

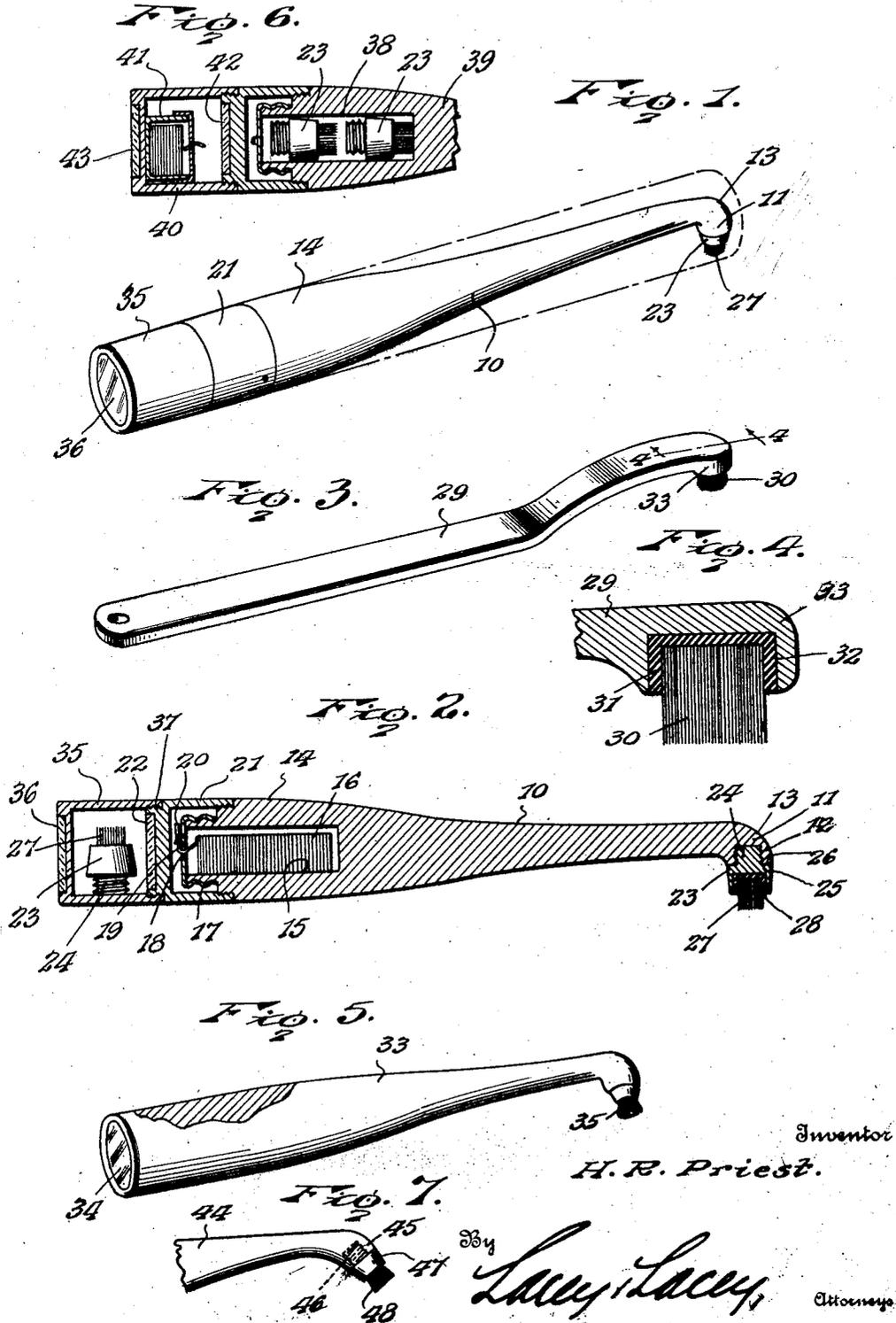
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TOOTH CLEANING AND POLISHING ELEMENT

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TOOTH CLEANING AND POLISHING ELEMENT

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This invention relates to tooth cleaning and polishing elements and has for an object to provide primarily a device by means of which considerable pressure may be applied to effectively remove mucous films, stains, tartar and accumulations from the teeth.

A further object is to provide a cleaning and polishing device having a working element comprising a comparatively short non-extensible non-spreading tuft of stiff bristles by means of which an abrasive action may be exerted on the teeth, said tuft resisting the application of pressure up to and beyond twenty pounds without the shape or dimensions thereof varying noticeably so that tartar, for instance, which nearly approximates a bone growth in consistency and hitherto has been removed by power driven or manually operated cutters may be thoroughly removed and the normal luster and polish of the teeth exposed.

With the above and other objects in view the invention consists in certain novel details of construction and combination of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of this specification,

Fig. 1 is a perspective view of a cleaning and polishing device constructed in accordance with my invention,

Fig. 2 is a longitudinal sectional view through the device,

Fig. 3 is a perspective view of an ordinary or stock tooth brush handle equipped with my improved cleaning and polishing element,

Fig. 4 is a fragmentary sectional view taken on the line 4-4 of Fig. 3,

Fig. 5 is a perspective view of a modified form of shank for the cleaning and polishing element,

Fig. 6 is a detail sectional view showing another modified form of shank constituting a magazine for spare cleaning and polishing

elements and showing a removable dental floss magazine applied thereto, and

Fig. 7 is a fragmentary elevation showing a cleaning and polishing element disposed at an oblique angle to the shank.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, 10 designates a shank which terminates at one end in an annular hollow head 11 which is comparatively short in length and is interiorly threaded, as shown at 12. The head is rounded exteriorly, as shown at 13.

The shank is enlarged uniformly at the butt end, as shown at 14, to provide a comfortable grip and is preferably provided with an axial recess 15 adapted to form a magazine for dental floss 16. A cap 17 is screwed onto the end of the shank and forms a closure for the dental floss recess. The cap is provided with an axial opening 18 to permit the end 19 of the dental floss to project therethrough and is also provided with a spur 20 struck from the metal of the cap to provide a cutter for cutting off a desired length of the dental floss.

Preferably, a cap 21 is removably secured to the butt end of the shank and houses the exposed end of the dental floss so as to protect the same from contamination. A mirror 22 is preferably counter-sunk in the flat outer end face of the cap and provides means for inspecting the condition of the teeth.

As best shown in Fig. 2, the cleaning and polishing element comprises a socket 23 which is preferably provided with an exteriorly threaded stem 24 adapted to engage the screw threads 12 of the hollow head 11. The socket is substantially annular in contour and is provided with a shoulder 25 at the base of the stem 24 to engage the flat end face 26 of the hollow head and limit insertion of the socket in the head.

A single comparatively short straight tuft of rigid bristles 27 is secured in the socket. The bristles are embedded or rubber set in preferably a hard rubber base 28 which is preferably forced into the socket under pressure so as to so snugly fit in the socket as to positively prevent accidental dislodgment of

the tuft. The hard rubber base 28 extends substantially one-half the length of the tuft and assists in preventing any tendency of the bristles thereof to spread laterally. The purpose of the base 28 is to maintain the bristles in intimate contact with each other throughout their entire length, and by extending for a considerable length along the bristles the base permanently secures the bristles against any tendency to spread and binds or clamps the bristles so tightly together as to positively prevent any yielding of the bristles of the tuft to destroy the unitary non-distortable characteristic of the tuft.

The tuft 27 may be formed of badger bristles, boar bristles, wood fiber bristles, or other material of sufficient rigidity to resist lateral spreading apart. In practice, the preferred embodiment of the bristle element is constructed so compact as to nearly resist penetration of a pin or needle laterally between the bristles. The tuft therefor is characterized by exhibiting non-extensibility as well as non-spreading of the tuft. Consequently, an unyielding or distortionless tuft is produced which will maintain its contour as well as longitudinal and transverse diameters substantially without change during the application of the great pressure necessary to effectively remove tartar and like accumulations which have hitherto required the use of cutters or abrasive tools to effect dislodgment thereof.

The tuft 27 in the present embodiment is shown as being substantially cylindrical and having a substantially flat working surface. However, it is not intended to limit the construction of the tuft to this particular shape, as in practice the tuft may be formed with a wedge shaped working surface or with a conical working surface or with any other shaped working surface which may prove effective to effect entry of the tuft in crevices of and between the teeth.

It is well known to those skilled in the art of dentistry that ordinary tooth brushes comprising yielding bristles of one-half inch or more in length fail to function when pressure greater than 12 pounds is applied thereto. The bristles have a hinge action, that is, they yield or spread apart laterally when great pressure is applied and no longer perform useful work. Furthermore, the handles of ordinary tooth brushes break under pressures above 12 pounds. In contrast to this, my improved device actually begins its effective work when under pressure from 12 to 20 pounds or more, since the comparatively stiff unyielding tuft of bristles does not yield laterally under such great pressure, that is, there is absent from the unitary tuft element any hinge effect whatsoever.

My tuft element 27, it will be stated, in

practice, is exposed beyond the base 28 approximately $\frac{1}{8}$ inch in length.

In Fig. 3 there is shown a modified form of the invention in which I employ an ordinary stock tooth brush handle 29. The cleaning and polishing tuft 30 constructed as above described is in this instance rubber set or provided with a hard rubber or similar base 31 which confines the bristles in a solid compact mass. The base is forced under pressure into a socket 32 formed in the head 33 of the shank 29. Thus the cleaning and polishing component is rigidly associated with the shank as a unit therewith and is non-removable therefrom.

In Fig. 5 there is shown a further modification of the invention. In this modified form, 33 designates the grip or shank which is somewhat similar in contour to the shank 10 shown in Fig. 1 with the exception that it is solid throughout. The shank is equipped at one end with a mirror 34 preferably, although the mirror may be dispensed with if desired. The cleaning and polishing element 35 is in this modification similar in construction to the cleaning and polishing element shown in Fig. 2, the preferred form of the invention, that is, the element is detachable from the shank to permit of renewal when worn out. However, the element may be rigidly and non-detachably secured in the shank 23 in much the same manner as the element is secured in the modified form of the invention illustrated in Fig. 4.

In the modified forms shown in Figs. 3 and 5, the shank is less expensive to manufacture, while the virtues residing in the single unitary stiff tuft of non-bendable or non-hinging bristles, is retained in the product.

By referring again to Figures 1 and 2, it will be seen that a cap 35 is applied to the end of the shank 10 and constitutes a magazine for storage of a spare cleaning and polishing element or a plurality of such elements. The magazine is preferably provided in the end wall with a mirror 36. Preferably, the magazine is threaded onto the butt end of the shank, as shown at 37, although a slip or friction joint may be substituted for the threaded joint if desired. As a result of this construction, all the necessary members for thoroughly cleaning and polishing the teeth are associated in a single unitary assembly, such as dental floss, spare cleaning and polishing elements, as well as the attached cleaning and polishing element in the head of the shank.

In Fig. 6 there is shown a slightly modified form of the invention in which the axial recess 38 in the shank 39 constitutes a magazine for the storage of spare cleaning and polishing elements, while the cap 40 constitutes a magazine for the storage of a metal dental floss carton 41. A mirror 42 is disposed in the butt end of the shank in this embodiment

and also a mirror 43 is disposed in the end wall of the cap 40.

While the various shanks are illustrated each with a head thereon which receives the bristle element at substantially a right angle to the axis of the shank, nevertheless it is not intended to limit the invention to this angular relationship of the shank and bristle element. In Fig. 7 the bristle element is shown disposed at an oblique angle to the axis of the shank, the shank 44 in this embodiment terminating in a head 45 which receives the threaded stem 46 of the socket 47 at an angle of substantially 45 degrees with respect to the axis of the shank whereby the bristle tuft or component 48 is disposed with its flat working face transversely with respect to the axis of the shank rather than substantially parallel thereto, as in the preferred forms illustrated.

By referring again to Fig. 1, it will be seen that there is shown by broken lines a case to house the cleaning and polishing tuft and prevent contamination thereof. This case may be applied to all of the modified forms as well as the preferred form of the invention and may be removably joined to the shank by means of a slip or friction joint or by screw threads or otherwise.

Having thus described the invention, I claim:

1. In a tooth cleaning and polishing device, a shank terminating at one end in an enlarged grip having an axial recess in the end thereof, said recess providing a magazine for dental floss, a cap closing said recess and having an opening through which the dental floss may be drawn from the supply in the magazine, a cutter on said cap, a second cap housing the first named cap and adapted to protect the end of the dental floss from contamination, and a short compact stiff tuft of bristles removably carried by said shank at the opposite end thereof from said magazine.

2. In a tooth cleaning and polishing device, a shank terminating at one end in an enlarged grip having an axial recess in the end thereof, said recess forming a magazine, a cap closing said recess, a second cap housing the first-named cap and forming a magazine, and a short compact stiff tuft of bristles removably carried by said shank at the opposite end thereof from said magazines.

In testimony whereof I affix my signature.

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