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TITLE OF THE INVENTION:

CLEANER EXCLUSIVELY USED FOR TOOTHBRUSHES

BACKGROUND OF THE INVENTION:

FIELD OF THE INVENTION:

This invention relates to a close cleaner exclusively used for toothbrushes, adapted to clean just-used toothbrushes, and more particularly to a cleaner exclusively used for toothbrushes, adapted to clean just-used toothbrushes by pouring ozone, which is produced by an ozone generator, on surfaces of hairs of the toothbrushes, and thereby sterilize and bleach the hairs of the toothbrushes by the effect of the ozone.

DESCRIPTION OF THE RELATED ART:

A just-used toothbrush has heretofore been washed sufficiently with city water, and thereafter stored in a toothbrush storage case provided in a lavatory, or stood up in a toothbrush stand, the resultant toothbrush being then left as it is in practice until the toothbrush is used next time. However, in recent years, opinions that the safety of the city water is doubtful have been put forth. Also, with the diversification of the eating culture and mode of living, an allergic disease which has heretofore rarely posed problems occurs, and new infection diseases have become a social problem.

Under such circumstances, many people take very much interest, especially, in sanitary problems, brush their teeth after meals as a matter of course, and strain their nerves to

wash hands and gargle their throats after they return home from the outside. Thus, they make their efforts variously to protect their own bodies. As an example, a portable sterilization paper towel is much in request, and becomes a necessary article of life at present.

Carrying with attention given to sanitation the above-mentioned sterilization paper towel so that the paper towel can be used at any time is effective in its own way as a handy preventive method usable in a place which a person makes a visit. However, specific alcohols used as sterilization agents may cause an unexpected inflammation to occur when they directly contact eyes or a surface of an oral cavity, or put an alcohol hypersensitive person to inconvenience of avoiding the use of these alcohols.

SUMMARY OF THE INVENTION:

The present invention has been made with attention paid to the problem of the sanitation of oral cavity in which people have taken much interest recently, and, moreover, in view of the importance of paying attention to the sanitary management of a customarily used toothbrush, and provides a cleaner exclusively used for toothbrushes, adapted to sterilize, bleach and clean just-used toothbrushes safely and, moreover, easily by a simple apparatus. To provide this cleaner, attention was paid to the utilization of the sterilization and bleaching power of ozone to complete the present invention.

According to the present invention, a close cleaner exclusively used for toothbrushes is provided which include a body case containing an ozone generator therein, a toothbrush receiver formed so that surfaces of hairs of toothbrushes are set in a position in which the surfaces of the hairs are opposed to an ozone supply port of the ozone generator, the ozone supply port being located in an upper portion of the case body, and an upper cover provided so that the upper cover can be opened and closed for inserting and withdrawing the toothbrushes into and from the body case, all of which parts are combined together in one body, the ozone produced by the ozone generator being blown upon the hairs of the toothbrushes.

The cleaner exclusively used for toothbrushes, according to the invention, is formed by providing an ozone generator in a body case, providing an ozone supply port of the ozone generator in an upper portion of the body case, providing a toothbrush receiver formed so that surfaces of hairs thereof are set in a position opposed to the ozone supply port, providing an upper cover, which is used to withdraw and insert the toothbrushes from and into the case body, on the upper portion of the case body so that the upper cover can be opened and closed, and providing an ON/Off switch for the ozone generator on an outer side surface of the body case. A power source may be a household power source using an electric cord, or (internal) batteries.

BRIEF DESCRIPTION OF THE DRAWINGS:

A preferred embodiment of the present invention will be described in detail with reference to the following figures, wherein:

Fig. 1 is a side view of an embodiment of the cleaner exclusively used for toothbrushes according to the present invention;

Fig. 2 is a longitudinal side view of the same toothbrush cleaner; and

Fig. 3 is a longitudinal front view of the same toothbrush cleaner.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

A mode of embodiment of the present invention will now be described on the basis of what are shown in the drawings but the invention is not limited to this embodiment. The design of the invention can be changed freely within the scope of the gist of the invention.

Fig. 1 is a side view showing an embodiment of the cleaner exclusively used for toothbrushes, Fig. 2 a longitudinal side view of the same cleaner, and Fig. 3 a longitudinal front view of the same cleaner. A reference numeral 1 denotes a body case made of a plastic, 2 an ozone generator, 3 a toothbrush receiver, 4 an upper cover, 5 an ON/OFF switch, and 6 toothbrushes.

The cleaner exclusively used for toothbrushes shown in Figs. 1 to 3 includes a box type body case 1 made of a plastic having dimensions large enough to hold a plurality of

toothbrushes 6, an ozone generator 2 provided inside the body case on the side of a rear wall thereof, a toothbrush receiver 3 provided on the front side of the body case 1, an upper cover 4 fixed to an upper portion of the body case 1 so that the upper cover can be opened and closed, and an ON/OFF switch for the ozone generator. The whole cleaner is formed in a tight-close configuration. The ozone generator 2 is set on an inner partition 1-1 so that an ozone supply port 2-1 is positioned in an upper portion of the body case, and the body case is further provided in the portion thereof which corresponds to an upper portion of the partition 1-1, and which is opposed to the ozone supply port 2-1, with an ozone injection window 1-2. The toothbrush receiver 3 provided on the front side of the body case 1 is projected horizontally under the ozone injection window 1-2 formed in the position opposed to the ozone supply port 2-1, and a plurality of toothbrush fixing grooves 3-1 each having a U-shaped cross section are provided at regular intervals so that surfaces of hairs of a plurality of toothbrushes 6 are set in the portion of the body case which is opposed to the ozone supply port 2-1. The upper cover 4 is formed round so that the upper cover extends along an outer circumferential surface of an arcuate top portion 1-3 of the body case 1. The upper cover is engaged pivotably at a circular recess 4-1, which is formed in both side surfaces of the upper cover, with circular projections 1-4 formed on both side surfaces of an upper portion

of the body case 1. The upper cover is thus formed so that the cover can be opened and closed freely in the longitudinal direction. The ON/OFF switch 5 is fixed to a side surface of the body case 1, and formed so that the ozone generator can be manually turned on and off. The ozone supplying time can be regulated by operating the ON/OFF switch 5. The ozone supplying time can also be set by, for example, an IC timer incorporated in the ozone generator 2.

Although the material constituting the body case 1 is not specially limited, a plastic, such as an ABC resin, cheap, having a considerable level of mechanical strength, not having a conductivity by itself, and having light weight, a high corrosion resistance and, moreover, a high processability is preferable. It is desirable that a transparent resin, for example, an acrylic resin be used as a material forming the upper cover 4 since the inner condition can be ascertained easily.

Any known ozone generator of, for example, an inner board generating system or a generating body circuit system can be suitably selected and used as the ozone generator 2. The ozone generator can be designed with the safety and economical effect taken into consideration, in such a manner that the ozone generator is automatically turned off at specific time by an operation of an IC timer incorporated therein as mentioned above.

To obtain the inner construction of the toothbrush receiver 3 and a bottom portion of the body case with which the lower

ends of the toothbrushes contact, and the upper cover 4, the same or different materials may be used. However, it is preferable that the same material be used for forming these parts taking into consideration a case where a molding process is carried out by, for example, welding. It is more preferable that an anti-germ material or a material subjected to an anti-germ treatment be used.

In order to sterilize toothbrushes in the cleaner of the above-described construction exclusively used for toothbrushes, the upper cover 4 is opened, and toothbrushes 6 are inserted into the body case 1, the toothbrushes 6 being then set in the toothbrush receiver 3 so that the surfaces of the hairs of the toothbrushes 6 are opposed to the ozone supply port 2-1. After the toothbrushes are thus set, the upper cover 4 is closed to make the cleaner tightly closed, and the ON/OFF switch 5 is turned on to generate ozone by the ozone generator 2. The generated ozone is injected from the ozone supply port 2-1 into the case body, and blown upon the surfaces of the hairs of the toothbrushes 6 through the ozone injection window 1-2. The surfaces of the hairs of each toothbrush are sterilized with the ozone blown thereupon. Although the time for generating and injecting the ozone is not specially limited, it may be 2 ~ 3 minutes. After injection of the ozone the upper cover 4 is left as being closed so that the surfaces of the hairs of the toothbrush are so effectively sterilized by not only the blown ozone but also the

ozone filled in the cleaner.

Although a toothbrush cleaner formed by combining in one body the ozone generator 2, toothbrush receiver 3 and upper cover 4 with the integral body case is shown in this embodiment, a unit system structure in which a container having an ozone generator 2 therein and a toothbrush storage container having a toothbrush receiver 3 are separately formed can also be employed.

As described above, the present invention enables the sterilization of just-used toothbrushes and the cleaning thereof by bleaching to be attained in a lavatory in a house in a short period of time with a high efficiency by merely using a regular household power source or contained batteries owing to the use of a gaseous element as a cleaning element called ozone which has very high sterilization power and, moreover, a high easiness to handle and a high safety. This toothbrush cleaner has a comparatively simple construction, and is capable of sterilizing and cleaning by bleaching just-used toothbrushes safely and easily, so that the toothbrush cleaner is very suitable for the management of the sanitation of regularly used toothbrushes. Moreover, the ozone generator used in the present invention can be combined with a commercially available toothbrush storage case to form a simple cleaner exclusively used for toothbrushes, and the resultant product can also be provided for the cleaning of toothbrushes. In addition, the cleaner exclusively used for

toothbrush being formed in a tight-close configuration, it can effectively sterilize the toothbrush by the ozone filled in the cleaner and can also prevent the ozone from being leaked out so as to settle the ecological problem of deteriorating the environment.