



US 20150074926A1

(19) **United States**  
(12) **Patent Application Publication**  
**Jang**

(10) **Pub. No.: US 2015/0074926 A1**  
(43) **Pub. Date: Mar. 19, 2015**

(54) **PORTABLE TOOTHBRUSH**

**Publication Classification**

(71) Applicant: , Gwangju (KR)  
(72) Inventor: **Sun Oh Jang**, Gwangju (KR)

(51) **Int. Cl.**  
*A46B 15/00* (2006.01)  
*A46B 11/00* (2006.01)  
*A46B 5/00* (2006.01)  
(52) **U.S. Cl.**  
CPC ..... *A46B 15/0071* (2013.01); *A46B 15/0069*  
(2013.01); *A46B 5/0016* (2013.01); *A46B*  
*11/002* (2013.01)  
USPC ..... **15/106**; 15/167.1; 15/105

(73) Assignee: **WHIMI CO., LTD.**, Gwangju (KR)

(21) Appl. No.: **14/383,153**

(57) **ABSTRACT**

(22) PCT Filed: **Mar. 11, 2013**

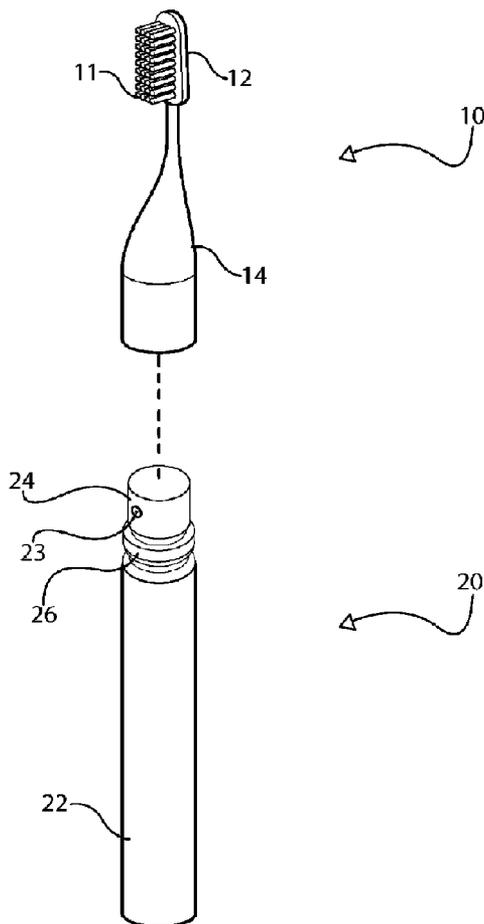
(86) PCT No.: **PCT/KR2013/001923**

§ 371 (c)(1),  
(2) Date: **Sep. 5, 2014**

The present invention relates to a portable toothbrush which, in particular: has a cleaning solution capable of cleaning the mouth, toothbrush bristles, and an interdental brush; discharges, via a spraying method, the cleaning solution from a storage member for storing the cleaning solution; has an interdental cleaning member detachably installed thereon, and a cover for covering the interdental cleaning member that is coupled to an interdental cleaning member fixing hole; is used by discharging the cleaning solution via the spraying method before and after the toothbrush is used so as to enable the hygienic rinsing of the mouth; and facilitates the carrying and replacement of the interdental toothbrush.

(30) **Foreign Application Priority Data**

Mar. 12, 2012 (KR) ..... 20-2012-0001942  
Mar. 12, 2012 (KR) ..... 20-2012-0001943



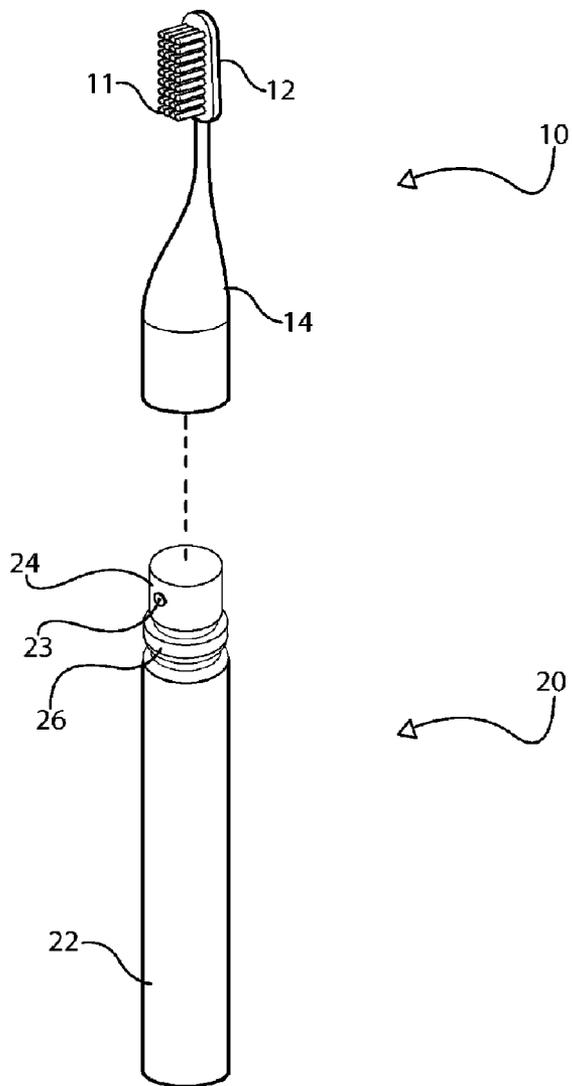


FIG. 1

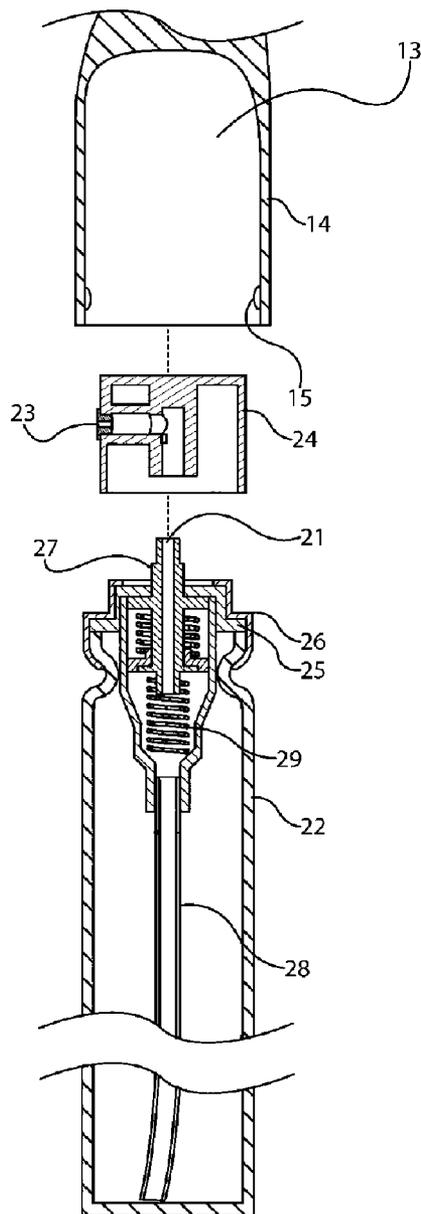


FIG. 2

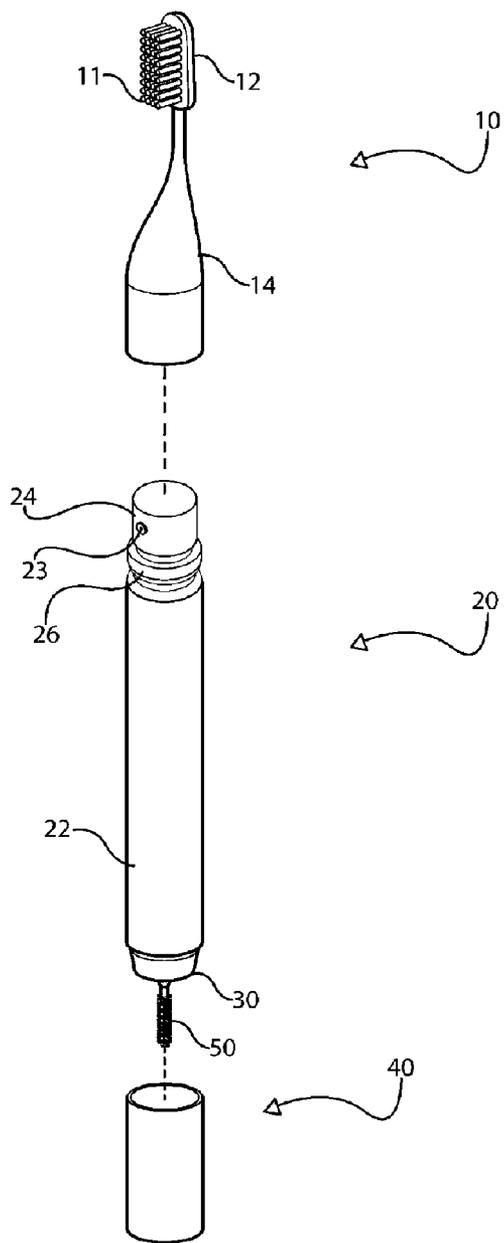


FIG. 3

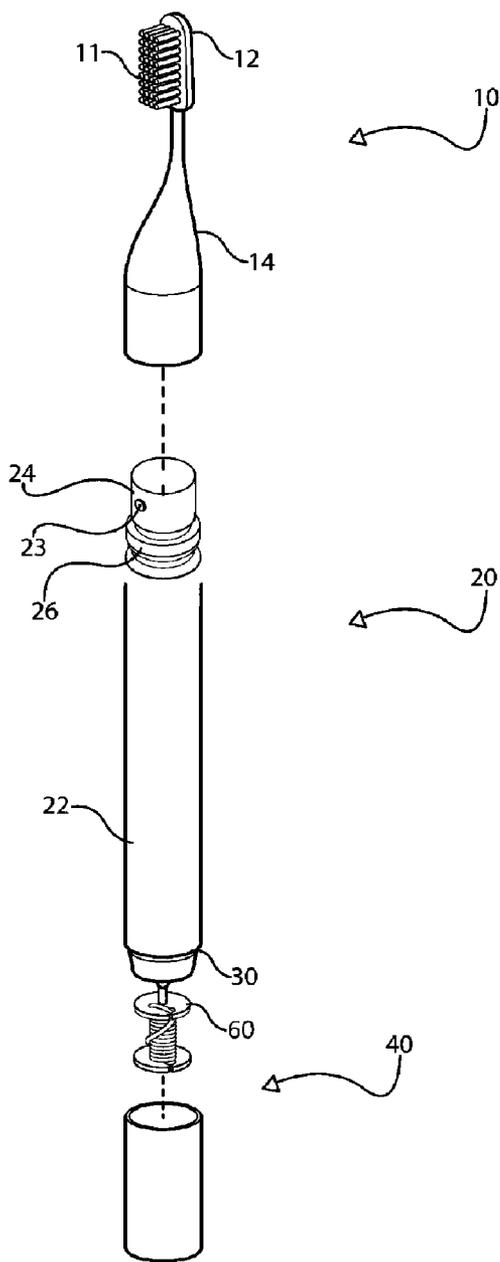


FIG. 4

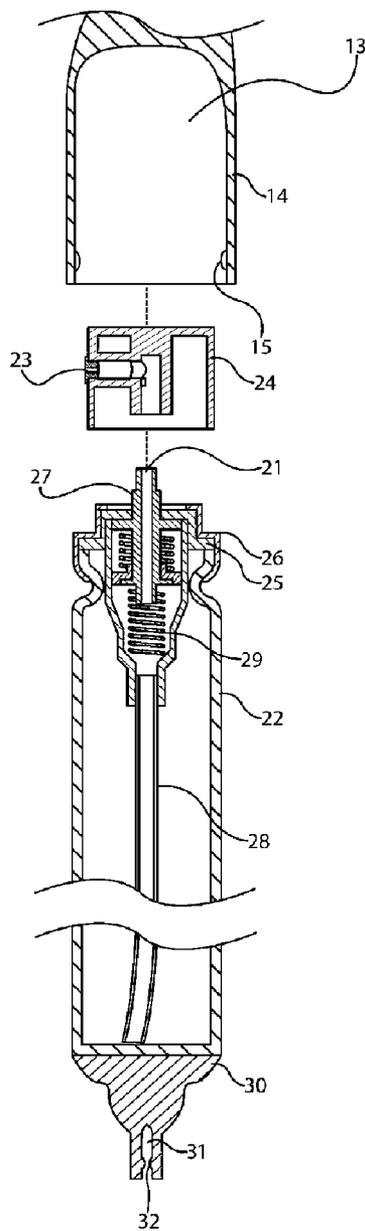


FIG. 5

## PORTABLE TOOTHBRUSH

### TECHNICAL FIELD

[0001] The present invention relates to a portable toothbrush, and more particularly, to a portable toothbrush having a cleaning solution capable of cleaning the mouth, toothbrush bristles, and an interdental brush and capable of facilitating the carrying of an interdental cleaning member such as an interdental toothbrush or a dental floss.

### BACKGROUND ART

[0002] Since bacteria over hundreds of species are lived in man's mouth, numerous bacteria reproduce even in the toothbrush thereof for cleaning the tooth. Accordingly, it is necessary to wash and dry the toothbrush well for preventing the propagation of the bacteria after toothbrushing and wash the toothbrush for sterilization before toothbrushing.

[0003] In other words, it is preferable to completely dry the toothbrush by rubbing the bristles with his thumb, washing it clean and then, placing it at the sunshiny and airy window after toothbrushing thereof.

[0004] Meanwhile, where it is far away from home like a travel or a business trip etc., since the toothbrush is not easily cleaned due to time and space constraints, numerous bacteria reproduce in the toothbrush thereof. In this state, when the user brushes his teeth, it can lead to health problems in terms of teeth and oral thereof.

[0005] In order to solve this problem, conventionally, it is necessary to separately equip a cleaning solution with the toothbrush. In this case, since it is inconvenient to separately equip a cleaning solution with the toothbrush, when the user brushes his teeth after eating out, there is difficult in completely ensuring the toothbrush and oral hygiene.

[0006] On the other hand, in the conventional toothbrush, it applies the toothpaste to a brush head to clean the teeth so as to remove food leftovers or plaques etc. existed on the teeth. However, in the conventional toothbrush, it is difficult to do a thorough cleaning of the teeth. Accordingly, the food leftovers or the plaques etc. existed between the teeth are removed by means of a dental floss or a specifically formulated interdental toothbrush, not the general toothbrush.

[0007] In the interdental toothbrush, a cone-shaped brush is fixed to an iron core, which is coupled to an end of the body of a bar shape. Here, the body is molded by a synthetic resin like the general toothbrush and the iron core is made of a nickel. Here, the surface of the core is coated on a resin material such as a nylon in consideration of the allege reaction.

[0008] In the conventional interdental toothbrush, in a state that the user holds the body thereof, the brush is repeatedly pushed and pulled toward the spaces between the teeth, so that the food leftovers or the plaques etc. existed in the spaces between the teeth are removed to maintain the dental health thereof.

[0009] However, although the conventional dental floss or the interdental toothbrush is used in parallel with the general toothbrush, since they are separately housed, the use thereof is very cumbersome. Also, since it is hard to secure a storage area thereof during a separate storage, there is a problem in a hygienic storage thereof.

[0010] "Interdental toothbrush having cleaning solution" (Korea Patent Registration No. 10-0468075, Patent Document 1) is disclosed as the conventional art. However, the

conventional art, since the interdental toothbrush is small in volume, there is a problem in that the loss there is easy during travelling.

### PRIOR ART DOCUMENT

[0011] Patent Document 1

[0012] Korean Patent Registration No. 10-0468075 (Jan. 15, 2005)

### DISCLOSURE

#### Technical Problem

[0013] Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and a object of the present invention is to provide a portable toothbrush in that a storage member for discharging a cleaning solution for cleaning a mouth and a toothbrush bristles by means of the spraying method is coupled detachably to a knob portion of the toothbrush, while maintaining a fundamental shape of the toothbrush without taking up additional space during carrying thereof, so that the mouth and the toothbrush bristles can be easily cleaned before and after the toothbrush, thereby enabling the hygienic teeth and mouth care.

[0014] Another object of the present invention is to provide a portable toothbrush in that an interdental toothbrush or a dental floss is coupled detachably to an interdental cleaning member fixture formed at the storage member, so that the interdental toothbrush or the dental floss can be easily stored therein.

#### Technical Solution

[0015] In order to accomplish this object, there is provided a portable toothbrush including: a toothbrush body **10** having a head portion **12** provided with a bristles **11** on one side thereof and a body portion **14** integrally with the head portion **12** and provided with an coupling groove **13**, which is formed on an inside thereof; and a storage member **20** having one side coupled detachably to the coupling groove **13** of the body portion **14** and storing a cleaning solution therein.

[0016] Preferably, the cleaning solution is a cleansing agent for cleaning the teeth and the bristles or a mouthwash for removing halitosis therein.

[0017] Preferably, the portable toothbrush further includes: an interdental cleaning member fixture **30** having one side fixedly coupled to the other side of the storage member **20**, a fixing groove **31** formed on the other side opposed to one side thereof, and a coupling protrusion **32** protruded to the inside of the fixing groove **31**; and a cover **40** coupled to the interdental cleaning member fixture **30** and covering an interdental cleaning member so as to protect the interdental cleaning member coupled detachably to the interdental cleaning member fixture **30** by inserting into the fixing groove **31** from the outside environment.

[0018] Preferably, the cleaning solution is a cleansing agent for cleaning the teeth, the bristles, and the interdental cleaning member or a mouthwash for removing halitosis therein.

[0019] Preferably, the interdental cleaning member is an interdental toothbrush **50** or a dental floss **60**.

[0020] Preferably, in the storage member **20**, the cleaning solution is discharged by means of a spraying method.

[0021] Preferably, the storage member **20** includes: a storage container **22** for storing the cleaning solution therein; a

cap **25** seated on an upper end of the storage container **22**; an opening and closing valve **27** coupled to and penetrated through the cap **25** in such a manner that one side thereof is disposed on an inside of the storage container **22** and the other side thereof is disposed on an outside of the storage container **22** and having a discharge hole **21** therein; a coupling member **26** for coupling the storage container **22** with the cap **25** so as to maintain the sealing thereof; an inflow pipe **28** formed on an lower portion of the other side of the opening and closing valve **27** so as to allow the cleaning solution stored in the storage container **22** to be delivered to the discharge hole **21**; and a push button **24** coupled to the opening and closing valve **27** in an upper portion of the storage container **22** so as to operate the opening and closing of the opening and closing valve **27** and having a spray nozzle **23**, which is formed on one side of the outer circumference thereof.

Advantageous Effects

[0022] According to the present invention, the storage member is made of transparent material so as to allow the cleaning solution stored therein to be seen and the storage member is coupled detachably to the body portion, so that it facilitates the carrying thereof and the cleaning solution stored in the storage member is easily discharged by means of the spraying method before and after the toothbrush, so that it can clean the toothbrush bristles and the mouth, thereby enabling the hygienic rinsing of the mouth.

[0023] Also, since the interdental toothbrush or the dental floss is coupled detachably to the interdental cleaning member fixture, which is formed at the other side of the storage member having the cleaning solution therein, it facilitates the carrying of the interdental toothbrush or the dental floss. Moreover, where the interdental toothbrush is damaged or the dental floss is contaminated, the interdental toothbrush or the dental floss can be easily replaced with a new one.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The above and other objects, features and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

[0025] FIG. 1 is a perspective view illustrating a portable toothbrush according to an embodiment of the present invention;

[0026] FIG. 2 is an exploded cross-sectional view of a portable toothbrush shown in FIG. 2;

[0027] FIG. 3 is a perspective view illustrating a portable toothbrush according to another embodiment of the present invention;

[0028] FIG. 4 is a perspective view illustrating a portable toothbrush according to further another embodiment of the present invention; and

[0029] FIG. 5 is an exploded cross-sectional view of a portable toothbrush shown in FIG. 3.

DESCRIPTIONS ON REFERENCE NUMBERS FOR THE MAJOR COMPONENTS IN THE DRAWINGS

- [0030] **10**: toothbrush body
- [0031] **11**: bristles
- [0032] **12**: head portion
- [0033] **13**: coupling groove
- [0034] **14**: body portion

- [0035] **20**: storage member
- [0036] **21**: discharge holes
- [0037] **22**: storage container
- [0038] **23**: spray nozzle
- [0039] **24**: push button
- [0040] **25**: cap
- [0041] **26**: coupling member
- [0042] **27**: opening and closing valve
- [0043] **28**: inflow pipe
- [0044] **29**: spring
- [0045] **30**: interdental cleaning member fixture
- [0046] **31**: fixing groove
- [0047] **32**: coupling protrusion
- [0048] **40**: cover
- [0049] **50**: interdental toothbrush
- [0050] **60**: dental floss

BEST MODE

Mode for Invention

[0051] The objects, specific advantages, and novel features of the present invention will become more apparent from the detailed description and the preferred embodiments below, which are associated with the accompanying drawings.

[0052] Prior to the description, terms or words used in the present specification and claim should not be interpreted as conventional and dictionary meanings. They should be interpreted as the meanings and concepts conforming to the technical spirit of the present invention on the basis of the principle that the inventor can appropriately define the concepts of the terms so as to explain his invention with the best mode thereof.

[0053] Also, where reference numerals are added to the components of the drawings in this specification, the same element is illustrated as the same reference numeral, even if it is shown in other drawings.

[0054] Hereinafter, an exemplary embodiment of the present invention will be described in detail with reference to the accompanying drawings.

[0055] FIG. 1 is a perspective view illustrating a portable toothbrush according to an embodiment of the present invention and FIG. 2 is an exploded cross-sectional view of a portable toothbrush shown in FIG. 2.

[0056] Referring to FIG. 1 and FIG. 2, the portable toothbrush according to the present invention includes a toothbrush body **10** having a head portion **12** provided with a bristles **11** on one side thereof, and a body portion **14** integrally with the head portion **12** and provided with an coupling groove **13**, which is formed on an inside thereof; and a storage member **20** coupled detachably to the coupling groove **13** of the body portion **14** and storing a cleaning solution therein.

[0057] At this time, an inner protrusion **15** is formed on an inner circumference of the coupling groove **13** of the body portion. Accordingly, it can prevent the storage member **20**, which is inserted into and coupled to the coupling groove **13** of the body portion **14**, from being easily separated from the coupling groove **13**.

[0058] That is, when the storage member **20** is inserted into the coupling groove **13** to be coupled, since the inner protrusion **15** is caught in a coupling member **26** of the storage member **20**, it can prevent the storage member **20** from being easily separated from the coupling groove **13** during toothbrushing thereof.

[0059] On the other hand, the storage member 20 includes a storage container 22 for storing the cleaning solution such as a cleansing agent for cleaning the teeth and the bristles 11 or a mouthwash for removing halitosis therein; a cap 25 seated on an upper end of the storage container 22; an opening and closing valve 27 coupled to and penetrated through the cap 25 in order that one side thereof is disposed on an inside of the storage container 22 and the other side thereof is disposed on an outside of the storage container 22 and having discharge holes 21 therein; the coupling member 26 for coupling the storage container 22 with the cap 25 so as to maintain the sealing thereof; an inflow pipe 28 formed on a lower portion of the other side of the opening and closing valve 27 so as to allow the cleaning solution stored in the storage container 22 to be delivered to the discharge hole 21; and a push button 24 coupled to the opening and closing valve 27 in an upper portion of the storage container 22 so as to operate the opening and closing of the opening and closing valve 27, the push button 24 being provided with a spray nozzle 23, which is formed on one side of the outer circumference thereof.

[0060] In the storage member 20, if the push button 24 is pressed, the opening and closing valve 27 descends to generate a pressure. At this time, by means of the pressure, the cleaning solution stored in the storage container 22 is sprayed to the outside through a spray nozzle 23 via the inlet pipe 28 and the discharge hole 21.

[0061] In this case, if the pressed push button is returned, the opening and closing valve 27 is returned by means of the elastic restoring force of a spring 29 formed on the lower portion of the opening and closing valve 27 and then, the spray of the cleaning solution is stopped.

[0062] That is, the cleaning solution stored in the storage member 20 is sprayed to the outside through the spraying method.

[0063] It is preferred that the storage member 20 is made of a transparent material so as to allow the cleaning solution stored therein to be seen.

[0064] As described above, in the portable toothbrush according to the present invention, since the storage member is made of transparent material so as to allow the cleaning solution stored therein to be seen and the storage member 20 is coupled detachably to the body portion 14, it facilitates the carrying thereof. Also, the cleaning solution stored in the storage member 20 is easily discharged by means of the spraying method before and after the toothbrush, so that it can clean the toothbrush bristles and the mouth, thereby enabling the hygienic rinsing of the mouth.

[0065] FIG. 3 is a perspective view illustrating a portable toothbrush according to another embodiment of the present invention, FIG. 4 is a perspective view illustrating a portable toothbrush according to further another embodiment of the present invention, and FIG. 5 is an exploded cross-sectional view of a portable toothbrush shown in FIG. 3.

[0066] Here, the portable toothbrush according to another embodiment of the present invention further includes an interdental toothbrush 50 as an interdental cleaning member and the portable toothbrush according to further another embodiment of the present invention further includes a dental floss as an interdental cleaning member. Since remaining elements are identical with the first embodiment of the present invention, they will be explained together herein below.

[0067] Referring to FIG. 3 through FIG. 5, the portable toothbrush according to the present invention includes a

toothbrush body 10 having a head portion 12 provided with a bristles 11 on one side thereof, and a body portion 14 integrally with the head portion 12 and provided with a coupling groove 13, which is formed on an inside thereof; a storage member 20 having one side coupled detachably to the coupling groove 13 of the body portion 14 and storing a cleaning solution therein; an interdental cleaning member fixture 30 formed on the other side of the storage member 20; and a cover 40 coupled to the interdental cleaning member fixture 30 so as to protect an interdental cleaning member (that is, any one of the interdental toothbrush 50 of FIG. 3 and the dental floss 60 of FIG. 4) inserted into and coupled detachably to the interdental cleaning member fixture 30 from the outside environment.

[0068] At this time, an inner protrusion 15 is formed on an inner circumference of the coupling groove 13 of the body portion. Accordingly, it can prevent the storage member 20, which is inserted into and coupled to the coupling groove 13 of the body portion 14, from being easily separated from the coupling groove 13.

[0069] That is, when the storage member 20 is inserted into the coupling groove 13 to be coupled, since the inner protrusion 15 is caught in a coupling member 26 of the storage member 20, it can prevent the storage member 20 from being easily separated from the coupling groove 13 during tooth brushing.

[0070] On the other hand, like the first embodiment of the present invention, the storage member 20 includes a storage container 22 for storing the cleaning solution such as a cleansing agent for cleaning the teeth, the bristles 11, and the interdental toothbrush 50 or a mouthwash for removing halitosis therein.

[0071] Also, one side of the interdental cleaning member fixture 30 is fixedly coupled to the other side of the storage member 20. The interdental cleaning member fixture 30 further includes a fixing groove 31 formed on the other side opposed to one side thereof so as to allow any one of the interdental toothbrush 50 and the dental floss 60 to be inserted therein to be coupled detachably. Also, a coupling protrusion 32 is protruded to the inside of the fixing groove 31.

[0072] At this time, the coupling protrusion 32 can prevent the body having the wound interdental toothbrush 50 or the wound dental floss 60, which is inserted into the interdental cleaning member fixture 30, from being easily separated from the interdental cleaning member fixture 30 during tooth-brushing thereof.

[0073] The interdental cleaning member fixture 30 can be formed separately from the storage member 20. That is, one side of the interdental cleaning member fixture 30 can be fixedly coupled to the other side of the storage member 20 by means of an adhesive means (for example, an high-strength adhesive) or can be formed integrally at the storage member 20.

[0074] On the other hand, the interdental toothbrush 50 or the dental floss 60, which is inserted into and detachably coupled to the interdental cleaning member fixture 30, can be replaced with a new one according to the selection of the user.

[0075] That is, when the interdental toothbrush 50 is damaged or the user wishes to replace the dental floss 60, the user removes the interdental toothbrush 50 or the dental floss 60 from the interdental cleaning member fixture 30 and then, a new interdental toothbrush 50 or a new dental floss 60 is inserted to the interdental cleaning member fixture 30 to be utilized.

[0076] The cover 40 for covering the interdental toothbrush 50 or the dental floss 60, which is inserted into and coupled detachably to the interdental cleaning member fixture 30, can prevent the interdental toothbrush 50 or the dental floss 60, which is coupled detachably to the interdental cleaning member fixture 30, from being contaminated or damaged from the outside environment.

[0077] As described above, in the portable toothbrush according to the present invention, since the storage member is made of transparent material so as to allow the cleaning solution stored therein to be seen and the storage member 20 is coupled detachably to the body portion 14, it facilitates the carrying thereof. Also, the cleaning solution stored in the storage member 20 is easily discharged by means of the spraying method before and after the toothbrush, so that it can clean the toothbrush bristles 11 and the mouth, thereby enabling the hygienic rinsing of the mouth.

[0078] Also, in the portable toothbrush according to another embodiment of the present invention, since the interdental toothbrush 50 or the dental floss 60 is coupled detachably to the interdental cleaning member fixture 30, which is formed at the other side of the storage member 20 having the cleaning solution therein, it facilitates the carrying of the interdental toothbrush 50 or the dental floss 60. Also, where the interdental toothbrush 50 is damaged or the dental floss 60 is contaminated, the interdental toothbrush 50 or the dental floss 60 can be easily replaced with a new one.

[0079] Although a preferred embodiment of the present invention has been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the present invention as disclosed in the accompanying claims.

INDUSTRIAL APPLICABILITY

[0080] The portable toothbrush of the present invention can be applied to various fields, such as a disposable toothbrush for traveling, a home toothbrush, and an electric toothbrush.

- 1. A portable toothbrush comprising:
  - a toothbrush body having a head portion provided with a bristles on one side thereof and a body portion integrally with the head portion and provided with an coupling groove, which is formed on an inside thereof; and
  - a storage member having one side coupled detachably to the coupling groove of the body portion and storing a cleaning solution therein.

2. The portable toothbrush as claimed in claim 1, wherein the cleaning solution is a cleansing agent for cleaning the teeth and the bristles or a mouthwash for removing halitosis therein.

3. The portable toothbrush as claimed in claim 1, further comprising:

- an interdental cleaning member fixture having one side fixedly coupled to the other side of the storage member, a fixing groove 31 formed on the other side opposed to one side thereof, and a coupling protrusion protruded to the inside of the fixing groove; and

a cover coupled to the interdental cleaning member fixture and covering an interdental cleaning member so as to protect the interdental cleaning member coupled detachably to the interdental cleaning member fixture by inserting into the fixing groove from the outside environment.

4. The portable toothbrush as claimed in claim 3, wherein the cleaning solution is a cleansing agent for cleaning the teeth, the bristles, and the interdental cleaning member or a mouthwash for removing halitosis therein.

5. The portable toothbrush as claimed in claim 3, wherein the interdental cleaning member is an interdental toothbrush or a dental floss.

6. The portable toothbrush as claimed in claim 1, wherein, in the storage member, the cleaning solution is discharged by means of a spraying method.

7. The portable toothbrush as claimed in claim 3, wherein the storage member comprising:

- a storage container for storing the cleaning solution therein;
- a cap seated on an upper end of the storage container;
- an opening and closing valve coupled to and penetrated through the cap in such a manner that one side thereof is disposed on an inside of the storage container and the other side thereof is disposed on an outside of the storage container and having a discharge hole therein;
- a coupling member for coupling the storage container with the cap so as to maintain the sealing thereof;
- an inflow pipe formed on an lower portion of the other side of the opening and closing valve so as to allow the cleaning solution stored in the storage container to be delivered to the discharge hole; and
- a push button coupled to the opening and closing valve in an upper portion of the storage container so as to operate the opening and closing of the opening and closing valve and having a spray nozzle, which is formed on one side of the outer circumference thereof.

8. The portable toothbrush as claimed in claim 6, wherein the storage member comprising:

- a storage container for storing the cleaning solution therein;
- a cap seated on an upper end of the storage container;
- an opening and closing valve coupled to and penetrated through the cap in such a manner that one side thereof is disposed on an inside of the storage container and the other side thereof is disposed on an outside of the storage container and having a discharge hole therein;
- a coupling member for coupling the storage container with the cap so as to maintain the sealing thereof;
- an inflow pipe formed on an lower portion of the other side of the opening and closing valve so as to allow the cleaning solution stored in the storage container to be delivered to the discharge hole; and
- a push button coupled to the opening and closing valve in an upper portion of the storage container so as to operate the opening and closing of the opening and closing valve and having a spray nozzle, which is formed on one side of the outer circumference thereof.

\* \* \* \* \*