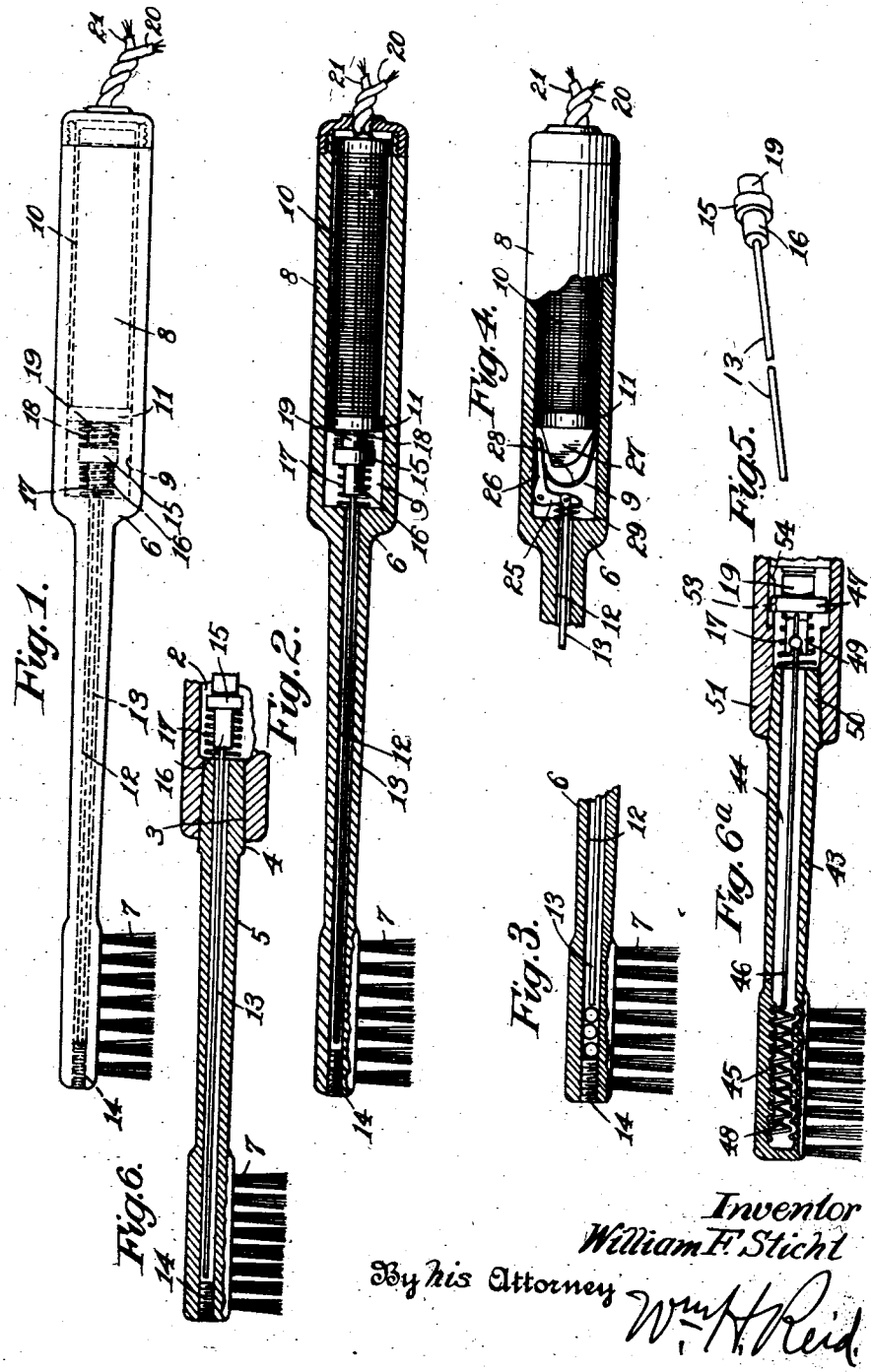
Feb. 26, 1929.

1,703,642

W. F. STICHT

VIBRATING TOOTHBRUSH

Filed Jan. 29, 1927



Inventor
William F. Sticht
By his Attorney
Wm. H. Reid.

Patented Feb. 26, 1929. 1,703,642

UNITED STATES PATENT OFFICE.

WILLIAM F. STICHT, OF WEST NEW YORK, NEW JERSEY.

VIBRATING TOOTHBRUSH.

Application filed January 29, 1927. Serial No. 164,442.

This invention has reference to tooth-brushes and has for its object to provide a tooth-brush with means for producing an extremely rapid vibration on the handle or body portion thereof, so that a kind of therapeutic or massage effect is produced, that will be imparted to the gums of the user.

Another object of the invention is to provide means for easy adjustment of the vibration and to take up for wear in the impact portion.

A further object of the invention is to provide a device of this character in which the vibration mechanism is mounted in a detachable handle portion, whereby the bristle portion can be renewed.

Another object of the invention is to provide a device of this character in which the means for affecting the vibration is mounted at a separate place and a flexible shaft is detachably connected with the tooth-brush.

In the accompanying drawing showing embodiments of my invention:

Fig. 1 is a side elevation of one form of the device indicating the parts in normal position.

Fig. 2 is a longitudinal section showing the stem or impact member as retracted by the magnet.

Fig. 3 is a partial view showing loose objects adjacent the stem end.

Fig. 4 shows a modification.

Fig. 5 shows the plunger as set forth in Fig. 2.

Fig. 6 shows a similar arrangement with the detachable handle portion.

Fig. 6ª shows a modified stem arrangement.

As shown in Figs. 1, 2 and 5 the handle 6 is provided with a bristle portion 7 at one end, and with a chamber portion 8 at the other end containing a large chamber 9. In this chamber 9 is arranged a magnetic vibrator containing a coil and provided with terminal wires leading to any suitable source of electric current, such as an ordinary light socket or other tap. This vibrator is arranged to cause a rapid succession of blows or impacts against the body of the handle, and preferably will have these blows applied at the bristle portion of the handle, so that the effect will be transmitted through the bristles to the gums and teeth of the user. In the arrangement shown the vibrator itself is placed in the chamber 9 and has an extension projecting through the handle to the bristle end. A suitable coil 10 is shown enclosing the magnetic core 11. A reduced handle portion 6 is provided with a bore 12 into which extends a stem 13, whose forward extremity terminates adjacent the bristles, and may contact with a stop member in the form of metal stud 14 that is shown as threaded to be adjustable in the end of the bore 12. At the rear end of this stem is attached the armature 15 having a reduced portion 16 to receive a coil spring 17 that will normally push the stem and head 15 to the rear. The rear end of the head 19, which is of magnetic material, is attracted by the core 11 of the magnet when energized. A second spring 18 is arranged between the head 15 and the reduced portion 19 that will have the effect of holding this head or armature normally spaced a short distance from the core 11, and the magnet, but the other spring 17 is of sufficient tension to prevent the spring 18 from forcing the stem against the stop 14. The coil 10 has the terminals 20 and 21 for the electric current.

In Fig. 3 I show loose objects between the end of the stem 13 and the block 14, such as balls 22. This will tend to increase the vibratory effect.

In Fig. 4 a slight modification is shown in which a bent lever 25 is mounted on a pivot in the casing, has one end pivoted to the stem 13. The other arm 26 of the lever acts as the armature to be attracted by the extension 27 of the magnetic core. A plate spring 28 tends to press the armature end away from the magnet, and a coil spring 29 tends to shift the lever in the same direction, but the spring 29 will hold the stem normally to the rear out of contact with the stop pin 14. The plate spring when the lever is attracted will resist advancing the stem, such magnetic force over-balancing the force of the two springs, and causing the stem 13 to strike the impact pin 14.

In use the device simply has the terminals connected with a source of current such as electric light socket, preferably of alternating current. This will cause pulsating magnetic force in the core of the magnet. When the armature 15 is first attracted the spring 18 will become compressed while the other spring will expand. Then on reversal of current the armature will be repelled and advanced in the opposite direction with also the stem, and this force augmented by the compressed spring 18 will drive the stem against

the plug 14. The next reversal will cause return of the stem and armature by reaction of the compressed spring 17 that was put under compression when the stem advanced to engage the stop. This operation will be repeated with great rapidity and a very quick succession of blows or impacts are imparted to the stem 14. This of course will cause these impacts to be received by the handle member, and delivered in close proximity to the bristle portion of the tooth-brush. Such operation can take place when the tooth-brush is held against the teeth and gums, and even during the brushing operation by the user. This will stimulate the tissues of the gums and cause an increase in the circulation in the blood vessels, and a general strengthening of these parts will result.

In Fig. 6 is shown a detachable portion for the vibrator device, in which the chamber portion 2 has a large tapered bore 3, into which projects the tapered end portion 4 of the handle 5. The stem 13 will remain attached in the chamber portion 2 and simply be withdrawn from the brush portion when it is removed.

In Fig. 6[a] another arrangement of the vibrator stem is shown in which the brush portion 43 has a bore 44 that at the end portion 45 is provided with a screw thread. The stem 46 that is connected with the vibrator head 47 is provided with a helix 48 that extends into the threaded bore 45, but has a loose connection therewith, whereby this helix can move back and forth a limited distance without turning. When the stem is reciprocated by the vibrating magnet head the helix will alternately engage the opposite walls of the threaded bore and make impact throughout a comparatively large area or surface. This will increase the effect, at the same time there will not be such wear as might result where the end of a stem engaged a stop. The other end of the stem 46 has a head 48 detachably engaging a split socket 49 connected with the head 47. The tube portion 46 has a tapered end 50 that has a tight fit in the end portion 51 of the chamber handle to be detachable. At the same time the stem by this head will become detached from the spring socket. The head 47 has a slot 53 into which projects an extension 54 from the handle portion.

What I claim is:

1. A tooth-brush provided with a chamber in the handle, a bore leading from the chamber to the bristle portion, a magnetic vibrator in the handle chamber, and a stem on the vibrator extending into the said bore and which will produce rapid impacts against the end portion of the bore at the bristle portion.

2. A tooth-brush provided with a chamber in the handle, a bore leading from the chamber to the bristle portion, a magnetic vibrator in the handle chamber, a stem on the vibrator extending into the said bore and which will produce rapid impacts against the end portion of the bore at the bristle portion, and a loose object in the bore engaged by the stem end.

3. A tooth-brush provided with a chamber in the handle, a bore leading from the chamber to the bristle portion, a magnetic vibrator in the handle chamber, a stem on the vibrator extending into the said bore and which will produce rapid impacts against the handle, and a spring to control the impacts.

4. A tooth-brush provided with a chamber in the handle, a bore leading from the chamber to the bristle portion, a magnetic vibrator in the handle chamber, a stem on the vibrator extending into the said bore and which will produce rapid impacts against the end portion of the bore at the bristle portion, and a spring arranged to normally press the stem toward the bore end.

5. A tooth-brush provided with a chamber in the handle, a bore leading from the chamber to the bristle portion, a magnetic vibrator in the handle chamber, a stem on the vibrator extending into the said bore and which will produce rapid impacts against the end portion of the bore at the bristle portion, a spring arranged to normally press the stem toward the bore end, and a second spring tending to move the stem toward the magnet.

6. A tooth-brush provided with a chamber in the handle, a magnetic vibrator in the handle chamber arranged to produce rapid impacts against the handle, and a pair of differential springs on the vibrator.

7. A tooth-brush provided with a chamber in the handle, a bore leading from the chamber to the bristle portion, a vibrator in the handle chamber, a stem on the vibrator extending into the said bore and which will produce rapid impacts against the end portion of the bore at the bristle portion.

8. A tooth-brush provided with a chamber in the handle, a bore leading from the chamber to the bristle portion, a vibrator in the handle chamber, a stem on the vibrator extending into the said bore and which will produce rapid impacts against the end portion of the bore at the bristle portion, and a loose object in the bore engaged by the stem end.

Signed at New York city, N. Y., January 26, 1927.

WILLIAM F. STICHT.