No. 867,063. PATENTED SEPT. 24, 1907.

O. C. LILLIE.

ROTARY TOOTH BRUSH.

APPLICATION FILED FEB. 10, 1906.

Fig. 1.

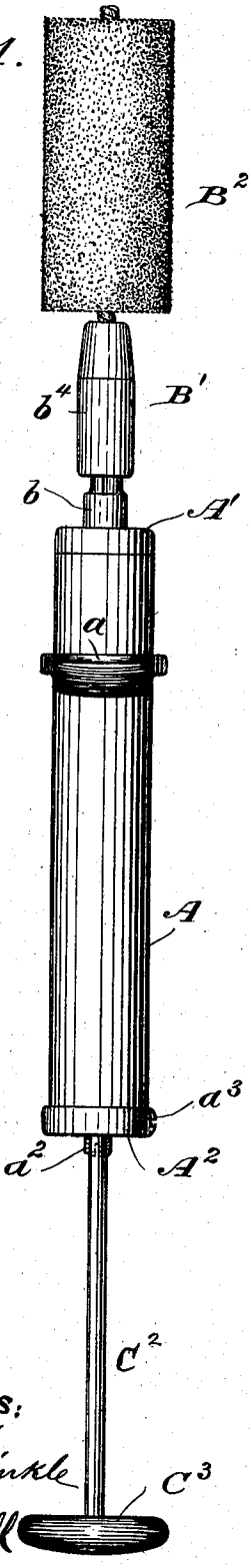
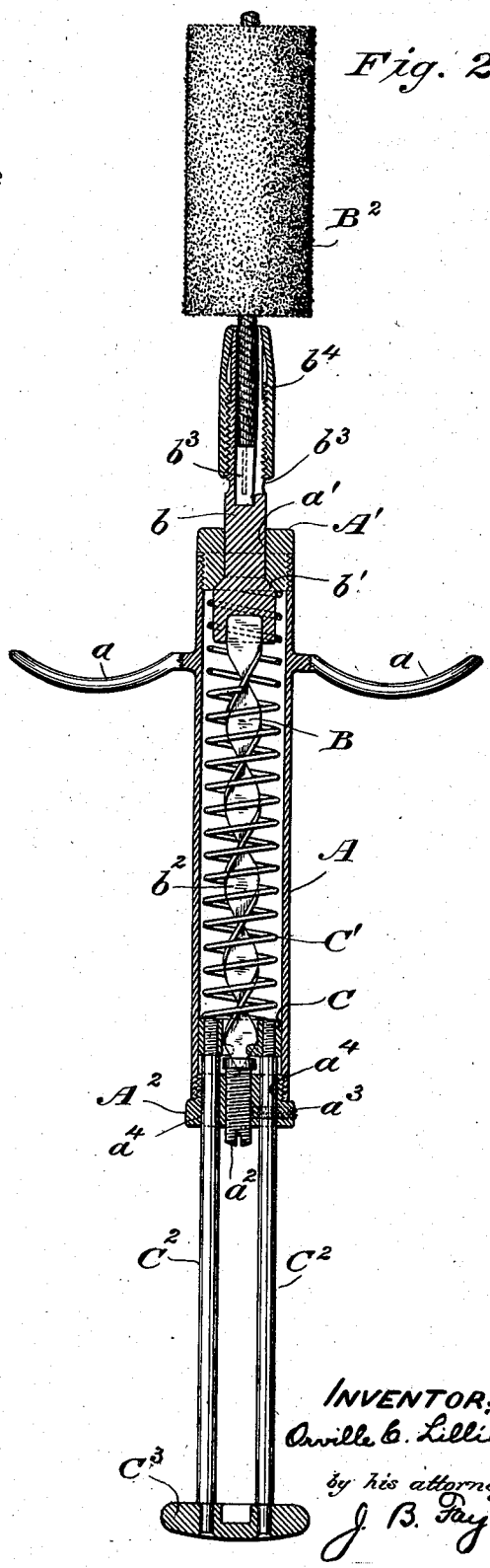


Fig. 2.



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ORVILLE C. LILLIE, OF CONNEAUT, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, OF THREE-TENTHS TO GEORGE M. WHITNEY, OF CONNEAUT, OHIO.

ROTARY TOOTH-BRUSH.

No. 867,063. Specification of Letters Patent. Patented Sept. 24, 1907.

Application filed February 10, 1906. Serial No. 300,373.

To all whom it may concern:

Be it known that I, ORVILLE C. LILLIE, a citizen of the United States, and a resident of Conneaut, county of Ashtabula, and State of Ohio, have invented a new and useful Improvement in Rotary Tooth-Brushes, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to improvements in tooth brushes of the rotary type and particularly to brushes of this character in which the rotation of the brush is effected by the employment of a reciprocatory member engaging with a screw-threaded spindle, particular attention being devoted to the use of fixed finger pieces diposed well forward on the handle so that the latter will be effectively steadied and the surface well brushed over which the brush is used.

Said invention consists of means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing: Figure 1 represents a side elevation of my improved rotary tooth brush; and Fig. 2 represents a central longitudinal section of the same taken on a plane at right angles to the plane of the drawing in Fig. 1.

As is readily apparent from an inspection of these two figures, my brush comprises as a base member a tubular handle A. This handle is provided with two oppositely projecting finger-pieces *a a* near its forward end, such finger-pieces being either integral with or else solidly attached to the handle. The ends of the handle are closed by caps A′ A^2 respectively. Of these, the one, A′, at the forward end is provided with an aperture *a′* forming a bearing for the projecting end *b* of a spindle B that is rotatably mounted in such handle. The aperture *a′* is reamed out on the inner side of the cap and the spindle B is formed with a corresponding shoulder *b′* registering therewith. The other end of spindle B is journaled in an adjustable end-bearing formed by a set screw a^2 centrally mounted in cap A^2 and adapted to be locked against rotation by a second set screw a^3. The portion of spindle B intermediate of the ends of the handle is formed with a screw thread b^2 preferably of the form shown.

Fitted within handle A so as to be freely movable longitudinally thereof is a block or nut C engaging the threaded portion of spindle B. Nut C is normally retained in the rear end of the handle by a helical spring C′ disposed as shown between it and the cap A′ that closes the other end of the handle. Such nut C is adapted to be moved against spring C′ by means of actuating rods C^2 mounted therein or otherwise attached thereto and slidably working in openings a^4 in the cap A^2, such rods and openings, where two in number, being disposed on opposite sides of set-screw a^2. The nut C may obviously not only be reciprocated by means of such actuating rods, but is also held by means of them against rotation within the handle, so that the effect of such reciprocation is rotation of the spindle B. A cap C^3 mounted upon the other ends of nut-actuating rods C^2 serves as a thumb-piece, whereby the tooth brush is adapted to be readily grasped in the hand, the thumb resting on such cap C^3, while the first and second fingers respectively rest against finger-pieces *a a* at the forward end of the handle.

The forward end *b* of spindle B, that projects through the bearing in cap A′, is provided with a chuck B′ for holding the base or stem of the rotary brush B^2. Such chuck may be of any approved design, the simple form shown, involving merely a plurality of jaws b^3 threaded on their outside to receive a sleeve b^4, being preferred. The brush B^2 which may be any one of a variety of forms, is thus made easily detachable from the spindle.

In operation, after affixing a rotary brush B^2 of the kind desired, the device as a whole is grasped between the thumb and fingers of either hand in the manner above set forth. By alternately contracting and expanding the hand the spindle with attached brush will be rapidly rotated, first in one direction then in the other. Pending such operation, the brush may be accurately directed to, and steadily retained in, any desired position in the mouth, since by virtue of the position of fixed finger-pieces well forward on the handle such handle is at all times firmly held. I would also call attention to the details of construction and particularly to set screw a^2 which forms an adjustable end-bearing for spindle B as has been pointed out; by the fewness and simplicity of parts a light and easily manipulated device is produced, and by the adjustable feature noted provision is made for taking up wear in the only place where it can occur. At the same time all the mechanism of the brush, little though it be, is with a proper regard to sanitary conditions, tightly inclosed within case A.

Having thus described my invention in detail, that which I particularly point out and distinctly claim is:—

1. In a tooth brush, the combination of a tubular handle provided with finger-pieces; caps closing the ends of said handle; a spindle, having a screw-thread, journaled in one of said caps and having an adjustable end-bearing in the other thereof, one end of said spindle projecting without said first-named cap; a rotary brush mounted upon such projecting spindle end; a nut longitudinally movable in said handle and engaging said spindle; a

helical expansion spring interposed between said nut and said first-named cap and normally retaining said nut against said last named cap; rods slidably mounted in such cap and attached at their inner ends to said nut; and a thumb-piece mounted on the outer end of said rods.

2. In a tooth brush, the combination of a tubular handle, provided with finger-pieces near its forward end; a cap, having an aperture forming a bearing, fitted to such forward end; another cap, having a set-screw centrally mounted therein and forming an adjustable end-bearing, fitted to the rear end of such handle; a spindle, having a screw-thread, journaled in such bearings and projecting without said first-named cap at one end; a rotary brush mounted upon such projecting spindle end; a nut longitudinally movable in said handle and engaging said spindle; a helical expansion spring normally retaining said nut against said last-named cap; two rods slidably mounted in such cap and attached at their inner ends to said nut; and a thumb-piece mounted on the outer ends of said rods.

Signed by me, this 1st day of February 1906.

ORVILLE C. LILLIE.

Attested by—
JNO. F. OBERLIN,
G. W. SAYWELL.