Oct. 25, 1949. G. S. RIDNER, SR 2,486,062

COLLAPSIBLE TOOTHBRUSH

Filed Nov. 13, 1946

FIG. 1.

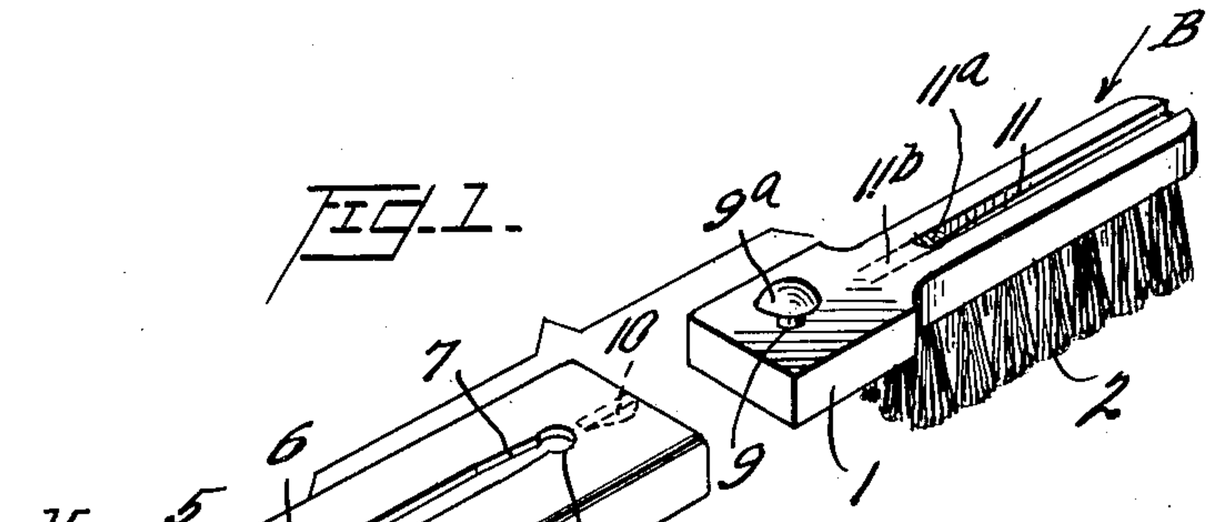
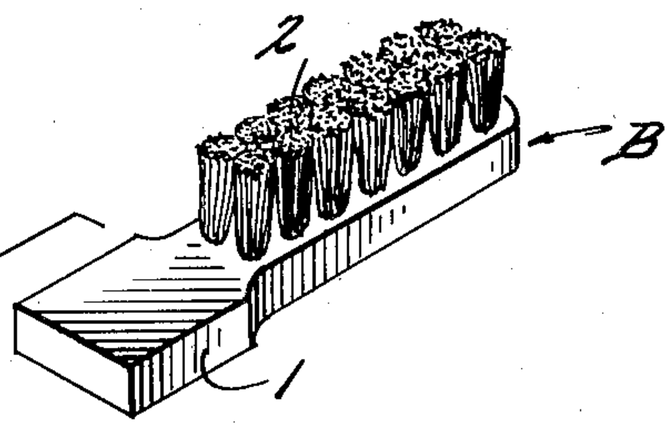


FIG. 2.



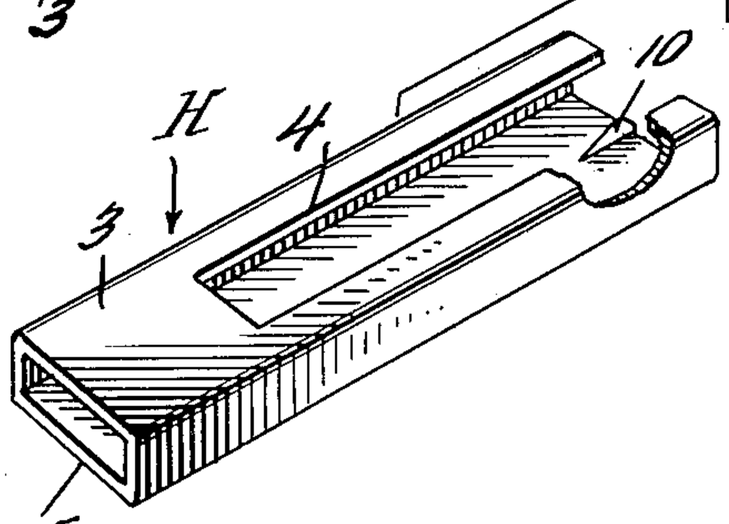


FIG. 3.

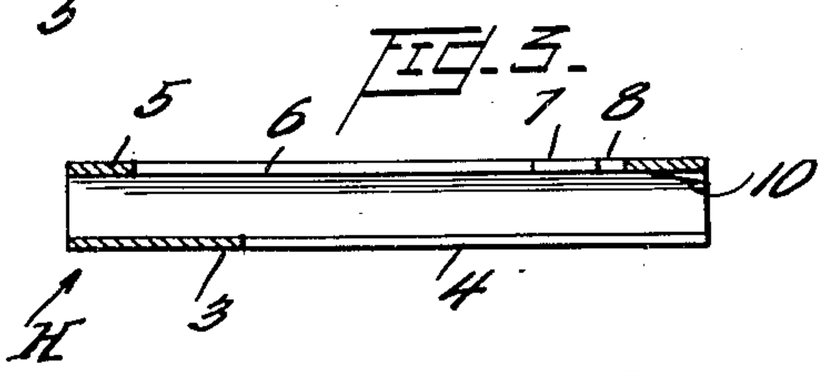


FIG. 4.

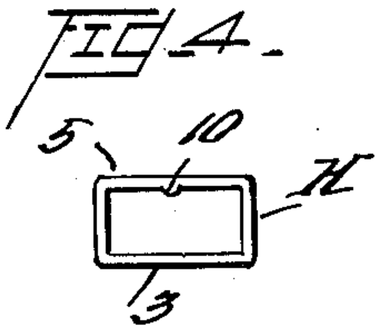
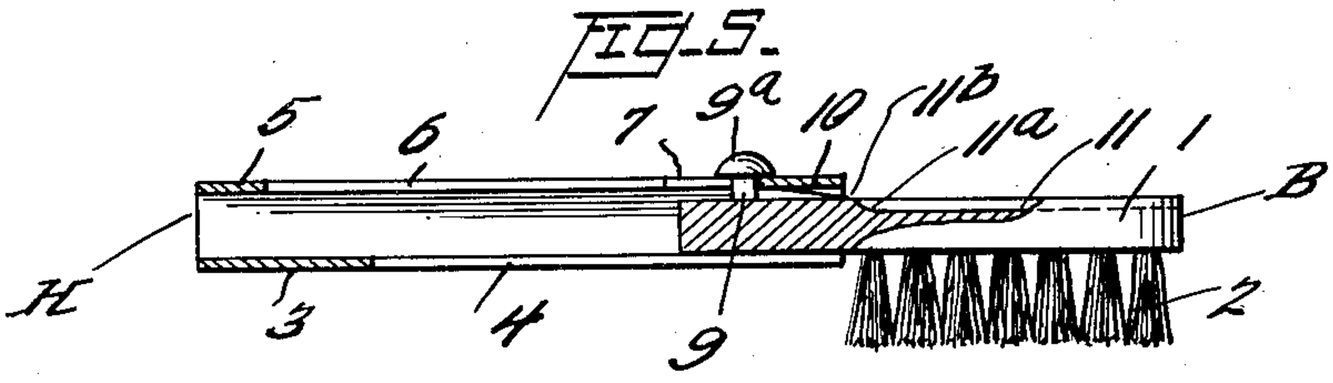


FIG. 5.



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UNITED STATES PATENT OFFICE

2,486,062

COLLAPSIBLE TOOTHBRUSH

George S. Ridner, Sr., Newark, N. J.

Application November 13, 1946, Serial No. 709,507

1 Claim. (Cl. 15—167)

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This invention relates to tooth brushes of the collapsible type and more particularly represents an improvement upon the telescopic tooth brush described and claimed in my copending application Serial No. 690,752, filed August 15, 1946.

The tooth brush described in the above-mentioned application comprises a hollow handle and a brush head adapted to be telescoped within the handle when the tooth brush is not in service and to be slid outwardly to extended position through an open end of the handle when the brush is to be used for brushing the teeth. In this form of tooth brush the handle is formed with a wedge-shaped portion adapted to bind within a correspondingly shaped area defined by the opposed walls of the handle adjacent one end thereof so as to frictionally lock the brush head in its extended position while the tooth brush is in use. While such form of tooth brush is satisfactory from a utilitarian standpoint, it is nevertheless somewhat expensive to manufacture requiring as it does the use of material, preferably a plastic, of variable thickness in the fabrication of the brush handle to provide for the wedge locking action.

It is an important object of the present invention to provide in a tooth brush of the above collapsible type improved means for locking the brush head in extended position relative to the handle and which at the same time permits the tooth brush to be manufactured largely from sheet stock of uniform thickness in a simple and economical manner.

Another object of my invention is to provide a tooth brush of the above type which is compact in construction, neat and attractive in appearance and which holds the wet bristles of the brush head in erect, laterally-compressed condition after use so as to preserve the life of the bristles.

Other objects and advantages will be apparent from the following detailed description of a preferred embodiment of the invention, reference being had to the annexed drawing in which:

Figure 1 is a perspective view of a collapsible tooth brush with the brush head entirely withdrawn from the hollow handle for the sake of greater clearness;

Figure 2 is a perspective view similar to Fig. 1 but showing the opposite side of the tooth brush;

Figure 3 is a longitudinal cross-sectional view through one side of the hollow handle of the tooth brush;

Figure 4 is an end view of the handle; and

Figure 5 is a longitudinal cross-sectional view through one side of the tooth brush showing the brush head in extended position.

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The collapsible tooth brush shown in the drawing comprises a hollow handle H and a brush head B slidable therein from a collapsible position within the handle to an extended position projecting outwardly through an open end of the handle.

The handle H is made of sheet material of uniform thickness, such for example as a stiff plastic of the nature of Celluloid, formed to tubular shape and of rectangular transverse cross-section. The brush head B is of approximately the same length as the handle and at its inner end, as indicated at 1, corresponds in shape generally to the cross-section of the hollow interior of the handle so as to make a sliding fit therewith. Tufts of bristles 2 project from a flat face of the brush head adjacent its forward end, and a flat side wall 3 of the handle H is cut inwardly from one end thereof to provide a clearance slot 4 for the bristles when the brush head is retracted within the handle. The slot 4 is of such a width that its side edges bear against and laterally compress the bristles and maintain them in erect position when the brush head is slid into the handle.

The means for locking the brush head in extended position and which form an important feature of the present invention are as follows: The flat side wall 5 of the handle, opposite the side wall 3, is recessed to form an open narrow track 6 extending centrally but terminating short of opposite ends of the handle. The side edges of the track lie parallel to each other throughout a major part of the length of the track but adjacent one end of the handle—namely, the end from which the brush head is adapted to be extended—the side edges of the track converge, as indicated at 7, and thence open into a circular-shaped recess 8, the diameter of this recess corresponding approximately to the width of the track throughout its non-convergent portion.

A pin 9 having a mushroom head 9*a* is mounted in the upper face 1 of the brush head B adjacent an end thereof remote from the bristle-holding portion. This pin is cylindrical in transverse cross-section and is of such diameter as to snugly fit and be slidable within the track 6 with the flat underside of the head 9*a* closely overhanging the sides of the track. The construction and arrangement is such that when the brush head B is withdrawn from the handle the pin 9 will freely slide along the track 6 throughout the portion of its length which is of uniform width, but as the

brush head approaches its fully extended position the pin will ride into the constricted portion 7 of the track and exert a spreading pressure thereon, so that as the pin finally rides into the recess 8 the sides of the track will snap back to their normal unsprung condition behind the pin and releasably lock the pin within the recess. While this locking action is sufficient to hold the brush head extended under usual conditions of use, only a slight longitudinal pressure by the fingers against the end of the brush head is required to force the pin out of the recess and to slide the brush head to completely telescoped condition within the handle H.

In order to aid the locking action just described and to hold the brush head against wobbling in the handle when in use, as a result of possible play between the brush head and the handle, an elongated tapered bead 10 of the same material as that of which the handle is made is provided upon the inner face of the flat side 5 of the handle in line with but positioned beyond the track 6 nearest its circularly recessed end. This bead rides within a guide channel 11 extending centrally of the brush head from its outer end thereof to a point somewhat in advance of the pin 9. The bottom of the channel at its innermost end is upwardly inclined, as indicated at 11*a*, the arrangement being such that as the brush head is drawn out of the handle into its locked position, the bead tracking within the channel 11 rides up the slope 11*a*, thus pressing the flat under-face of the brush head tightly against the opposing flat face, or side 3, of the handle. In the fully extended position of the handle the bead 10 is completely withdrawn from the channel and bears against the flat surface of the brush head within the area indicated by dotted lines 11*b* in Fig. 1.

It is believed that the manner of use of the collapsible tooth brush just described will be readily apparent. When carrying the tooth brush in a lady's handbag, a suitcase or a toilet kit, the brush head B will lie within the hollow handle H with the bristles projecting a short distance beyond the plane of the slot 4, and this slot maintains the bristles laterally compressed and in properly erect position. When the tooth brush is to be used, the brush head is gripped by the fingers and drawn outwardly from the handle. During this action the pin 9 slides within the track 6 and the bead 10 slides within the channel 11 until the pin snaps into the recess 8 and the bead has ridden up over the slope 11*a*, at which time the brush head becomes locked in its fully extended position. After using the brush, the brush head is slid back into the hollow handle by longitudinal finger pressure applied to the outer end of the brush head.

Obviously various changes in the form, construction and arrangement of the several parts of my new collapsible tooth brush may be made

and substituted for those herein shown and described without departing from the nature and principle of my invention as defined by the following claim.

I claim:

In a tooth brush of the collapsible type, the combination comprising a hollow tubular handle having a plurality of enclosing walls and an open end and a brush head having an inner end permanently telescoped with the handle and slidable so as to move its other outer end from a position within to a position outside the handle through the open end of the handle, a field of bristles projecting from one side of the brush head adjacent its outer end, a slot in a wall and opening through the open end of the handle providing clearance for the bristles when the brush head is retracted within the handle, locking means for releasably retaining the brush head in extended position relative to the handle, said locking means comprising a slot defining a track in a wall of the handle opposite from the wall containing said bristle-clearance slot and extending longitudinally of the handle, said track being constricted in width adjacent its end located nearest the open end of the handle and terminating in a widened portion, and a pin on the brush head slidable within the track and provided with a head overlying the marginal edges of the track, whereby when the brush head is moved to fully extended position the pin travels along the track, wedges apart the constricted portion and snaps into the widened portion of the track so as to hold the brush head against retraction, a bead upon the inner face of the track-carrying wall of the handle and located adjacent the open end of the handle and a guide channel in the coacting face of the brush head traversible by the bead, said guide channel having a raised bottom adjacent the inner end of the brush head and engageable by the bead for camming the brush head into tight frictional contact with the inner wall of the handle when the brush head is moved to fully extended position to insure a non-wobbing fit between the brush head and handle.

GEORGE S. RIDNER, SR.

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