

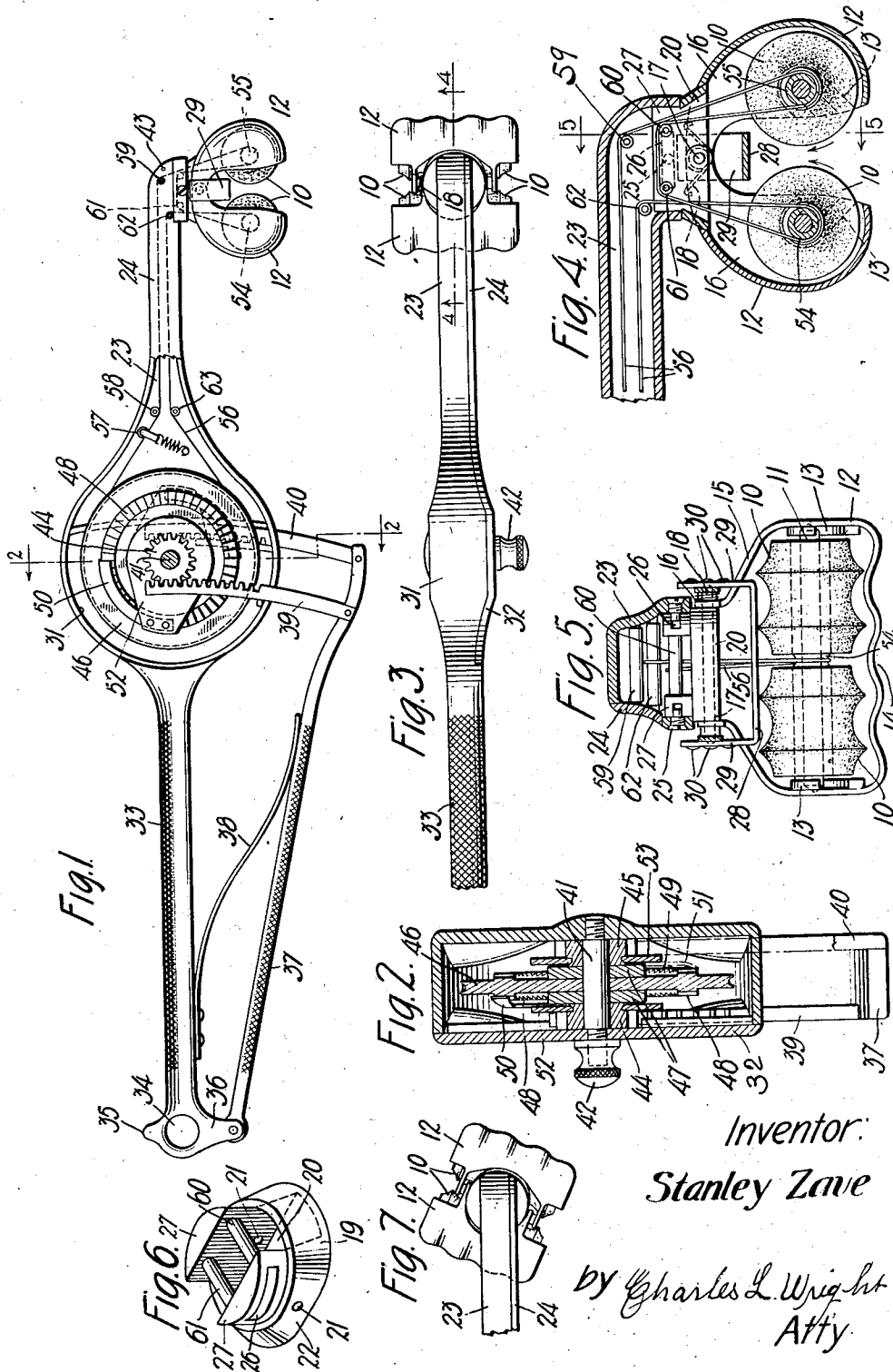
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TOOTHBRUSH

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UNITED STATES PATENT OFFICE.

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TOOTHBRUSH.

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To all whom it may concern:

Be it known that I, STANLEY ZAVE, a citizen of the Republic of Lithuania, and a resident of Richmond Hill, in the county of Queens 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 and has as one of its objects to provide a brush capable of effectively cleaning the teeth mechanically, on both the inner and outer sides simultaneously, and with a minimum of effort.

A further feature is in the provision of a pair of rolling brushes, that fit the contour of the teeth and which are caused to positively rotate by a simple movement of the operator's fingers as engaged upon the brush handle.

Another aim is to provide a stop limiting the range of brushing action to the length of the teeth, the stop being adjustable at will, and the brush carrying head self-adjustable.

A still further object is to produce a pair of revoluble brushes, separable against spring closing pressure, by which teeth of widely varying sizes are automatically provided for.

These and other like important and practical purposes are accomplished by the novel construction, arrangement and combination of parts hereinafter described and shown in the accompanying drawing, constituting a material part of this disclosure and in which:—

Figure 1 is a side elevational view of an embodiment of the invention, a portion of the cover being removed to show the construction.

Figure 2 is a transverse sectional view taken on line 2—2 of Figure 1, and drawn to an enlarged scale.

Figure 3 is a fragmentary top plan view of Figure 1.

Figure 4 is an enlarged partial longitudinal sectional view taken on line 4—4 of Figure 3.

Figure 5 is an enlarged transverse sectional view taken on line 5—5 of Figure 4.

Figure 6 is a perspective view of one of the details of construction.

Figure 7 is a partial top plan view, similar to Figure 3, but showing the brush carrying head at an angle to the stem.

lar to Figure 3, but showing the brush carrying head at an angle to the stem.

Stated in general terms, the device consists of a pair of revolving brushes arranged on parallel axes, spring pressed towards each other to receive a tooth or teeth therebetween and provided with a stop limiting the distance the brushes may be passed over a tooth.

These brushes are disposed within a casing or guard to protect the lips, tongue and cheeks and are rotated by an endless driving belt, passing through the brush carrying head, which is self-adjustable to conform with any angle required.

The belt is substantially continuously driven by mechanism contained within the body of the device and actuated by merely pressing a pivoted lever-like portion of the handle toward the main part thereof.

Referring more in detail to the drawing, the numeral 10 designates in general the brushes, the peripheries of which are sinuous and conformable to a tooth structure. These brushes are fixed upon spindles 11 having sharp conical points to engage in corresponding recesses in the end walls of casings 12, provided with slotted reenforcing plates 13, which permit the brushes to be easily removed when desired.

The fronts 14 of the casings are formed undulatingly, as shown, to conform in general to the shape of the brush which is closely adjacent. The rear portions 15 of the casings are bent convergingly and their ends 16 extended to reach past one another to receive a pivot 17 on which they are hingedly engaged at both ends.

A coiled torsion spring, 18, encircles one end of the pivot 17, the ends of the spring being bent to urge the casings or guards 12, and therefore the brushes carried by them, inwardly towards each other, this contractible effect being limited by the bevelled portion 19 of a crown 20, through the opening 21 of which this pivot passes, the crown being flattened on opposite sides 22 to form a bearing for the casing guard ends 16.

The crown 20 is held in the brush frame 23 and its cover 24 by pivot screws 25 set therein, the points of the screws entering slots 26 in raised segments 27 extending integrally from the crown, the arrangement being such as to allow the crown and casing

to turn limitedly, on the axis of the crown within the frame.

A stop 28 is provided with rearwardly bent right angular arms 29 which are formed to present spaced indentations in their inner surfaces, the metal being forced outwardly as at 30, and these indentations are engageable with the conical points of the pivot 17, to be held floatingly therein and adjustable with respect to the several indentations, as will be understood, thereby permitting adjustment of the stop.

The frame 23 is of generally channel shaped cross section, having a curved outer end and open at one side to receive the crown 20, held to turn limitedly therein by the screws 25.

The frame is expanded to form a hollow body 31 increased in width as shown and over which is disposed an expanded portion 32 of the cover 24.

A handle 33 is rigid with the body 31, the handle being semi-circular in cross section and terminates in a head having an opening 34, a projecting knob 35 serving to prevent the hand from slipping off.

Opposite the knob is a forked lug 36 in which is pivoted a lever 37, pressed normally outward by a flat spring 38, this handle and lever being preferably corrugated to provide an effective grip.

Attached rigidly to the free end of the lever 37 are curved rack bars 39 and 40, these bars having teeth upon their respective inner adjacent edges.

A stud 41 is fixed axially in the body 31, one of its reduced ends passing through the cover plate 32, and is provided with a clamp nut 42, the cover being further held, at its outer end by a screw 43.

Loosely mounted on the stud 41 are two pinions 44 and 45 closely against the side walls of the hollow body and in register with the bars 39 and 40, the teeth of which engage the teeth of the pinions.

Centrally on the stud is a grooved wheel 46 and intermediate the sides of the wheel and hubs of the pinions are spacing washers 47. On the sides of the wheel are ratchet teeth 48 and 49 engageable by arcuate spring pawls 50 and 51 fixed on the ends of sector plates 52 and 53 secured respectively on the hubs of the pinions 44 and 45.

As the teeth of the ratchets 48 and 49 are arranged in opposed relation, it will be seen that the wheel 46 is propelled in a clockwise direction, both upon pressing the lever 37 inwardly and when it is returned by the spring 38, thus giving a substantially continued forward movement.

Fixed on the spindles 11, centrally between the ends of the brushes 10 are small pulleys 54 and 55 by which the brushes are driven.

An endless cord or belt 56 is trained over

the pulley 46, one of its ends passing under a spring tightener 57, thence passing guide rollers 58 and 59 to the brush pulley 55, thence over guide rollers 60, 61, thereafter being crossed and passed over the other brush pulley 54, thence to guide rollers 62, 63 to the wheel 46.

From the foregoing it will be seen that the brushes are caused to rotate, at a rapid speed, in reverse directions upon manipulation of the handle and that their movement is essentially constant and unvarying in direction, affording a scrubbing action not possible of attainment with an ordinary brush.

The foregoing disclosure is to be regarded as descriptive and illustrative only, and not as restrictive or limitative of the invention, of which obviously an embodiment may be constructed including many modifications without departing from the general scope herein indicated and denoted in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A tooth brush comprising a pair of rotatable brushes, arranged on spaced parallel axes, manual means for rotating said brushes co-incidentally in reverse directions, and means for normally constraining said brushes towards each other.

2. A tooth brush comprising a pair of rotatable brushes, arranged in spaced parallel relation, manual means for rotating said brushes co-incidentally in reverse directions, a guard casing for each brush, said casings being pivoted together, and a spring tending to urge the brushes together.

3. A tooth brush comprising a hollow body, having a hollow stem at one end and a handle at the other, a pair of guard casings pivoted at the end of said stem, brushes rotatable on parallel axes in said casings, a motor in said body, means combined with the handle for actuating said motor, and driving connections between said motor and each of said brushes.

4. A tooth brush comprising a hollow body, having a hollow stem at one end and a handle at the other, a pair of guard casings pivoted at the end of said stem, brushes rotatable on parallel axes in said casings, a stop limiting the entrance of teeth between said brushes, means to retain said stop in adjustment, a pulley in said body, ratchets for rotating said pulley, a lever pivoted to said handle for actuating said ratchets, and driving connections between said pulley and each of said brushes.

5. A tooth brush comprising a pair of sinuous rolling brushes adapted to engage both sides of a tooth simultaneously, a handled body in which said brushes are mounted to move towards and from each other, re-

silent means pressing said brushes towards each other, a stop limiting the relative movement of the brushes, and means combined with the handle to rotate said brushes in opposite directions coincidently.

5 6. A tooth brush comprising a body having a hollow stem open at one side at its end, a crown partially rotatable in the stem opening, a pair of casings pivoted to said crown, a brush revoluble in each casing, means permitting removal of each brush individually, and means for rotating said brushes simultaneously.

10 7. A tooth brush comprising a body having a hollow stem open at one side at its

end, a crown partially rotatable in the stem opening, a pair of casings pivoted to said crown, a brush revoluble in each casing, a handle on said body, a spring pressed lever pivoted to the handle, a pulley in said body, operative connections between said lever and pulley, whereby the pulley is rotated in one direction irrespective of the movement of the lever, an endless drive belt between said pulley and brushes, and means for maintaining said belt in a taut condition. 20 25

In testimony whereof I have signed my name to this application.

STANLEY ZAVE.