My invention relates to new and useful improvements in toothbrushes and more particularly to toothbrush cover fasteners.

An important object of my invention is the provision of a toothbrush construction wherein the bristles will be covered when not in use to prevent the collection of dust and the like thereon and to permit the brush to be packed without danger of the bristles being damaged during transportation.

Another object of my invention is the provision of a unique means for locking the cover in proper association with the brush, the arrangement being operative to securely but releasably hold the cover against displacement and having all of its working parts disposed within the body of the brush with the exception of the latch and operating elements.

Still another object of my invention is the provision of a device of the above mentioned character that is simple and compact in its construction, the cover being provided with a pocket clip so that, if desired, the device may be conveniently carried in the pocket of a person.

Other objects and advantages of my invention, will be apparent during the course of the following description.

In the drawings, forming a part of this specification, and wherein like numerals are employed to designate like parts throughout the same,

Figure 1 is a front elevation of a device embodying my invention,

Figure 2 is a side elevation thereof and showing parts broken away for clearness of illustration,

Figure 3 is a longitudinal sectional view taken on the line 3-3 of Figure 2,

Figure 4 is a transverse sectional view taken on the line 4-4 of Figure 3,

Figure 5 is a perspective view of a slide supporting block embodying a part of my invention,

Figure 6 is a perspective view of a slide or finger piece embodying a part of my invention,

Figure 7 is a perspective view of a stud comprising a part of my invention,

Figure 8 is an end elevation of the device,

Figure 9 is an end elevation of a modified form of the invention,

Figure 10 is a fragmentary longitudinal section view taken on the line 10-10 of Figure 9,

Figure 11 is a fragmentary longitudinal section view taken on the line 11-11 of Figure 10,

Figure 12 is an end elevation of still another modification of the device,

Figure 13 is a fragmentary longitudinal section view taken on the line 13-13 of Figure 12,

Figure 14 is a fragmentary longitudinal section view taken on the line 14-14 of Figure 13,

Figure 15 is a fragmentary side elevation illustrating a modified form of the latch operating parts,

Figure 16 is a fragmentary longitudinal section view taken on line 16-16 of Figure 15,

Figure 17 is a fragmentary longitudinal section view of my invention and illustrating a modification of the means for attaching the toothbrush to the handle portion thereof,

Figure 18 is a fragmentary longitudinal sectional view of still another modification of the invention.

In the accompanying drawings, wherein for the purpose of illustration, is shown a preferred embodiment of my invention, the numeral 20 designates a brush head having a plurality of bristles 21 extending from one side thereof. The head is of the type generally associated with toothbrushes comprising an elongated member flattened for a portion of its length to receive the bristles and being formed at one end thereof with longitudinally extending shank 22 which connects with one end of a handle or body 23.

I prefer that the body and the brush head be detachably connected with each other and I have, therefore, provided the end of the shank 22 with screw threads 24 which engage with the internal screw threads of the sockets 25 provided in the mentioned end of the body. The body is here illustrated as being of essentially oval formation in transverse section and as being of constant dimension for its entire length. It is to be understood, however, that the body may be made in any desired formation and that it may be longitudinally tapered, if desired. I have here illustrated the end thereof attached to the brush head as being tapered toward the shank portion of the brush to join substantially smoothly therewith. The outer surface of the body may be knurled as shown in the drawings or it may be made smooth, as desired.

It is highly desirable that a suitable means be provided to protect the bristles of the brush from contamination or damage when travelling and for this reason I have provided a cover 26 which may be slipped over the head portion of the brush and releasably connected to the adjacent end of the body 23. The cover is of generally elongated tubular formation and is of the same cross-sectional formation as the body so that the open connecting end 27 thereof will snugly receive the end of the body. The outer end 28 of the cover
is closed to prevent dust and the like from having access therein. In order that the bristles of the brush may be disposed within the cover without contacting the inner surface thereof, I have offset the shank portion 22 of the brush head in the manner illustrated in Figure 3. Under certain conditions it may be desirable to carry the toothbrush in the pocket and when the brush and cover are thus positioned the spring clip 29 may be snapped over the edge of the pocket to hold the device securely but removably positioned therein. The toothbrush will then simulate a conventional fountain pen and, by reason of the pleasing appearance and compact formation of the cover and body, the brush will not attract undue attention. The ventilator openings 30 in the cover permit air to have ready access into the cover for drying the damp bristles.

An important feature of my invention is the means for positively locking the cover on the body. A pair of oppositely directed studs 31 and 32 are slidable mounted in a passage 33 extending transversely through the portion of the body disposed within the cover. The end 34 of the portion of reduced diameter and this reduced portion opens through the body to permit the Shank of the stud located at this end of the passage to enter the registering recess 35 provided in the confronting inner surface of the cover. The opposite end of the passage is internally screw threaded to receive the insert or plug 36, and the portion of the passage opening through the body is enlarged to receive the head of the insert which head is thus permitted to extend flush with the surface of the body to in no way interfere with the application of the cover thereon. The Shank of the stud 31 extends through a central opening in the insert and into a registering recess 37 provided in the confronting inner surface of the cover. A coil spring 38 is interposed between the stud and the resilient action thereof normally serves to hold the ends of the stud Shanks seated within the registering recesses in the cover whereby to efficaciously prevent the cover from being inadvertently removed from the body.

For releasing the studs, I have provided a manually operable finger piece or slide 39 which is mounted in the longitudinal external groove or slot 40 located in the portion of the body extending beyond the cover. The finger piece is retained within the slot by means of the block 41 of the lower end 42 of which is beveled + looking seat against the inclined lower end 43 of the slot and the upper end 44 of which is retained within the slot by suitable screw elements 45, or the like. The finger piece comprises an essentially rectangular block portion 46 which is mounted for longitudinal shifting movement in the elongated recess 47 provided in the inner face of the retaining block and an outwardly extending Shank 48 which projects through the elongated central opening 49 of the block. The upper end of the block portion 46 is undercut, as at 50, to receive one end of the flexible tie element 51. The opposite end of the tie element extends through the duct 53 which connects the upper end of the recess 47 with the passage 33 at substantially its middle. The portions of the tie element which enter the passage 33 is attached to a flexible connection 52 which passes through the coil spring 33 and connects with the studs 31 and 32. The resilient action of the coil spring will normally hold the connection and tie element tautly stretched whereby to hold the finger piece normally disposed in the upper end of the recess 47.

Thus, when it is desired to remove the cover from the body of the brush it is only necessary for the operator to touch the projecting Shank of the finger piece and to press downwardly thereon whereby to shift the same within the opening 48. This action will operate through the medium of the tie element and connection to simultaneously retract the studs within the passage 33 against the resilient action of the coil spring. As soon as the shanks of the studs are removed from the recesses in the cover, the cover may be readily removed. Conversely, when it is desired to apply the cover to the brush it is only necessary to slip the cover over the brush head and to slide the same along the body until it abuts against the extending Shanks of the studs. As soon as the finger piece is actuated to retract the studs the cover may be slipped further along the body. The finger piece is then released so that the spring 38 may seat the studs within the recesses in the cover as soon as the same move into register with the recess 47.

When the cover is removed from the brush it may be desirable to maintain the finger piece in the lower position to hold the studs retracted within the passage 33. In Figures 15 and 16, I have illustrated the lower end of the opening 48 in the retaining block 41 as being provided with a laterally offset portion 54 into which the Shank 48 of the finger piece may be shifted by the application of lateral pressure thereto.

When a person is travelling it is inconvenient to carry a separate tube of paste and I have, therefore, provided a chamber 55 in the body which opens through the end thereof remote from the cover for receiving a tube of paste or a liquid or powder dentifrice. In Figure 3, I have illustrated the chamber as being closed by a threaded plug 56 the opposite sides of the head portion of which extend through slots 57 in the opposite side of the body and permit ready manual access to be had thereto.

Inasmuch as the brush is subjected to considerable rough treatment during transportation it may be desirable to provide a more secure means for closing the open end of the chamber 55. In Figures 9, 10 and 11 I have illustrated such a means. An essentially cup shaped cap 58 is snugly received within the opened central chamber and the outer edge thereof is formed with a lip 59 which extends over the end of the body to limit the distance to which the cap may be inserted in the chamber. A plate 60 is fitted in the cap and the confronting faces of the cap and plate are formed with registering grooves 61 and 62 which define a passage for receiving the studs 63 and 64. The studs are positioned at opposite ends of the passage and a coil spring 65 is interposed therebetween for normally holding the Shank portions thereof disposed in openings provided in the body and with engaging ends thereof seated in aligning recesses provided in the cover. Each of the studs is formed with an outwardly extending lug 66 which travels in an elongated slot 67 provided in the plate. The ends of the lugs extend beyond the plate and provide finger pieces which may be manually operated to retract the studs 63 and 64 into the passage to effect release of the cap from the body.

Another means for attaching the cap to the body is illustrated in Figures 12, 13 and 14. I have here illustrated the opposite sides of the cap as being flattened to extend between the lon-
itudinally extending lips 68 provided at the corresponding sides of the body. The confronting inner surfaces of the lips are formed with recesses which receive the opposite ends of an arm 68 pivoted centrally on the outer side of the cap. The arm is formed at opposite sides of its pivot with upward facing tabs 70 which facilitate manual actuation of the arm into or out of the recesses in the body. It will be readily apparent that rotation of the arm to a position along the major axis of the cap will effect release of the cap and that rotation of the arm to a position along the minor axis of the cap will cause the opposite ends thereof to be received within the mentioned recesses whereby to securely hold the cap against displacement.

In Figure 17 I have illustrated a construction wherein the head 20 is formed with a central passage 72 which communicates with the bristles 21 through the ports 73. The passage opens into the chamber 85 of the body to permit a liquid dentifrice contained within the chamber to flow through the passage and onto the bristles when the plug 86 is retracted a sufficient distance to uncover the inner end of the air vent 74. In this form of the invention the plug is normally positioned to close the air vent 74 and to hold the distal beveled end 78 of the valve stem 76 snugly into the dentifrice chamber. Obviously, when the plug is threaded entirely into the body no dentifrice may flow from the chamber. However, partial retraction of the same to open the vent 74 and to unseat the valve 76 will permit the liquid dentifrice to traverse the passage 72 and egress through the ports 73.

If desired, other personal implements may be substituted for the brush part of the device.

It is to be understood that the form of my invention, hereinafter shown and described, is to be taken as a preferred example of the same, and that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of my invention, or scope of the appended claims.

Having thus described my invention, I claim:

1. In a device including a body member and a cover having an open end receiving one end of the said body, a latch means for holding the cover securely associated with the body comprising studs slidable disposed in a transverse passage provided in the mentioned end of the body, the opposite ends of the passage being of reduced diameter to receive the shank portions of the studs and opening through opposite sides of the body and into recesses in the inner surface of the cover, spring means interposed between the studs for normally urging the shank portions thereof into the recesses of the cover, a manually operable slide element mounted in an external slot of the body located beyond the attached end of the cover, a flexible connection extending between the studs and having its opposite ends attached to the said slide element and the opposite end thereof being connected to the said cover, the spring means normally acting through the medium of the said connection and tie member to hold the slide at the adjacent end of the slot, and means located at the opposite end of the slot for releasably holding the slide element against the resilient action of the spring means when the same is positioned to retract the studs.

LUDWIG F. PERWAS.