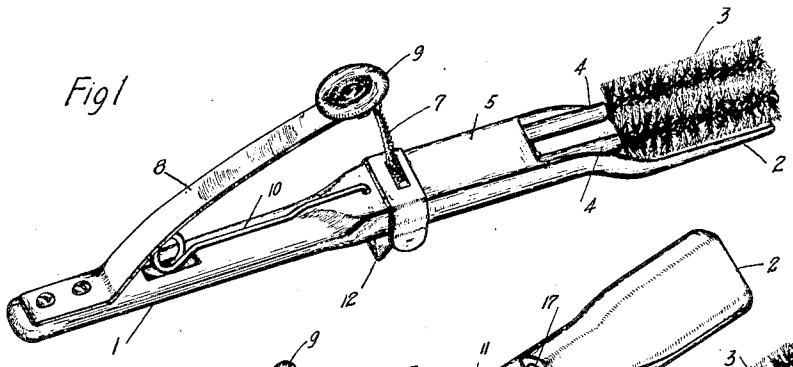
H. W. GOFF.

TOOTHBRUSH.

APPLICATION FILED MAY 13, 1920.

1,434,436. Patented Nov. 7, 1922.

Fig 1



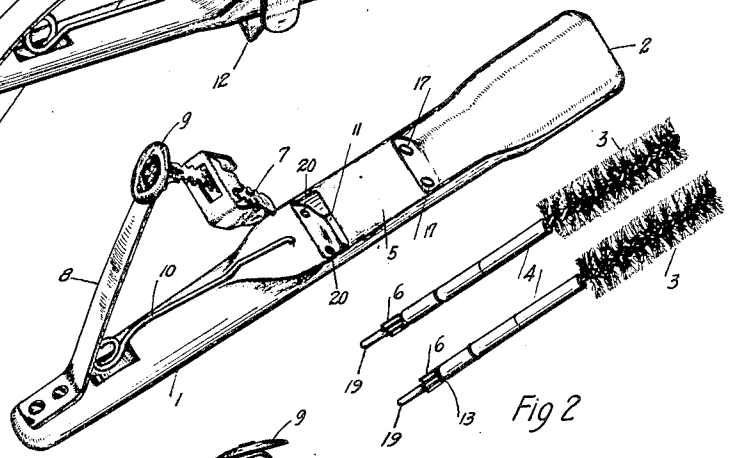


Fig 2

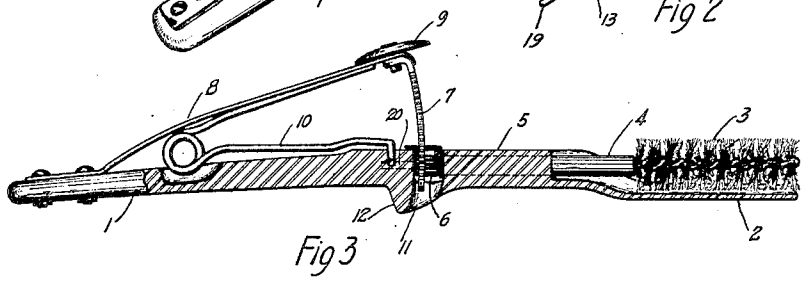


Fig 3



Fig 4

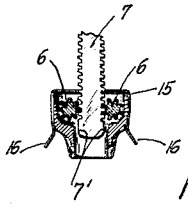


Fig 5

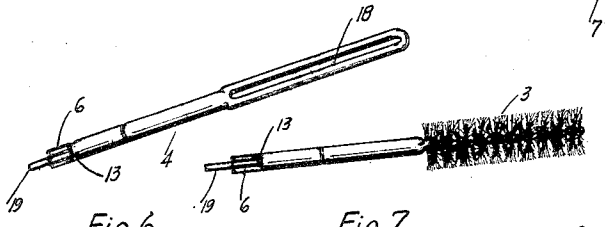


Fig 6.

Fig 7.

Harold Wheelar Goff Inventor

By his Attorney

Abel L. Browning

Patented Nov. 7, 1922. 1,434,436

UNITED STATES PATENT OFFICE.

HAROLD WHEELER GOFF, OF NEW YORK, N. Y.

TOOTHBRUSH.

Application filed May 13, 1920. Serial No. 380,984.

To all whom it may concern:

Be it known that I, HAROLD WHEELER GOFF, a citizen of the United States, residing in New York, in the county and State of New York, have invented certain new and useful Improvements in Toothbrushes, of which the following is a specification.

This invention relates to tooth brushes having rotatable brush members.

One feature of the invention includes a shaft locking member which cooperates with suitable shoulders on the shafts to normally hold them against longitudinal movement or removal and which at the same time serves as a guard or cover member for a recess in the framework in which operating mechanism for the shafts is mounted. Another feature includes an improved return spring device by which a proper operating relation between a rack carried by the spring and a pair of pinions carried by the brush shafts is provided. Still another pertains to an improved brush support employed in the device. Other features of the invention will be hereafter referred to.

In the drawings:

Fig. 1 is a perspective view of a device embodying the invention and showing the parts in assembled condition.

Fig. 2 is a view similar to Fig. 1 showing the device disassembled for cleaning purposes.

Fig. 3 is a view of the device partly in side elevation and partly in longitudinal section.

Fig. 4 is a perspective view of a holding clip used in the device.

Fig. 5 is a transverse section of the device showing the rack and gears.

Fig. 6 is a perspective view of a slotted brush-supporting shaft before mounting the bristles.

Fig. 7 is a perspective view of the shaft shown in Fig. 6, with the bristles held in place by twisting the slotted portion of the shaft.

Referring to the drawings, a main supporting or frame member 1 provides a handle having a forwardly extending guard member 2, preferably formed integrally with the handle member. Mounted to rotate closely adjacent to the inner face of the guard member 2 is a pair of brush members 3 carried by shafts 4 journaled in a substantially parallel position in a bearing member 5 preferably formed integrally with a forward part of the handle member 1. The rearward portions of the shafts 4 are provided with pinions 6, which are operated by a rack member 7 having its opposite edges toothed for meshing engagement with the pinions 6. The rack 7 is carried by a flat spring member 8, which is preferably transversely curved or otherwise stiffened for the greater portion of its length except at a point adjacent the rear, where it is attached in any suitable manner to the handle member 1. It is obvious that an inflexible member hinged at its rear end to the handle may replace the spring member just described.

It will be seen that the depression of the forward end of the spring member 8 by the pressure of the thumb of the operator on the button 9 will move the rack member longitudinally between the pinions 6 to thereby rotate the brush members 3 in opposite directions. The spring member 8, because of its formation, bends near the rearmost portion, while the entire forward portion remains substantially unbent, thereby maintaining constant the position of the rack member 7, with relation to forward or rearward movement that would tend to disturb the mesh relation of the rack and pinions if not provided for.

In order to facilitate the return of the rack 7 to raised position, I preferably employ a supplemental spring member 10 of the coiled wire type and which is provided with outwardly extending lugs at its opposite extremities for holding engagement with suitable depressions formed for the purpose in the handle member 1 and spring 8.

In order to provide for the necessary range of movement of the rack member 7, an opening 11 is provided in the handle through which the rack may pass, the opening being guarded by an extension 12 to prevent contact of the fingers of the user with the rack. In order to prevent a sufficient upward movement of the rack to carry the rack out of engagement with the pinions 6, the opposite edges 7′ of the rack adjacent the lower extremity are not provided with teeth, so that a stop is thereby provided to normally restrict the retracting movement of the rack. This is clearly indicated in Fig. 5 of the drawing.

An important feature of the invention resides in a provision for disassembling the construction described for cleaning purposes, as indicated in Fig. 2. It will be seen that the

brush-carrying shafts 4 are bodily withdrawn from their seats in the bearings and that the rack is raised to a position wholly clear of the handle member. This is brought about by providing the shafts 4 at points preferably just forward of the pinions 6 with grooves 13 adapted to be engaged by the opposite edges of a locking tongue 14 projecting downwardly from a spring clip 15 arranged to clasp the handle member and provide a cover member for the opening or recess 11 in which the pinions 6 are mounted. It will be noted that when the clip is in position as in Fig. 1, the tongue 14 extends downwardly between the shafts 4 and into each of the grooves 13 to thereby prevent longitudinal movement of the shafts, as will be clear. In order to remove the shafts as illustrated in Fig. 2, it is necessary merely to raise the spring clip 15 by means of the fingers engaging portion 16, as indicated, whereupon the tongue 14 is lifted out of locking engagement with the grooves 13 and the shafts can be drawn out of the bearings, the rack being at the same time slightly depressed in order to remove the tendency of the pinions to became locked by the rack edges 7'. The removal of the shafts permits the movement of the rack to the elevated position shown and to which it is removed by the action of the springs. It will be seen that access can now be had to the inner face of the guard member 2, the bearing shaft-receiving openings 17 and the opening 11 in the handle, so that every part of the device can be readily cleaned and sterilized. While I have shown the clip member 15 as wholly removable from the handle, it may also be pivoted or otherwise secured thereto so that it could be tilted out of and into shaft-engaging position.

I find that a simple and effective brush construction resides in the formation of a slotted shaft such as is indicated in Fig. 6 of the drawing. The slot 18, closed at both ends, is adapted to receive the brush bristles, whereupon the slotted portion of the shaft may be subjected to a twisting operation to bring the edges into gripping relation to the bristles, as shown in Fig. 7. Preferably, the pinions 6 are formed integrally with the shafts 4 as is a rearwardly extending portion 19 adapted to be journaled in openings 20 formed in the rearward wall of the handle opening 11 in alignment with the shaft-receiving openings 17 in the bearing member 5.

In addition to the sanitary feature provided by the removable brushes, there is the additional advantage that the brush members may be removed and replaced by new ones when worn. For this purpose, the entire brush and shaft may be a unitary construction, as shown, or the rear portion of the shaft may be made separable from the forward portion, as desired.

What I claim is:

1. A tooth brush comprising: a handle member, a pair of rotatable brush-carrying shafts journaled in said handle member, a pinion on each shaft, a rack member operably engaging said pinions, grooves on said shafts, a locking member arranged to engage said grooves to retain said shafts in said handle, said locking member being operable to disengage said grooves and permit removal of said shafts from said handle member.

2. A tooth brush comprising: a handle member, a pair of rotatable brush-carrying shafts journaled in said handle member, a pinion on each shaft, a rack member having operable engagement with said pinions, a spring member operable to move said rack member in one direction, an opening in said handle member, shoulders on said shafts accessible through said opening, and a locking device insertible in said opening to engage said shoulders and prevent longitudinal movement of the shafts, said locking device being operable to permit the removal of said shafts from the handle member.

3. A tooth brush comprising: a handle member, a pair of rotatable brush-carrying shafts journaled in said handle member, pinions on said shafts, an opening in said handle member in which said pinions are mounted to rotate, a rack member toothed for engagement with each of said pinions, a spring member attached to the handle member and having an operable connection at its forward end with said rack member, and a clip member arranged to clasp said handle member in covering relation to said opening, said clip member being provided with means for preventing the longitudinal movement of said shafts, said clip member being readily removable to permit the removal of the shafts.

Signed at New York, in the county and State of New York, this 12th day of May, 1920.

HAROLD WHEELER GOFF.