

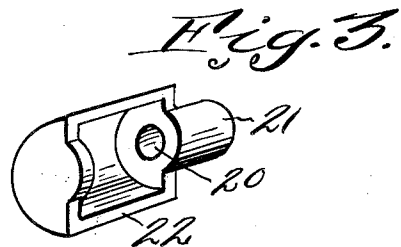
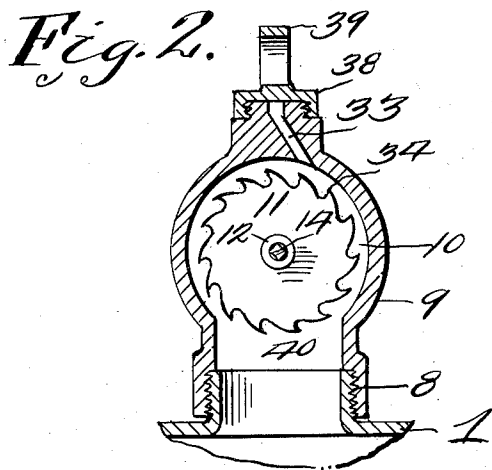
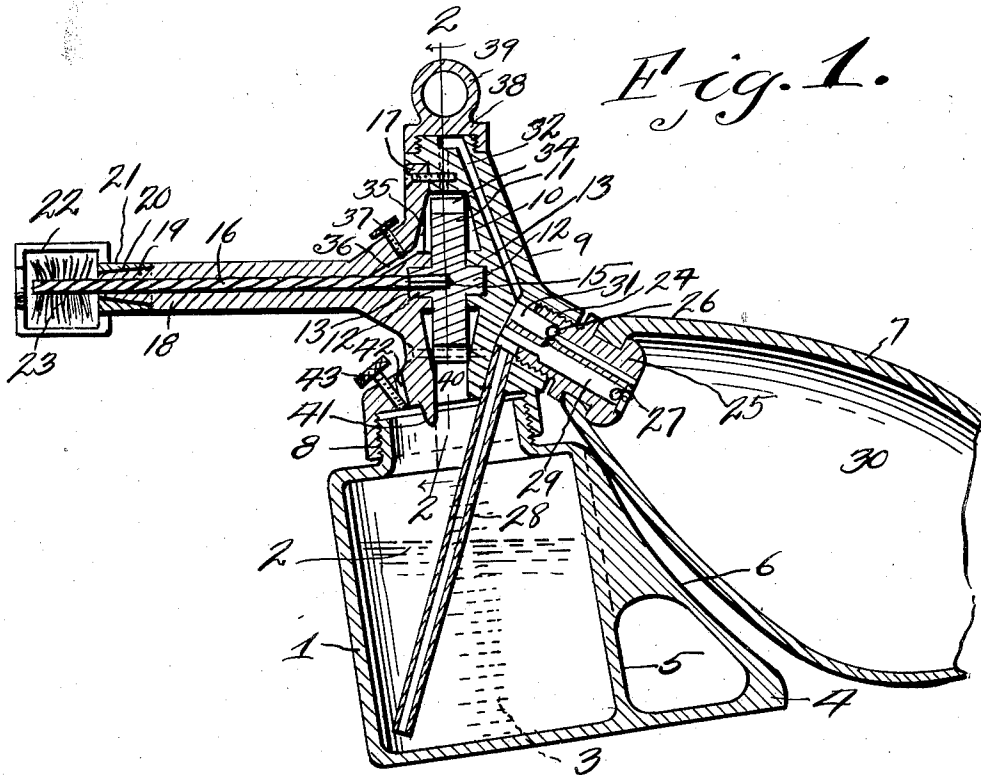
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POWER DRIVEN ROTARY TOOTHBRUSH

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POWER DRIVEN ROTARY TOOTHBRUSH

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11 Claims. (Cl. 15—24)

The invention relates to power driven rotary tooth brushes and has for its object to provide a device of this type wherein the liquid, for instance antiseptic, is placed in a container and discharged therefrom by compressing a collapsible member which has previously sucked liquid therein, and to provide means whereby liquid discharged from the collapsible member will rotate a turbine wheel of the brush stem and will be conveyed along the stem to the brush for a cleaning operation of the brush.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of conveyor means carried by the shaft the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a vertical longitudinal sectional view through the device.

Figure 2 is a vertical transverse sectional view taken on line 2—2 of Figure 1.

Figure 3 is a perspective view of the brush shield.

Figure 4 is a perspective view of a cap adapted to be placed on the device when the shield is removed for preventing leakage when the device is stored, otherwise not in use.

Referring to the drawing, the numeral 1 designates the container in which antiseptic is placed as shown at 2. The container 1 may be formed from any material, however, it is preferably formed from glass for sanitary purposes and the operator can easily see the liquid level therein. If desired a conventional form of liquid level scale may be used as shown at 3 in Figure 1. One side of the container 1 is provided with a handle member 4 having a finger receiving aperture 5 therein, through which the operator passes his fingers during the operation of the device.

The handle member 4 has its outer side concaved as shown at 6, and against which a collapsible rubber bulb 7 is compressed during the operation of the device, therefore it will be seen that the device will be steadied during the compressing of the bulb 7, as well as during its expansion. The concaved side 6 of the handle member 4 conforms to the convex side of the bulb 7 so as to reduce lost play between the parts and to insure positive collapsing of one side of the bulb 7 over a large area for a positive operation of the turbine wheel hereinafter set forth.

Threaded at 8 on the container 4 is a head 9 in the chamber 10 of which is rotatably mounted a turbine wheel 11 having its pintles 12 rotatably mounted in bearings 13 in opposite sides of the chamber 10. Turbine wheel 11 has one of its bearings or pintles 12 provided with a square socket 14 for the rectangular shaped end 15 of the twisted wire brush shaft 16, therefore it will be seen that when the turbine wheel 11 is rotated the twisted wire shaft 16 will rotate therewith. The forward side of the head 9 is preferably provided with removable plate 17, which allows access to the chamber 10 for repair purposes, and at the same time allows the turbine wheel 11 to be placed in the chamber. Plate 17 is provided with an outwardly extending tubular portion 18 in which the twisted wire shaft 16 is rotatably mounted when it terminates in a tapered portion 19, which is received in a tapered portion 20 of the brush sleeve 21, which in turn carries a semi circular shield 22 arching one side of the brush and adapted to shield the flesh part of the mouth during the tooth cleaning operation, and at which time the brush 23 may be rotated. Brush 23 may be of any form desired, preferably with bristles of different length.

Threaded at 24 into the head 9 and inclining downwardly and outwardly is a valve casing 25 having opposed check valves 26 and 27. At the initial starting of the operation of the device, the operator grasps the device with his fingers through the opening 5 and around the collapsible bulb 7 and compresses the bulb, then allows the same to expand. This expanding action will suck antiseptic 2 from the container 1 through the tube 28 and thence through the intake passage 29 to the chamber 30 of the bulb, at which time the valve 26 is closed. Upon the next compression of the bulb 7, liquid will be forced through the passage 31 in the valve casing 25 at the same time valve 27 will be moved to closed position. The liquid passing through the passage 31 passes upwardly through the port 32 in the head, substantially in the plane of the axis of the turbine wheel, and downwardly through the port 33 and discharges tangentially against the teeth 34 of the turbine wheel 11, thereby rotating said turbine wheel and the brush 23 carried thereby. A portion of the liquid is trapped in the chamber 10 by baffle plates 35, which directs the same through a feed port 36 leading to the bearing of the twisted wire shaft 16, and as the shaft is rotated, it will convey the liquid to the brush incident to its

spiral shape. A valve 37 is provided in connection with the feed port 36, whereby the amount of liquid allowed to pass through the shaft 16 may be regulated.

- 5 It will be noted that port 32 connects to the port 33 at the upper end of the head 9 and said portion is closed by a cap 38 at this point, therefore it will be seen that when it is desired to clean the ports 32 and 33 it will only be necessary to remove the cap 38 and access may be readily had to these straight ports.

Cap 38 is provided with a ring 39, by means of which the device may be suspended from a hook or other support when not in use.

- 15 It will be noted that the head 9 is out of axial alinement with the container 1, therefore it will be seen that when the container is placed on a shelf, the tubular member 18 will incline upwardly and any liquid which may accumulate therein will drain back into the container and will not drip. By referring to Figure 2 it will be seen that the chamber is open at its lower end as shown at 40, and the excess antiseptic or fluid used for the rotation of the device will flow back into the container. A downwardly extending lip 41 is preferably provided however to one side of the passage 40 to prevent liquid from accumulating on the vent opening 42 controlled by the valve 43.

- 20 From the above it will be seen that a power driven tooth brush is provided which is simple in construction, driven by antiseptic or other fluid and a portion of said fluid is diverted to the brushing element during the recirculation of the antiseptic or liquid for power purposes. It will also be seen that the device is simple in construction, the parts reduced to a minimum and that the same can be cheaply manufactured and sold.

- 25 A cap 44 having a chamber 45 is provided and is adapted to be placed on the tapered end 19 when the shield 25 is removed. The idea of this cap is to prevent leakage when the device is stored, for instance in a suit case while travelling.

The invention having been set forth what is claimed as new and useful is:

- 45 1. A rotary brush comprising a casing, a rotatable turbine in said casing, a fluid container carried by said casing and means whereby fluid in the container may be recirculated between the container and turbine wheel for rotating said wheel.

- 50 2. The combination with a rotary brush mounted in a casing, a liquid container carried by said casing of means whereby liquid from the container may be recirculated, a turbine wheel carried by said brush, means whereby said recirculating liquid will rotate said turbine wheel and means whereby a portion of the recirculating liquid will be diverted to the brush.

- 55 3. The combination with a rotary brush, a shaft carried by said brush, said shaft being rotatably mounted in a casing, a turbine wheel carried by the shaft and rotatably mounted in a chamber of the casing, means for recirculating fluid for rotating the turbine wheel, of conveyor means carried by the shaft whereby a portion of said recirculating fluid will be diverted to the brush.

- 60 4. A device as set forth in claim 3 wherein the

conveyor means carried by the shaft comprises a spiral groove in the shaft.

5. A device as set forth in claim 3 wherein the conveyor means carried by the shaft comprises a spiral groove in the shaft, said shaft being formed from twisted wire forming the spiral groove. 80

6. A rotary portable fountain brush comprising a container, a head carried by said container and having a turbine wheel chamber in communication with the chamber of the container, a turbine wheel in said head chamber, a tubular extension carried by said head and having a shaft bearing therein, a shaft driven by the turbine wheel and rotatably mounted in the tubular extension; a brush driven by said shaft adjacent the end of the tubular extension and means whereby liquid from the container may be recirculated to the turbine wheel chamber for rotating the wheel and to the container and means whereby a portion of said recirculating liquid may be diverted to the brush. 85 90 95

7. A rotary portable fountain brush comprising a container, a head carried by said container and having a turbine wheel chamber in communication with the chamber of the container, a twisted wire shaft driven by the turbine wheel and forming a spiral feed groove, said shaft being rotatably mounted in a tubular extension member carried by the casing, a brush driven by said shaft, a fluid by-pass between the turbine wheel chamber and the shaft bearing and a pumping device for recirculating fluid between the container chamber and projecting the same against the turbine wheel. 100 105 110

8. A device as set forth in claim 7 wherein the pumping device comprises a collapsible bulb, a double valve through one of which fluid is sucked from the container and through the other of which liquid from the bulb is directed through a port and projected tangentially against the turbine wheel. 115

9. A device as set forth in claim 7 wherein the tubular extension member is at an obtuse angle to the axis of the container whereby when the container is placed on a horizontal support liquid in the extension member will drain to the turbine chamber. 120

10. The combination with a fountain rotatable brush driven by a turbine wheel, said turbine wheel being disposed in a chamber of a head, a liquid container carried by said head with its chamber in communication with the turbine chamber, a collapsible bulb carried by the head adjacent the container and into which liquid from the container is sucked, of an upwardly extending discharge port from the collapsible bulb and terminating above the turbine wheel, said port terminating in a downwardly extending port discharging tangentially against the turbine wheel. 125 130 135

11. A device as set forth in claim 10 wherein the upwardly extending and downwardly extending ports terminate in a communicating passage in the upper end of the head and a closure carried by said head for said passage. 140

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