Oct. 21, 1930. S. TOLMACH 1,779,057

TOOTHBRUSH

Filed Nov. 5, 1929

Fig. 4.

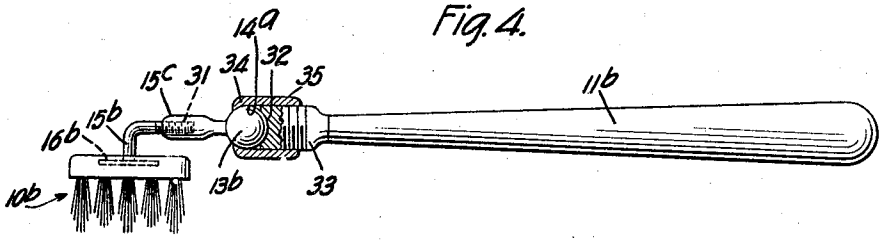


Fig. 1.

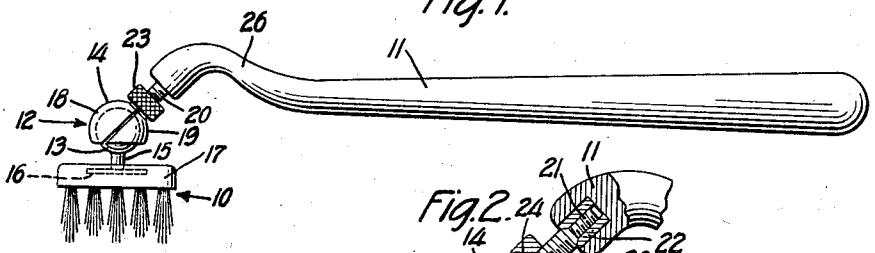
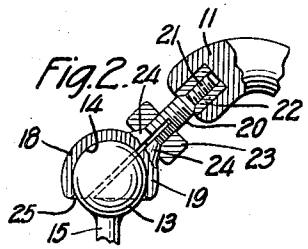


Fig. 2.



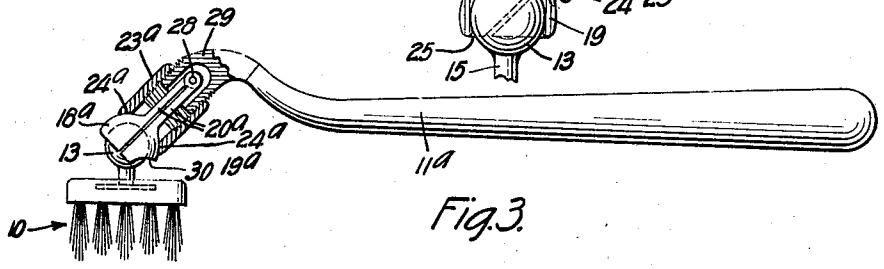


Fig. 3.

Fig. 5.

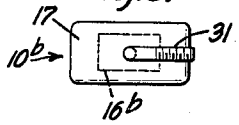


Fig. 6.

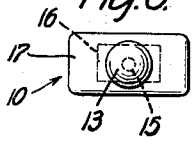
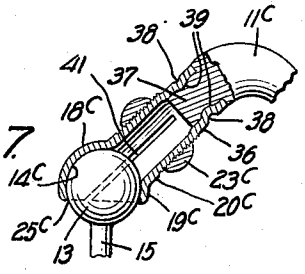


Fig. 7.



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UNITED STATES PATENT OFFICE

SAMUEL TOLMACH, OF NEW YORK, N. Y.

TOOTHBRUSH

Application filed November 5, 1929. Serial No. 404,914.

This invention relates to improvements in tooth brushes and especially to the kind in which the brush may be adjusted relatively to the handle to facilitate access to all the surfaces of the teeth for thorough and proper cleaning.

An object of the invention is to provide a brush with means to afford a maximum range of adjustment so that it may be set to numerous positions relatively to the handle and so that the handle may always extend substantially perpendicular to the face irrespective of the position of the brush thereon.

Another object of the invention is to provide a tooth brush having a universal adjustment, which is strong and simple in construction and which may be manufactured economically.

Features and advantages will hereinafter appear.

In the drawings—

Fig. 1 is a side elevation of my improved tooth brush.

Fig. 2 is a detail sectional view, on a larger scale showing construction of the universal joint.

Fig. 3 is a side view, partly in section, illustrating another form of the invention.

Fig. 4 is a side view of still another form of the invention.

Fig. 5 is a top plan view of the brush, shown in Fig. 4, removed from its holder.

Fig. 6 is a top plan view of the brush part shown in Figs. 1 and 3.

Fig. 7 is a still further form of the invention.

Similar reference characters represent similar parts throughout the several views.

A brush 10 is supported on a handle 11 by means of a universal joint 12; the universal joint including a ball 13 and a socket 14 into which the ball fits.

The ball 13 is preferably secured to the brush 10 so that the latter may readily be removed from the holder for substitution by a new one. In order to secure the ball to the brush it may be provided with a stem 15 secured to a plate 16 embedded in the back 17 of the brush in any convenient manner.

The socket 14 may be formed by two jaws 18 and 19 extending from an enlarged portion 20 of a shank 21 threaded into a metal brushing 22. The brushing 22 may be firmly secured in the end of the handle 11, in any suitable manner; the handle being composed of any suitable non-metal material.

To secure the brush 10 in any position to which it may be adjusted, there may be provided a nut 23 threaded on the enlarged portion 20 and adapted to engage tapered shoulders 24 on the jaws 18 and 19 to force said jaws together and thus clamp the ball sufficiently tight to prevent accidental displacement of the brush relatively to the handle while in use. Thus in order to tighten the universal joint 12 the nut is fed towards the said joint. To prevent accidental loosening of the shank 21 while the universal joint 12 is being tightened, the thread on said shank may be in a direction which tends to screw said shank further into the brushing 22.

By an inspection of Figs. 1 and 2 it will be understood that the stem 15 is perpendicular to the brush and that the stem may not only be rotated about its axis but that said stem may be adjusted in any radial position relatively to the center of the ball 13, within the range of the opening 25 at the receiving end of said jaws. Accordingly the brush may be rotated to any angular position about the axis of the stem 15 and may be set with its face in any angular position by swinging it about the center of the ball 13.

In order to remove the brush 10 from the handle 11, as for replacement, the nut is first fed towards the upper part of the shank portion 20 far enough to permit the jaws 18 and 19 to be swung apart while pulling the ball through the opening 25.

To reach certain parts of the mouth more conveniently, I have found it advantageous to form the handle with a goose neck or contra-angle 26.

In the form of the invention illustrated in Fig. 3 jaws 18^a and 19^a may be pivotally supported on a pin 28 in a holder 29 secured to handle 11^a in any suitable manner. A nut

23^a is threaded on to the holder 29 and is provided with inclined shoulders 24^a to engage the socket portions of the jaws to clamp said jaws against the ball 13 and thus hold the brush against accidental displacement.

To give a wider range of adjustment of the brush the free ends of the jaws may extend perpendicularly to their stems 20^a and the jaw 19^a may be cut out at 30.

In the form of the invention shown in Fig. 4 the brush 10^b has secured thereto a bent stem 15^b provided with a threaded end 31 by which it may be detachably secured to a stem 15^c extending from ball 13^b. The ball is located in a socket 14^a formed by a cavity 32 in the end of a portion 33 which may be suitably secured to the handle 11^b, and an inturned end 34 of a nut or coupling 35 threaded on the stem portion 33. It will readily be understood that by means of the coupling that the ball may be firmly gripped to prevent displacement of the brush 10^b.

In Fig. 7 the invention includes a tubular brush holding element 36 which may be secured to a reduced portion 37 of the handle 11^c by pressing portions 38 of the element 36 into depressions 39 of the handle portion 37. The element 36 includes a stem 20^c having a slot 41 to form jaws 18^c and 19^c. The jaws are pressed to form the socket 14^c into which the ball 13 of the brush element may be inserted through the aperture 25^c. The stem 20^c is slightly tapered and is provided with screw threads so that the jaws may be tightened against the ball by nut 23^c threaded onto the stem 20^c.

It will be understood that in any form the nut is utilized to tighten the jaws sufficiently on the ball to hold the brush against accidental displacement but that the position of the brush may be changed at will without loosening the nut, being also used to take up wear of the ball in its socket. It will also be understood that in certain forms of the invention the nut may be screwed back far enough to enable the jaws to be sprung apart, sufficiently to permit of removal and insertion of the ball relatively to the socket when replacing the brush element.

Having thus described the invention I do not desire to limit myself to the specific embodiments shown in the drawings, these being illustrative and there being other variations that fall within the scope of the appended claim.

I claim:

In a tooth brush, the combination of a tooth brush, a handle therefor, a universal joint interposed between said brush and handle comprising a ball carried by one of said elements, jaws carried by the other of said elements, said jaws forming a socket for said ball, one of said elements having a threaded shank, and an internally threaded sleeve carried by said shank and movable longitudinally thereof, the free end of said sleeve engaging the socket forming portion of said jaws to hold the same in clamped position against the ball.

In testimony whereof I have affixed my signature to this specification.

SAMUEL TOLMACH.