April 20, 1954 H. G. STRONG 2,675,573

TOOTHBRUSH WITH REMOVABLE HEAD

Filed Oct. 7, 1949

FIG. 5.

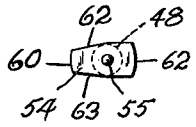


FIG. 1.

FIG. 4.

FIG. 2.

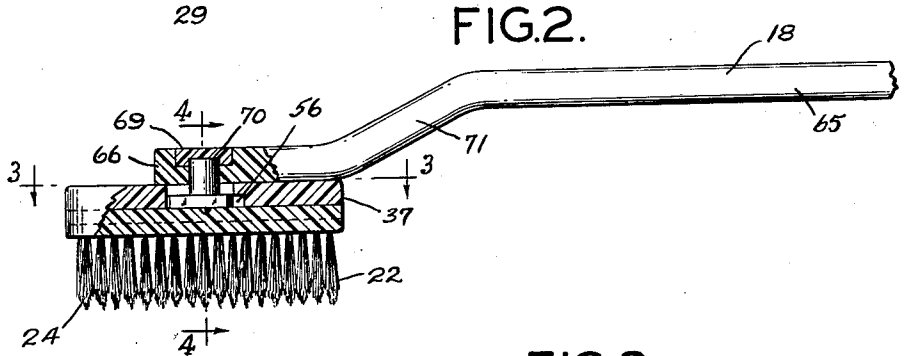
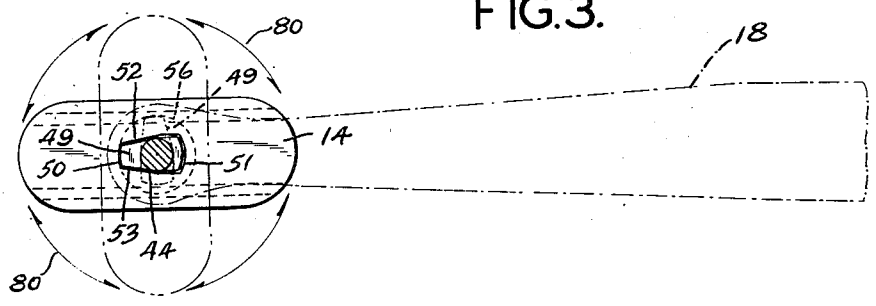


FIG. 3.



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TOOTHBRUSH WITH REMOVABLE HEAD

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6 Claims. (Cl. 15—176)

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This invention relates generally to brushes and more particularly to toothbrushes.

Toothbrushes as heretofore constructed have a number of serious disadvantages. One of these is that as the bristles lose their resiliency and cleaning power, it becomes necessary to replace not only the bristles but the entire brush including the handle thus involving waste with a consequent expense. Another disadvantage of prior art toothbrush constructions lies in the fact that the bristle arrangement with respect to the handle is not conveniently adjustable.

It is therefore among the objects of the present invention to provide a novel and useful toothbrush construction wherein the brush element may be easily replaced when the bristles have lost their efficiency.

Another object herein lies in the provision of structure of the class described wherein the brush element is securely connected, in a rotatable manner, to the handle element at all times except when the brush element and the handle element are in a pre-determined position with respect to each other which position is critical.

Another object herein lies in the provision of toothbrush construction wherein the brush element may be placed in a most desirable position with respect to the handle element so that the teeth of the user may be properly brushed in accordance with accepted procedure of the dental profession, and such positioning of the brush element may be made quickly and easily to accommodate the toothbrush for use by left-handed or right-handed persons.

Another object herein lies in the provision of a toothbrush having the above described characteristics which may be readily fabricated on large scale at low cost with a consequent wide sale, distribution and use.

These objects and other incidental ends and advantages will more fully appear in the progress of this disclosure and be pointed out in the appended claims.

In the drawings similar reference characters designate corresponding parts throughout the several views.

Figure 1 is an exploded view in perspective of an embodiment of the invention.

Figure 2 is an elevational view, partly in section.

Figure 3 is a fragmentary sectional view as seen from the plane 3—3 on Figure 2.

Figure 4 is a sectional view as seen from the plane 4—4 on Figure 2.

Figure 5 is a bottom plan view of a locking element.

In accordance with the invention the toothbrush comprises broadly a brush element 12, a head element 14, a locking element 16 and a handle element 18.

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The brush element 12 includes a bristle mounting member 20 and a plurality of tufts 22 each containing a number of bristles 24. The bristle mounting member is preferably of elongated shape and includes a front end wall 26, a rear end wall 27, side walls 28 and 29, a bottom wall 30, a pair of rabbets 31 and 32 and a top wall 33. The top wall is provided with a depression 34. The rabbets 31 and 32 give the side walls 28 and 29 a rib formation.

The head element 14 includes a front end wall 36, a rear end wall 37, side walls 38 and 39, a bottom wall 40, internal grooves 41 and 42, an upper wall 43 and an aperture 44 and ledges 45 and 46. The size of the head element 14 is preferably such that it may contain the brush element 12 exclusive of the tufts 22 and so that the front wall 26 and rear wall 27 may be coterminus with the front wall 36 and the rear wall 37 respectively. The riblike formations of the side walls 28 and 29 are slidably disposed within the grooves 41 and 42.

The locking element 16 is of irregular configuration, best seen in the drawings and includes an axle 48 and a key member 49. The key member 49 is of non-circular configuration which is asymmetric with respect to the axis of the axle 48. The external size of the key member 49 is such that it may slidably pass through the aperture 44. Thus (Figure 3) the aperture 44 may have a front edge 50, a rear edge 51 and side edges 52 and 53 while the key member may have corresponding edges 60 to 63 inclusive. Disposed below the aperture 44 and communicating directly therewith is a hollow cylinder 56 with which the front wall 60 of the key member 49 may be in close proximity or have slidable contact. The upper wall 43 directly overlying the cylinder 56 therefore forms a shoulder which prevents the handle element 18 from being separated from the head element 14 unless the handle element and the key member 49 are in the critical position shown in Figure 3 (dot dash and full lines respectively). When the head element 14 and handle element 18 and the key 49 are rotated to any other position throughout 360° (one position being shown by the dash double total lines on Figure 3) and projection 55 (Fig. 5) on the end portion of the key member engages depression 34, the parts cannot be separated.

The end or bottom surface 54 of the key member 49 is provided with the projection 55 which corresponds to the depression 34. The said projection and depression form means for preventing movement of the brush element 12 longitudinally of the head element 14.

The handle element 18 at the grasping portion 65 may be of any desired or conventional configuration. The forward portion 66 is provided with an orifice 67 and a counterbore 68. A

plug 69 has a recess 70 which is adaptad to receive the upper end of the axle 48 as a forced fit and the orifice 67 is likewise adapted to receive the axle 48 as a forced fit. While the outer surface of the axle 48 is shown as smooth, it may have a roughened surface to strengthen the joint between it and the handle element 18 as well as the plug 69. It is to be noted that the locking element 16 is stationary with respect to the handle element 18 and other well-known means may be used to secure it upon said handle. The handle element 18 is preferably provided with an offset portion 71 so that the forward end is displaced downwardly as viewed in Figure 2 from the plan of the rear portion 65. This provides for greater facility in use.

It may thus be seen that the replacement of a brush element 12, when required, is a simple matter. When the parts are in the position shown in Figures 2 to 4 inclusive, the handle element and key member 49 may be elevated slightly so that the projection 55 disengages the depression 34. The brush element may now be slid forwardly or rearwardly and a new one substituted. When the new brush element is properly centered the handle and key member are pushed down to reengage the projection 55 and a slight rotation of the handle element in either direction as indicated by the arrows 90 places the brush in operative condition again.

It may thus be seen that I have disclosed a novel and useful toothbrush construction permitting greater facility, convenience and economy in use.

While I have shown the aperture 44 as having its greatest length lying in the direction of the greatest length of the head element 14, this is a matter of choice and where it is desired to have the orientation of the handle element 18 different at the time of engagement and disengagemtnt of the parts, this may be accomplished in manufacture by a change in the relative position of said aperture or change in the relative position of the locking element.

I wish it is to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. Toothbrush construction comprising: a head element having an aperture; a brush element movably associated with said head element; a handle element; a locking element connected to said handle element and projected through said aperture and being detachably engaged with said head element and said brush element.

2. Toothbrush construction comprising: a head element having an aperture and a shoulder bordering said aperture; a brush element movably associated with said head element; a locking element having a lateral projection, insertable through said aperture and positionable between said shoulder and said brush element, said locking element being detachably engaged with said head element and said brush element.

3. Toothbrush construction comprising: a head element having a non-circular aperture and a shoulder bordering said aperture; a brush element movably connected to said head element and adapted for movement in a pre-determined plane; a locking element having a laterally extending key member, and insertable into said aperture by a movement at an angle with respect to said plane; said key member being rotatable to a position between said shoulder and said brush element; and means interengaging said locking element and said brush element for restricting movement of the brush element in said plane.

4. Brush construction comprising: a head element having a non-circular aperture and a shoulder bordering said aperture; a brush element movably connected to said head element, and adapted for movement in a predetermined plane; a locking element having a laterally extending key member; a handle secured to said locking element; said locking element and handle being rotatable as a unit with respect to said head element about a pre-determined axis whereby the key member may engage an inner surface of said shoulder; and means on the locking element for detachably engaging said brush element to prevent movement thereof while it is in the head element.

5. Toothbrush construction comprising: a head element having a non-circular aperture, and a shoulder bordering said aperture; a brush element movably connected to said head element, and adapted for movement in a predetermined plane; a locking element having a laterally extending key member, and insertable into said aperture by a movement at an angle with respect to said plane; said key member being rotatable to a position between said shoulder and said brush element; and means interengaging said locking element and said brush element for restricting movement of the brush element in said plane; said means including a projection upon said key member engageable with a corresponding depression in said brush element.

6. Brush construction comprising: a head element having a non-circular aperture and a shoulder bordering said aperture; a brush element movably connected to said head element; a locking element having a laterally extending key member; a handle secured to said locking element; said locking element and handle being rotatable as a unit with respect to said head element about a predetermined axis whereby the key member may engage an inner surface of said shoulder; and means on the locking element for detachably engaging said brush element to prevent movement thereof while it is connected to the head element; said means including a projection extending from the end portion of said key member engageable with a corresponding detent in said brush element.

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