

Pico-hydro-electric Toothbrush

Amey G. Patil

Abstract— A pico-hydro-electric toothbrush has an elongated housing shaped to be grasped by human hand. The housing encloses a pico-hydro-electric plant which generates the electricity and drives a brush shaft that has a stub projecting through a nose of the housing and upon which in use a brush is mounted. A pico-hydro-electric toothbrush has an elongated housing shaped to be grasped by the human hand. The housing encloses a pico-hydro-electric plant which generates the electricity and drives a brush shaft that has a stub projecting through a nose of the housing and upon which in use a brush is mounted. A variety of electric toothbrushes has been disclosed and has appeared on market. These automatic toothbrushes commonly use a DC motor drive to move the brush holder through a spring mechanism or transmission mechanism. The transmission mechanism can be of any type that oscillates, rotates or vibrates the brushhead. The brushhead, that hold a respective bunch of bristles and are driven to make a circular motion and reciprocating motion respectively for cleaning the teeth in the most efficient way.

Index Terms— Pico-hydro-electric Toothbrush, Amey G. Patil, Energy Harvesting, Toothbrush Technology, Hydro Powered Toothbrush.

1 BACKGROUND OF THE INVENTION

THIS present invention relates to electric toothbrush which operates on hydroelectricity. It is a complete energy harvesting product.

Electronic toothbrushes are very much prelevanting in the market which enables the user to have the most effective brushing of teeth with right technique. Just to add a spark to recent trends and innovation in this motorized movement of toothbrushes, this invention proves to be a boon as to save and conserve conventional source of energy. As this mechanical toothbrushes are comparatively expensive when compare to non-mechanical ones this invention is just an effort to grab attention of one-time investment in a complete daffy way.

2 TECHNICAL FIELD

This invention relates to toothbrushes, and more particular-ly to power toothbrushes.

3 IN THE DRAWINGS

Fig.1 is a longitudinal view of Pico-hydro-electric toothbrushes.

Fig.2 is a schematic diagram of internal circuit of Pico-hydro-electric toothbrush.

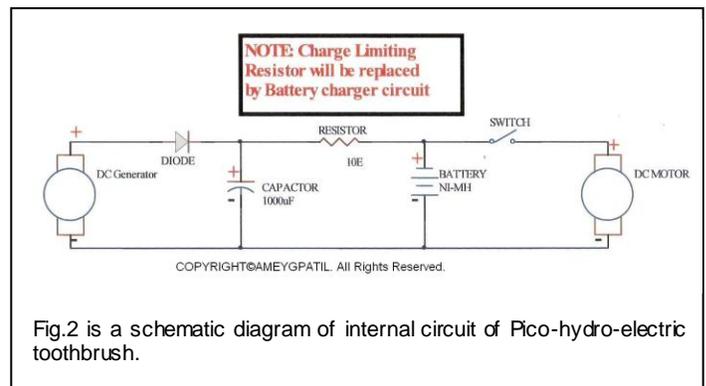


Fig.2 is a schematic diagram of internal circuit of Pico-hydro-electric toothbrush.

4 DETAILED DESCRIPTION

Referring to Fig.1, a pico-hydro-electric toothbrush includes an elongated housing, a brushhead, grained stainless steel or plastic turbine (impellor), a larger gear, AC generator, step-up transformer, rectifier, capacitor (filter), Li-MH or Li-Polymer battery, On/Off switch, a green bulb used as an indicator, colour coding part, stab, cam and gear unit, bristled with gum massager tips.

Detach the outer case placed at the lower end of the toothbrush letting the turbine exposed under the tap. Flowing tap water results in rotation of turbine, which is at the extreme end of the turbine vanes. Once the turbine rotates, it results in rotating movement of larger gear and smaller gear respectively leading to multiple rapid rotation of smaller gear, thus generating the mechanical energy. The mechanical energy thereby produced gets converted into electrical energy (aac current) by AC generator. AC current which is produced is enhanced with increased power by the step-up transformer and finally AC current is converted into DC current with the help of rectifier and filter (capacitor).

[Note: We can also replace AC generator and step-up transformer by DC generator provided a compulsory placement of a diode which stops the battery current to flow back to the DC generator].

Capacitor (filter) has to be placed to absorb glitches in generated voltage. Resistor is used for limit charging current. Later resistor will be replaced by charging circuit unit, recom-

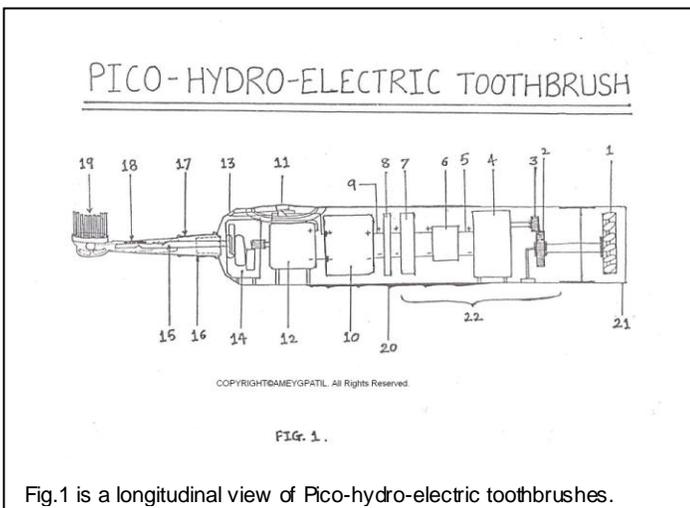


Fig.1 is a longitudinal view of Pico-hydro-electric toothbrushes.

mended by battery manufacturer.

Batteries that can be brought into use are either 'Lithium-Polymer' or 'Lithium-Metal-Hydride'. But it should be in compact size and rechargeable.

The moment when the switch is turned on, battery supplies current to the geared DC motor. This motor rotates the Cam & Gear Unit. Cam & Gear Unit gives oscillatory movement to the shaft or stab. This stab gives oscillatory or rotary motion to bristles base which is mounted on the brushhead.

5 ADVANTAGES

1. Energy harvesting.
2. Effective and efficient cleaning of teeth.
3. One-time investment.
4. Simple in structure.
5. Secured comfortable grip.
6. Highly attractive design.
7. Unique gum massager tips.
8. Improved facility of guiding the brushhead over the surface of the teeth that reaches interdentally.
9. Detachable brushheads.
10. Brush-heads with very much noticeable colour-coding.
11. Due to oscillatory motion of bristles perfect cleaning of teeth, it removes plaque as well as polishes the tooth surface in the most efficient way.

6 DISADVANTAGES

- 1 If not used properly, results in wastage of water.

7 CONCLUSION

Pico-hydro-electric toothbrush has additional features than any toothbrushes available in the market & moreover is made as energy harvesting than other electric toothbrushes.

Author's Profile



- **Amey G. Patil** is an ingenious dental student, inventor of Pico-hydro-electric Toothbrush.
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