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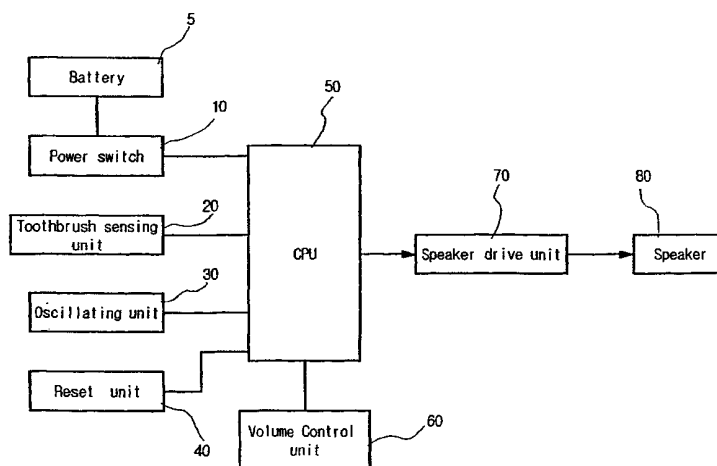
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(54) Title: TOOTH-BRUSHING TIME ANNOUNCING DEVICE



(57) Abstract: A tooth-brushing time announcing device is disclosed. This device is used with a toothbrush holder and is designed to stepwisely output announcements while continuously outputting music for a predetermined lengthy period of time after a user takes a toothbrush from the toothbrush holder preferably having a specifically designed character shape. The device thus allows the user to more effectively and more willingly brush his teeth for an effective and healthful brushing time. The device of this invention, set in a toothbrush holder (100) having a specifically designed character shape, is provided with a sensing unit (20) for sensing a separation of a toothbrush (90), by a user, from the toothbrush holder (100). When sensing a separation of the toothbrush (90) from the holder (100), the sensing unit (20) outputs a sensing signal to a CPU (50). Upon receiving the signal from the sensing unit (20), the CPU (50) stepwisely outputs announcements through the speaker (80) while continuously outputting music through the speaker (80) for a predetermined lengthy period of time. The device of this invention thus allows the user to more effectively and more willingly brush his teeth for an effective and healthful brushing time while alleviating the tedium of brushing teeth.



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TOOTH-BRUSHING TIME ANNOUNCING DEVICE

Technical Field

The present invention relates to a tooth-brushing time announcing device used with a toothbrush holder and designed to stepwisely output announcements while outputting music for a predetermined lengthy period of time after a user takes a toothbrush from the toothbrush holder preferably having a specifically designed character shape, thus allowing the user to more effectively and more willingly brush his teeth for an effective and healthful brushing time while alleviating the tedium of brushing teeth.

10 Background Art

In accordance with dental statistic data, most people spend only about 40 to 80 seconds each time they brush their teeth.

However, most dentists exhort people to brush their teeth for 180 seconds each time, and so the tooth-brushing time, 40 to 80 seconds, is relatively shorter than the exhorted brushing time. Such a short brushing time is caused by a bad habit typically formed in childhood and regrettably fails to accomplish a desired tooth-brushing effect or to maintain one's dental health.

It is impractical for people to precisely count the desired tooth-brushing time, 180 seconds, and so most people roughly brush their teeth for a shorter time. In addition, most people feel tedious while brushing their teeth.

Disclosure of the Invention

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a tooth-brushing time announcing device, which is used with a toothbrush holder and is designed to stepwisely output announcements three times

at timings of 60 seconds, 120 seconds and 180 seconds while outputting music for a predetermined lengthy period of time after a user takes a toothbrush from the toothbrush holder preferably having a specifically designed character shape, thus allowing the user to more effectively and more willingly brush his teeth for 180
5 seconds while alleviating the tedium of brushing teeth.

Another object of the present invention is to provide a tooth-brushing time announcing device, which is designed to output announcements along with music from a toothbrush holder, thus automatically outputting announcements and music from the toothbrush holder after a user takes a toothbrush from the toothbrush
10 holder holding at least one toothbrush.

A further object of the present invention is to provide a tooth-brushing time announcing device, which uses a high quality antibacterial bio-ceramic material having both a high degree of bactericidal activity and a high degree of deodorization activity, thus almost completely protecting toothbrushes from
15 bacteria and always keeping the toothbrushes hygienically.

In order to accomplish the above object, the present invention provides a tooth-brushing time announcing device provided in a toothbrush holder, comprising: a central processing unit (CPU) controlling an operation of the device so as to allow the device to stepwisely output announcements and music for a
20 preset period of time after a toothbrush is removed from the toothbrush holder; a power switch connected to an input terminal of the CPU and used for controlling power supply from a battery to the device; an oscillating unit connected to an input terminal of the CPU and used for outputting an oscillating signal to the CPU in response to an operation of the power switch, thus activating the CPU; a
25 toothbrush sensing unit connected to an input terminal of the CPU and used for sensing a removal of the toothbrush from the toothbrush holder and outputting a sensing signal to the CPU; a reset unit connected to an input terminal of the CPU and used for resetting the CPU; a speaker drive unit connected to an output terminal of the CPU and used for driving a speaker under the control of the CPU,
30 thus stepwisely outputting the announcements and music through the speaker; and a volume control unit connected to an input terminal of the CPU and used for

controlling the volume of the announcements and music output from the speaker..

Brief Description of the Drawings

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

Fig. 1 is a block diagram, showing the construction of a tooth-brushing time announcing device in accordance with the preferred embodiment of the present invention;

Fig. 2 is a view of a toothbrush holder having a specifically designed character shape and being provided with the tooth-brushing time announcing device of this invention; and

Fig. 3 is a flowchart of the operational process of the tooth-brushing time announcing device of this invention.

Best Mode for Carrying Out the Invention

Fig. 1 is a block diagram, showing the construction of a tooth-brushing time announcing device in accordance with the preferred embodiment of the present invention. As shown in the drawing, the tooth-brushing time announcing device of this invention comprises a power switch 10 used for controlling power supply from a battery 5 to the device. The device also has a toothbrush sensing unit 20, an oscillating unit 30, a reset unit 40, a CPU 50, a volume control unit 60, and a speaker drive unit 70. The toothbrush sensing unit 20 is used for sensing whether a user takes a toothbrush from a toothbrush holder, while the oscillating unit 30 outputs an oscillating signal to the CPU 50 in response to an operation of the power switch 10, thus activating the CPU 50. The reset unit 40 is used for resetting the CPU 50, while the CPU 50 controls all the parts of the device in accordance with a stored program. The power switch 10, toothbrush sensing unit 20, oscillating unit 30 and reset unit 40 are connected to the input terminals of the

CPU 50. The volume control unit 60 is connected to the CPU 50 and controls the volume of announcements and music output from the device. On the other hand, the speaker drive unit 70 is connected to the output terminal of the CPU 50 and drives the speaker 80 under the control of the CPU 50.

5 Fig. 2 is a view of a toothbrush holder 100 having a specifically designed character shape and being provided with the tooth-brushing time announcing device of this invention. The above toothbrush holder 100 is designed to easily and removably hold a toothbrush 90 thereon.

10 In the present invention, the toothbrush holder 100 is preferably made of an antibacterial ABS (acrylonitrile butadiene styrene) resin material, and so the holder 100 has an antibacterial function. In addition, the holder 100 is preferably provided with an ultraviolet lamp therein so as to ultraviolet-sterilize the toothbrushes put in the holder 100.

15 Fig. 3 is a flowchart of the operational process of the tooth-brushing time announcing device of this invention.

All the parts of the tooth-brushing time announcing device of this invention, including the CPU 50, are installed within the toothbrush holder 100 having a specifically designed character shape of Fig. 2.

20 When the power switch 10 is turned on with a toothbrush 90 being put in the holder 100 as shown in Fig. 2, the oscillating unit 20 outputs an oscillating signal to the CPU 50, thus activating the CPU 50 at step S1.

When a user takes the toothbrush 90 from the holder 100 so as to brush his teeth, the toothbrush sensing unit 20 senses the removal of the toothbrush 90 from the holder 100 and outputs a sensing signal to the CPU 50 at step S2.

25 In response to the signal from the toothbrush sensing unit 20, the CPU 50 recognizes the removal of the toothbrush 90 from the holder 100 and outputs a control signal to the speaker drive unit 70, thus outputting a start announcement, "Hello, I'm Chikapu, please apply toothpaste on the toothbrush and let's start to brush" at step S3.

30 After the start announcement is output, three songs are output from the speaker 80 during a period of about 60 seconds under the control of the CPU 50 at

step S4.

That is, the speaker 80 outputs a first song “Chikapuka Chikapuka Poong! Poong! Poong!, Chikapuka Chikapuka Poong! Poong! Poong!, Three times a day, Three minutes each time, Chikapuka Chikapuka Poong! Poong! Poong!”, a second
5 song “Chikapuka Chikapuka Poong! Poong! Poong!, Chikapuka Chikapuka Poong! Poong! Poong!, Upper teeth clean!, Lower teeth clean!, Happy brushing!, Chikapuka Chikapuka Poong! Poong! Poong!”, and a third song “Chikapuka Chikapuka Poong! Poong! Poong!, Chikapuka Chikapuka Poong! Poong! Poong!,
10 Three times a day, Three minutes each time, Happy brushing!, Chikapuka Chikapuka Poong! Poong! Poong!” at the step S4.

Thereafter, the CPU 50 determines whether the first one minute has elapsed or not at step S5. When the CPU 50 determines that the first one minute has elapsed, a first minute announcement “Has one minute passed, already?” is output from the speaker 80 at step S6.

15 The CPU 50 also outputs the first and second songs of the above-mentioned three songs from the speaker 80 at step S7.

Thereafter, the CPU 50 determines whether the second one minute has elapsed or not at step S8. When the CPU 50 determines that the second one minute has elapsed, a second minute announcement “Oh!, clean teeth” is output
20 from the speaker 80 at step S9. The CPU 50 also outputs the third one of the above-mentioned three songs from the speaker 80 at the step S9.

Thereafter, the CPU 50 determines whether the third one minute has elapsed or not at step S10. When the CPU 50 determines that the third one minute has elapsed, a stop announcement “Now!, Stop the brushing, Oh!, Very
25 clean, Look at the mirror, Wash the brush and Put it in me, Bye now” is output from the speaker 80 at step S11.

In the preferred embodiment, the desired tooth-brushing time is preset to three minutes in the CPU 50 of the device. However, it should be understood that the tooth-brushing time is not limited to the three minutes, but may be freely
30 changed to two minutes or two minutes and thirty seconds as desired.

When a user operates the reset unit 40, the CPU 50 returns to its standby

mode and is stopped at that mode.

In addition, it is possible for a user to control the volume of announcements and songs output from the speaker 80 as desired by controlling the volume control unit 60 connected to the CPU 50.

5 The volume control unit 60 of this device has two modes of volume control and allows a user to freely select a desired one of the two modes. One of the two volume control modes is a variable resistance type control mode and the other is a digital type control mode.

10 The variable resistance type volume control mode is designed to allow a user to control the volume of announcements and songs at sixteen stages in accordance with a variation in the variable resistance, while the digital type volume control mode is designed to allow a user to control the volume at five stages by appropriately and repeatedly pressing a one-touch control button.

15 When a user continuously presses the control button of the volume control unit 60 in the digital type volume control mode, the volume control unit 60 automatically changes the volume of the announcements and songs in the five stages of 100% - 75% - 50% - 25% - Off.

20 On the other hand, the tooth-brushing time announcing device of this invention is provided with a power-saving mode, which allows the CPU 50 of this device to automatically return to its standby mode when one minute and thirty seconds has elapsed without receiving any sensing signal, indicating a removal of a toothbrush from the toothbrush holder 100, from the toothbrush sensing unit 20 after the power switch 10 is turned on.

25 That is, when the activated CPU 50 receives a sensing signal, indicating a removal of a toothbrush from the toothbrush holder 100, from the toothbrush sensing unit 20, the CPU 50 normally controls the device of this invention. On the other hand, the CPU 50 returns to its standby mode in response to another sensing signal, indicating a putting of a toothbrush in the toothbrush holder 100, output from the toothbrush sensing unit 20. However, the CPU 50 automatically
30 returns to its standby mode when one minute and thirty seconds has elapsed without receiving any sensing signal, indicating a removal of a toothbrush from the

toothbrush holder 100, from the toothbrush sensing unit 20 after the power switch 10 is turned on. While an announcement or a song is output from the speaker 80, the CPU 50 does not check a sensing signal output from the toothbrush sensing unit 20.

5 Of course, when a signal is applied to the CPU 50 in the standby mode, the CPU 50 quickly returns from the standby mode to a wake-up mode wherein the CPU 50 normally controls the device in accordance with a preset program.

 On the other hand, the tooth-brushing time announcing device of this invention is also provided with an ultraviolet lamp in the toothbrush holder 100, and so the device effectively ultraviolet-sterilizes toothbrushes put in the holder 100. Therefore, the device of this invention almost completely protects the toothbrushes from bacteria and always keeps the toothbrushes hygienically. In addition, the toothbrush holder 100 of this invention is made of an antibacterial ABS resin material, thus having a desired antibacterial function.

15 Industrial Applicability

 As described above, the present invention provides a tooth-brushing time announcing device used with a toothbrush holder. The device of this invention is designed to stepwisely output announcements and songs for a predetermined period of time after a user takes a toothbrush from the toothbrush holder preferably having a specifically designed character shape, thus allowing the user to more effectively and more willingly brush his teeth for an effective and healthful brushing time while alleviating the tedium of brushing teeth.

 The tooth-brushing time announcing device of this invention also uses a high quality antibacterial bio-ceramic material having both a high degree of bactericidal activity and a high degree of deodorization activity, thus almost completely protecting toothbrushes from bacteria and always keeping the toothbrushes hygienically.

 Although the preferred embodiments of the present invention have been disclosed 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 invention as disclosed in the accompanying claims.

Claims:

1. A tooth-brushing time announcing device provided in a toothbrush holder, comprising:

5 a central processing unit (CPU) controlling an operation of the device so as to allow the device to stepwisely output announcements and music for a preset period of time after a toothbrush is removed from the toothbrush holder;

a power switch connected to an input terminal of the CPU and used for controlling power supply from a battery to said device;

10 an oscillating unit connected to an input terminal of the CPU and used for outputting an oscillating signal to the CPU in response to an operation of said power switch, thus activating the CPU;

a toothbrush sensing unit connected to an input terminal of the CPU and used for sensing a removal of the toothbrush from the toothbrush holder and outputting a sensing signal to said CPU;

15 a reset unit connected to an input terminal of the CPU and used for resetting said CPU;

a speaker drive unit connected to an output terminal of said CPU and used for driving a speaker under the control of said CPU, thus stepwisely outputting the announcements and music through the speaker; and

20 a volume control unit connected to an input terminal of said CPU and used for controlling the volume of the announcements and music output from the speaker.

FIG. 1

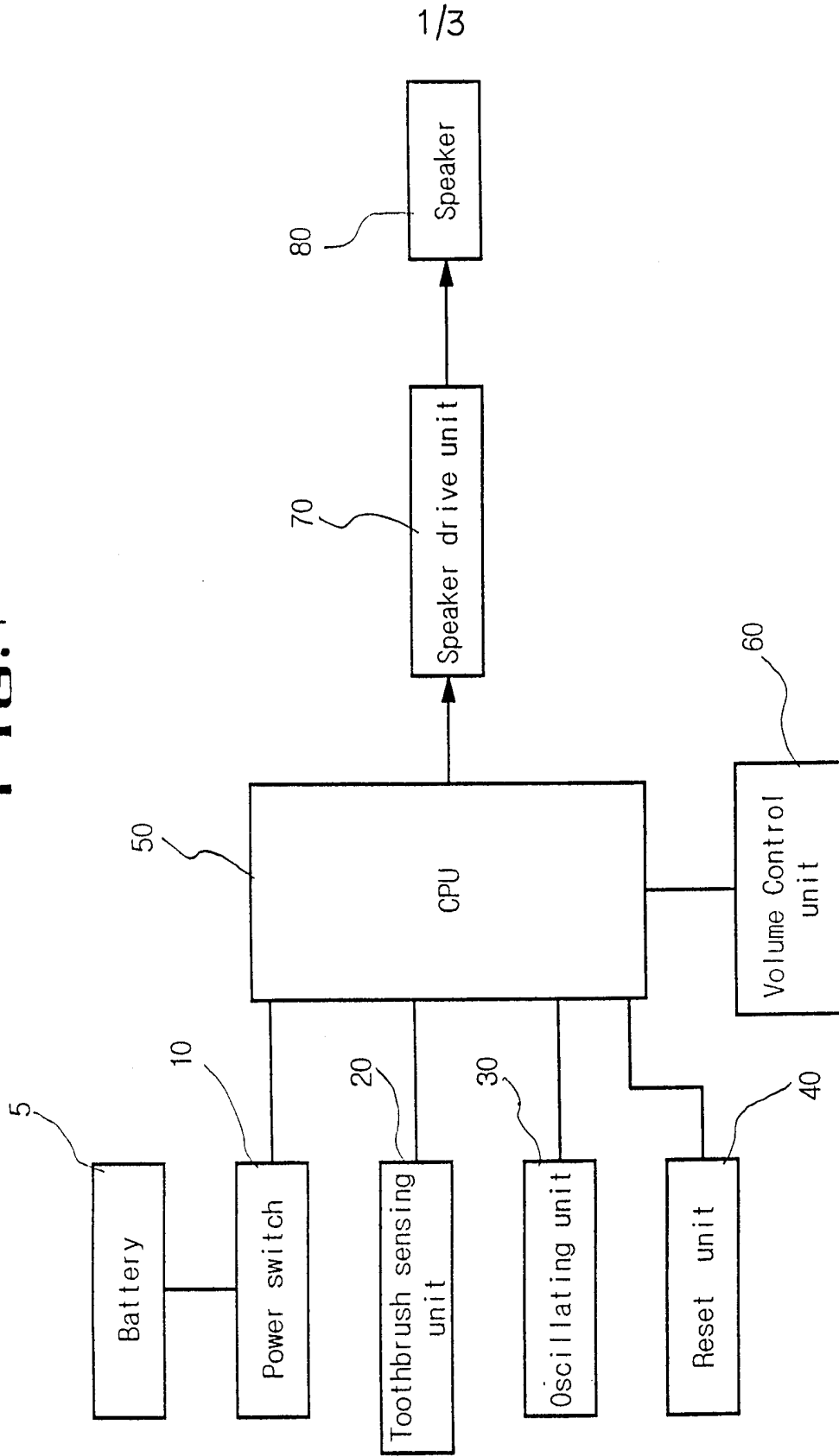


FIG. 2

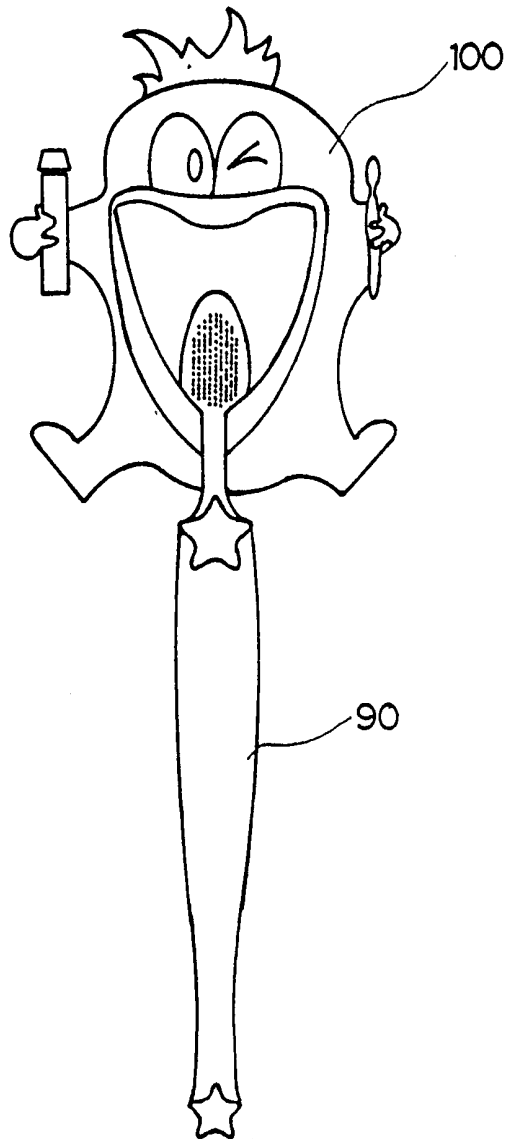
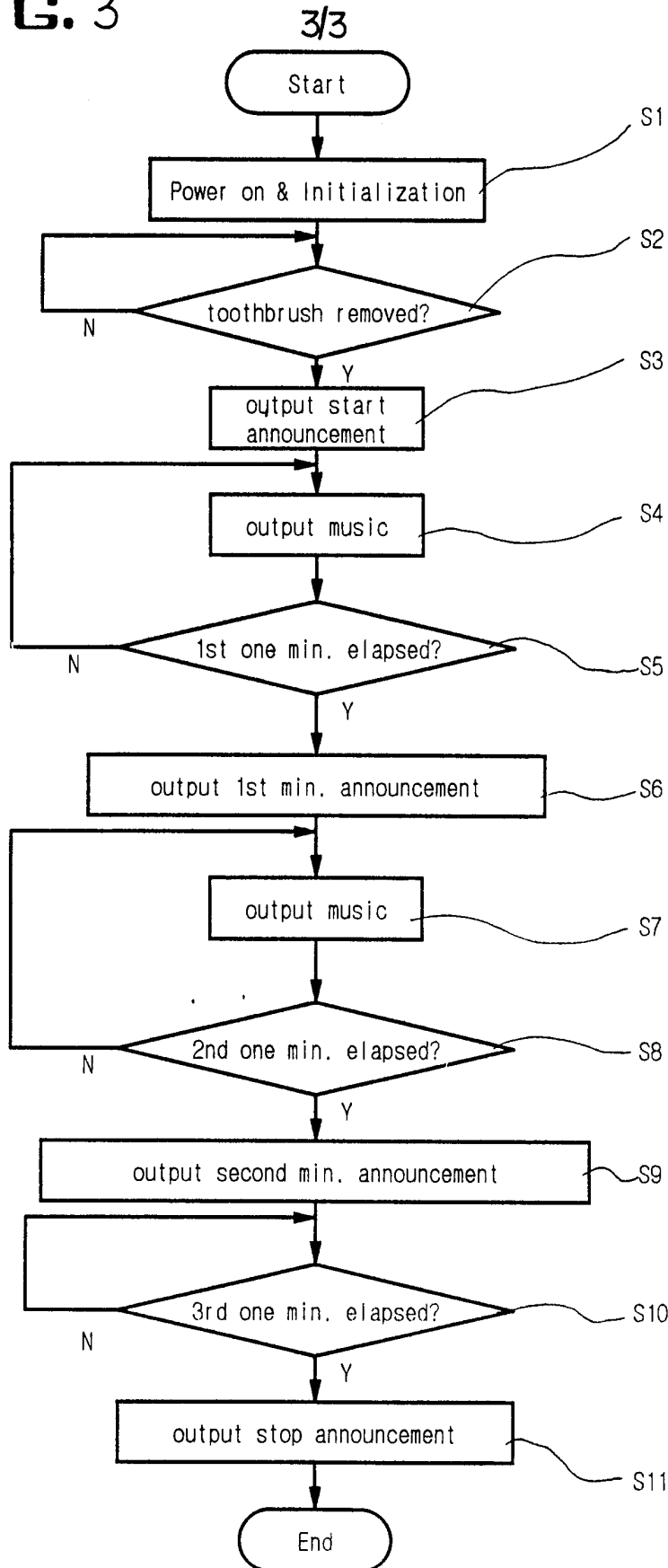


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR99/00791

A. CLASSIFICATION OF SUBJECT MATTER**IPC7 A47K 5/00**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6 A47K 5/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KR, JP : A46B 9/00, 15/00, A47K 5/00

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| Y | US 5184959 A (HARRY W. ORYBON : JEREMY ORYBON) 9. FEB. 1993 | 1 |
| A | KR 89-4657 A (IMAIKAN HANS) 9. MAY. 1989 | 1 |
| A | JP 2-200211 A (SANKI CORP) 8. AUGUST. 1990 | 1 |

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* Special categories of cited documents:

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