March 14, 1939. T. B. OLIVER 2,150,842

MOTORIZED FOUNTAIN-TYPE TOOTH BRUSH

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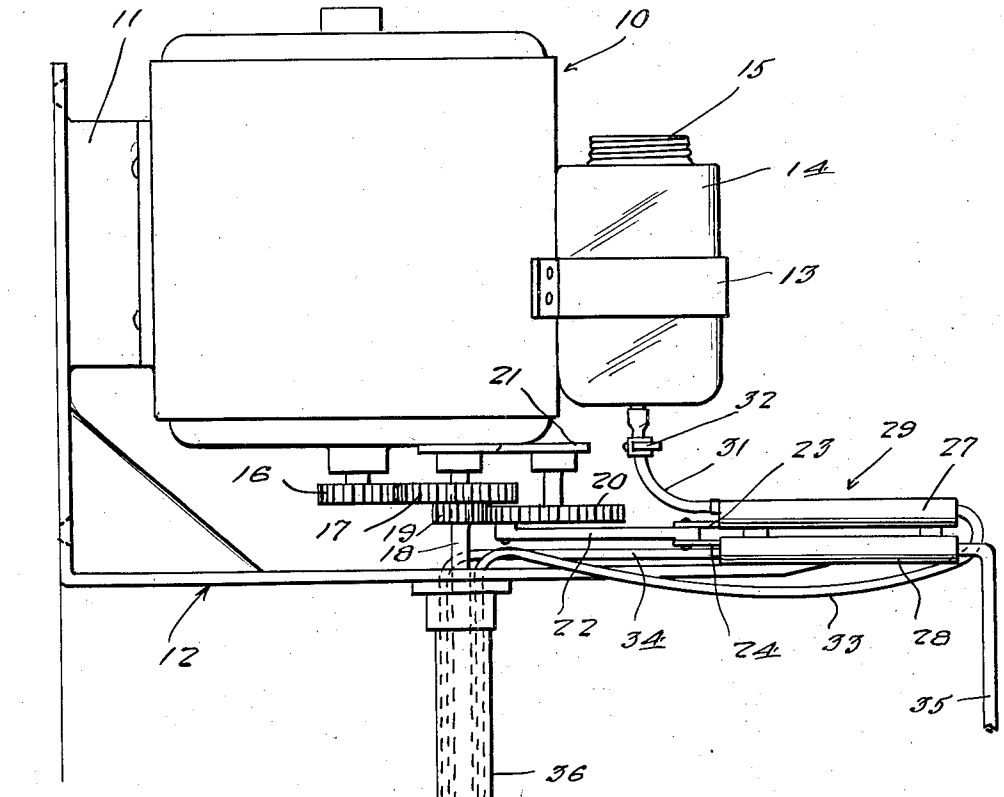
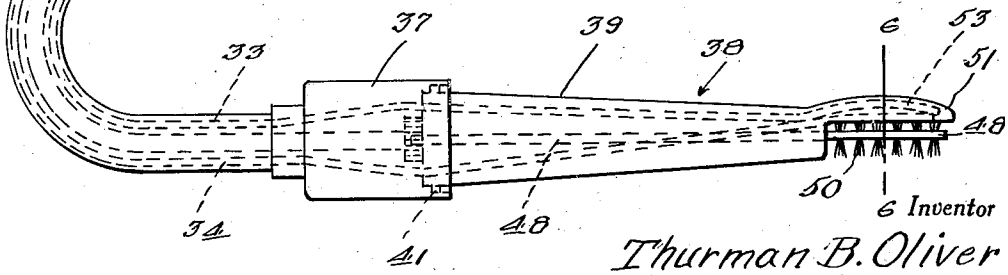


Fig. 1.



6 Inventor

Thurman B. Oliver

By Clarence O'Brien
Hyman Berman

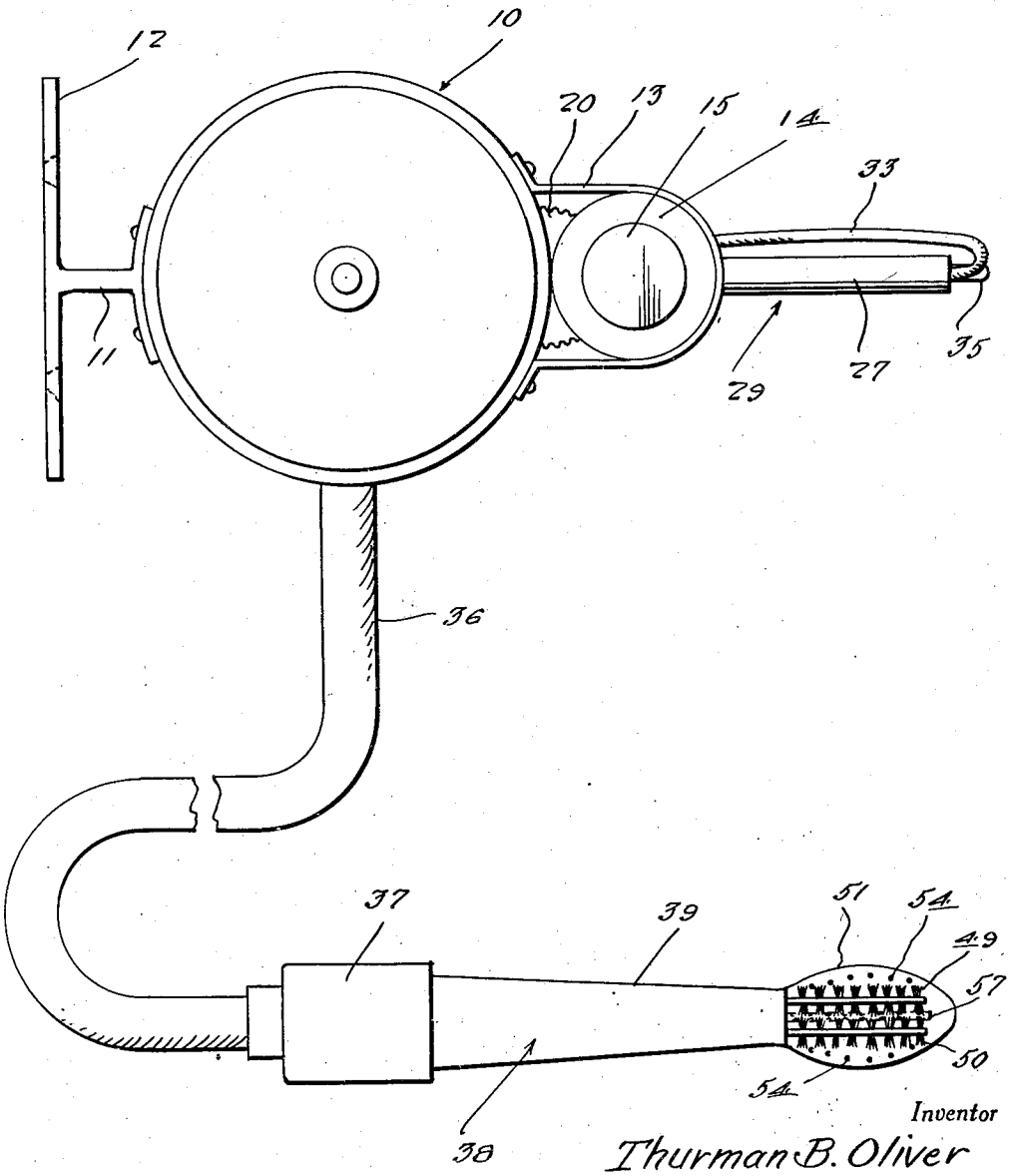
Attorneys

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MOTORIZED FOUNTAIN-TYPE TOOTH BRUSH

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Fig. 2.



Inventor

Thurman B. Oliver

By Clarence A. O'Brien

Hyman Berman

Attorneys

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Fig. 3.

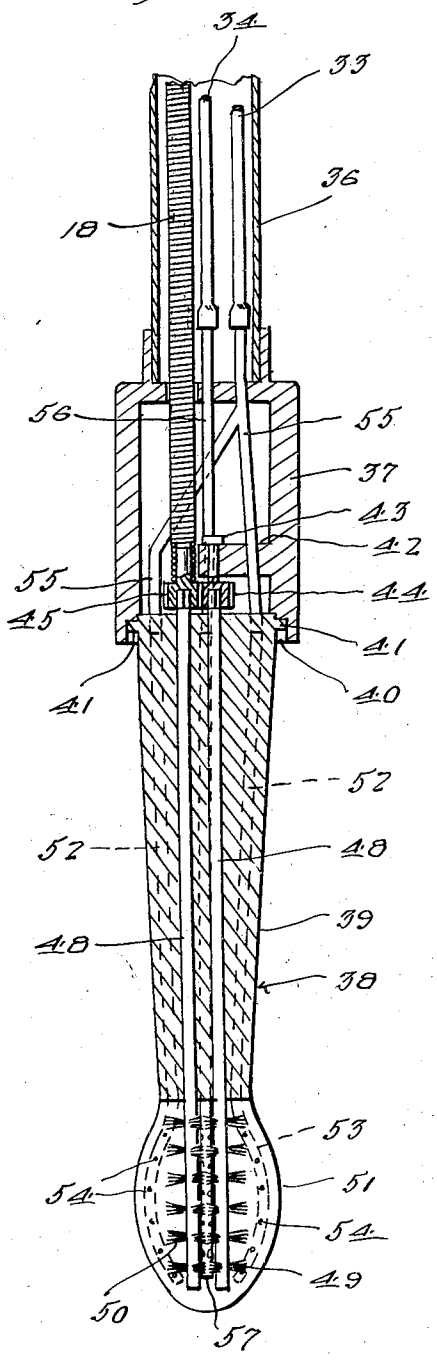


Fig. 4.

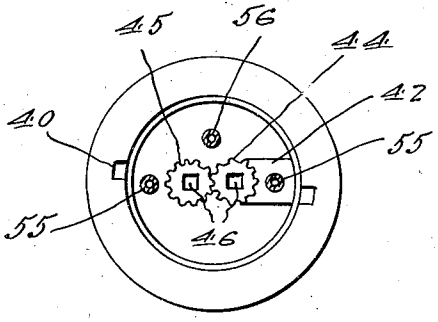


Fig. 5.

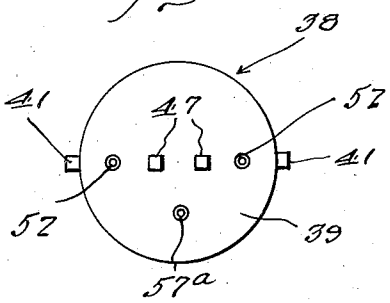
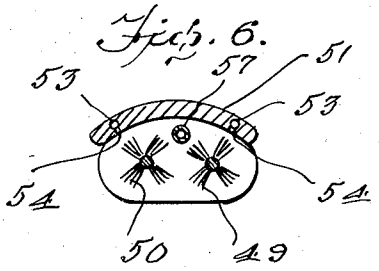


Fig. 6.



Inventor

Thurman B. Oliver

By Clarence A. O'Brien
Hyman Berman

Attorneys

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Fig. 7.

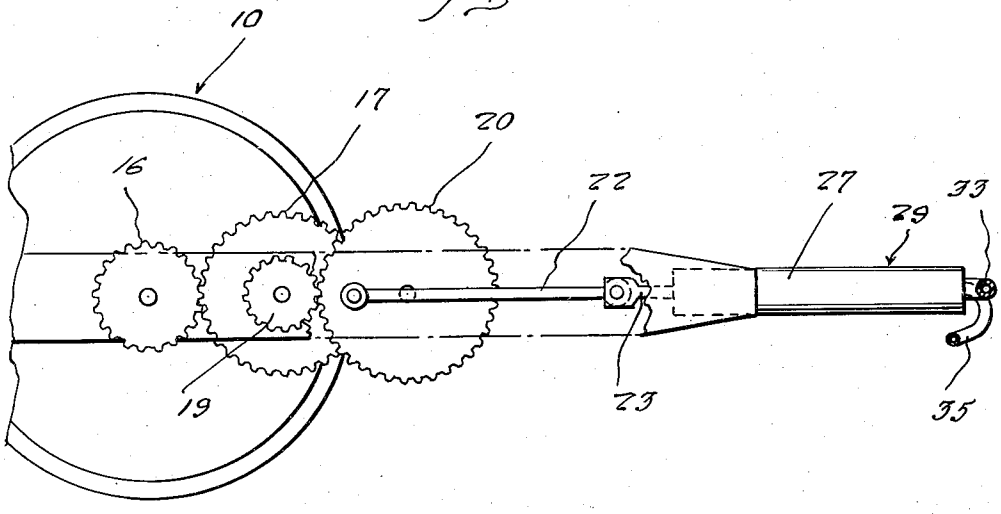
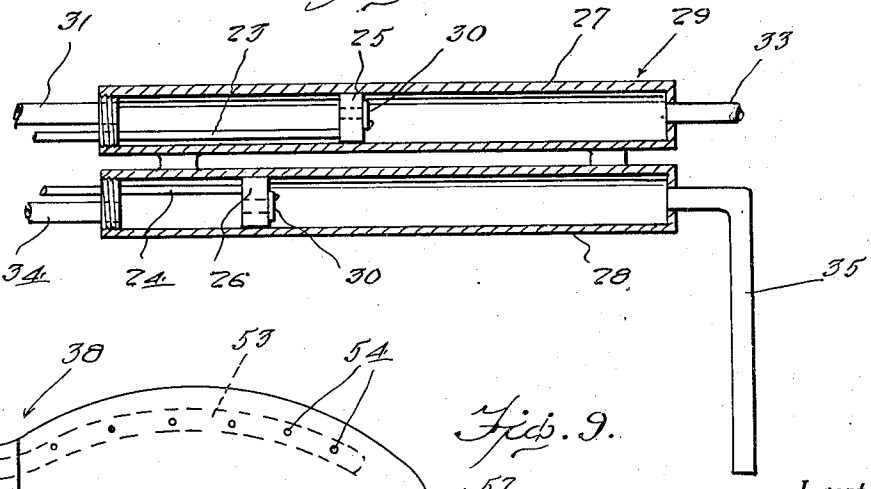


Fig. 8.



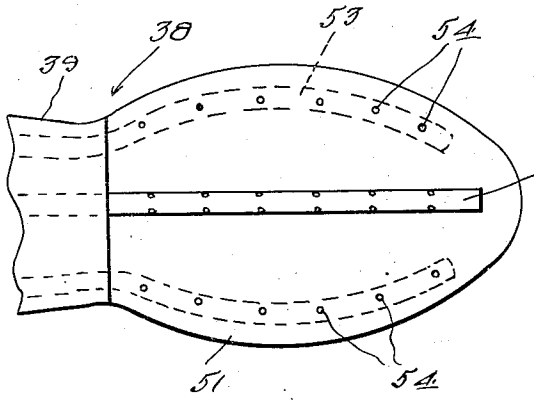


Fig. 9.

Inventor

Thurman B. Oliver

By Clarence A. O'Brien

Hyman Berman

Attorneys

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UNITED STATES PATENT OFFICE

2,150,842

MOTORIZED FOUNTAIN-TYPE TOOTH BRUSH

Thurman Boyce Oliver, Athens, Ga.

Application December 10, 1936, Serial No. 115,222

1 Claim. (Cl. 15—24)

The present invention relates to so-called rotary tooth brushes and has reference to an electric motor operated apparatus which, while usable in dental parlors and similar quarters, is essentially adapted for domestic or home use.

In accordance with the principles of my invention I have perfected a comparatively simple, motorized structure characterized by a detachable fountain brush unit cooperable with means for supplying a cleaning fluid, under pressure, to the bristle brushes for effective cleansing, additional means being provided for automatically disposing of extraneous matter, whereby to accomplish the desired results in an efficient and aptly suitable manner.

One feature and advantage is predicated upon the adoption and use of a detachable power operated brush unit having a properly constructed shield-forming head apertured to deliver the cleansing fluid to a pair of parallel oppositely rotating bristle brushes thus providing a duplex fountain brush assemblage susceptible of adequately and simultaneously cleaning and brushing the surfaces of the upper and lower rows of teeth at the same time.

Another feature of the invention is devoted to the adoption and use of the aforementioned motor-driven duplex brush assemblage having associated therewith an antiseptic solution containing jar, cylinder and piston means, and appropriately coordinated delivery conduits to satisfactorily deliver the antiseptic solution to the rotating brushes to insure a constant supply for effective results.

A further feature of the invention has reference to the provision of a single motor to drive the rotatable brushes, to feed the antiseptic solution to the brushes and to also operate the piston and cylinder means, a part of which constitutes a dependable arrangement for creating suction within the vicinity of the bristle brushes to carry away waste matter and thus promote reliable and sanitary cleaning.

Briefly then, the preferred embodiment of the invention is regarded as an innovation and novel contribution to the trade and art in that it is characterized by a compact and convenient consolidation of motor driven brushes, chemical solution supply means therefor, and simultaneously operable waste disposal means as described.

Other features and advantages will become more readily apparent from the following description and drawings.

In the accompanying drawings wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is an elevational view of the complete structural assemblage constructed in accordance with my own inventive idea.

Figure 2 is a top plan view of the arrangement depicted in Figure 1.

Figure 3 is a view partly in section and partly in elevation detailing the brush head construction and shaft propulsion means.

Figure 4 is a bottom plan view of the brush unit adapter coupling or fitting.

Figure 5 is an end view of the handle forming portion of the brush head unit.

Figure 6 is a detail section taken on the plane of the line 6—6 of Figure 1.

Figure 7 is a fragmentary bottom plan view looking upwardly beneath the motor and cylinder assembly disclosing the transmission gearing.

Figure 8 is a view partly in section and partly in elevation showing the electric motor controlled piston and cylinder means.

Figure 9 is a somewhat enlarged bottom plan view of the ovate fountain head shield and apertured disposal tube, with the bristle brushes removed for clearness of illustration.

Referring now to the drawings by distinguishing reference numerals attention is first invited to the general assemblage disclosed in Figures 1 and 2. Here the electric motor is denoted by the numeral 10 and this is of any suitable type adaptable for the purpose. It is attached to an appropriate hanger bracket 11 forming a part of the substantially L-shaped supporting fixture 12 connectible with the wall or other relatively stationary supporting surface. The numeral 13 designates a holding strap to accommodate and maintain in position a glass jar 14 having a removable screw-cap 15 and constituting a reservoir for a suitable antiseptic solution appropriate for cleaning the human teeth. The motor shaft drives a pinion 16 in mesh with a power take-off and speed reducing gear 17 which operates the flexible brush propulsion shaft 18. On this shaft is a pinion 19 which drives gear 20 supported for operation on a suitable bracket 21. This eccentric gear 20 operates the connecting rod 22 which, in turn, simultaneously reciprocates associated pistons 23 and 24. The pistons as shown to advantage in Figure 8 include heads 25 and 26 mounted for reciprocation in companion cylinders 27 and 28 forming complemental parts of the piston and cylinder assembly units unitarily denoted by the numeral 29. The piston heads are provided with suitable flap valves 30 having

the desired fluid check control action. A supply hose 31 as shown in Figure 1 supplies fluid into the cylinder 27, said hose being provided with a cut-off valve 32. The solution is forced under pressure out from the cylinder by way of the delivery hose or conduit 33. The waste matter intake tube or conduit connected with the cylinder 28 is denoted by the numeral 34, this being attached at one end of the cylinder. At the opposite end is the discharge or disposal pipe 35 which is designed for connection with a suitable part of the house sewage system.

The numeral 36 designates an appropriate flexible casing to accommodate the flexible power propulsion shaft 18 and the associated individual hoses 33 and 34.

Attention is now invited to Figure 3 showing the adapter fitting or coupling 37 for the fountain brush unit 38. The coupling is made to accommodate the handle portion 39 of said unit 38. It is provided with suitable keeper notches 40 to receive diametrically opposite keeper lugs 41 provided on the adjacent or complemental end of the handle. The handle, therefore, telescopes into the coupling in the manner shown. It will be noticed that a bearing member 42 is arranged in the coupling to accommodate an idling or stub shaft 43 carrying a gear 44. This is in constant mesh with a companion gear 45 on the end of the flexible drive shaft 18. These gears 44 and 45 are provided with polygonal sockets 46 (Fig. 4) to accommodate the correspondingly shaped or squared ends 47 (Fig. 5) on the brush operating shafts 48. The shafts 48 are mounted for rotation in bearings in the brush handle and the extended ends thereof are provided with bristle brushes distinguished by the numerals 49 and 50. These brushes turn in opposite directions and are adapted to simultaneously clean the surfaces of the upper and lower rows of teeth. The brushes 49 and 50 cooperate with the ovate or shield-shaped guard 51 forming an integral extension of the handle 39. The handle is provided with bores 52 which extend into the marginal portions of the guard 51 as indicated at the point 53 to provide suitable passages to deliver the antiseptic solution to the oppositely rotating brushes. The solution is ejected through orifices or ports 54 properly located and cooperating with the brushes in an obvious manner. The numerals 55 designate suitable rigid pipes in the coupling 37 which telescope into the adjacent ends of the bores or passages 52 when the brush unit 38 is slipped telescopically into said coupling 37. Thus the pipe ends 55 project into the bores or passages 52 while the key-forming ends 47 of the shafts 48 fit into the operating sockets 46 in the meshing gears 44 and 45. The numeral 56 designates a suction pipe connected with the disposal suction hose 34 which pipe 56 is connected with a longitudinal passage also formed in the brush handle 39, said passage terminating in an extending apertured centrally disposed intake nozzle 57 located between the brushes as shown to advantage in Figure 9 and also in Figure 6. This is the waste matter disposal nozzle, as is evident. That is to say its function is to carry away extraneous matter and excess saliva to facilitate the desired complete operation.

In operation it is understood that the motor operates the flexible shaft 18 and this, in turn, rotates the complemental gears 44 and 45 as seen in Figure 3. This action turns the brush shafts 48 and, in turn, drives the brushes 49 and 50 in opposite directions. At the same time the motor actuates the piston head 25 to supply antiseptic solution from the jar 14 to the brushes by way of the piston and cylinder arrangement, plus the delivery pipes 55 and passages 52 and ports 54 as disclosed in Figure 3. While this is being accomplished the cylinder 28 and piston 26 come into play in producing suction through the line 34. This draws in waste matter through the nozzle 57 and carries it into the cylinder 28 where it is discharged by way of the check valve 30 on the proper stroke, and is forced out through the discharge pipe 35. As before indicated this pipe 35 is connected with a suitable source of deposit such as the house sewage system. It follows that the provision of the duplex motor driven brushes, properly guarded, and the antiseptic supply, and disposal means for waste material, provides an ideal tooth brush construction for individual home and other uses. It is understood that it is not so much the place in which the structure is used as it is the construction of the apparatus itself, which forms the novelty upon which newness is predicated.

Possessed of features of refinement and improvement, and characterized by a consolidated arrangement reflecting compactness and convenience, it is believed that I have evolved and produced a structure which may be unqualifiedly endorsed by the trade as performing the desired result in an effective and reliable manner.

It is thought that the description taken in connection with the drawings will enable a clear understanding of the invention to be had. Therefore, a more lengthy description is thought unnecessary.

While the preferred embodiment of the invention has been shown and described, it is to be understood that minor changes coming within the field of invention claimed may be resorted to if desired.

What is claimed is:

As a component part of a structural assemblage of the class described, a tooth brush unit including a handle terminating at one end in a shield-shaped guard and fountain forming head, said head being provided with apertured fluid delivery passages, the handle having passages cooperating therewith, an additional passage in said handle to carry off waste material, an apertured nozzle connected with said additional passage and underlying said head, a pair of shafts mounted for rotation in the handle and having end portions projecting beneath the head on opposite sides of said nozzle, and brush bristles carried by said projecting shaft-ends in the manner and for the purposes described.

THURMAN B. OLIVER.