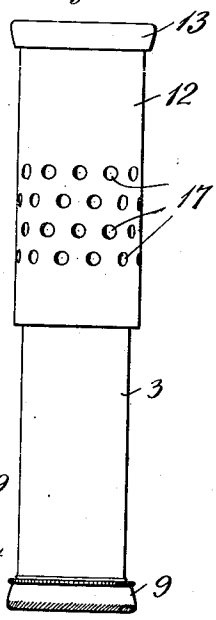


Fig: 2.

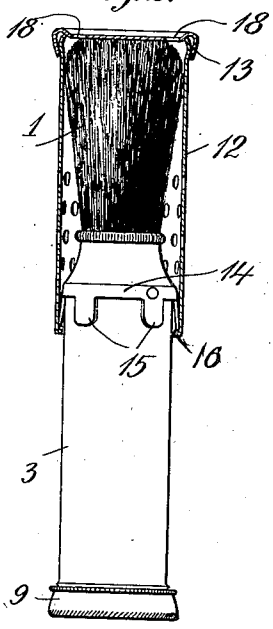


Fig: 3.

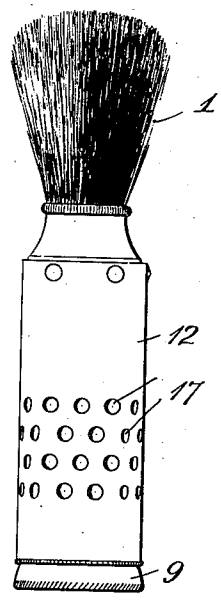


Fig: 9.

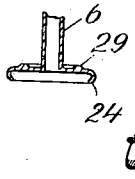


Fig: 4.

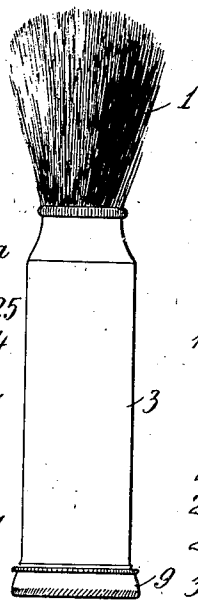


Fig: 8.

Witnesses:
Max B. A. Doring
D. A. Dorr

Fig: 5.

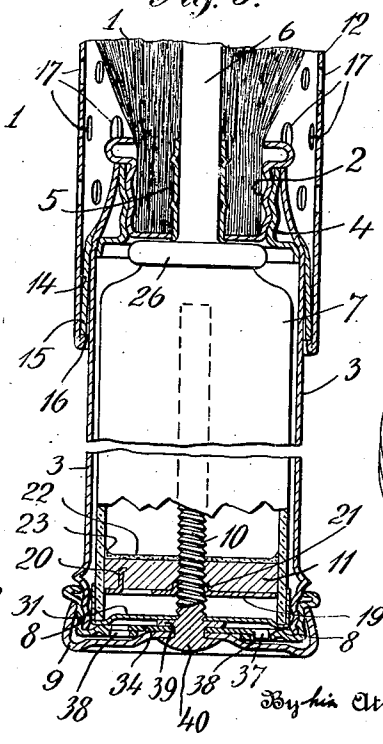


Fig: 6.

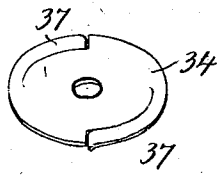
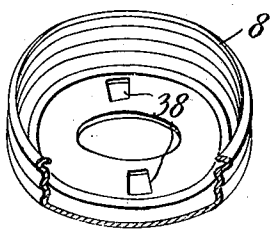


Fig: 7.



Inventor
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By his Attorneys
Marble & Matthy

UNITED STATES PATENT OFFICE.

JOEL BARLOW FESLER, OF NEW YORK, N. Y., ASSIGNOR TO FESLER SALES COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

FOUNTAIN-BRUSH.

1,170,744. Specification of Letters Patent. Patented Feb. 8, 1916.

Application filed August 8, 1914. Serial No. 855,744.

To all whom it may concern:

Be it known that I, JOEL B. FESLER, citizen of the United States of America, and a resident of Richmond Hill, borough of Queens, county of Queens, city and State of New York, have invented certain new and useful Improvements in Fountain-Brushes, of which the following is a specification.

My invention relates to improvements in fountain brushes, that is to say, brushes comprising a reservoir for soap, mucilage, ink, paint or the like.

The particular brush herein illustrated and described is particularly intended for use as a shaving brush, though suitable for other uses as well, and comprises improvements over the brushes illustrated and described in my Patents Nos. 904,190, dated November 17, 1908, 1,006,641, dated October 24, 1911, and 1,067,596, dated July 15, 1913, and in my applications for Letters Patent Sr. Nos. 629,647, filed May 26, 1911 and and 762,847 filed April 22, 1913.

My invention comprises particularly an improved construction of operating means for such brushes, whereby backward rotation of the feed screw is prevented, and whereby an indication is given to the operator of the amount of soap or the like that he is expelling; also in an improved construction of the connection between the operating hand piece and the feed screw.

The objects of my invention are to improve and simplify fountain brushes, and particularly to provide improved means for preventing backward rotation of the operating hand piece of such brushes, and to provide an improved connection between such operating hand piece and the feed screw.

I will now proceed to describe my invention with reference to the accompanying drawings, and will then point out the novel features in claims.

In said drawings: Figure 1 shows an elevation of one form of the brush provided with a sliding cover. Fig. 2 is a similar view, except that the sliding cover and the top thereof are shown in longitudinal section. Fig. 3 is a side view of the brush, showing the sliding cover moved down over the handle, to expose the bristle tuft for use. Fig. 4 shows a side elevation of a plain brush, *i. e.*, a brush provided with no cover. Fig. 5 shows, on a larger scale than the previous views, a central longitudinal section of the brush, a portion of the reservoir within the handle of the brush being shown in elevation. Fig. 6 is a detail perspective elevation of the pawl disk hereinafter described. Fig. 7 is a perspective elevation of the end cap of the handle, a portion of the side of the end cap being broken away. Fig. 8 shows, on a smaller scale than Fig. 5, a central vertical section of the reservoir, detached from the brush, a portion of the delivery tube of that reservoir being shown in elevation, and the protecting cap on the top of that delivery tube being shown in section. Fig. 9 is a fragmentary vertical section of the lower portion of the delivery tube, as the same is before it is placed upon the reservoir.

In the drawings, 1 designates the bristle tuft, 2 designates a screw threaded ferrule constituting the bristle holder, 3 designates the main portion of the hollow handle, and 4 designates a screw-threaded ferrule fitting into the upper end of the handle 3 and into which the bristle holder 2 screws.

5 designates a central tube secured to, and in effect forming a part of, the bristle holder 2, through which tube the flexible feed tube 6 of the brush passes into the bristle tuft.

7 designates a removable reservoir within the handle, and to which the feed tube 6 is connected, as hereinafter described, so as to be in effect a part of that reservoir.

8 designates an end cap for the handle, screw connected to the main portion 3 of the handle, and serving to hold the reservoir 7 in place, and 9 designates a hand piece rotatably mounted upon this end cap 8, and to which is connected the feed screw 10 extending up into the interior of the reservoir 7 and having mounted upon it a piston 11 adapted to force the plastic contents of the reservoir into the feed tube 6.

12 (Figs. 1, 2, 3 and 5) designates a sliding or telescopic cover for the bristle tuft mounted to slide upon the handle 3 and provided at its upper end with a removable cap 13. To guide the cover 12 and permit it to slide over the handle 3, without marring the surface thereof, such handle 3 is provided with a spring collar 14 provided

at its lower end with downwardly and outwardly projecting spring leaves 15 which, in action, bear against the inner wall of the cover 12, so centering and guiding the said cover, and which also, when the cover is in its raised position, indicated in Figs. 1, 2 and 5, bear against a hook-shaped bead 16, formed on the lower end of the cover, thereby arresting outward or upward movement of the cover. In other words, these spring leaves 15 form stops for the cover. It is important that circulation of air around the bristle tuft shall be provided for when said bristle tuft is inclosed by the cover, and to that end I provide a number of side openings 17 in the cover and have also provided openings 18 (Fig. 2) in the cover cap 13, which openings 17 and 18 permit free entrance of air into the handle, and free escape of air from the handle, and therefore make possible the rapid drying of the bristle tuft when wet. In order that the ends of the spring leaves 15 shall not catch in the openings 17 of the cover, the ends of said spring leaves are rounded, as indicated in Fig. 2.

The construction comprising a spring collar 14 having spring leaves 15 adapted to guide the handle 3 and also to engage the bead 16 on the lower end of the cover, is claimed in my application Serial No. 629,647 filed May 26, 1911.

In the form of brush shown in Fig. 4, in which no telescopic cover is provided, the collar 14 and spring leaves 15 are of course omitted. The piston 11 may be formed of any suitable material; for example, cork composition or rubber composition. It is customarily provided with a reinforcing bottom plate, 19, secured to the piston disk 11 by means of points or prongs 20 cut out of the material of said bottom plate 19, and pressed into the disk 11 and there clenched. The bottom plate 19 is provided with a central hole to receive the feed screw 10, this central portion of the disk 19 being provided with a rib 21 surrounding the said hole, which rib serves to thicken the plate 19 at this point, providing sufficient thickness for enough screw threads to insure suitable engagement with the screw threads of the feed screw 10. In practice, the rib naturally formed on the plate 19, in punching the central hole in said plate, is a sufficient rib.

The reservoirs 7 are customarily formed of glass; though I do not limit myself to reservoirs formed of this material. It is practically impossible, except at prohibitive expense, to obtain glass tubes or the like of uniform internal diameter, and which are approximately cylindrical. To obtain a tight joint between the piston 11 and the reservoir 7 (the diameters of different reservoirs varying somewhat as previously explained) I apply a layer 22 of some suitable plastic material (glue, gelatin, paraffin or the like constitutes a suitable material) to the outer side of the piston, and then after the piston has been inserted in the reservoir and before the delivery tube has been applied to the reservoir, I insert a hot metal tool through the upper end of the reservoir, then open, and press this metal tool against the layer 22 on the piston. The heat of this tool softens the layer 22, and by the tool a portion of the material 22 is pressed up at the edges of the piston, forming a raised rib 23 which makes a tight joint with the sides of the reservoir. The material of the layer 22 hardens very quickly after the withdrawal of the said hot tool so that the rib 23 becomes quite rigid. This rib, when rigid, forms an excellent guide for the piston, preventing the latter from assuming an angular position in the reservoir, and so insures that the piston shall slide freely within the reservoir. The said sealing material, so pressed against the sides of the reservoir, adheres tightly to the sides of the reservoir and thus tends to hold the piston stationary when the screw 10 is inserted through the sealing layer 22, and is turned up through said piston until the end cap 8 is screwed on to the handle. Thereafter, this sealing layer prevents the rotation of the piston, when the screw is turned, forcing the piston to travel longitudinally through the reservoir as the same is turned; whereas, but for the friction of this sealing layer against the sides of the reservoir, the otherwise loosely fitting piston might itself turn with the screw, in which case the piston would not travel through the reservoir. While, as above stated, the sealing layer 22 adheres tightly to the sides of the reservoir, when it has cooled, nevertheless such adhesion is easily broken by an upward thrust of the piston due to rotation of the screw 10.

The piston having been placed in the reservoir 7, and the sealing layer 22 having been pressed against the sides of the reservoir, as previously explained, the reservoir is filled with soap or other material to be contained within that reservoir, and then the base of the feed tube 6 is applied to the upper end of the reservoir. This feed tube is customarily of elastic rubber, and so is its base portion 24. The reservoir being provided with a neck portion 25 and having beyond such neck portion an upwardly turned flange 25^a, the base 24 of the feed tube is readily fitted over such flange 25^a, as shown particularly in Fig. 8, and then a metal disk 26, perforated centrally for the passage of the feed tube 6, is applied above the base 24 of the feed tube and its edge is also pressed or spun over the edge of the flange 25^a, as indicated in Fig.

8, so holding the feed tube firmly in place on the reservoir, and making it practically impossible to remove said feed tube from the reservoir, except by mutilation of the said metal cap 26.

The feed tube is provided at its upper end with a narrow slit 27 for the escape of the contents of the reservoir as the piston is forced up through said reservoir. This slit in practice closes so tightly, because of the elasticity of the material of the feed tube 6, that little or no escape of the volatile ingredients of the soap or other contents of the reservoir can take place through such slit; the two lips of the feed tube formed by the slit 27, constituting an automatically closing mouth for the feed tube. But to guard against even such slight escape, I customarily provide the upper end of the feed tube with a protecting cover 28. This covering is usually applied by dipping the end of the feed tube into molten paraffin, gelatin, glue or the like. When the end of the tube is dipped into said material, and then withdrawn a thin film of paraffin or the like adheres to the tube and, quickly solidifying, seals the slit 27 perfectly. In Fig. 8, for clearance of illustration, the thickness of this closure 20 is greatly exaggerated. The sealing layer 28 is readily broken by the semi-liquid or liquid material within the reservoir when the latter is forced up through the feed tube by means of the piston 11.

To insure a tight joint between the base of the feed tube and the mouth of the reservoir, said feed tube is provided on its upper side with a raised rib 29; (see Fig. 9). When this feed tube has been applied to the reservoir and the metal cap 26 is applied and pressed firmly down upon the base of the feed tube, this rib 29 is displaced inward, by reason of the elasticity of the material of which the base of that feed tube is formed, thus forming on the inner surface of the base of the feed tube an inwardly projecting rib 30 which presses firmly against the flaring portion of the mouth of the reservoir forming a tight joint.

To prevent the piston from being drawn out of the reservoir after the latter has been filled, I fit to the lower end of the reservoir, a cap, customarily a metal cap, 31, having a central perforation 32, for the passage of the feed screw 10. In practice this cap 31 is cemented firmly to the reservoir 7.

The reservoir described is in effect a non-refillable reservoir since, with the opening in the piston 11, sealed by the sealing layer 22, and with the discharge tube held in place by the metal cap 26, and with the orifice at the upper end of the discharge tube closed by the sealing layer 28, it is practically impossible to refill the reservoir when empty without leaving indication of such refilling.

In some cases, to further seal the reservoir and to provide visual indication of tampering therewith, I provide between the bottom layer of the reservoir and this cap 31, a layer 33 of frangible material (paper, for example) which is readily pierced by the feed screw 10, when the latter is inserted into the reservoir, and which, when unpierced, is readily visible through the opening 32 in the cap 31. But in general this additional layer is unnecessary, since the sealing layer 22 closes the hole in the piston, and this sealing layer 22, when unpierced, is itself visible through the opening 32 in the bottom of the cap 31.

The reservoir having the piston 11 provided with a sealing layer 22 and having the discharge tube 6 secured to such reservoir by the metal cap 26 and having a frangible layer 33, is claimed in my application for Letters Patent Serial No. 762,847 filed April 22, 1913.

The feed screw 10 has secured to it, just above the hand piece 9, a pawl disk 34 (Fig. 6 provided with one or more spring pawls 37, customarily formed by slitting the disk partly, as indicated in Fig. 6, and bending downward the ends of the spring leaves, thus formed from the material of the disk. These spring pawls 37 are adapted to engage corresponding recesses or apertures 38 (Fig. 7) formed in the end cap 8 of the handle of the brush, when such ends of the pawls come in registry with such aperture. In Fig. 5, near the right of such figure, one of such pawls 37 is shown in engagement with such an aperture 38. The said pawls, by engagement with such apertures, enforce rotation of the hand piece 8 in one direction only; or at least, prevent the hand piece from being turned backward more than the angular distance between such apertures (half a revolution in the construction shown). Thereby the user of the brush is prevented from turning the hand piece backward, except as he may desire to turn it backward in order to remove the end cap 8 from the handle 3 to remove an exhausted reservoir and insert a new reservoir; for once the pawls 37 are engaged with the apertures 38, further backward rotation of the hand piece 9 will unscrew the end cap from the handle. This engagement of the pawls 37 with the recesses 38, therefore, serves to show the user of the brush in which direction he should rotate that hand piece to feed the contents of the reservoir into the bristle tuft. Further, since the pawls 37 make a clicking noise as they engage the apertures 38, they serve to indicate to the user of the brush how much soap he is expelling into the brush; for the user soon learns the relative amount of soap or other

contents of the reservoir discharged into the bristle tuft by each partial rotation of the hand piece 9 represented by a click of the pawls 37.

The provision of pawls 37 to engage the recesses 38 in the end cap 8 of the handle also greatly facilitates the unscrewing of that end cap, for mere backward rotation of the hand piece unscrews the end cap 8, after the pawls 37 have engaged the recesses 38.

In the construction shown in Fig. 5, the bottom portion of the feed screw 10 is provided with a flange 39 and with a head 40; the pawl disk 34 and the hand piece 9 being gripped tightly between flange 39 and head 40. In practice, flange 39 is first formed on the screw, by upsetting the metal of that screw at the proper point, and then the pawl disk 34, end cap 8 and end piece 9 are placed over the end of the screw, the pawl disk 34 resting upon the said flange 39, and the head 40 is then formed by upsetting the end portion of the metal of the screw. The hand piece 9 is centrally depressed, as indicated in Fig. 5, both in order that the head 40 of the screw may not project beyond the outer rim of the hand piece 9, and in order that the inner edge of the end cap 8 may be engaged by such centrally depressed portion of the hand piece 9, thereby centering the hand piece 9 with reference to the end cap 8, and preventing any undue looseness of the parts. It will be seen that the hand piece 9 engages the end cap 8 both at the said centrally depressed portion of the hand piece, and at the top of the rim of the hand piece. In addition, since the pawl disk 34 is directly above the end cap 8, and in practical contact therewith, a very steady rotary bearing for the screw 10 is provided; which bearing is rendered yet more steady by the pressure of the pawls 37 on the end cap 8.

What I claim is:

1. The combination with an end cap of a fountain brush, of a hand piece rotatably mounted on the outside of said end cap and having a feed screw extending therethrough, and means arranged within said cap for permitting relative rotation of said cap and hand piece in one direction only.

2. The combination with an end cap of a fountain brush, of a hand piece rotatably mounted on the outside of said end cap and having a feed screw extending therethrough, and means carried by said hand piece and screw arranged within said cap to engage the same to prevent relative rotation of said cap and hand piece in one direction and to permit relative rotation in the opposite direction.

3. The combination with a hollow member, of an end cap thereon, a hand piece rotatably mounted on the outside of said end cap and having a feed screw extending therethrough into said hollow member, and means arranged within said cap and carried by said hand piece and screw for audibly engaging said cap at intervals during the rotation of said hand piece, whereby the number of rotations given said hand piece can be audibly observed.

4. The combination with a hollow member, of a cap mounted on the end thereof and provided with one or more recesses, a rotary member mounted upon the outside of such end cap, and one or more spring pawls carried by said rotary member and arranged within said cap to engage such recesses as such member rotates with respect to the end cap.

5. The combination with a hollow handle, of an end cap mounted thereon and having one or more recesses, a hand piece mounted on such end cap, and provided with a central screw projecting into such hollow handle, and one or more spring pawls connected to said screw and located within said end cap and adapted to rotate with the screw and to engage the said recess or recesses.

6. The combination with a hollow handle, of a centrally apertured end cap secured to such handle, and having one or more recesses, a hand piece rotatably mounted upon the outside of such end cap, and having a screw secured to it and projecting through the central aperture of such end cap, a pawl plate connected to said screw and hand piece and in substantial contact with the inner surface of such end cap, whereby a steady bearing for said screw is provided, such pawl plate provided with one or more pawls adapted to engage the said recesses of the end cap, as the hand piece, screw and pawl rotate.

7. The combination with a hollow handle of a centrally apertured end cap secured to such handle, and having one or more recesses, a hand piece, centrally apertured, a screw passing through the aperture of said hand piece and having a flange on one side of such hand piece, and a head on the other side of such hand piece, and a pawl plate located between said hand piece and flange, and resting against the inner side of said end cap, said pawl plate and hand piece held tightly between such flange and head of the screw; whereby a steady bearing for said screw is provided; said pawl plate having one or more spring pawls normally bearing against the inner side of said end cap and adapted to engage the said recesses of the end cap as the hand piece rotates.

8. The combination with a hollow handle, of a centrally apertured end cap secured to such handle, and having one or more recesses, a hand piece embracing such end cap and extending over the end thereof and itself centrally perforated, a pawl plate bear-

ing against the inner surface of such end cap and itself centrally perforated, a screw extending through the central perforations of the hand piece and pawl plate and provided with a flange, and with a head, gripping between them the said hand piece and pawl plate, said hand piece centrally depressed to engage the edge of the central aperture of the end cap, the pawl plate having one or more spring pawls adapted to engage the recess or recesses of the end cap as the hand piece rotates.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOEL BARLOW FESLER.

Witnesses:
H. M. MARBLE,
PAUL H. FRANKE.