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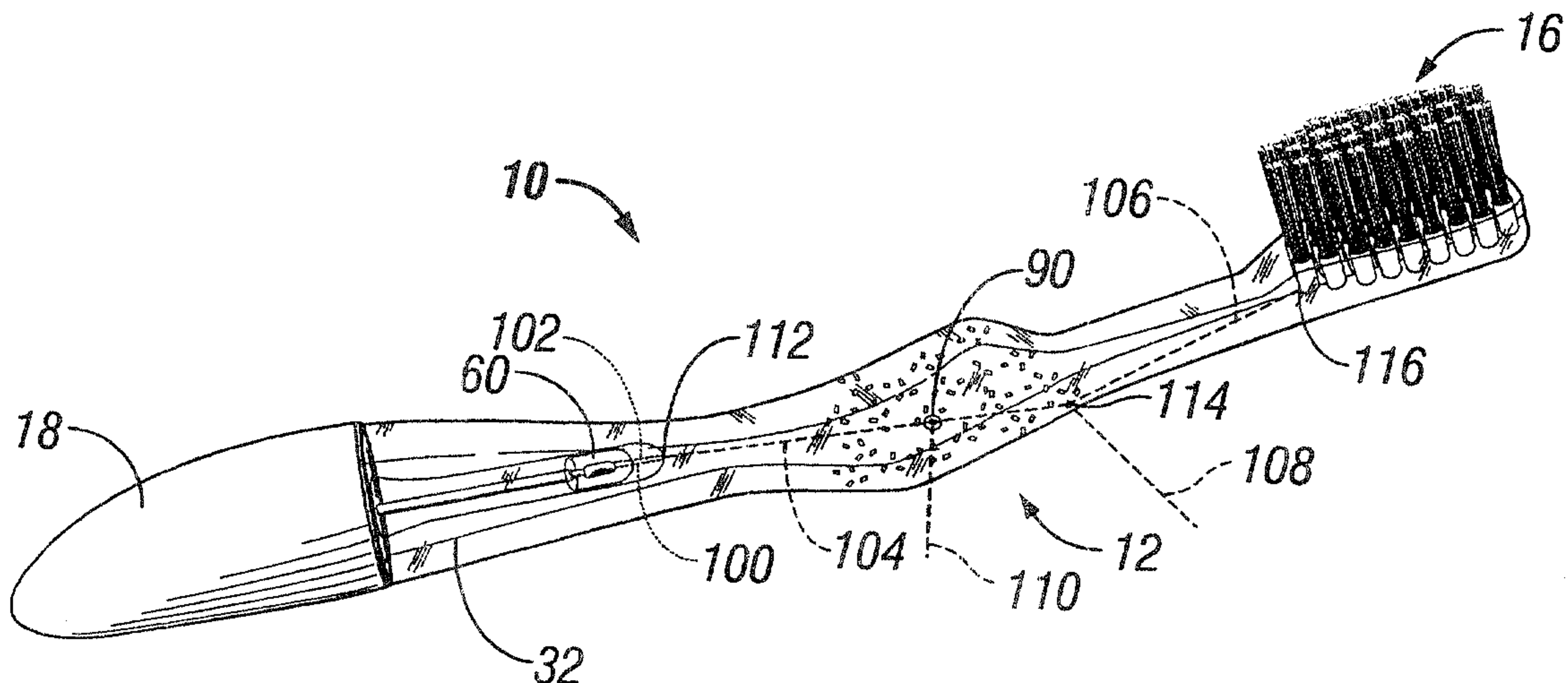
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(54) Title: ILLUMINATED TOOTHBRUSH AND METHOD OF USE



(57) Abrégé/Abstract:

A toothbrush with a handle having a base, a body, and a head. The body having a first section and a second section forming an oblique angle. A projector of a beam of light located within the handle. The toothbrush having at least one bristle attached to the head. The toothbrush having a grip attached to the base. A method of using a toothbrush including the step of gripping the toothbrush. The method further including the step of engaging the projector of a beam of light. The method still further including the step of utilizing the toothbrush while the projector of a light beam is activated.



ABSTRACT OF THE DISCLOSURE

A toothbrush with a handle having a base, a body, and a head. The body having a first section and a second section forming an oblique angle. A projector of a beam of light located within the handle. The toothbrush having at least one bristle attached to the head.

- 5 The toothbrush having a grip attached to the base. A method of using a toothbrush including the step of gripping the toothbrush. The method further including the step of engaging the projector of a beam of light. The method still further including the step of utilizing the toothbrush while the projector of a light beam is activated.

TITLE:

ILLUMINATED TOOTHBRUSH AND METHOD OF USE

BACKGROUND OF THE INVENTION

5 The present invention relates to an illuminated toothbrush and a method for using an illuminated toothbrush.

 In the design and use of a toothbrush, there is a need for illumination. Therefore, a primary objective of the present invention is to provide a projector of a beam of light within a toothbrush handle to provide for lighting the handle.

10 In the design of toothbrush handles for illumination, there is a need for maximizing the amount of light that is directed towards the user. Therefore, a further objective of the present invention is to provide a toothbrush handle that maximizes the amount of light transmitted, reflected, and refracted within its handle towards the user.

 Also in the design of toothbrush handles, there is a need for indicating an increment
15 of time in which a user is brushing their teeth. Therefore, a still further objective of the present invention is to provide a timing circuit so that a user can identify an amount of time passed while brushing their teeth.

 A still further objective of the present invention is to provide a novel device to encourage a user to brush their teeth.

20 A still further objective of the present invention is to provide a device with is easy to use and economical to manufacture.

 The means and method of accomplishing these and other objectives will become apparent from the following description of the invention.

25 BRIEF SUMMARY OF THE INVENTION

 The foregoing objects may be achieved by a toothbrush with a handle having a base, a body, and a head. The body having a first section and a second section forming an oblique angle. A projector of a beam of light located within the handle. The toothbrush having at least one bristle attached to the head. The toothbrush having a grip attached to
30 the base.

The foregoing objects may also be achieved by a toothbrush having a handle having a base, a body, and a head. The body having a chamber therein. A projector of a beam of light within the chamber. The toothbrush having at least one bristle attached to the head. The toothbrush having a grip attached to the base.

5 The foregoing objects may still further be achieved by a method of using a toothbrush. The method uses a toothbrush having a handle and an illumination circuit. The toothbrush handle having a base, a body, and a head. The toothbrush illumination circuit having a projector of a beam of light connected to a switch. The method including the step of gripping the toothbrush. The method further including the step of engaging the switch
10 for completing the illumination circuit. The method still further including the step of activating a projector of a light beam within the toothbrush. The method still further including the step of utilizing the toothbrush while the projector of a light beam is activated.

15

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a toothbrush showing the lines of transmission, reflection, and refraction of a light beam emitted by a projector of a light beam.

FIG. 2 is a front elevation view of the toothbrush of FIG. 1 showing the brush side
20 of the toothbrush.

FIG. 3 is a rear elevation view of the toothbrush of FIG. 1 showing the non-brush side of the toothbrush.

FIG. 4 is a side view of the toothbrush of FIG. 1 showing the chamber preferentially placed near the non-brush side.

25 FIG. 5 is a top view of the toothbrush with the grip removed exposing the toothbrush base and illumination circuit held within.

FIG. 6 is an exploded top view of the toothbrush grip, base, and lower section of toothbrush handle showing the placement of the illumination circuit within the toothbrush handle.

30 FIG. 7 is a sectional view of the grip of FIG. 6.

FIG. 8 is a sectional view of the base in FIG. 6 showing the indentations for containing the positive terminal conductors.

FIG. 9 is a perspective view of the illumination circuit without the power supply.

FIG. 10 is a bottom view of the illumination circuit.

5 FIG. 11 is a top perspective view of the illumination circuit.

FIG. 12 is a schematic drawing of the illumination circuit.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, numeral 10 generally refers to the illuminated toothbrush
10 of the present invention which comprises a handle 12, an illumination circuit 14, a brush
16, and a grip 18.

The handle 12 has a base 20, a body 21, and a head 26. The body has a first section
22 and a second section 24. The handle 12 is formed of hard, clear plastic. Alternatively,
the handle 12 may be a colored plastic. Alternatively, the handle 12 may be a translucent
15 plastic. Alternatively, the handle 12 may be fashioned out of a plastic incorporating
metallic flake 90.

The toothbrush handle 12 is formed through an injection molding process. Plastic
in a liquid form is injected into a mold having two sections. Liquid plastic is injected into
the mold where it is then allowed to solidify. When the mold is opened it creates a handle
20 having a brush side 28 and a non-brush side 30. At the intersection of these two sides 28,
30, is a ridge 32. The ridge 32 is a surface characteristic resulting from the injection
molding process. The ridge 32 does not extend inside the handle 12 but exists on the
surface. The injection molding process in constructing of the toothbrush handle 12 is
conventional and does not form a part of the present invention.

25 As seen in FIG. 5, 6, and 8, the handle 12 has a handle base 20. The base 20 is
generally cylindrical in shape and has a circumferential groove or cavity 44 therein. The
circumferential groove has a centerline. The base 20 has an outside surface 34, an inside
surface 36, a first end 38, and a second end 40. On the outside surface 34 of the base 20
are three annular rings 42. The annular rings 42 provide a ledge upon which the grip 18
30 holds.

The inside surface 36 defines a cavity 44. The inside surface 36 has first indentation 46 and a second indentation 48. The cavity 44 serves as a housing for the illumination circuit 14. The first and second indentation 46, 48 serve as a guide for positioning the illumination circuit 14 within the base 20.

5 A chamber 50 extends within the section 22. The chamber 50 has a first end 52 and a second end 54. The chamber 50 is generally cylindrical in shape. The first end 52 is rounded and provides a transition between the chamber 50 filled full of air and the first section 22 which is of plastic. The air is inherently present as a result of assembly at a time after the handle was formed. Alternatively, the chamber may be filled full of a material in
10 a process separate from the forming of the handle.

The second end 54 of the chamber 50 is open to the first end 38 of the base 20. The first section chamber 50 is in off-center alignment with the base 20. As seen in FIG. 8, the first section chamber 50 is in off-center alignment with the base 20 to allow the projector of a light beam or illuminating member 60 to emit a light beam 104 that travels through the
15 first section 22 and to strike the interface 114 between the second section 24 and atmosphere. At this interface, a light beam 106 is reflected towards the handle head 26 and a light beam 108 is refracted towards atmosphere.

The first section chamber 50 is also positioned in off-center alignment with the base 20 because in the first section 22 is ergonomically designed to accommodate a user's grip.
20 In the ergonomic design, the brush side 28 of the first section 22 is contoured and the non brush side 30 of the first section 22 is flat. In addition, the brush side 28 of the first section 22 arrives at a point of the second section 24 at a greater angle than the non brush side 30. In other words, the illumination circuit 14 extends within the first section 22 substantially parallel to the center line of the base member 20 but the first section 22 brush side 28
25 angles toward the inner point where the first section 22 meets the second section 24 and the non brush side 30 portion of the first section 22 also angles toward the point where the first section 22 meets the second section 24. Thus, for the first section chamber 50 to extend the furthest into the first section 22 of the handle 12, the first section chamber 50 must be positioned closer to the non-brush side 30 of the first section 22.

30 The illumination circuit 14 has an illuminating member or projector of a light beam 60, a resistor 62, a timing circuit 64, and a power source 66. These parts are joined by

conductor. The conductors serve structural functions. The illuminating member conductor 68 provides a support structure extending the illuminating member 60 a distance away from the timing circuit 64. The negative terminal conductor 70 is a spring which presses against the power source 66. The positive terminal conductor 72 extends away from the timing circuit 64 to embrace three batteries. The positive terminal conductor 72 is also sized to stabilize the illumination circuit 14 within the base 20 as the positive terminal conductor 72 is sized to fit within the first indentation 46 and the second indentation 48 of the base 20.

The illumination member 60 in this embodiment is a light emitting diode (LED).
 Alternatively, the illuminating member 60 could be an incandescent lightbulb.
 Alternatively, the illumination member 60 may be any other device known in the art that may provide illumination.

The power source 66 is a micro cell battery model number G3-ACNB. Three batteries are placed in serial within the base 20. The timing circuit functions to illuminate the illuminating member 60 for approximately 60 seconds. The illuminating member 60 also serves to control the illuminating member 60 to blink intermittently for the time period in which it is engaged. Alternately, the illumination member 60 may stay on continuously.

The brush 16 has bristles 80. The bristle 80 has a first end 82 and a second end 84. The bristle second end 84 is embedded in the head 26 of the handle 20. The bristle 80 are made of clear plastic material. The bristle 80 when struck by light traveling from the illuminating member 60 through the first section 22 and the second section 24 illuminate. A portion of the light striking the bristle 80 may reflect through the bristle 80 and extend out of the bristle 80. The brush 16 is made of a series of individual bristle 80.

The grip 18 is made of a flexible material. The grip 18 also serves to function as a switch. The grip 18 has an extending piece or switch 74 of flexible material as seen in FIG. 7. The piece 74 moves the positive terminal metal conductor 72 to contact the power source 66. Alternatively, the piece 74 moves the power source 66 to contact the positive terminal metal conductor 72. In doing so the piece 74 moves illumination circuit 14 from an unilluminated position to a luminated position. The grip 18 stays in place on the base 20 by engaging the annular rings 42 on the outside surface 34 of the base 20. An adhesive

88 is positioned between the first section 22 and the grip 18 to hold the grip 18 in close connection with the first section 22.

The grip 18 is made of a flexible material. Alternatively, the grip 18 may be of a hard material but have a flexible portion that may be used to engage the positive
5 terminalconductor 72 and press against the power source 66.

In operation the illuminated toothbrush 10 is used by a user to indicate the duration of an amount of time. The user grips the toothbrush handle 12 in their hand with the bristle 80 surface with the bristles 80 against their teeth and engages the illumination circuit switch 74. The illuminating member 60 begins to blink intermittently in an on/off fashion.
10 The illuminating member 60 continues to blink for a period of approximately 60 seconds. The handle is designed to direct light to the user in multiple way so that the user may be accurately appraised of brushing time.

A light beam 100 travels from the illuminating device 14 through a first section chamber 50. The light beam 100 strikes an interface 112 between the first section chamber
15 and the first section and a light beam 102 is partially reflected off of the interface and a light beam 104 is refracted enters the first chamber. The light beam 104 travels through the first section 22 to strike upon an interface 114 between the second section 24 and atmosphere. A light beam 106 is reflected from interface 144 toward head 26 and a light beam 108 is refracted towards atmosphere. The light beam 106 then strikes an interface
20 116 between the head 26 and bristle 80 where it is partially reflected and refracted.

Alternatively, the toothbrush handle may have a metallic piece or flake embedded in the hardened plastic. The angle of reflection upon the flake is equal to the angle of incidence upon the flake. These metallic pieces 90 may be glitter. In operation, light will strike these metallic pieces 90 at an angle of incidence and the reflected light beam 110
25 directed at an angle of reflection as seen in FIG. 1.

In the drawings and specifications there has been set forth a preferred embodiment of the invention, and although specific terms are employed, these are used in a generic descriptive sense only and not for purposes of limitation. Changes in the form and the proportion of parts as well as in the substitution of equivalents are contemplated as
30 circumstance may suggest or render expedient without departing from the spirit or scope of the invention in the following claims.

What is claimed is:

1.

A toothbrush comprising:

a handle having a base, a body, and a head;

5 the body having a first section and a second section forming an oblique angle;

a projector of a beam of light located within the handle;

at least one bristle attached to the head;

a grip attached to the base.

10

2.

The toothbrush of claim 1 further comprising a switch for control of the projector of a beam of light from a non-illuminating position to an illuminating position.

3.

15 The illuminated toothbrush handle of claim 2 wherein the switch is a flexible member attached to the base.

4.

20 The toothbrush of claim 3 further comprising a timing circuit limiting the operation of the projector of a beam of light to approximately 60 seconds.

5.

The toothbrush claim 4 wherein the first section has a chamber therein, the projector of a beam of light located within the chamber.

25

6.

30 The toothbrush of claim 5 wherein a light beam is transmitted from the projector, the light beam partially reflected off an interface between the chamber and the first section, the light beam partially refracted off the interface between the chamber and the first section.

7.

The toothbrush of claim 6 wherein the light beam is partially reflected off of an interface between the second section and atmosphere toward the head, the light beam partially refracted into the atmosphere.

5

8.

The toothbrush of claim 7 wherein the light beam is partially reflected off of an interface between the head and the bristle, the light beam partially refracted into the bristle.

10

9.

The toothbrush of claim 8 wherein the light beam is partially reflected off of at least one metallic flake imbedded in the body.

10.

15

A toothbrush comprising:

a handle having a base, a body, and a head;

the body having a chamber therein;

a projector of a beam of light within the chamber;

at least one bristle attached to the head.

20

a grip attached to the base.

11.

The toothbrush of claim 10 further comprising a switch for control of the projector of a beam of light from a non-illuminating position to an illuminating position.

25

12.

The illuminated toothbrush handle of claim 11 wherein the switch is a flexible member attached to the base.

13.

The toothbrush of claim 12 further comprising a timing circuit limiting the operation of the projector of a beam of light to approximately 60 seconds.

5

14.

The toothbrush of claim 13 wherein a light beam is transmitted from the projector, the light beam partially reflected off an interface between the chamber and the body, the light beam partially refracted off the interface between the chamber and the body.

10

15.

The toothbrush of claim 14 wherein the base has a circumferential groove therein, the circumferential groove located adjacent the chamber, the circumferential groove having a centerline.

15

16.

The toothbrush of claim 15 wherein a centerline of the chamber is in offset alignment with the circumferential groove centerline.

17.

20

A method of using a toothbrush having a handle and an illumination circuit, the handle having a base, a body, and a head, the illumination circuit having a projector of a beam of light connected to a switch, the method comprising:

gripping the toothbrush;

engaging the switch for completing the illumination circuit;

25

activating a projector of a light beam within the toothbrush;

utilizing the toothbrush while the projector of a light beam is activated.

18.

The method of claim 17 wherein the step of engaging the switch comprises
30 longitudinal pressing a grip attached to the base of the toothbrush towards the body.

19.

The method of claim 18 further comprising the step of intermittent engaging the projector of a light beam.

20.

5 The method of claim 19 further comprising the step of deactivating the projector of a light beam after approximately 60 seconds.

1/3

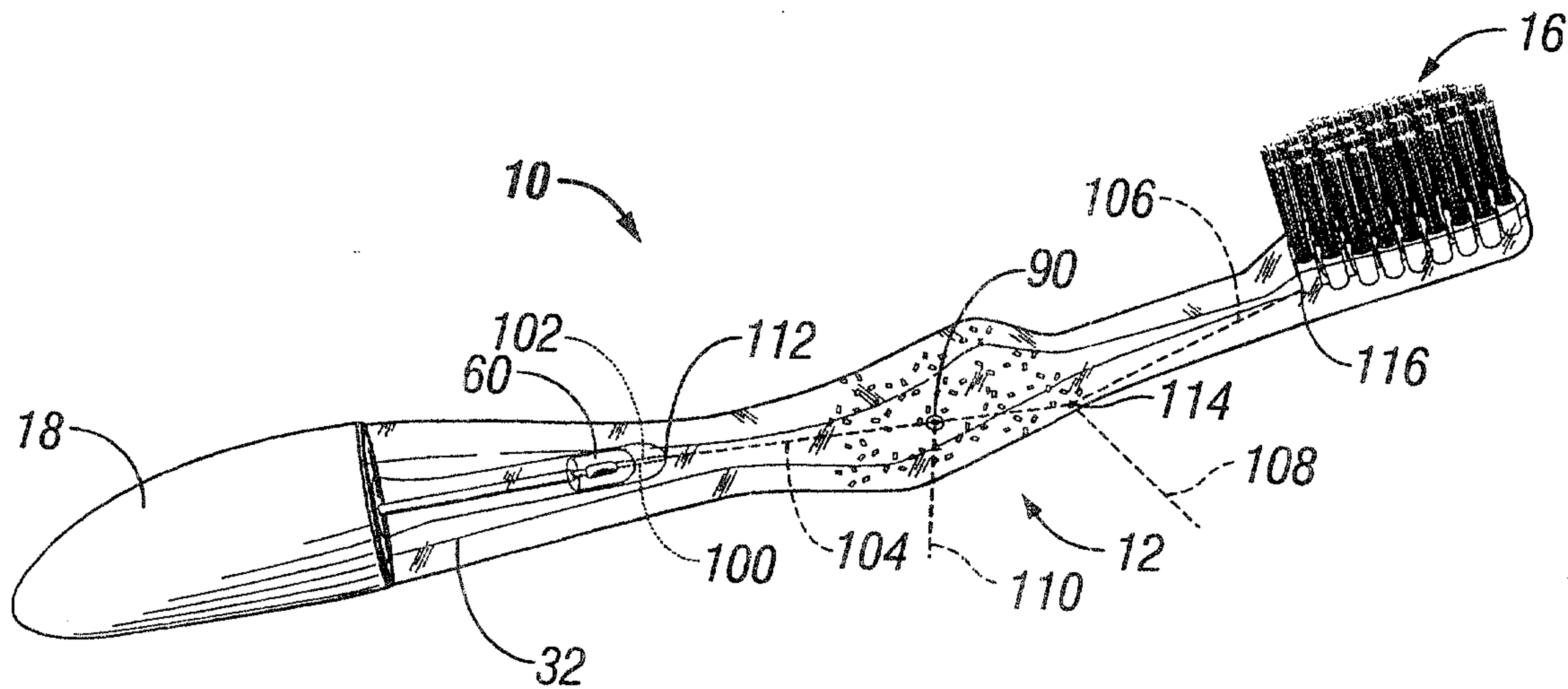


FIG. 1

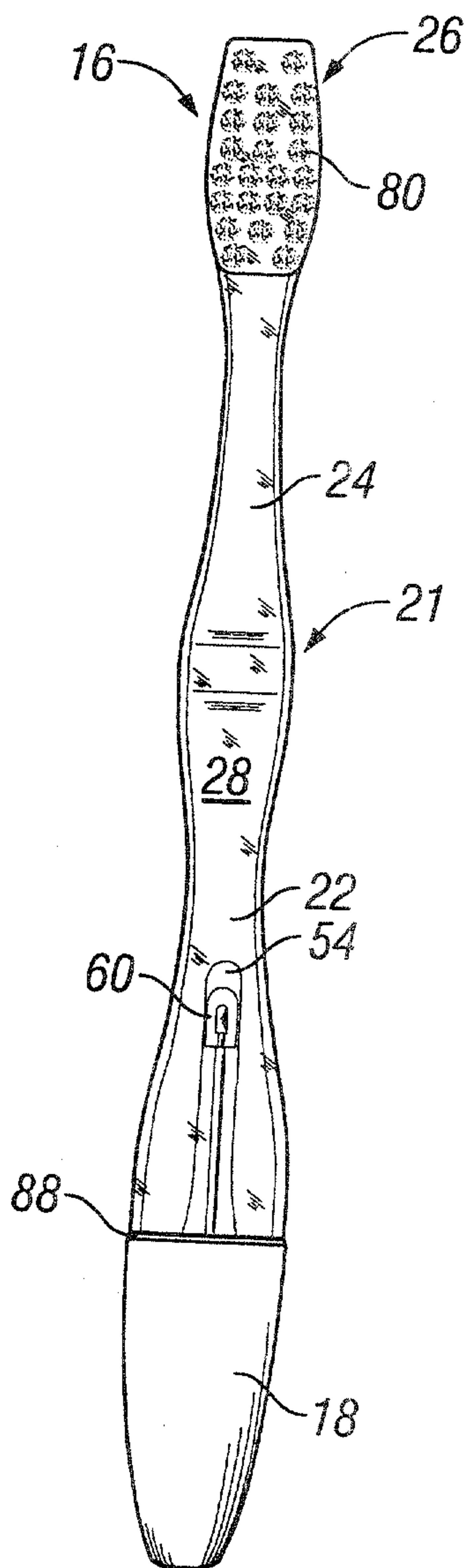


FIG. 2

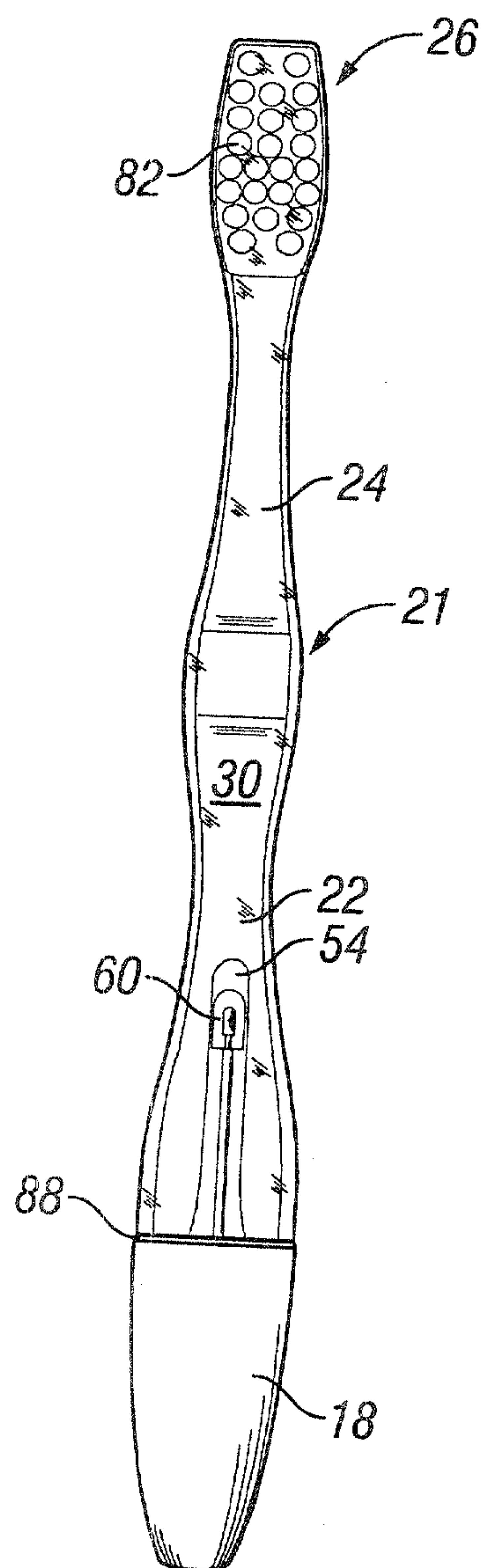


FIG. 3

2/3

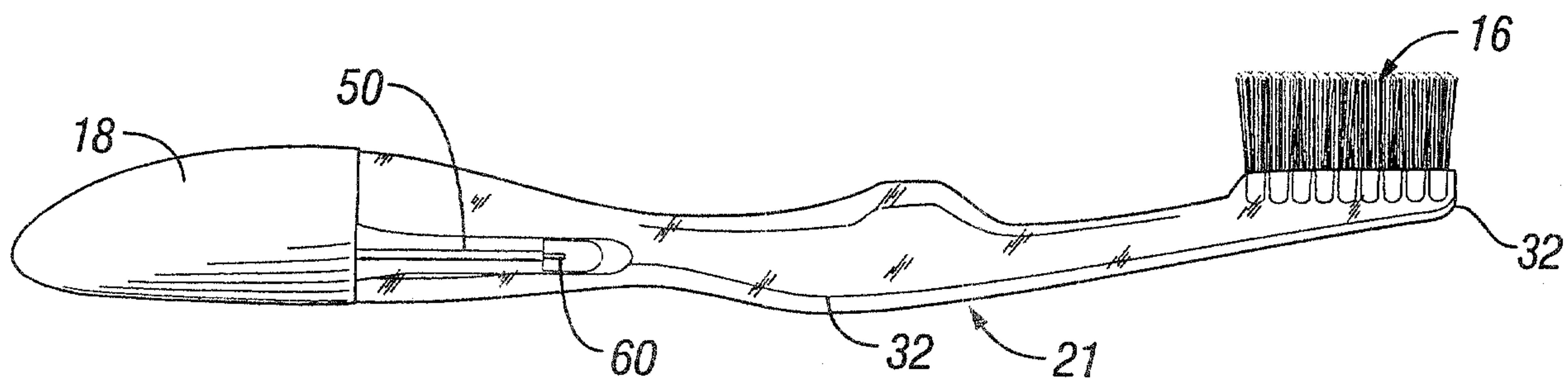


FIG. 4

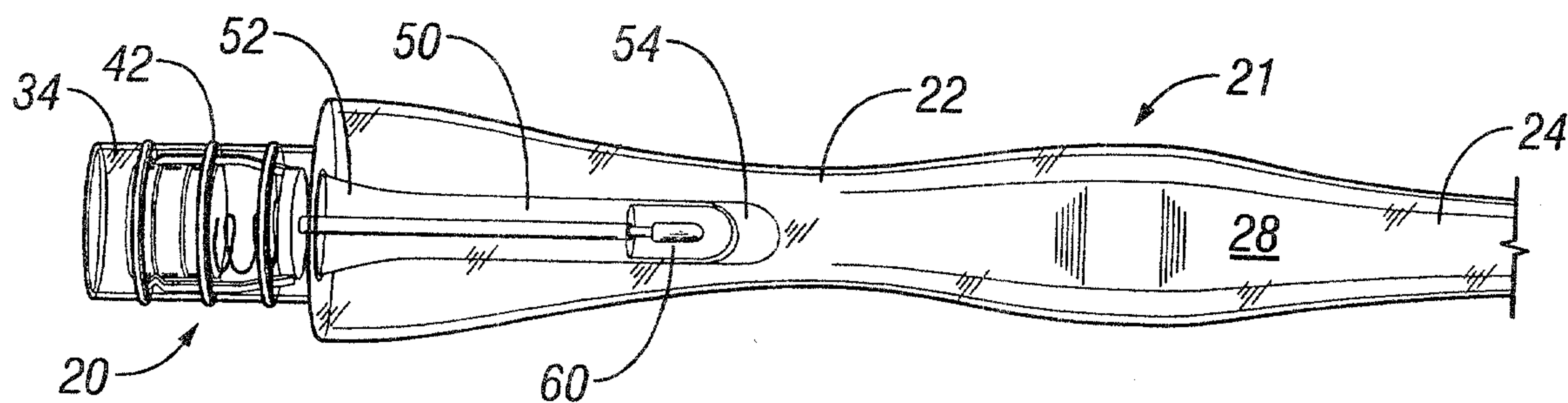


FIG. 5

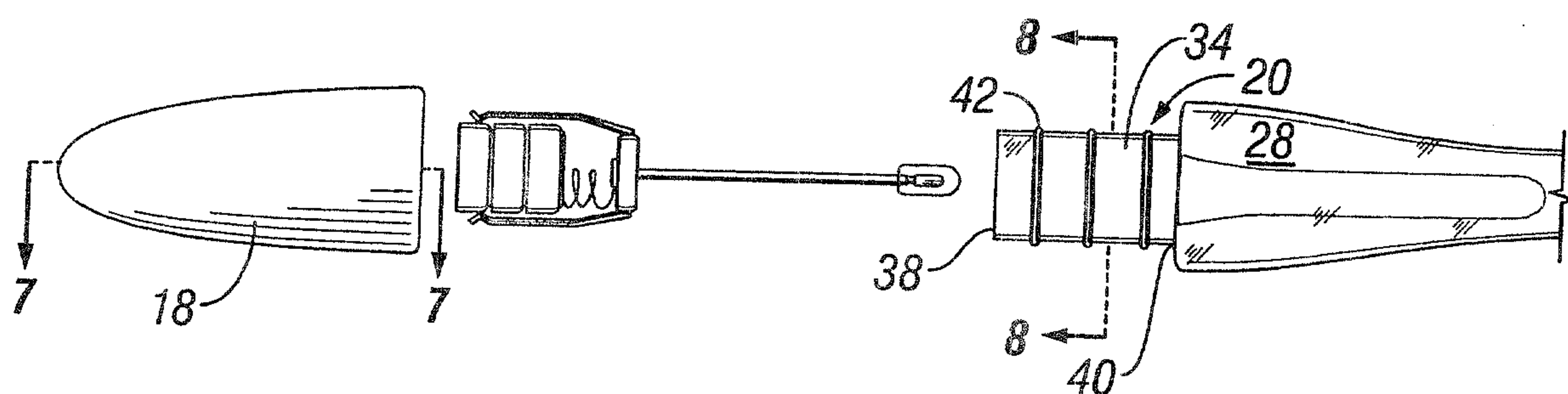


FIG. 6

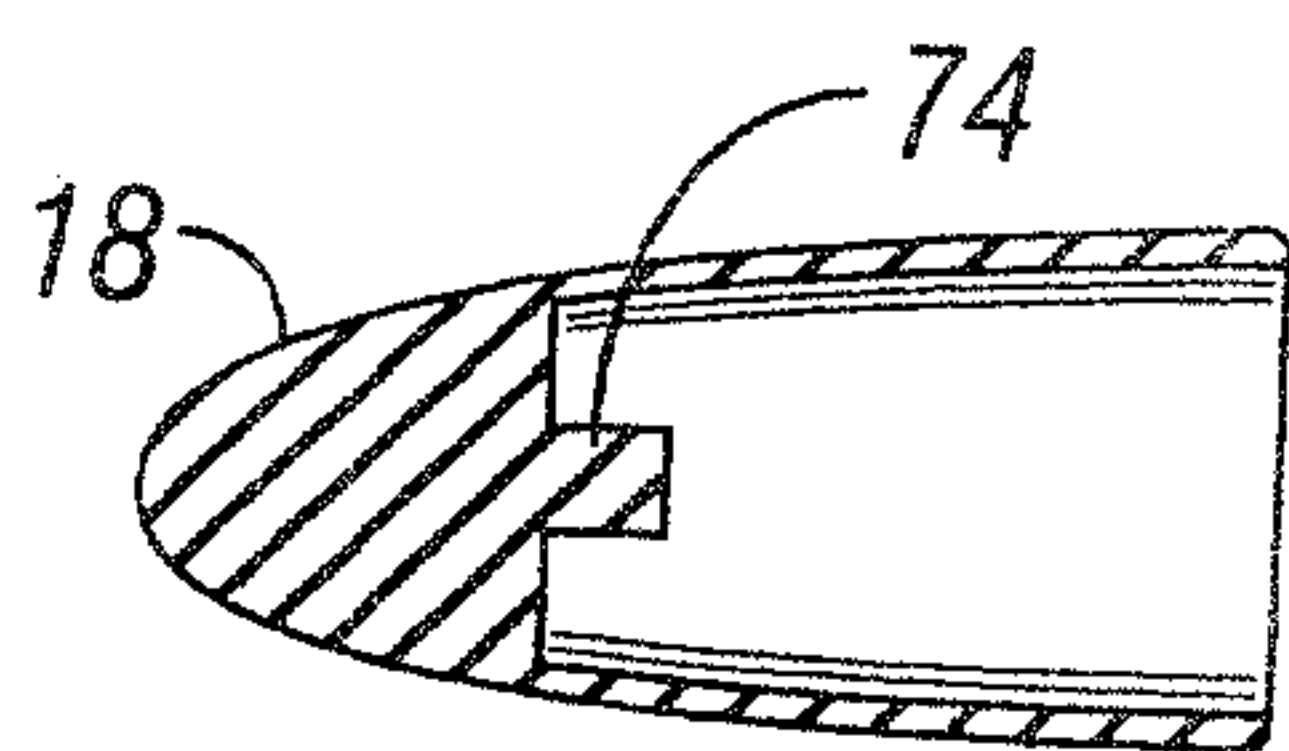


FIG. 7

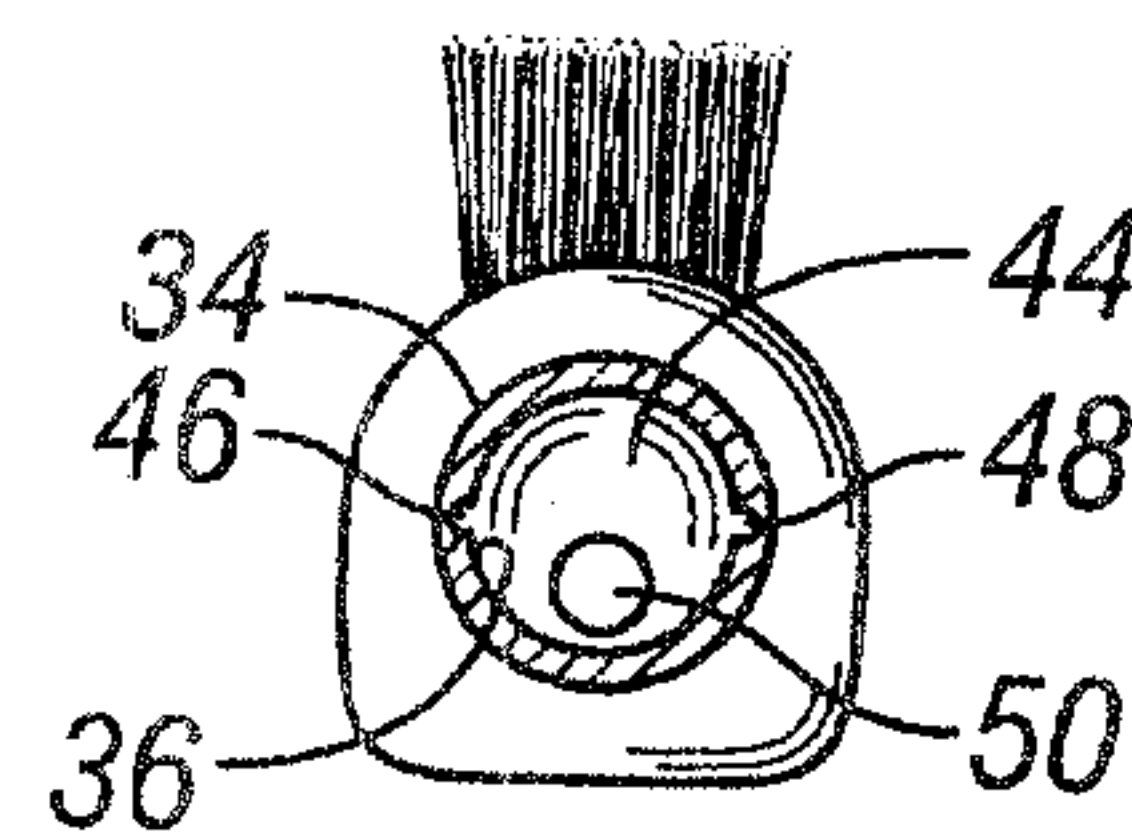


FIG. 8

3/3

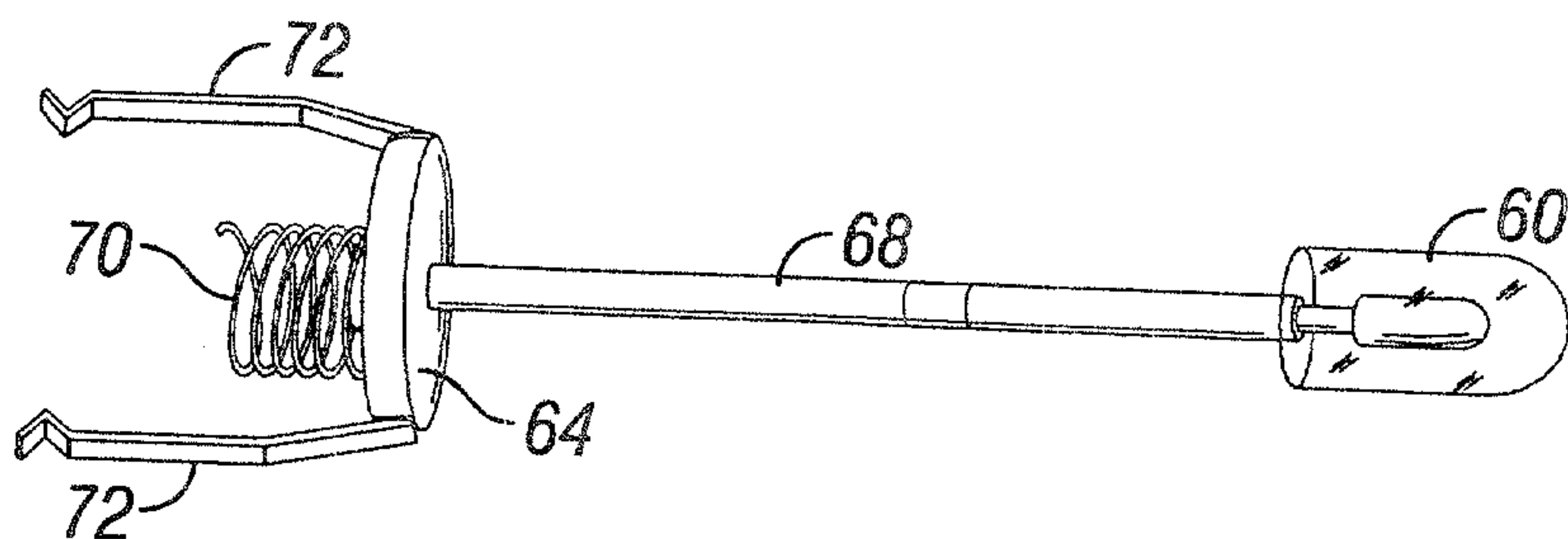


FIG. 9

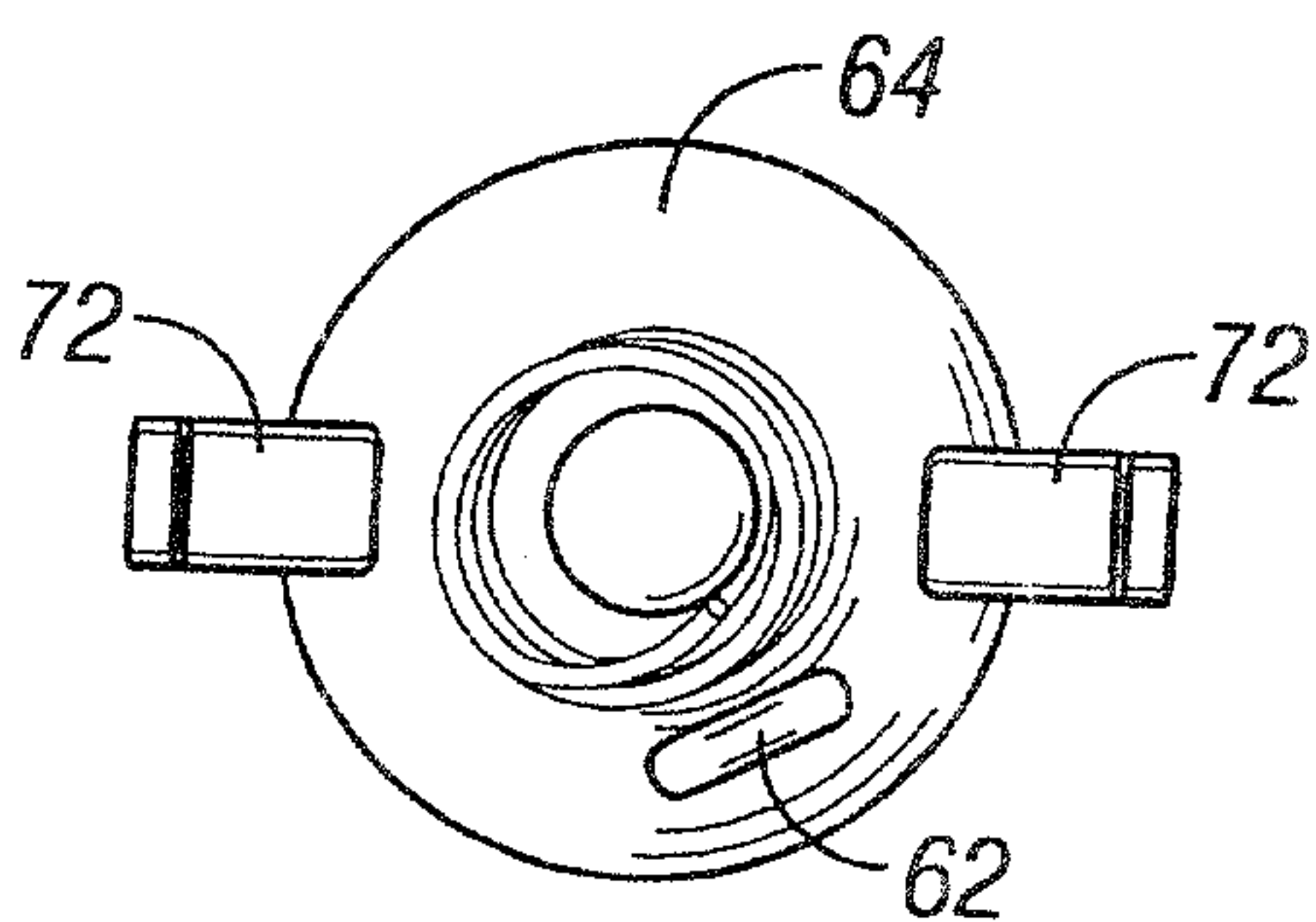


FIG. 10

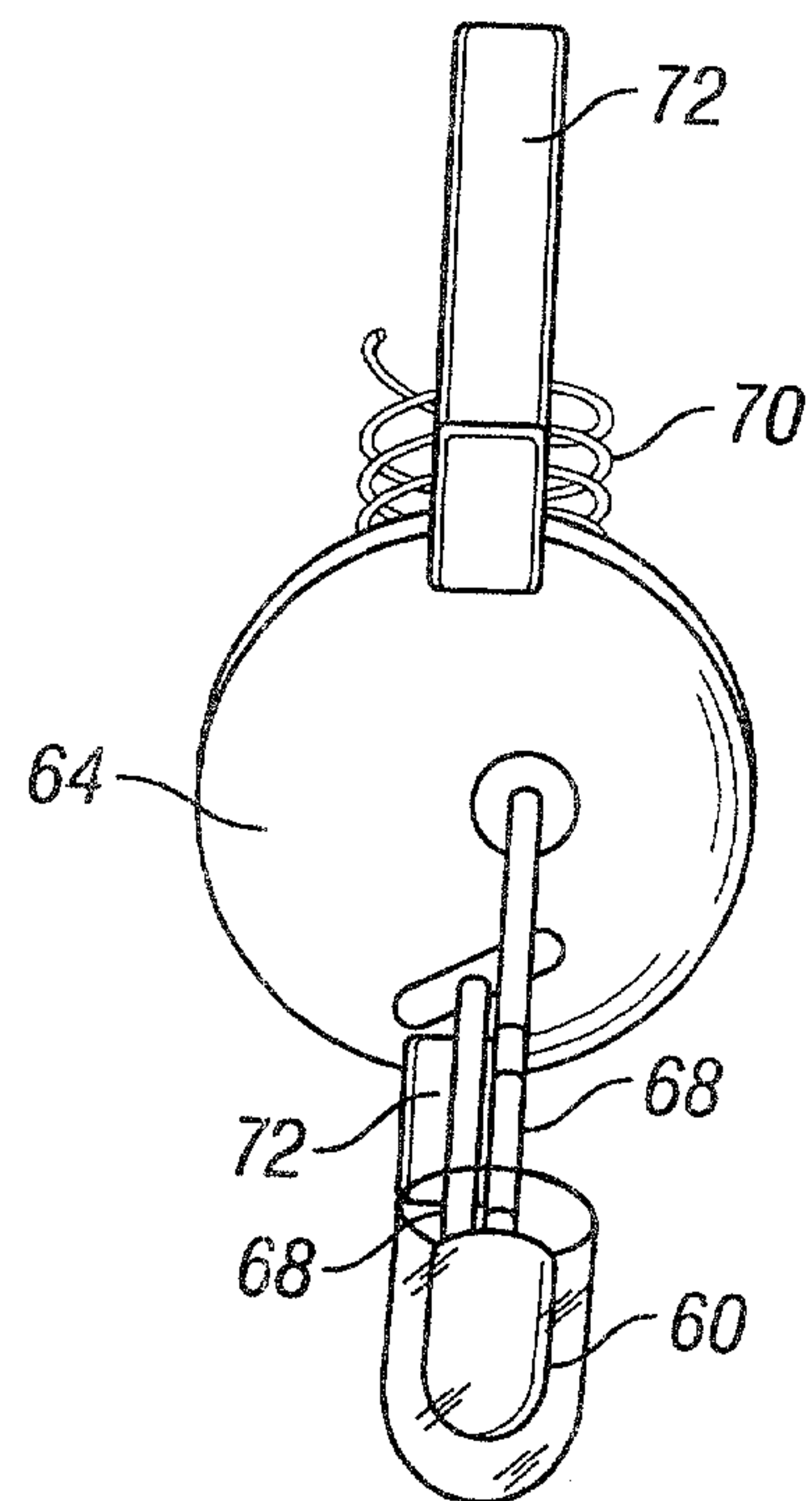


FIG. 11

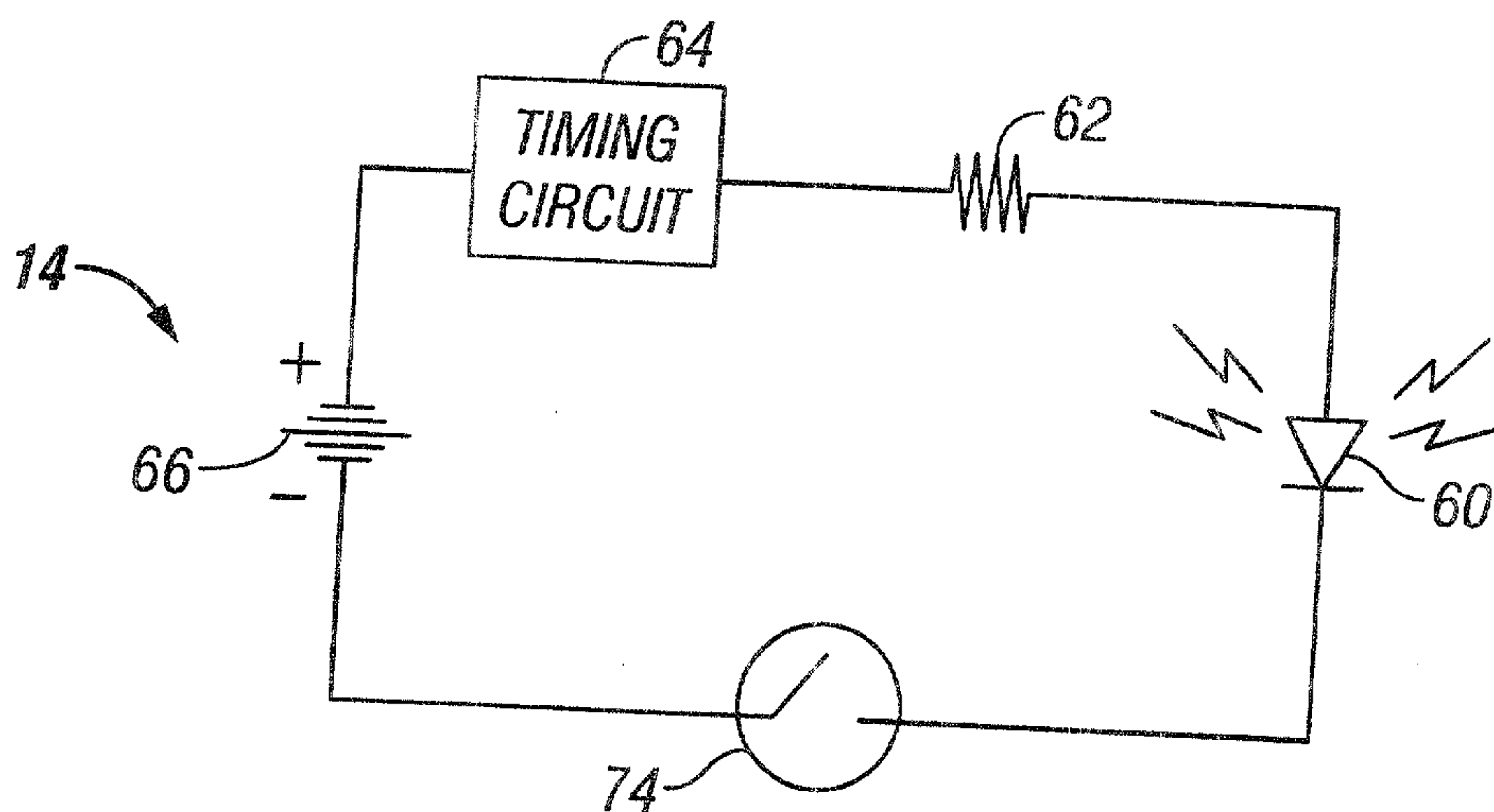


FIG. 12

