

E. L. McCAIN.
TOOTH BRUSH.
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967,413.

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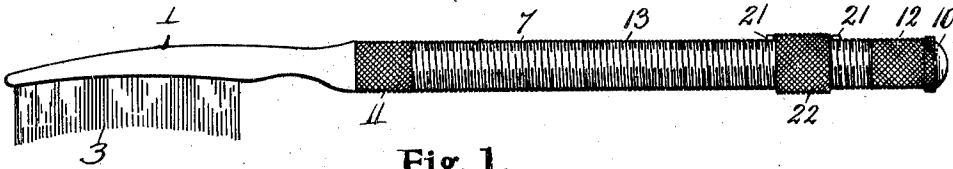


Fig. 1.

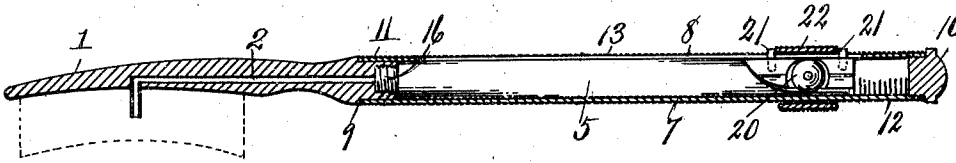


Fig. 2.

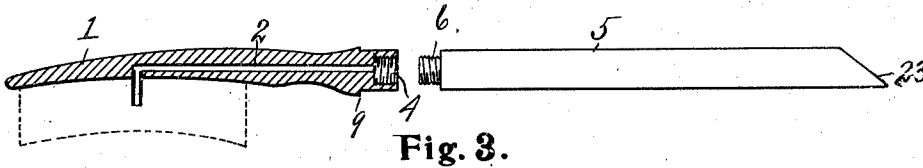


Fig. 3.

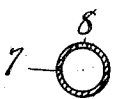


Fig. 5.

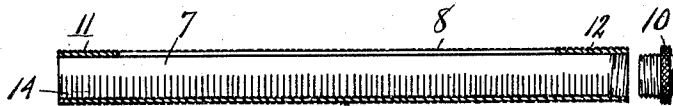


Fig. 4.

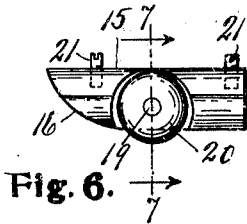


Fig. 6.

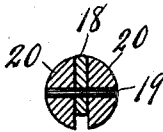


Fig. 7.

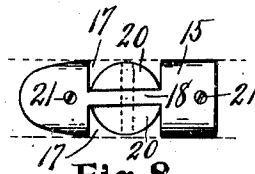


Fig. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

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TOOTH-BRUSH.

967,413.

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To all whom it may concern:

Be it known that I, ELLSWORTH L. McCAIN, a citizen of the United States, residing at Detroit, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in Tooth-Brushes; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to a toothbrush, and more particularly to a brush having a hollow handle which serves as a container for a tooth or dental paste from which said paste may be discharged into the bristles of the brush, and consists in the construction and arrangement of parts hereinafter more fully set forth and pointed out particularly in the claims.

The object of the invention is to provide a brush of the character described, of simple and comparatively inexpensive construction, wherein the arrangement is such as to enable a collapsible tube containing dental paste to be retained in the handle of the brush, and the contents of the tube discharged therefrom, as required for use.

The above object is attained by the structure illustrated in the accompanying drawings, in which:—

Figure 1 is an elevation of a toothbrush involving my invention. Fig. 2 is a central longitudinal section therethrough, the collapsible tube within the brush handle, and the longitudinally movable shoe which forces the contents from said tube appearing in elevation. Fig. 3 is a longitudinal section through a brush head made in accordance with my invention showing associated therewith in detached position a collapsible tube adapted to contain the dental paste. Fig. 4 is a longitudinal section through the hollow handle of the toothbrush with the screw plug removed from the outer end thereof, said plug appearing in elevation. Fig. 5 is a transverse section through said hollow handle. Fig. 6 is an enlarged elevation of the shoe and rollers carried thereby which are adapted to be mounted in and moved longitudinally of the hollow handle to collapse the tube containing the dental paste and force said paste from said

tube as required for use. Fig. 7 is a transverse section on line 7—7 of Fig. 6. Fig. 8 is a plan view of Fig. 6.

Referring to the characters of reference, 1 designates the brush head which is provided with a longitudinal channel 2, the inner end of which communicates with the bristles 3 of the brush and the outer end of which communicates with the tapped socket 4 in the end of the brush head. The collapsible tube 5 may be of the ordinary construction, the threaded end 6 of which is adapted to screw into the tapped socket 4 of the brush head, as clearly shown in Fig. 2. The handle 7 of the brush is preferably in the form of a cylindrical tube and is provided with a longitudinal slot 8 through the wall thereof. The handle is of such diameter as to freely receive the tube 5, and the inner end thereof is adapted to tightly receive the reduced end of the brush head in which is formed the socket 4, said head having an annular shoulder 9 against which the end of the handle abuts. The outer end of the handle is closed by a screw cap 10.

It will be noted on referring to Fig. 1 that the inner end of the handle of the brush is knurled, as shown at 11, and that the outer end of said handle is also knurled, as shown at 12. It will be further observed that between said knurled extremities, the exterior of the handle is provided with a screw thread 13. It will further be observed on referring to Fig. 4 that the lower wall of the interior of the handle opposite the longitudinal slot 8, is corrugated, as shown at 14. Located within the hollow handle and movable longitudinally thereof is a shoe 15 which in transverse section through the major portion thereof is cylindrical and of less diameter than said tube, and which at its forward end is provided with a beveled and rounded under face 16. Said shoe near its longitudinal center is provided in opposite sides with the recesses 17 divided by the longitudinally extending central portion 18 which connects the opposite ends of said shoe. Journaled at its longitudinal center in said central portion and projecting therefrom in opposite directions is a shaft 19. Lying within the recesses 17 and mounted upon the opposite ends of said shaft are the hemispherical disks 20 forming in conjunction a spherical roller whose diameter is nearly equal to the diameter of the brush handle. Projecting from the op-

posite ends of the shoe 15 are the screw pins 21 which extend through and lie in the slot 8 of the handle and prevent the shoe turning therein as it is moved longitudinally. Mounted upon the threaded portion of the handle is a rotatable knurled collar 22 which is adapted to screw upon the externally threaded handle and which lies between the projecting ends of the pins 21, whereby as said collar is rotated and carried longitudinally of the handle by means of the screw threads thereon, a movement longitudinally of the handle is imparted to the shoe therein. When this longitudinal movement of the shoe is toward the brush head, the forward beveled end thereof will ride onto the rear end of the tube 5 and collapse said tube so as to force the contents therefrom and through the channel 2 in the brush head into the bristles of the brush. As the shoe is pressed forward onto the collapsible tube, the hemispherical disks 20 which extend below the shoe will roll thereon and carry the shoe thereover. As the tube is compressed by the passage of the roller it is made to conform to the contour of the handle and is forced into the corrugations 14 formed in the lower inner wall thereof, whereby the tube is held longitudinally in place, and thereby prevented showing forward and buckling within the handle in advance of the shoe. By this arrangement the contents of the tube may be readily forced into the bristles of the brush as required for use. When the paste shall have been entirely exhausted from said tube, the shoe will occupy a position within the handle at the inner end thereof. By reversing the direction of rotation of the collar 22, or by screwing it backward upon the handle, the shoe may be carried to the outer end thereof so as to release the collapsed tube 5, when the handle may be withdrawn from the end of the brush head and the collapsed tube removed, after which a full tube may be screwed into the tapped socket in the brush head and the handle again mounted thereon in its normal position, to render the brush ready for further use.

By beveling the rear end of the tube 5, as shown at 23 in Fig. 3, the shoe will be enabled to more readily ride onto and collapse said tube as said shoe is driven forward through the manipulation of the screw collar 22.

The knurled portion 11 of the handle enables said handle to be firmly held between the thumb and finger of one hand while the screw collar is being manipulated with the other. The knurled portion 12 at the outer end of the handle enables said handle to be held while the cap 10 is being removed

and replaced. The only function of the cap 10 is to close the outer end of the handle and to give a finish thereto. By removing said plug, the shoe may be introduced into the handle through the outer end thereof and the cleaning of the handle facilitated. To enable the removal of the shoe from the hollow handle, the pins 21 are first unscrewed therefrom.

Having thus fully set forth my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a toothbrush, the combination of a brush head having a channel therein communicating with the bristles, said head also having a socket communicating with said channel, said socket being adapted to receive the discharge end of a collapsible tube, a hollow handle fitted onto the brush head, a shoe mounted to move longitudinally in the handle and adapted to compress a collapsible tube therein, said shoe carrying a roller adapted to roll upon said tube, a collar embracing the handle and movable longitudinally thereon, and means connecting the shoe and collar to enable the former to be moved longitudinally within the handle by a manipulation of the latter.

2. In a toothbrush, the combination with the brush head having a passage way there-through communicating with the bristles, a hollow handle removably attached to the brush head having a longitudinal slot therein, and being externally screw threaded, a collapsible tube within the handle communicating at its discharge end with the passage in the brush head, a shoe in the handle movable longitudinally thereof having a beveled end to engage said tube, and a spherical roller to roll upon and compress the same, pins engaging said shoe and projecting through said slot, and a tapped collar embracing the handle and engaging the threads thereof, said collar lying between said pins.

3. In a toothbrush, the combination with the brush head having a passage there-through communicating with the bristles, a hollow handle fitted to the brush head having corrugations in the inner wall thereof, a collapsible tube within the handle communicating at its discharge end with the passage in the brush head, a shoe movable longitudinally within the handle adapted to compress said tube onto said corrugations, and means upon the exterior of the handle for moving said shoe longitudinally.

In testimony whereof, I sign this specification in the presence of two witnesses.

ELLSWORTH L. MCCAIN.

Witnesses:

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