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(54) **POWERED TOOTHBRUSH HAVING A DECORATIVE FACADE**

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(76) Inventors: **Fung Kut Hui**, Cityone Shatin (HK);
Joseph Edward Fattori, Mendham, NJ
(US); **Tau Dai**, Edison, NJ (US); **John
J. Gatzemeyer**, Hillsborough, NJ (US)

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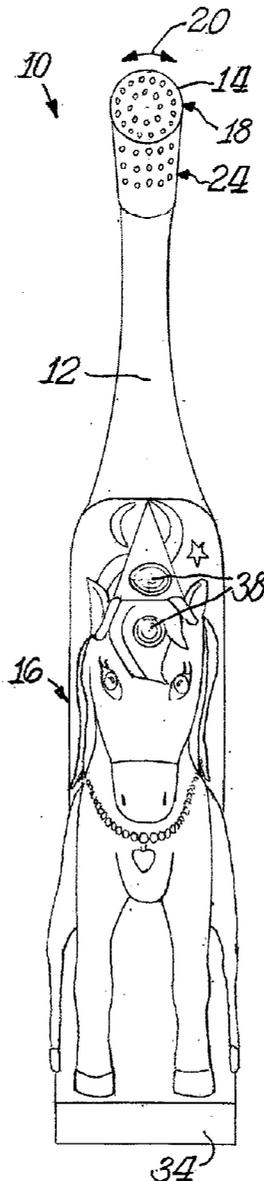
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Correspondence Address:
COLGATE-PALMOLIVE COMPANY
909 River Road
P.O. Box 1343
Piscataway, NJ 08855-1343 (US)

(57) **ABSTRACT**

The present invention relates to a powered toothbrush containing a decorative facade, which facade may be permanently attached to the brush handle or may be replaceable by the user.

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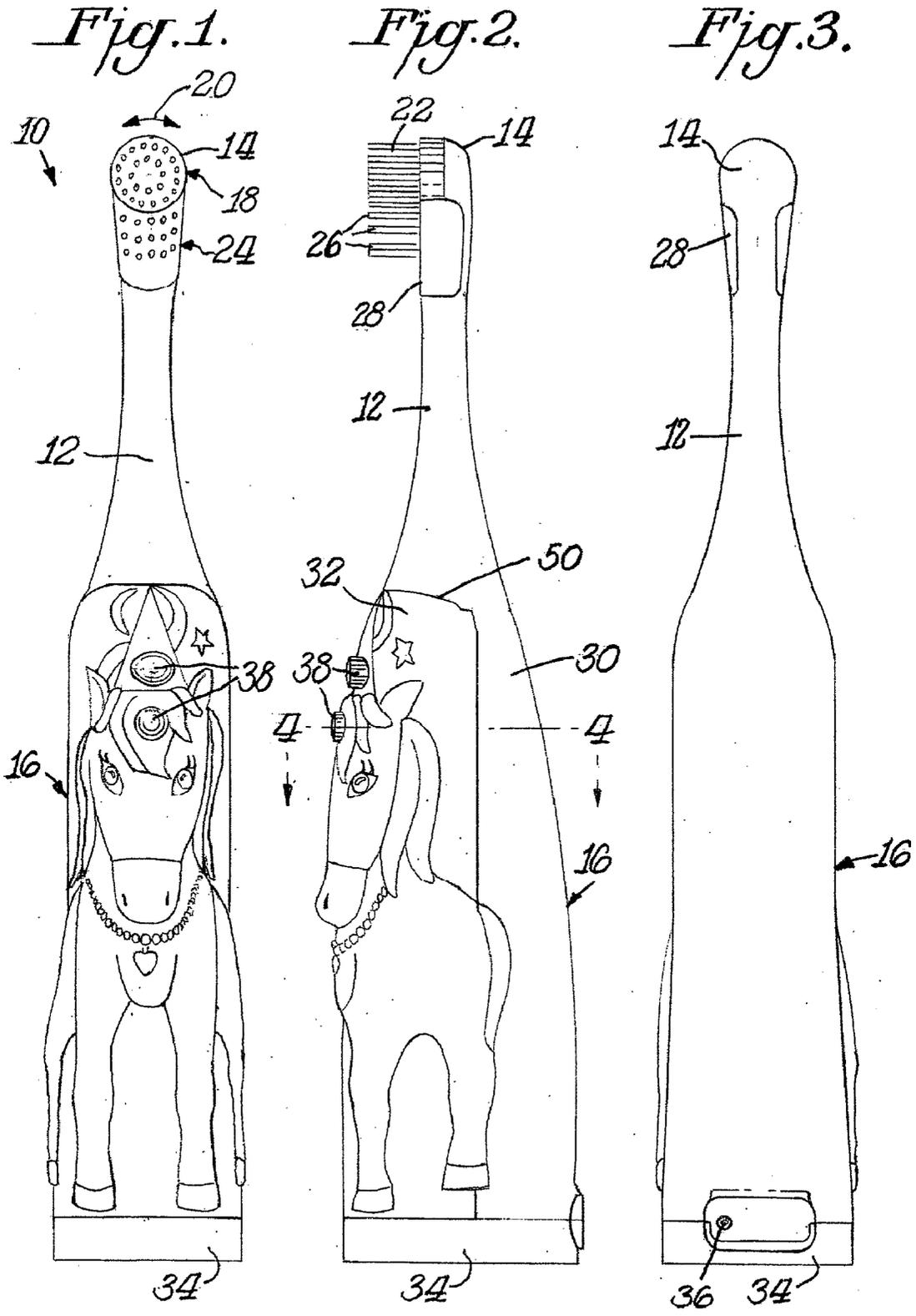


Fig. 5.

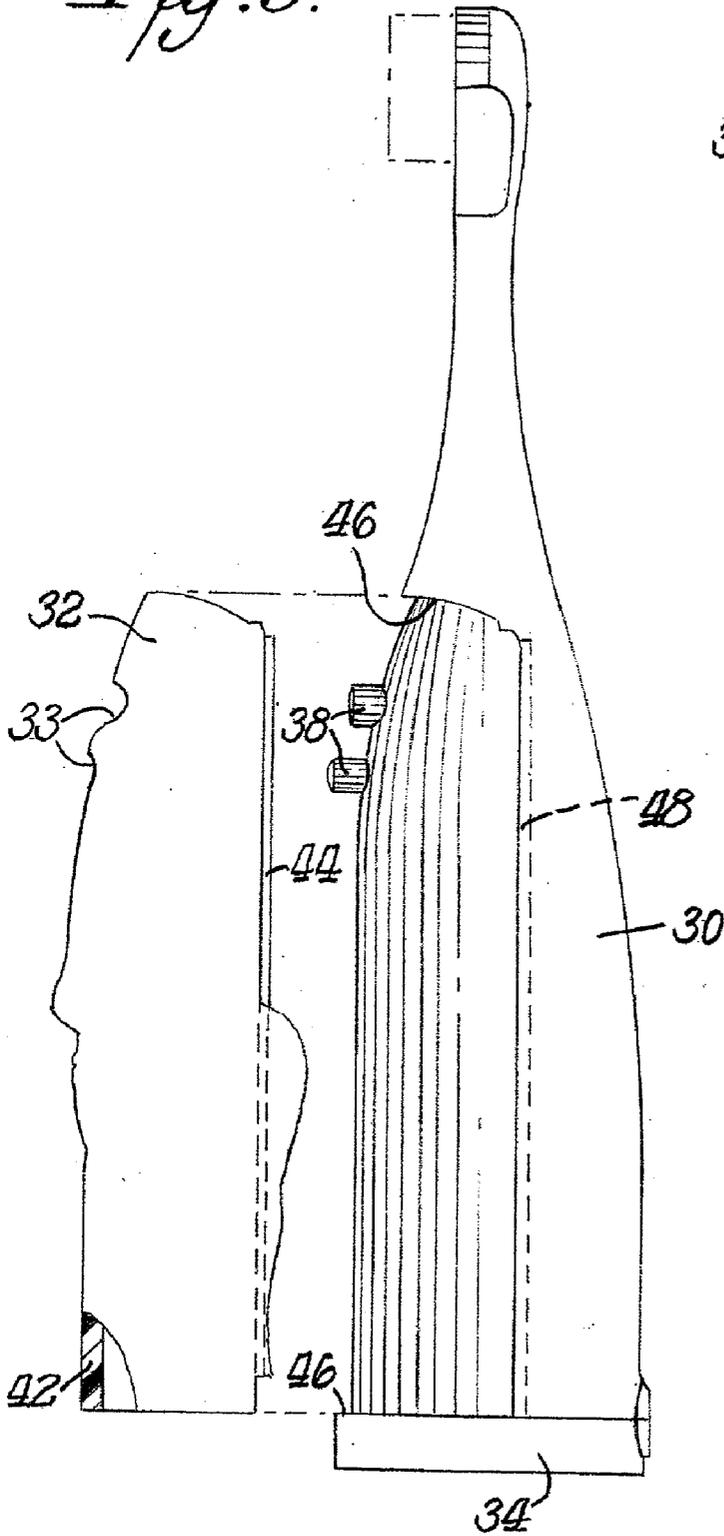


Fig. 4.

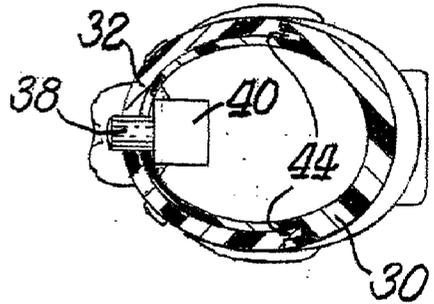
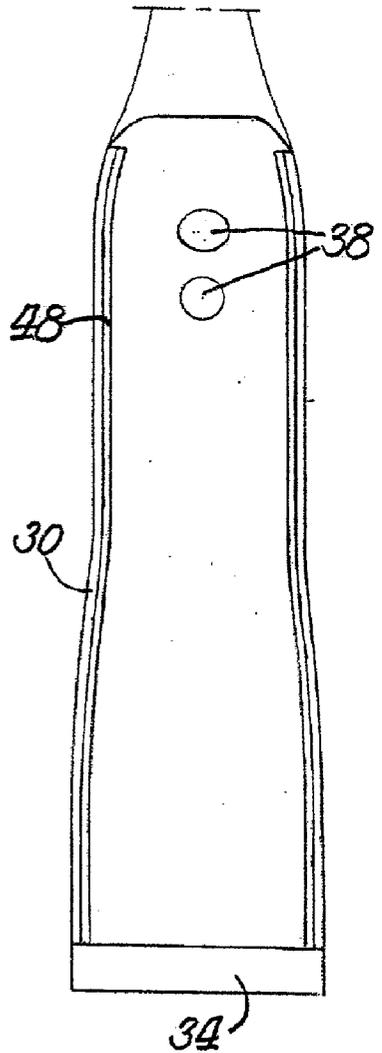


Fig. 6.



POWERED TOOTHBRUSH HAVING A DECORATIVE FACADE

BACKGROUND OF THE INVENTION

[0001] A. Field of the Invention

[0002] The present invention relates generally to toothbrushes, and, more particularly, to an economical powered toothbrush assembly having a standardized handle with a recess for receiving and retaining alternative decorative facades in such a manner that there is a smooth interface therebetween.

[0003] B. Description of the Related Art

[0004] Various types of non-powered toothbrushes having object-shaped handles are generally known in the art, and are designed to provide ergonomic grips, aesthetically pleasing appearances and/or to appeal to children to encourage them to brush their teeth for enhanced oral health. Examples of such toothbrushes that appeal to children include U.S. Design Pat. Nos. 443,765 and 452,381, which disclose toothbrushes which incorporate vehicles and U.S. Design Pat. Nos. 434,907, 5,353,464 which incorporate animals. Other toothbrush designs containing human, or toy shapes which appeal to children are disclosed in U.S. Design Pat. Nos. 113,744, 155,668, 175,198, and 209,574.

[0005] Many powered toothbrushes include handles formed by connecting two body portions or shells to form a complete housing. Examples of such powered toothbrushes may be found in U.S. Pat. Nos. 5,115,530, 5,341,534, and 6,148,462, 6,202,242. U.S. Pat. No. 6,202,242 discloses a light-emitting, electric toothbrush that includes a handle made from a front body portion and a rear body portion. The front and rear body portions are ultrasonically bonded together along an interface line, to permanently seal the two body portions. None of the aforementioned toothbrushes discloses joining a third shell section, i.e. a decorative facade, about the exterior of a standardized powered toothbrush handle.

[0006] U.S. Pat. No. 5,590,436 discloses a non-powered toothbrush having a handle that carries a figurine formed separately from but attached to the handle. The figurine can be attached directly to the handle of the toothbrush or can be attached first to a carrier, which carrier is then attached to the handle. The toothbrush handle of U.S. Pat. No. 5,590,436 does not disclose use of a decorative facade about the exterior of an otherwise complete toothbrush handle.

[0007] Thus, there is a need in the art to provide powered toothbrushes which having a facade for economic, ergonomic and/or aesthetic reasons, especially facades designed to appeal to children to encourage them to brush their teeth.

SUMMARY OF THE INVENTION

[0008] The present invention solves the problems of the related art by providing a powered toothbrush having a standardized handle to provide manufacturing efficiency and economy, to which standardized handle alternate facades may be permanently or removably and replaceably mounted. The decorative facade may have designs that appeal to children, to motivate them to brush their teeth often, and to set in place lifelong habits of good oral hygiene.

[0009] Alternatively, the decorative facade may be used as a location for advertising material. The powered toothbrush may then be sold to a variety of manufactures, who in turn, may place their own unique identification or advertising material on the decorative facade. Such manufacturers may then offer the powered toothbrushes, with their unique facade, as promotional items for their companies and/or their products.

[0010] As embodied and broadly described herein, the present invention is broadly drawn a powered toothbrush assembly, comprising: a head connected to a neck, said head having a plurality of bristles extending outwardly therefrom; and a handle connected to said neck, said handle having a decorative facade mounted thereon. The decorative facade may be permanently or replaceably mounted within a recessed portion of the handle so as to smoothly conform to the external shape of said handle, to enhance the consumer acceptance thereof.

[0011] Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description. It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention, as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention, and wherein:

[0013] **FIG. 1** is a front elevational view of a powered toothbrush having a recess for retaining a decorative facade in accordance with an embodiment of the present invention;

[0014] **FIG. 2** is a right side elevational view of the powered toothbrush shown in **FIG. 1**;

[0015] **FIG. 3** is a rear elevational view of the powered toothbrush shown in **FIGS. 1 and 2**;

[0016] **FIG. 4** is a cross-sectional top plan view of the powered toothbrush handle shown in **FIGS. 1-3**, taken along line 4-4 of **FIG. 2**;

[0017] **FIG. 5** is a right side elevational view of the powered toothbrush shown in **FIGS. 1-4**, with the decorative facade spaced apart from the remainder thereof; and

[0018] **FIG. 6** is a fragmental front elevational view of the powered toothbrush handle shown in **FIGS. 1-5**, with the decorative facade removed.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0019] The following detailed description of the invention refers to the accompanying drawings. The same reference numbers in different drawings identify the same or similar

elements. Also, the following detailed description does not limit the invention. Instead, the scope of the invention is defined by the appended claims and equivalents thereof.

[0020] FIGS. 1-6 illustrate one practice of the present invention wherein a powered toothbrush 10 includes a neck section 12 interposed between a head 14 and a handheld handle 16. Preferably, neck 12 and head 14 are integrally connected, and together are detachably connected to handle 16 so that head 14 may be replaced as the bristles become worn. In an alternate, less costly embodiment of the present invention, the head 14 and neck 12 are integral and permanently connected to the handle 16. Head 14 may contain a movable bristle bearing platform or a tuft block in a variety of shapes, including but not limited to circular, oval, square, rectangular, various regular or irregular shapes, etc.

[0021] As illustrated, particularly in FIG. 1, head 14 includes a first movable tuft block 18, which is illustrated as being at the outermost or distal portion of head 14. First tuft block 18 is preferably a disk of circular ring-type shape, and is movably driven in a rotating or oscillating manner as indicated by arrow 20 in FIG. 1. Other shapes may be used for first tuft block 18, such as oval or various regular or irregular shapes. First tuft block 18 may be provided with a multitude of tufts or bristles 22, arranged, in the illustrated embodiment, in a circular manner. Bristles 22 extend generally away from an outer surface 28 of head 14.

[0022] First tuft block 18 may be oscillated by any suitable drive mechanism. For example, the drive mechanism described in U.S. Pat. No. 5,625,916, the disclosure of which being incorporated by reference herein in its entirety except where inconsistent with the express teachings of the present invention, may be used to oscillate first tuft block 18.

[0023] A second tuft block 24 may be fixedly attached to head 14 at a location above neck 12, but below first tuft block 18. Second tuft block 24 may include a multitude of tufts or bristles 26 extending away from outer surface 28 of head 14 a distance equal to or different than the distance bristles 22 extend outwardly from outer surface 28 of head 14. It is to be understood, however, that second tuft block 24 could be located distally from, or laterally side-by-side to first tuft block 18. It is preferred, however, that second tuft block 24 be longitudinally outside of first tuft block 18 so as to extend the length of the surface area of head 14 having bristles.

[0024] The provision of second tuft block 24 in this manner is advantageous in that powered toothbrush 10 simulates, in appearance of head 14, the structure of a manual toothbrush. This makes powered toothbrush 10 more acceptable to users of conventional manual toothbrushes, since the appearance simulates what such a user is accustomed to seeing. In addition, two tuft blocks 18, 24 even further enhances the efficiency of toothbrush 10, both as a result of the movement of tuft blocks 18, 24, and of the ability to readily retain toothpaste.

[0025] While FIGS. 1 and 2 illustrate conventional fiber or filament form bristles, the term "bristles" as used herein is intended to be used in a generic sense as cleaning elements or massage elements and could include, for example, elastomeric fingers or walls arranged in a circular cross-section shape or any type of desired shape, including straight portions or sinusoidal portions.

[0026] The bristles 22, 26 could be mounted to the tuft blocks or sections by extending through suitable openings in outer surface 28 so that the base of bristles 22, 26 is mounted within or below the surface 28 using conventional staple or in-mold tufting technology for mounting therein. If desired, the bristles could be embedded in an elastomeric material which would permit the bristles to have an independent motion. Such various forms of bristles may thus be used for the bristles used in any section of head 14.

[0027] It is to be understood that the specific illustration of the bristles is merely for exemplary purposes. The invention can, however, be practiced with various combinations of the same or different bristle configurations as disclosed in U.S. Pat. Nos. 5,609,890, 5,390,984, and 5,533,791, the disclosures of which being incorporated by reference herein in their entirety, and/or with the same or different bristle materials, such as nylon bristles, spiral bristles, rubber bristles, etc. Similarly, while FIGS. 1 and 2 illustrate the bristles to be generally perpendicular to surface 28 of head 14, some or all of the bristles may be angled at various angles with respect to the outer surface of the bristle head. It is thereby possible to select the combination of bristle configurations, bristle materials and bristle orientations to achieve specific intended results, such as to create as much movement from the oscillating tuft heads to deliver additional oral health benefits like enhanced cleaning, tooth polishing, tooth whitening and/or massaging of the gums.

[0028] As further shown in FIGS. 1-6, handle 16 preferably includes a housing 30 and a decorative facade 32, each molded of known plastics, including for example a copolymer such as ABS (acrylonitrile, butadiene, styrene copolymer) or a high impact styrene. The decorative facade 32 can be removably or permanently connected to housing 30, by means discussed below. Housing 30 can be pre-formed as a single generally hollow shell or as two or more separate shell portions which are joined together by welding or other known means. Pre-forming housings or pre-forming complete powered toothbrushes to accept alternative decorated facades provides for an efficient less costly manufacturing process, in that the preformed housings or complete powered toothbrushes can be manufactured in longer manufacturing runs which have less wastage and less set-up labor cost than short manufacturing runs in which a decorative front is altered.

[0029] Housing 30 has an opening provided at an end portion thereof located away from neck 12. The hollow nature of housing 30, as best be seen in FIG. 4, enables housing 30 to enclose the drive mechanism (not shown) for oscillating first tuft block 18, as well as, the mechanism(s) providing power to the drive mechanism. The opening of housing 30 may be enclosed by an end cap or base 34. Base 34 enables a power mechanism, batteries for example, to be inserted in or removed and replaced from housing 30. Base 34 connects to housing 30 via a variety of connection mechanisms which may include a force fit male/female type interlock or as illustrated in FIG. 3, a hinged screwed 36 door which allows access to pry-off the end cap 34.

[0030] Handle 16 is also provided with buttons 38 for controlling the drive mechanism of the powered toothbrush 10. As best shown in FIGS. 1 and 2, buttons 38 extend through openings 33 (see FIG. 5) provided in decorative facade 32. Buttons 38 may control the drive mechanism, and

thus the oscillation of first tuft block **18**, in a known on-off type manner. Although two buttons **38** are shown in the Figures, preferably one to energize the drive mechanism and one to de-energize the drive mechanism, buttons **38** may be replaced with single switch or other control mechanism for the drive mechanism. As best shown in **FIG. 4**, each button **38** may connect to a switch **40** that controls the energizing of the drive mechanism.

[0031] Further details of the housing **30** and decorative facade **32** are provided in **FIGS. 4-6**. As best shown in **FIG. 5**, decorative facade **32** includes a body portion **42** that is arcuate in shape and conforms to the arcuate shape of housing **30**. Body portion **42** includes thinner sections **44** at the distal ends thereof. Preferably the thinner sections **44**, as shown, extend substantially along the entire height of body portion **42**; however, these sections may only extend a portion of the length thereof. The thinner sections **44** are received in the recessed portion of housing **30**, as described more fully below.

[0032] Housing **30** preferably includes a recessed portion **46** that is arcuate in shape and conforms to the arcuate shape of decorative facade **32**. As shown in **FIGS. 4 and 5**, buttons **38** extend through openings provided in recessed portion **46** of housing **30**, and through openings **33** provided in decorative facade **32**. Recessed portion **46** of housing **30** may further include deeper sections or grooves **48** that receive and retain thinner sections **44** of decorative facade **32**. Thus, deeper sections **48** may extend substantially along the entire height of recessed portion **46** corresponding to the thinner sections **44** extending from decorative facade **32** to interconnect therewith. The interconnection of thinner sections **44** of decorative facade **32** and deeper sections **48** of housing **30** is best shown in **FIG. 4**. This interconnection enables decorative facade **32** to be mechanically, by a force or snap fit, and removably attached to housing **30**.

[0033] Alternatively, decorative facade **32** may be permanently attached to housing **30** in a variety of ways. For example, decorative facade **32** may be ultrasonically or adhesively, using cold or hot adhesives, bonded to recessed portion **46** of housing **30** along an interface line **50**, as shown in **FIG. 2**. Decorative facade **32** may also be connected to recessed portion **46** with a mechanical connector (nuts and bolts, screws, etc.), heat or laser welded, etc.

[0034] The decorative facade **32** may have a three dimensional design, such as the horse illustrated in **FIGS. 1-2**, or alternately a vehicle, or a soldier, or a fireman, or a policeman or other image that appeals to children and that can be used by a child in play as a toy. A powered toothbrush **10** having a handle recess **46** with such a toy-shaped, decorative facade **32** provided therein offers a fun and exciting way for

children to brush their teeth. Such excitement motivates children to brush their teeth often, to set in place lifelong habits of good oral hygiene.

[0035] Alternatively, the decorative facade **32** may be used as a location for advertising material. The powered toothbrush **10** may then be sold to a variety of manufactures, who in turn, may place their own unique advertising material on the decorative facade **32**. Such manufactures may then offer the powered toothbrushes **10**, with their unique facade **32**, as promotional items for their companies and/or their products.

What is claimed is:

1. A powered toothbrush assembly, comprising:
 - a head connected to a neck, said head having a plurality of bristles extending outwardly therefrom; and
 - a handle connected to said neck, said handle having a decorative facade mounted thereon
2. A powered toothbrush assembly as recited in claim 1, wherein said handle has an external housing thereabout and wherein said decorative facade conforms to the shape of said housing and is received and retained in a recessed portion thereof.
3. A powered toothbrush assembly as recited in claim 2, wherein said decorative facade comprises a body portion that is arcuate in shape and conforms to an arcuate shape of said handle.
4. A powered toothbrush assembly as recited in claim 3, wherein the body portion includes thinner sections at the distal ends thereof; and wherein said recessed portion of said housing contains grooves which correspond to said thinner sections to receive and retain said thinner sections.
5. A powered toothbrush assembly as recited in claim 1, wherein said decorative facade contains a three dimensional design selected from the group consisting of a horse, a vehicle, a soldier, a fireman and a policeman.
6. A powered toothbrush assembly as recited in claim 1, wherein said decorative facade is permanently connected to said handle.
7. A powered toothbrush assembly as recited in claim 1, wherein said decorative facade is removably connected to said handle.
8. A powered toothbrush assembly as recited in claim 1, wherein said handle is arcuate in shape and conforms to an arcuate shape of said decorative facade.
9. A powered toothbrush assembly as recited in claim 4, wherein the grooves receive and retain the thinner sections of said decorative facade, enabling said decorative facade to be mechanically and removably attached to said handle.

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