

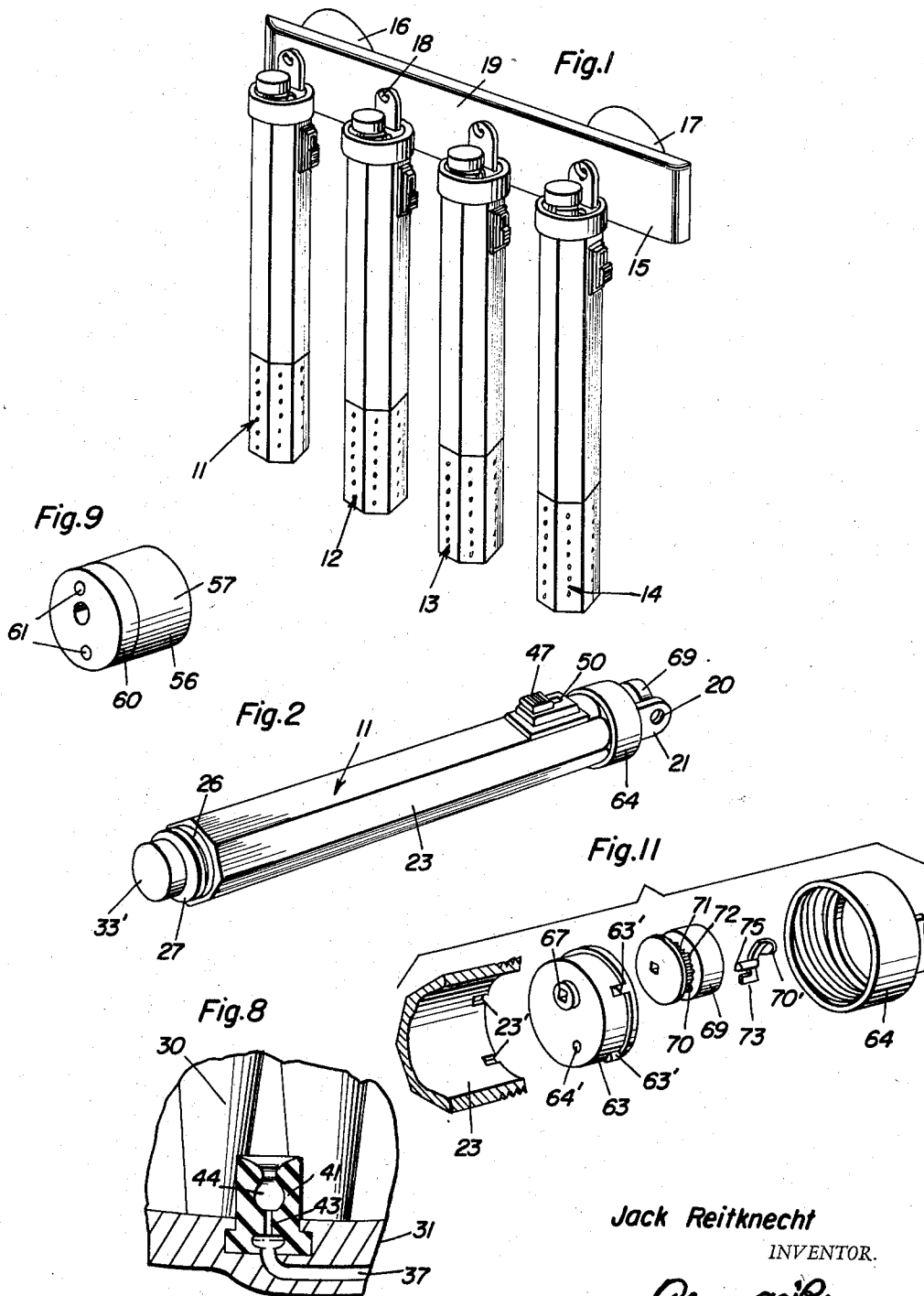
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J. REITKNECHT
FOUNTAIN TOOTHBRUSH

2,908,925

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2 Sheets-Sheet 1



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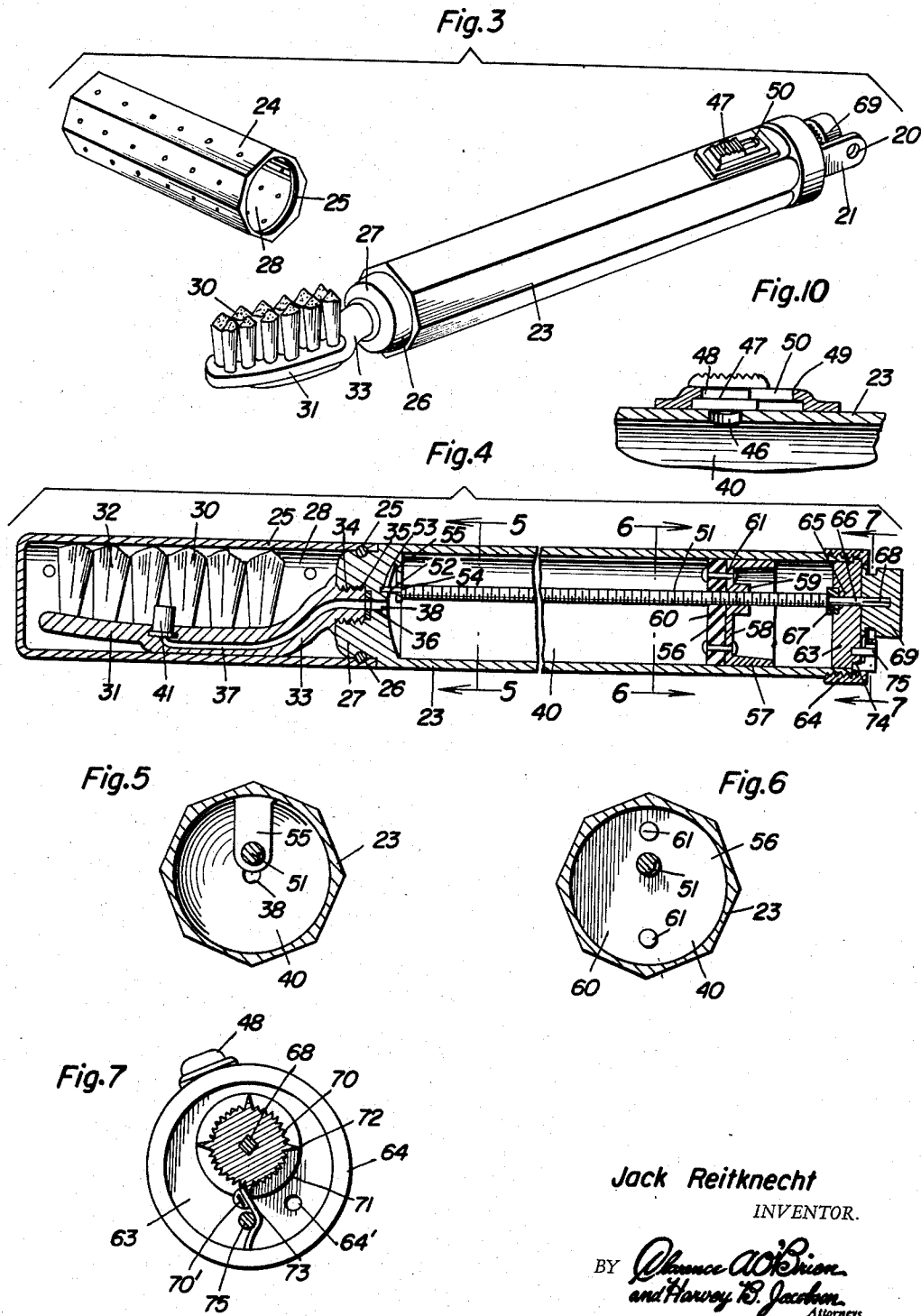
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1

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FOUNTAIN TOOTHBRUSH

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2 Claims. (Cl. 15-137)

This invention relates to toothbrushes and more particularly to a fountain toothbrush.

An object of the invention is to provide a novel, practical fountain toothbrush that is completely sanitary and which is very smoothly operative.

A fountain toothbrush constructed in accordance with the invention is neat in appearance and due to the inherent construction, can be made thin and light so that it is easily handled and capable of giving long, satisfactory use.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of a group of toothbrushes constructed in accordance with the invention;

Figure 2 is a perspective view of one of the brushes in Figure 1.

Figure 3 is an exploded perspective view showing the fountain toothbrush and its closure cap.

Figure 4 is a longitudinal sectional view of the toothbrush in Figure 2.

Figure 5 is a transverse sectional view taken on the line 5-5 of Figure 4.

Figure 6 is a transverse sectional view taken on the line 6-6 of Figure 4.

Figure 7 is a transverse sectional view taken on the line 7-7 of Figure 4.

Figure 8 is an enlarged fragmentary sectional view showing the toothpaste discharge nozzle in the head of the toothbrush.

Figure 9 is a fragmentary perspective view of the piston in the toothbrush.

Figure 10 is an enlarged sectional view showing the toothpaste filler opening in the toothbrush handle.

Figure 11 is a fragmentary exploded perspective view of a portion of the toothbrush.

In the accompanying drawings there is a group of toothbrushes 11, 12, 13 and 14, each neatly hung on a rack 15 that is adapted to be fastened to any supporting surface by conventional fasteners, for instance suction cups 16 and 17. The rack has a plurality of pegs 18 extending from one surface of the body 19 thereof, and these are engaged in opening 20 of hangers 21 of each of the toothbrushes. Since each toothbrush is identical, the toothbrush 11 is shown in detail in Figures 2-11.

Typical toothbrush 11 has a handle 23 and a perforated closure cap 24 separably attached to the handle by being frictionally fitted therewith but preferably has a groove 25 to engage with ring 26 on the stud 27 at one end of handle 23. Handle 23 is elongate with a surface octagonal although other shapes and/or surface ornamentation can be used. The closure cap has a cavity 28 within which to accommodate the head 30 of the toothbrush. The head has a backing 31 from which tufts 32

2

of bristles extend. A short shank 33 is curved and extends from the backing. There is a threaded end 34 of the shank which is adapted to fit in the threaded bore 35 (after removing plug 33') of the part 27 of the toothbrush so that the head is separably carried by the handle and can be removed and replaced for any reason whatsoever. Bushing 36 is at the bottom of bore 35 and is engaged by the end of the threaded part of shank 34 in order to form a seal.

Passageway 37 extends through backing 31 and shank 33 and has a continuation 38 of the passageway formed as an extension of bore 35 to register passageway 37 with chamber 40 in the handle 23 of the toothbrush. Nozzle 41 is at the opposite end of the passageway and is made of rubber or synthetic resinous material. It is inset or otherwise attached to the backing and has an axis of discharge approximately parallel to the tufts of bristles. The internal construction of the nozzle 41 is seen in Figure 8 and includes a small diameter bore 43 registered with passageway 37 and registered with a venturi 44 that opens in the region of the bristles tufts to discharge toothpaste thereon.

Chamber 40 is adapted to contain toothpaste, and the chamber is charged through inlet port or opening 46 in the side wall of the handle. Slide valve 47 consisting of a slide having a groove 48 between the upper and lower sections thereof, is slidable between the valve open and valve closed positions. The slide valve is constrained in its travel by being connected with guide 49, the latter consisting of a small plate having a center raised part with a slot 50 in it. The groove 48 is engaged with the walls defining slot 50 so that the travel of the slide valve is constrained by the shape of the slot.

The means for feeding the toothpaste are seen best in Figure 4. They consist of screw 51 having a reduced pintle 52 at one end and mounted for rotation in a pair of openings 53 and 54, opening 53 being in part 27 of the handle while opening 54 is in a small depending flange 55 that extends partially across chamber 40 near stud 27. Screw 51 has a piston 56 thereon, the piston made of a skirt 57 and piston head 58, the latter having a boss 59 through which an internally threaded opening is formed. The internal threads of the opening in boss 59 are engaged with the threads of screw 51 so that when the screw is rotated, the piston is moved axially along the screw, much in the nature of a nut. The piston cannot rotate in chamber 40 since screw 51 is laterally displaced from the longitudinal axis of chamber 40; and there is a compressible disk 60 attached, for instance by rivets 61, to the head 58 of the piston. The disk is of sufficient size to reasonably tightly contact the inner surface of the side walls of chamber 40 and also seal the threads of screw 51.

The outer end of the toothbrush handle has a closure plate 63 inset in it and held in place by threaded clamp ring 64 engaged with a threaded end of the handle 23. Matching slots 23' and lugs 63' on handle 23 and plate 63 engage when the plate 63 is mounted at the end of chamber 40. Vent 64' is in plate 63 to prevent the forming of a vacuum behind the piston 56. Passage 65 extends through plate 63 and has a non-threaded part or shank 66 of the screw mounted for rotation therein. Seal 67 is on part 66 of the screw and is disposed in a small well in closure plate 63. Shank 66 has a non-circular end 68 on which knob 69 is fitted to facilitate rotation of screw 51. A brake 70 is operatively connected with the knob 69, and is composed of a plurality of groups of short teeth 71 spaced circumferentially by longer teeth 72. A spring finger 73 having one end 74 (Figure 4) anchored in a small opening in plate 63, has its other end in contact with teeth 71 and 72. A reaction pin 75 is attached to plate 63 and bears against

3

a substantially V-shaped part of spring 73 to provide a reaction against which the spring functions when the knob 69 is turned. Finger or thumbnail grip 70' in the form of a grooved plate, is fixed to the finger 73 to release the brake for disassembly or to enable the piston to be returned to start and permit refill from any supply of toothpaste e.g. a pressure can or tube. The brake 70 prevents any motion of the screw 51 unless a positive force is applied in the proper direction to rotate the screw and feed a charge of toothpaste, the size of the charge determined by the number of clicks when knob 69 is turned.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A fountain toothbrush comprising a hollow handle having a toothpaste storage chamber, a brush head having a backing and an externally threaded shank, said hollow handle having an end wall, an internally threaded bore extending through said end wall, said externally threaded shank threadedly engaged in said bore, a continuous passageway through said backing and shank, a passageway in said end wall terminating in said chamber communicating with said continuous passageway, a nozzle carried by said backing, said brush having bristles in the region of which said nozzle opens, a piston in said chamber, said piston including a flexible disk having outer edges flush with the walls of the storage chamber, an eccentrically positioned boss on said piston, an internally threaded opening in said boss, a screw, means eccentrically and rotatably retaining said screw in said chamber, said screw threadedly engaged in said opening in said boss, an aperture in said flexible disk aligned with said piston boss opening for receiving said screw to prevent seepage therearound, said means retaining said screw including a depression in said end wall, a reduced pintle on said screw rotatably received in said depression, said hollow housing externally threaded at an end remote from said brush head, a flanged closure plate partially received in said hollow housing, said flange of said closure plate abutting said housing, an internally threaded clamp ring threadedly engaged with said externally threaded end of said housing overlying and retaining said closure plate, an aperture in said closure plate passing the end of said screw re-

4

mote from said pintle therethrough, said end of said screw having a square cross section, a knob having a square aperture received on said screw, said knob having a plurality of spaced circumferentially positioned teeth thereon, a leaf spring secured to said closure plate extending into contact with said teeth for preventing rotation of said knob in one direction only, a reaction pin extending from said closure plate and engaging said spring for urging said spring into contact with said teeth, and a thumbnail grip in the form of a grooved plate fixed to said spring to facilitate disengagement of said spring and teeth.

2. A fountain toothbrush comprising a hollow handle having a toothpaste storage chamber, said hollow handle having an apertured end wall, a brush head having a passageway therethrough carried by said handle, said aperture communicating said passageway with said chamber, a screw rotatably retained in said chamber, a piston threadedly and eccentrically carried by said screw for movement through said chamber, said screw having a square end, a knob having a square aperture received on said screw, an apertured closure plate passing said screw mounted on one end of said hollow handle adjacent said knob, said knob having a plurality of spaced circumferentially positioned teeth thereon, a leaf spring secured to said closure plate extending into contact with said teeth for preventing rotation of said knob in one direction only, a reaction pin extending from said closure plate and engaging said spring for urging said spring into contact with said teeth, and a thumbnail grip in the form of a grooved plate fixed to said spring to facilitate disengagement of said spring and teeth.

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