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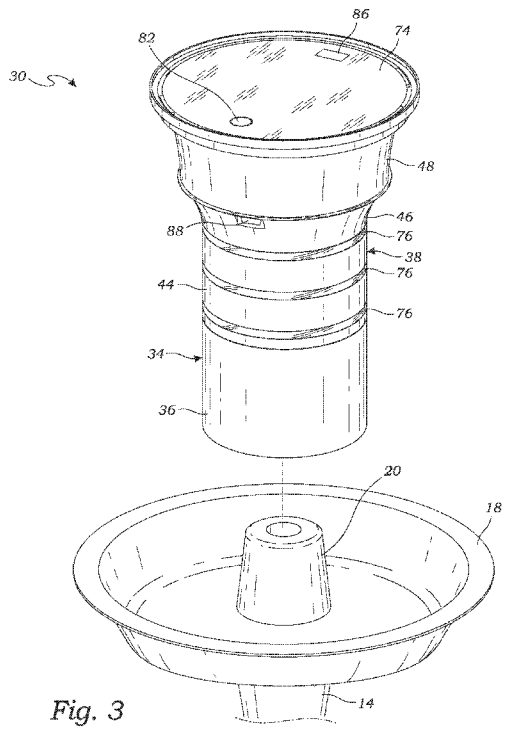


Fig. 3

(57) Abstract: An electronic hookah bowl (e-hookah bowl) may be used with a conventional hookah by replacing the conventional hookah bowl with the e-hookah bowl. The e-hookah bowl has a housing and a control circuit comprising a controller configured to control operation of the e-hookah bowl disposed within the housing. An air-flow sensor having a sensor surface is operably coupled to the control circuit. The air-flow sensor is configured to provide a signal to the control circuit upon detection of air-flow across the sensor surface. A power source is operably coupled to the controller. An LED band is disposed around at least a portion of the housing and is operatively coupled to the control circuit. The control circuit is configured to light the LED band upon receipt of a signal from the air-flow sensor indicating air- flow across the sensor surface.

E-HOOKAH BOWL

Field of The Invention

[0001] The present invention relates generally to hookahs, and more particularly to an electronic hookah bowl which may be used with a conventional hookah.

Prior Applications

[0002] The present application claims the benefit of U.S. patent application Serial No. 62/026,526, filed July 18, 2014, under 35 U.S.C. § 119. The present application is a continuation-in-part of U.S. patent application Serial No. 29/496,536, filed July 14, 2014, and priority to the aforementioned application is hereby expressly claimed in accordance with 35 U.S.C. § 120 and any other applicable laws. The contents of the aforementioned applications are hereby incorporated herein by reference in their entirety as if set forth fully herein.

Background

[0003] A hookah, also known as a waterpipe, is an apparatus for vaporizing and smoking flavored tobacco. Typically, the vapor passes through a water basin before inhalation. A typical hookah 10 is shown in Fig. 1. The hookah 10 comprises a base 12 which forms a jar (basin) 16 at the bottom end. At the top of the base 12 is a hookah shaft 14 which extends upward from the base 12. A tray 18 is disposed about the shaft 14 at the top end of the shaft 14 and a bowl stem 20 is attached to the top end of the shaft 14 in fluid communication with an inner lumen 15 of the shaft 14. A downstem 22 extends downward from the bottom end of the inner lumen 15 into the water at the bottom of the jar 16. The downstem 22 is also in fluid communication with the inner lumen 15 of the shaft 14. A bowl 24 is received on the bowl stem 20. The bowl 24 has one or more holes in its bottom which are in fluid communication with the bowl stem 20.

A hose 26 has a first end attached to the shaft 14, and a second end attached to a mouthpiece 28. The hose 26 is in fluid communication with an outer lumen 17 of the shaft 14.

[0004] In use, the jar 16 of the hookah is filled with water. Tobacco is put in the bowl 24 at the top of the hookah, and the bowl 24 is covered with tin foil. Holes are poked in the foil, and heated coal is placed on top of the foil. A smoker inhales through the hose 26 using the mouthpiece 28, causing air to be sucked past the charcoal in the bowl 24, thus vaporizing the tobacco, which then is sucked through the inner lumen 15 of the shaft 14, and then through the downstem 22, into the bottom of the jar 16 of the hookah 10, out of the bottom end of the downstem 22, and into the water. From there, the vapor passes upward through the water, and into the outer lumen 17 of the shaft 14, and then is inhaled by the hookah smoker through the hose 26 connected to the mouthpiece 28.

[0005] With the growing popularity of electronic cigarettes (also referred to as e-cigarettes), at least one company (Shenzhen Kelvin Technology Co., Ltd.) has sold electronic versions of hookah bowls (i.e., e-hookah bowls). The models are known as the KELVIN H1 and KELVIN H2. However, those e-hookah bowls do not have the inventive features of our invention as described herein, such as a lighting circuit to control LEDS (light emitting diodes, e.g., light bands) on or around the e-hookah bowl in response to airflow across an air-flow sensor caused by the e-hookah user sucking on the mouthpiece.

Summary of the Invention

[0006] One embodiment of the present invention is directed to an e-hookah bowl configured for use with a conventional hookah by replacing the conventional hookah bowl with the e-hookah bowl. The e-hookah bowl may also be used apart from a hookah by a user sucking directly through a tapered bore of the body which is configured to be received on the bowlstem of a conventional hookah, or by directly attaching a first end of a hose to the tapered bore and sucking on a mouthpiece attached to a second end of the hose. The e-hookah bowl comprises a housing having an air-flow path extending from a top end of the housing, through one or more cartomizer compartments for containing one or more cartomizer assemblies, to a tapered bore at the bottom of the housing. The tapered bore is configured to be received on a bowlstem of a conventional hookah. An air-flow sensing circuit is disposed in the housing. The air-flow sensing circuit includes an air-flow sensor having a sensor surface which is in fluid communication with the air-flow path. A power source is also disposed within the housing. An LED band is attached to the housing and extends around at least at a portion of the housing. As used herein, an "LED band" means an LED light source which has a length that is at least five times its width. The LED band is operatively coupled to the air-flow sensing circuit. The air-flow sensing circuit is configured such that when the air-flow sensor senses air-flow across the sensor surface, the air-flow sensing circuit lights the LED band.

[0007] In one aspect of the invention, the LED band extends around substantially an entire perimeter of the housing. In other words, the LED band substantially circumscribes the housing.

[0008] In another aspect, a plurality of LED bands are attached to the housing, with each LED band operatively coupled to the air-flow sensing circuit. The air-flow sensing circuit is configured to light each of the LED bands. The air-flow sensing circuit may be configured to light each of the LED bands simultaneously, or in a sequence, or other lighting pattern.

[0009] In another feature of the invention, the e-hookah bowl comprises a plurality of cartomizers disposed within the cartomizer compartments.

[0010] In still another aspect, the housing may comprise a plurality of casings which are attached together to form the complete housing.

Brief Description of the Drawings

[0011] Fig. 1 shows a prior art hookah with a conventional hookah bowl at the top.

[0012] Fig. 2 shows the prior art hookah of Fig. 1, except the hookah bowl of Fig. 1 is replaced with an e-hookah bowl according to one embodiment of the present invention.

[0013] Fig. 3 shows an e-hookah bowl in position to be mounted on a hookah air-flow port, according to one embodiment of the present invention.

[0014] Fig. 4 shows the e-hookah bowl of Fig. 3 with the power button being depressed.

[0015] Fig. 5 shows a partially exploded view of the e-hookah bowl of Fig. 3.

[0016] Fig. 6 shows a cross section of the e-hookah bowl of Fig. 4 along line 6-6.

[0017] Fig. 7 shows the e-hookah bowl of Fig. 3 with one of the LED bands being lit in response to sucking action.

[0018] Fig. 8 shows the e-hookah bowl of Fig. 3 with all three of the LED bands being lit in response to sucking action.

[0019] Fig. 9 shows an exploded view of the e-hookah bowl of Fig. 3.

Detailed Description

[0020] Referring to Figs. 2-9, an e-hookah bowl 30 according to one embodiment of the present invention is shown. As shown in Fig. 2, the e-hookah bowl 30 is configured for use with a conventional hookah 10 in which the conventional hookah bowl 24 (see Fig. 1) is replaced by the e-hookah bowl 30. While the e-hookah bowl 30 is configured for use with a conventional hookah 10, the e-hookah bowl 30 may also be used as a stand-alone self-contained unit. For example, a user can suck directly through a hookah air-flow port 32 (also referred to as a "nozzle") which comprises a tapered bore at the bottom portion of the housing 34 configured to mate with bowl stem 20. Alternatively, a hose or other conduit can have one end attached to the air-flow port 32 and a user can suck on the other end, such as a mouthpiece attached to the other end.

[0021] Still referring to Figs. 2-9, the e-hookah bowl 30 comprises a housing 34 which encloses and/or supports most of the other components of the e-hookah bowl 30. As best shown in Fig. 5, the housing 34 may comprise a bottom portion 36 and a top portion 38 which are detachably connected such as by a threaded connection. In this case, the bottom portion 36 has female threads and the top portion 38 has male threads. The threads, as well as the rest of the bottom portion 36 and top portion 38, may be made of metal, plastic or any other suitable material, and may be the same or different material on the bottom portion 36 and top portion 38. An internal spacer 40 formed of silicone or other suitable resilient material may be disposed at the interface of

the bottom portion 36 and top portion 38 to tighten the attachment and reduce the air gap from the exposed cartomizers 42 (described below), allowing for better air flow / suction draw through the e-hookah bowl 30. The spacer 40 also provides a slight pressure on the cartomizers to pin them to an electric contact surface (e.g., a contact spring) located at the upper part of the cartomizer housing 44.

[0022] As best seen in Fig. 6, the bottom portion 36 has an air-flow port 32 comprising a tapered bore which provides an air-flow path through the bottom portion 36. The air-flow port 32 is configured to couple to the bowlstem 20 of the conventional hookah 10 (see Fig. 3.) such that the bottom of the air-flow port 32 is in fluid communication with the bowlstem 20, and in turn, the internal lumen of the hookah 10 (e.g., as shown in Fig. 2, the inner and outer lumens 15 and 17 of shaft 14). The top of the air-flow port 32 is in fluid communication with the cartomizer housing 44 of the top portion 38.

[0023] The top portion 38 may comprise multiple parts as shown in Fig. 9, in which the top portion 38 includes the cartomizer housing 44, a cartomizer housing cap 46, and a control circuit housing 48. The cartomizer housing 44, cartomizer housing cap 46, and circuit housing 48 may be integrated as a single part, or separated parts attached to each other in a detachable manner (e.g., using mating threads, press fit interfaces, and/or fasteners such as screws) or non-detachable manner (e.g., using adhesive, welding, etc.).

[0024] The cartomizer housing 44 comprises a plurality of cartomizer compartments 43 for accommodating the cartomizer assemblies 41. The cartomizer compartments 43 may be cylindrical chambers configured and sized to each receive a

cartomizer assembly 41. Each cartomizer assembly 41 comprises a cartomizer casing 50, a cartomizer 42 disposed within the casing 50, and various other components described below for vaporizing hookah liquid stored in the cartomizers 42. The e-hookah bowl 30 may have any suitable number of cartomizers 42, such as 1, 2, 3, 4 or more. In the embodiment shown in the drawings and described herein, the e-hookah bowl 40 has 3 cartomizers 42. As best shown in Fig. 6, the cartomizer housing 44 has a plurality of cartomizer casings 50 with each cartomizer casing receiving one of the cartomizers 42. The cartomizer casings 50 are typically cylindrical, and may be metal, plastic, nylon, composite or other suitable material. Each cartomizer 42 includes a poly fill cotton-like absorbent material 52. Liquid is inserted or injected into the absorbent material 52 for vaporization and inhalation during use of the e-hookah bowl 30. A tube 54 (e.g., TEFLON or nylon tube) extends through the absorbent material providing an air-flow lumen through the absorbent material 52, thereby providing an air-flow path from the bottom of the cartomizer housing 44 to the top of the cartomizer housing 44. A wick 56 helically wrapped with a heating element 58 is also disposed at the top end of the inside of each cartomizer casing 42. The wick 56 is connected to the absorbent material 52 such that the liquid absorbed in the absorbent material 52 is drawn to wick 56 during operation, as described below. The top of each cartomizer casing 42 has a casing hole 60 to allow air to be drawn through the casing hole 60 and into the cartomizer casing 42. A pair of electrical contacts 62 are also provided on the top of each cartomizer casing 42 which are electrically connected to the heating element 58 (which may be through the surface of the cartomizer housing 44) in order to provide electrical power to the heating element 58 from the control circuit board 64. Springs or

other elements may be used to ensure proper contact through the electrical connection to the heating element 58.

[0025] The cartomizers 42 are interchangeable, and replaceable, to allow various flavors of hookah liquid to be used in various combinations. In one embodiment, each individual cartomizer assembly 41 may having the following characteristics:

[0026] Material of cartomizer casing 42: stainless steel;

[0027] Resistance of heating element 58 : ~1.9 – 2.3 ohms;

[0028] Gauge of heating element 58: ~0.15mm, round 5 and a half on glass fiber wick;

[0029] Absorbent material 52: 1# cotton;

[0030] Total Weight: ~ 9 grams;

[0031] Size: 14 x 37.1 mm;

[0032] Fit for oil: ~2.2ml – 3.0ml (max).

[0033] The cartomizer housing cap 46 is disposed on top of the cartomizer housing 44. A floor of the cartomizer housing cap 46 has a plurality of holes 66 to provide an air-flow path through the cartomizer housing cap 46 to the cartomizer housing 44. The holes 66 may be of a suitable size to allow sufficient air-flow through the e-hookah bowl 30, such as 4 holes having approximately a 2.5 mm diameter.

[0034] The control circuit housing 48 of the top portion 38 is disposed on top of the cartomizer housing cap 46. Similar to the cartomizer housing 44 and cartomizer housing cap 46, the control circuit housing 48 is also substantially cylindrical in shape. The control circuit housing 48 houses the control circuit board 64 which may be mounted on a control circuit platform 68 which mounts to the cartomizer housing cap 46

at or near the bottom of the cartomizer housing cap 46. The control circuit platform 68 in the described embodiment is a circular disc, but it may be any suitable shape. The control circuit platform 68 has a plurality of spacers 70 (which may be in the form of flanges) extending radially outward from the outer edge of the platform 68 so that the outer perimeter of the control circuit platform 68 is spaced apart from the inside surface of the cartomizer housing cap 46 so as to leave a radial air-flow gap 72 (see Fig. 6) to allow air-flow from above the control circuit platform 68 (i.e., ambient air from outside the e-hookah bowl 30) through the control circuit housing 48 and down into the cartomizer housing cap 46. A cover 74 is placed over the control circuit platform 68 at the top of the control circuit housing 48. The cover 74 has substantially the same perimeter dimensions as the control circuit housing 48 such that it does not block the radial air-flow gap 72. Alternatively, or even in addition, to the radial air-flow gap 72, the control circuit platform 68 and cover 74 may have air-flow holes similar to holes 66 in the cartomizer housing cap 46.

[0035] The control circuit board 64 may comprise most or all of the control circuit which controls the operation of the e-hookah bowl 30, or it may include only a portion of the circuits which control the operation. For example, the e-hookah bowl 30 may include a main control circuit of the control circuit board 64, an air-flow sensor circuit, and an LED control circuit, wherein each circuit may be integrated together or be separate interconnected circuits. Accordingly, the control circuit is sometimes referenced as a single circuit, but it is understood that the control circuit may comprise a single integrated circuit or multiple interconnected circuits. The control circuit board 64 includes a controller (e.g., a microprocessor or other logic controller) and other

electronics configured to control the operation of the e-hookah bowl 30, including turning the unit on and off using a power button 80, controlling a display component 84, receiving a signal from an air-flow sensor 77, powering the cartomizer assemblies 41, operating the LEDs 76, and charging the batteries 78. The control circuit board 64 is powered by one or more rechargeable batteries 78, and is electrically connected to the batteries 78 by wires or other suitable electrical conductor. The control circuit board 64 is also operably coupled to an air-flow sensor 77 which is mounted in the cartomizer housing cap 46 (see Fig. 6). The air-flow sensor 77 may be located at any suitable location along the air-flow path (see Figs. 7 and 8) through the e-hookah bowl 30. The air-flow sensor 77 may be a microchip draft sensor or other suitable sensor for detecting air-flow. When air flows across the air-flow sensor 76, the air-flow causes the air-flow sensor 77 to send a signal (e.g., air flow may cause current flow in the air-flow sensor 77) to the control circuit board 64.

[0036] The power button 80 is mounted on the control circuit platform 68 and is operably coupled to the control circuit board 64 for turning the e-hookah bowl on and off. A button cover 82 may be provided on the cover 74 for depressing the power button 80. A display component 84 is also mounted on the control circuit platform 68 and is coupled to the control circuit board 64 for displaying a status indicator which may indicate various conditions of the e-hookah bowl 30, such as the on/off status of the power to the e-hookah bowl 30, the charge level of the batteries, and/or the charging status of the batteries (e.g., batteries currently charging). The cover 74 has a display cover 86 positioned over the location of the display component 84.

[0037] An electrical power port 88 is also mounted on the housing 34, such as on the cartomizer housing cap 46, or other suitable location on the housing. The power port 88 is operably coupled to the control circuit, such as to the control circuit board 64. The power port 88 may utilize any suitable connector, such as a USB connector. The power port 88 and control circuit are configured to allow the batteries to be recharged by connected a suitable electrical power source to the power port 88. For example, the power source may be a 5V DC power supply which is standard for USB connections, or other suitable power supply.

[0038] The e-hookah bowl 30 also has one or more LEDs 76 operatively connected to the control circuit (e.g., the control circuit board 64) and the air-flow sensing circuit (including the air-flow sensor 77) which control the operation of the LEDs 76. As shown in the described embodiment, the LEDs 76 are each an "LED band" in which the LED band has a length that is at least five times its width. In the described embodiment, the LEDs 76 are mounted on the cartomizer housing 44 as three parallel rings which completely circumscribe the cylindrical perimeter of the cartomizer housing 44. The LEDs 76 may be mounted to any suitable part of the housing 34, including the bottom portion 36 or any part of the top portion 38.

[0039] The control circuit is configured such that the LEDs 76 are lighted in response to the e-hookah user using the hookah 10 with the e-hookah bowl 30 for its intended purpose. Specifically, when the user inhales or sucks air through the hookah mouthpiece 28, the air flow generated is sensed by the air-flow sensor 77 of the air-flow sensing circuit which generates a signal which is detected by the controller of the control circuit board 64. The control circuit is configured and programmed to then light

up the LEDs 76 in response to the signal generated by the air-flow sensor 77. To control the lighting of the LEDs 76, the control circuit may include an LED control circuit which may be integrated onto the control circuit board 64 or may be a separate circuit such as on a separate circuit board operably coupled to the control circuit board 74. The various circuits of the e-hookah bowl 30 may be integrated or separate for logistical reasons, spatial considerations, or any other reason.

[0040] In addition, there may be any number of LEDs arranged in a variety of orientations, although the embodiment shown in the drawings and described herein show three LEDs 76 as LED bands arranged in parallel orientation and evenly spaced apart. The LEDs 76 may completely circumscribe the housing 34 of the e-hookah bowl 30 as shown in the described embodiment, or the LEDs may partially circumscribe the housing 34. Other LED patterns may be used as well, such as various regular or custom geometric shapes, characters, logos, and/or combinations of the aforementioned. Similarly, the LEDs 76 may be various colors or the same color. The control circuit may be programmed to light up the LEDs 76 substantially simultaneously, or in sequence, at random, or in any other desired manner. In the embodiment with three LEDs 76 as shown in the figures, the control circuit is configured to light the LEDs in series one after the other, such as bottom, middle, top, and then the pattern repeats, so long as air flow continues. When air flow stops (i.e., because the e-hookah user stops inhaling), then the control circuit deactivates the LEDs 76.

[0041] The use and operation of the e-hookah bowl 30 with a conventional hookah 10 will now be described with reference to Figs. 2-9. First, the standard hookah bowl 24 is removed from the hookah 10 if it is currently installed. With the e-hookah bowl 30

turned off, the e-hookah bowl 30 is then mounted on the hookah 10 by placing the tapered bore of the air-flow port 32 onto the bowlstem 20 of the hookah 10. The e-hookah bowl 30 is then turned on by actuating (e.g., depressing) the power button 80. In response to actuation of the power button 80, the control circuit powers on the air-flow sensor 77. The display component 68 displays an indicator, such as a light, a graphic, etc., indicating that the e-hookah 30 is turned on. At this point, the cartomizer assemblies 41 are still turned off (i.e., no power is being supplied to each of the heating elements 58 of the respective cartomizer assemblies 41), and the LEDs 76 are also turned off. A user then sucks on the mouthpiece 28 of the e-hookah 30 as shown in Figs. 7 and 8. The sucking action causes air-flow through the e-hookah 30 as shown in Figs. 7 and 8. Air flows down inside the control circuit housing 48 and through the radial air gap 72 into the cartomizer housing cap 46. As air flows past the air-flow sensor 77 in the cartomizer housing cap 46, the air-flow sensor 77 sends a signal to the control circuit. In response to the signal from the air-flow sensor, the control circuit powers on the heating elements 58 of the cartomizer assemblies 41. The heating elements 58 vaporize the hookah liquid in the wick 56 which is drawn to the wick from the cartomizers 52. The vapor flows downward through the tubes 54 of each cartomizer 42, down through the air-flow port 32 and inner lumen 15 of the shaft 14, through the downstem 22 into the water in the jar 16, and finally up through the hose 26 into the mouthpiece 28 and into the user's mouth. At the same time, the control circuit powers on the LEDs in the programmed mode as described above.

[0042] While the present invention has been fully described above with particularity and detail in connection with what is presently deemed to be the invention, it will be

apparent to those of ordinary skill in the art that many modifications thereof may be made without departing from the principles and concepts set forth herein. Hence, the proper scope of the present invention should be determined only by the broadest interpretation of the appended claims so as to encompass all such modifications and equivalents.

What is claimed is:

1. An e-hookah bowl comprising:

a housing;

an air-flow sensing circuit comprising an air-flow sensor having a sensor surface;

a power source; and

a first LED band around at least a portion of the housing, the first LED band operatively connected to the air-flow sensing circuit such that when the air-flow sensor senses air-flow across the sensor surface, the air-flow sensing circuit lights the first LED band.

2. The e-hookah bowl of Claim 1, further comprising a plurality of cartomizer compartments.

3. The e-hookah bowl of Claim 2, further comprising a plurality of cartomizers within the plurality of corresponding cartomizer compartments, each of the cartomizers comprising a casing having an outer electrical contact surface and an inner surface, a tube within the casing defining an air-flow bore within the casing and having an outer surface, an absorbent material within the casing substantially filling the space between the outer surface of the tube and the inner surface of the casing, and a wick within the bore extending from one side of the bore to an opposite side of the bore, and a heating element wrapped around the wick.

4. The e-hookah bowl of Claim 1, wherein the housing comprises a top portion and a bottom portion removably connected to the top portion.

5. The e-hookah bowl of Claim 4, wherein the bottom portion comprises a tapered bore.

6. The e-hookah bowl of Claim 1, further comprising a second LED band around at least a portion of the housing, the second LED band operatively connected to the air-flow sensing circuit such that when the air-flow sensor senses air-flow across the sensor surface, the air-flow sensing circuit lights the second LED band.

7. The e-hookah bowl of Claim 6, further comprising a third LED band around at least a portion of the housing, the third LED band operatively connected to the air-flow sensing circuit such that when the air-flow sensor senses air-flow across the sensor surface, the air-flow sensing circuit lights the third LED band.

8. The e-hookah bowl of Claim 7, wherein the first, second, and third LED bands wrap substantially completely around the housing and are arranged in substantially parallel planes to each other, and wherein the air-flow sensing circuit is programmed to light up the first, second, and third bands substantially simultaneously.

9. The e-hookah bowl of Claim 7, wherein the first, second, and third LED bands wrap substantially completely around the housing and are arranged in substantially parallel planes to each other, and wherein the air-flow sensing circuit is programmed to light the first, second, and third bands in sequence.

10. The e-hookah bowl of Claim 7, where the first LED band is a first color, the second LED band is a second color different than the first color, and the third LED band is a third color different than the first color and different than the second color.

11. An e-hookah bowl comprising:

a housing;

a control circuit comprising a controller configured to control operation of the e-hookah bowl;

an air-flow sensor having a sensor surface operably coupled to the control circuit, the air-flow sensor configured to provide a signal to the control circuit when the air-flow sensor detects air-flow across the sensor surface;

a power source operably coupled to the controller; and

a first LED band around at least a portion of the housing, the first LED band operatively coupled to the control circuit;

wherein the control circuit is configured to light the first LED band when the control circuit receives a signal from the air-flow sensor when the air-flow sensor detects air-flow across the sensor surface.

12. The e-hookah bowl of Claim 11, wherein the housing comprises a cartomizer housing.

13. The e-hookah bowl of Claim 12, further comprising a plurality of cartomizer assemblies within the cartomizer housing, each of the cartomizer assemblies comprising a casing having an outer electrical contact surface and an inner surface, a tube within the casing defining an air-flow bore within the casing and having an outer surface, an absorbent material within the casing substantially filling the space between the outer surface of the tube and the inner surface of the casing, a wick within the bore extending from one side of the bore to an opposite side of the bore, and a heating element wrapped around the wick, the heating element operably coupled to the control circuit.

14. The e-hookah bowl of Claim 11, wherein the housing comprises a top portion and a bottom portion removably connected to the top portion.

15. The e-hookah bowl of Claim 14, wherein the bottom portion comprises a tapered bore configured to mount to a bowlstem of a hookah.

16. The e-hookah bowl of Claim 11, further comprising a second LED band around at least a portion of the housing, the second LED band operatively connected to the control circuit, and

wherein the control circuit is configured to light the second LED band when the control circuit receives a signal from the air-flow sensor when the air-flow sensor detects air-flow across the sensor surface.

17. The e-hookah bowl of Claim 16, further comprising a third LED band around at least a portion of the housing, the third LED band operatively connected to the control circuit; and

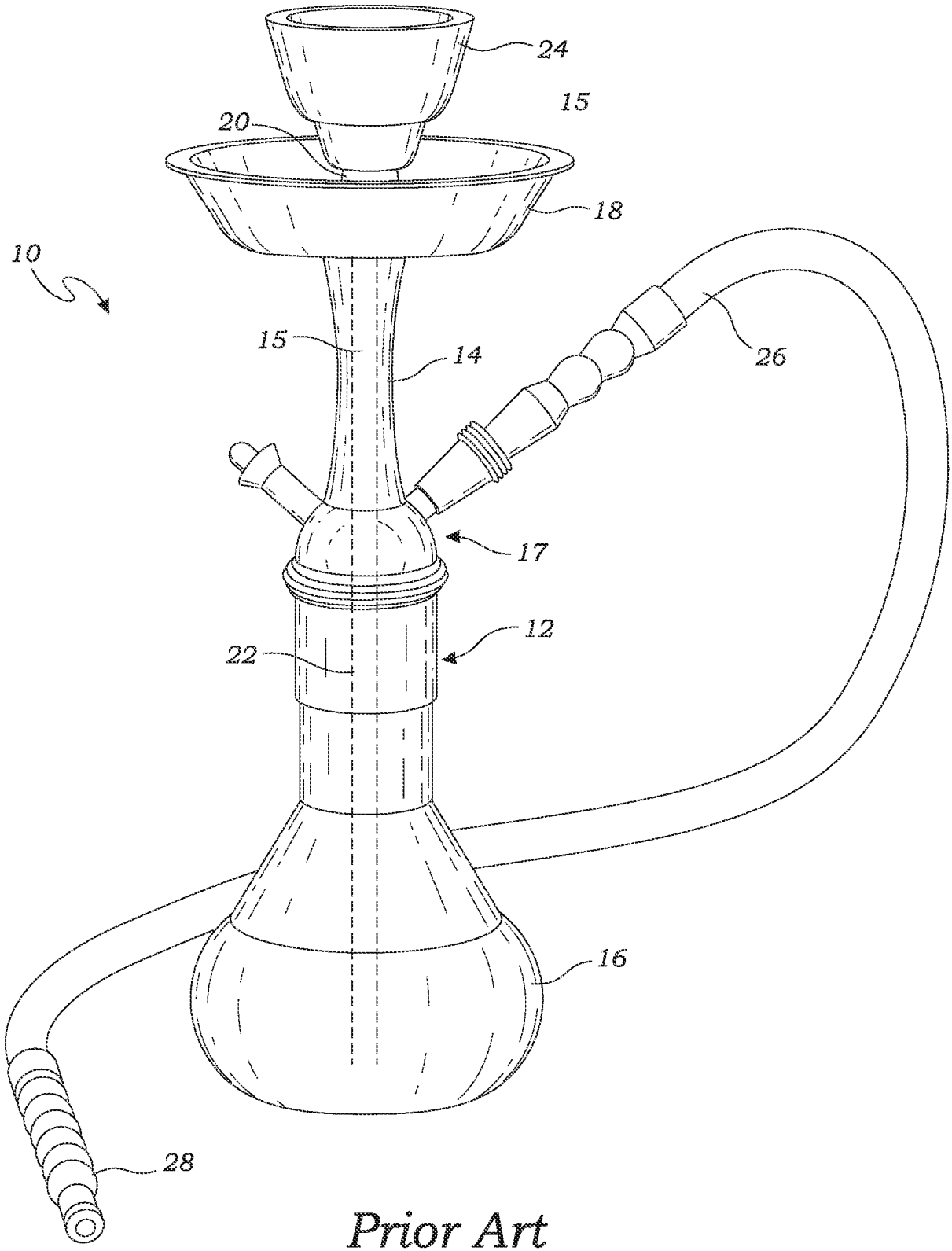
wherein the control circuit is configured to light the third LED band when the control circuit receives a signal from the air-flow sensor when the air-flow sensor detects air-flow across the sensor surface.

18. The e-hookah bowl of Claim 17, wherein the first, second, and third LED bands wrap substantially completely around the housing and are arranged in substantially parallel planes to each other, and wherein the control circuit is programmed to light up the first, second, and third bands substantially simultaneously.

19. The e-hookah bowl of Claim 17, wherein the first, second, and third LED bands wrap substantially completely around the housing and are arranged in

substantially parallel planes to each other, and wherein the control circuit is programmed to light the first, second, and third bands in a pre-programmed sequence.

20. The e-hookah bowl of Claim 17, where the first LED band is a first color, the second LED band is a second color different than the first color, and the third LED band is a third color different than the first color and different than the second color.



Prior Art
Fig. 1

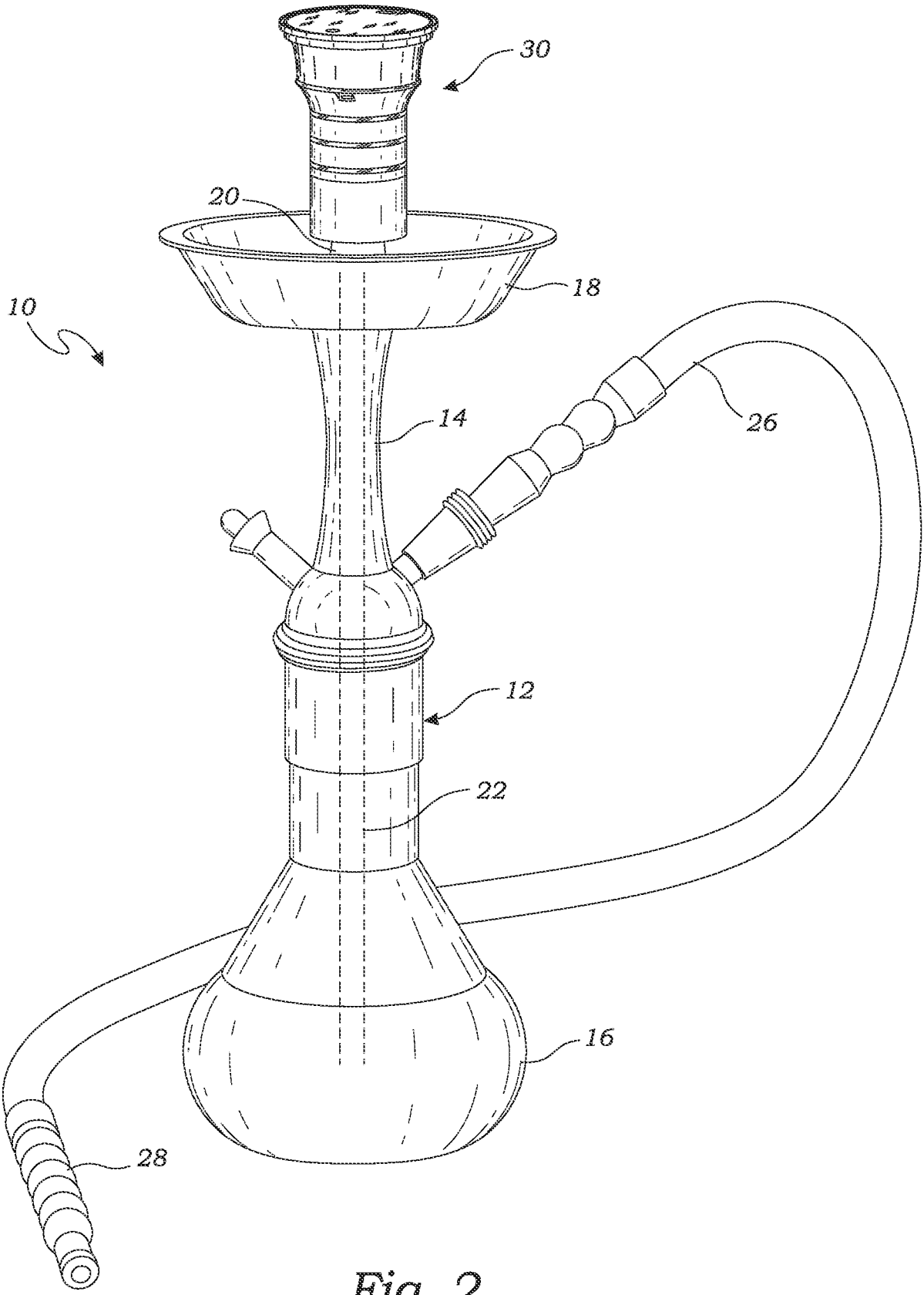


Fig. 2

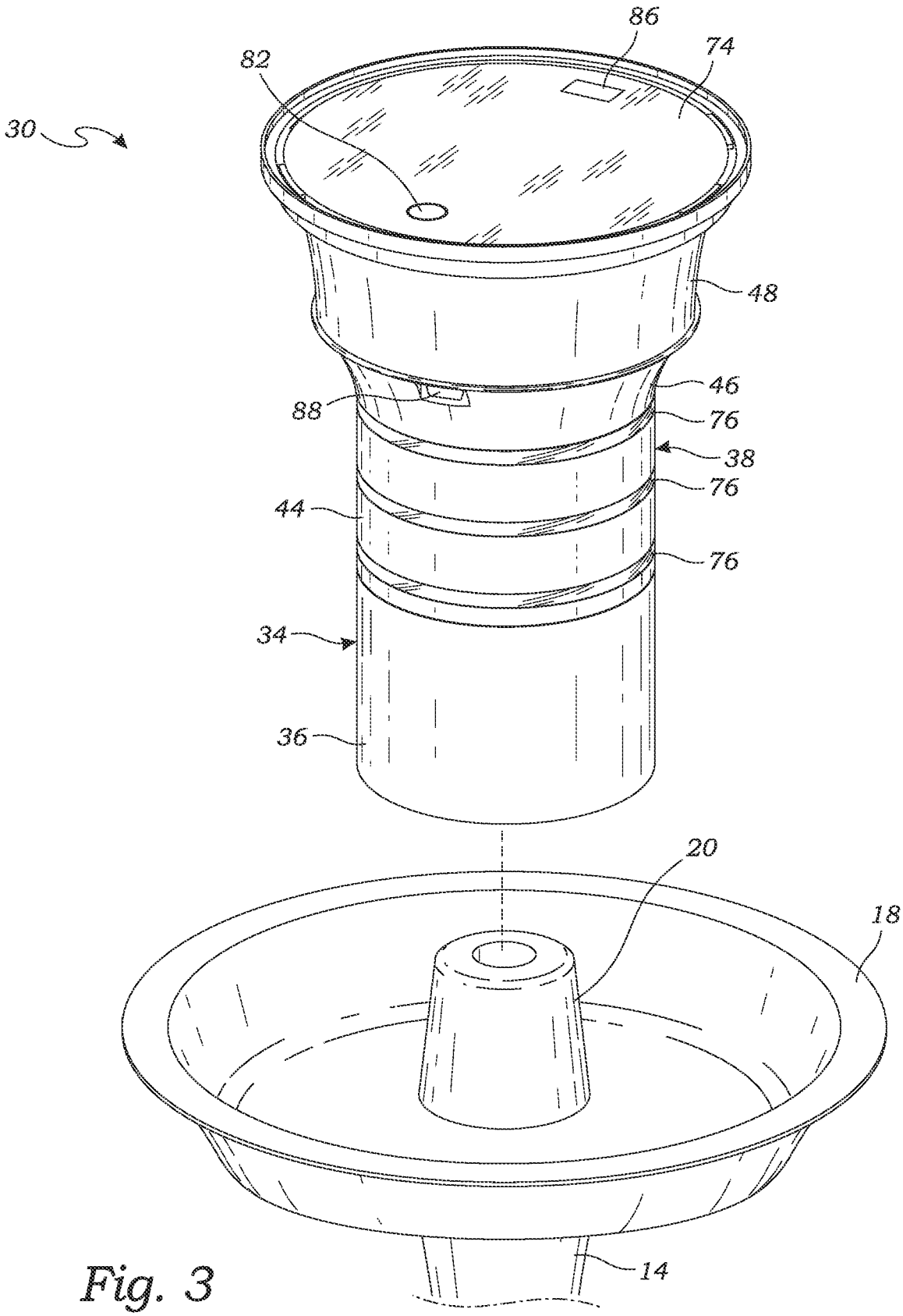


Fig. 3

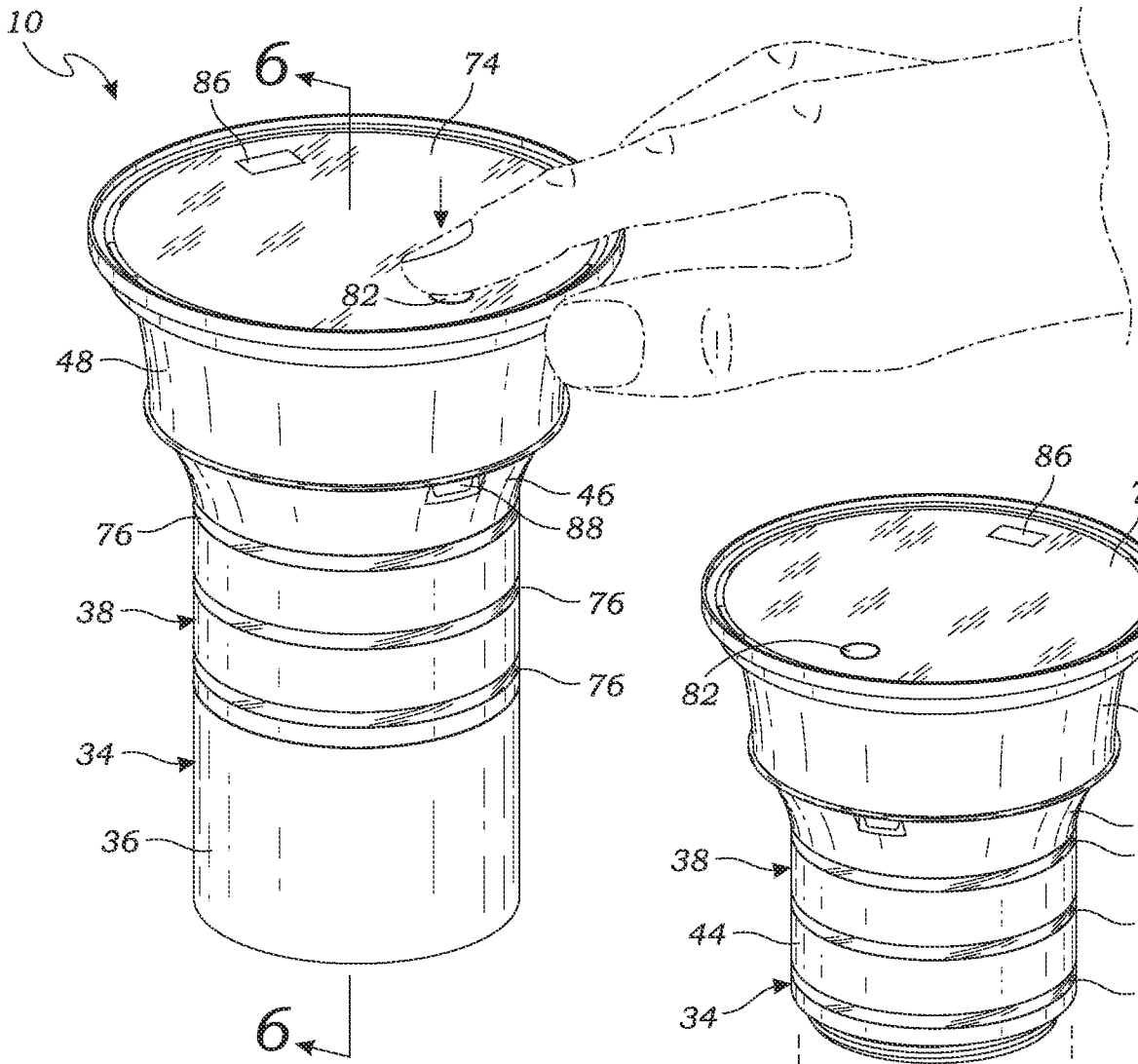

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Fig. 4

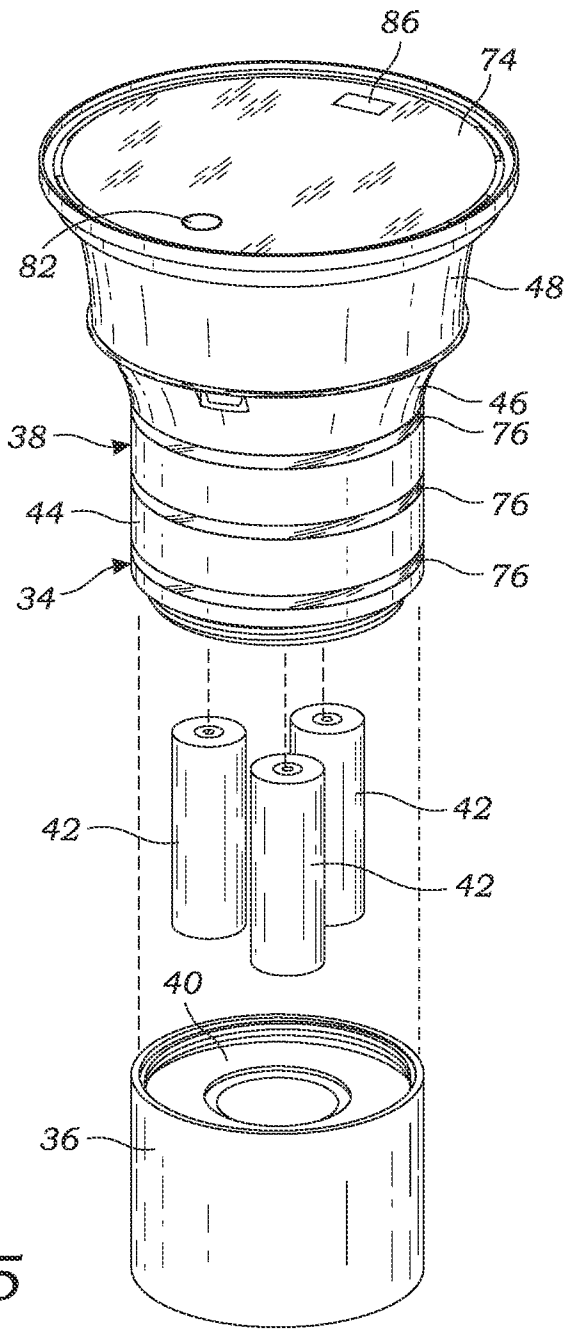
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Fig. 5

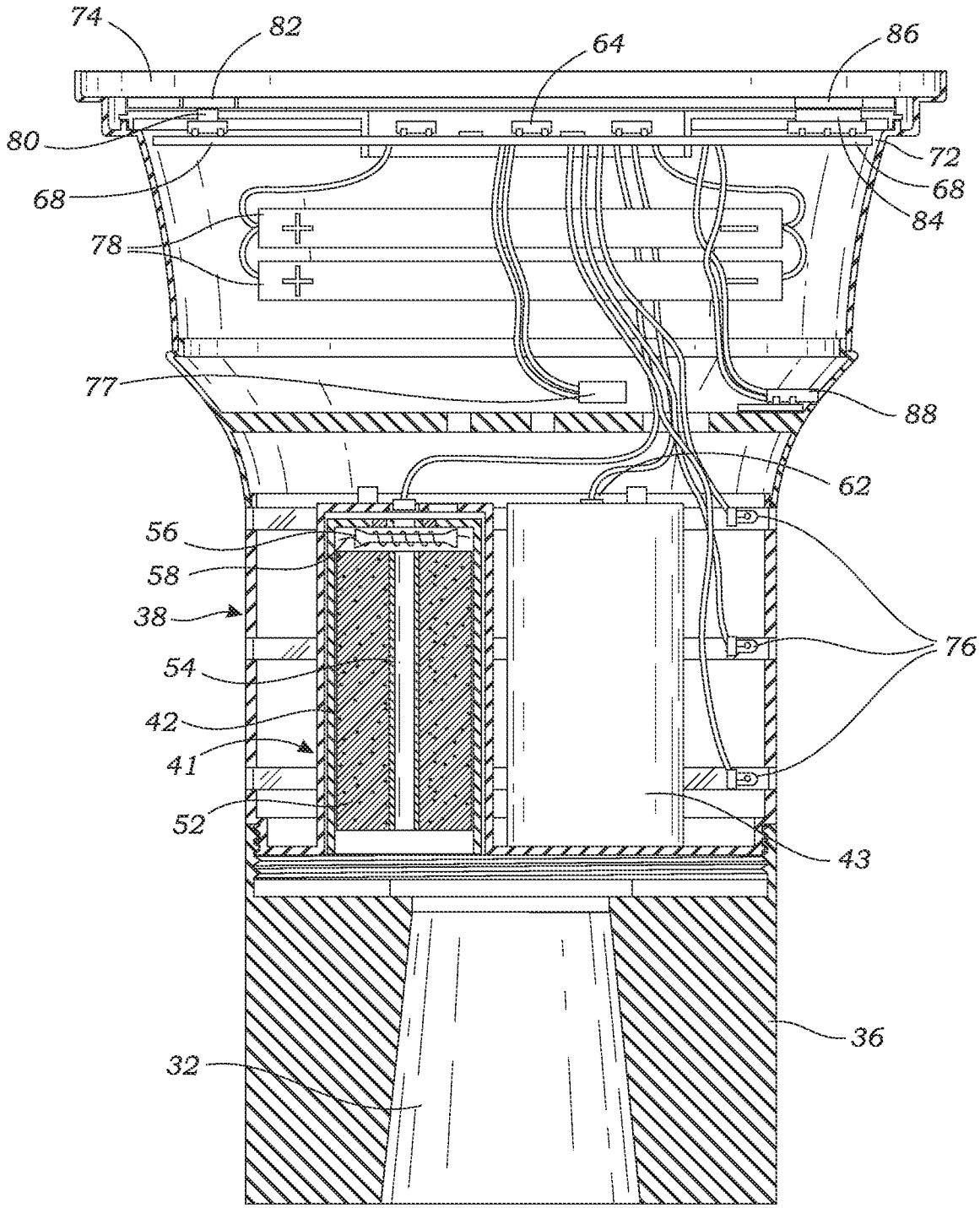

Fig. 6

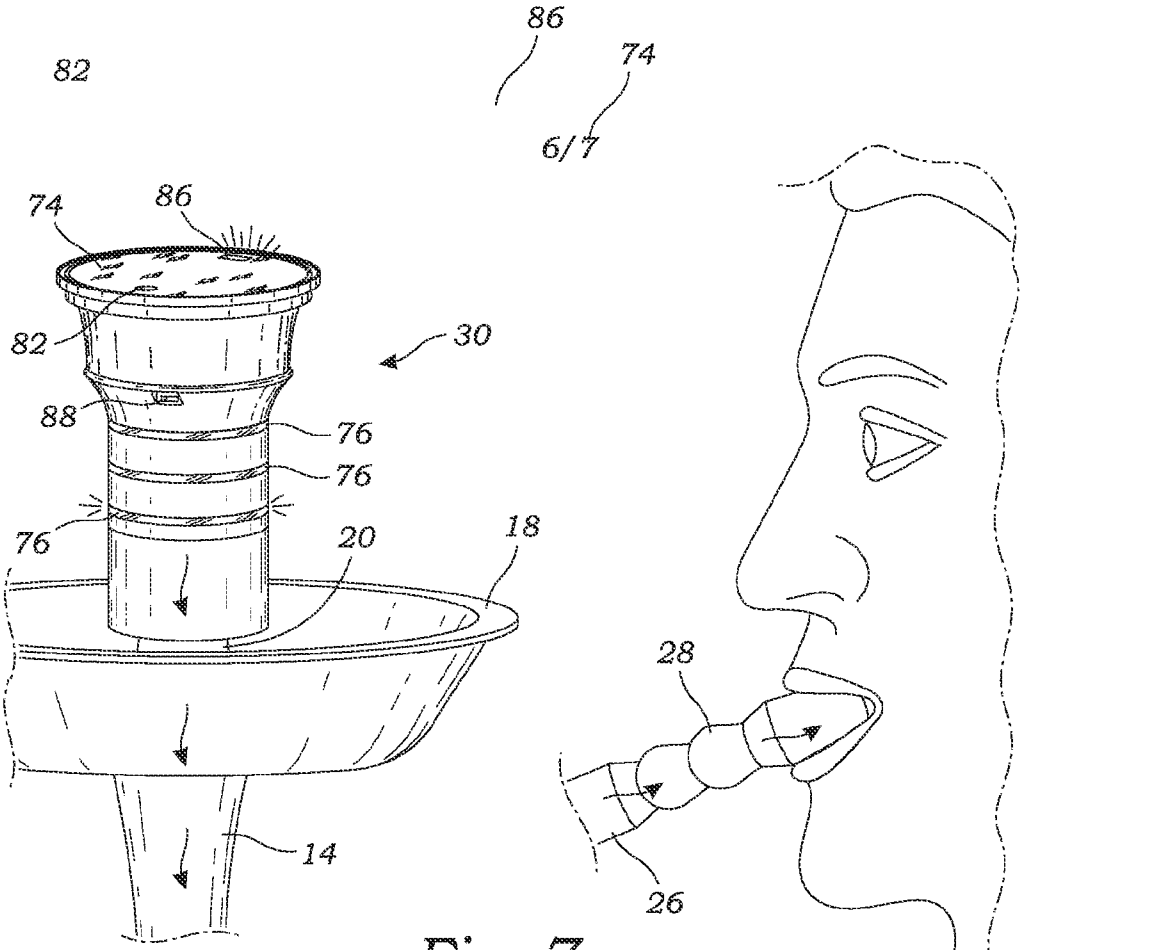
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Fig. 7

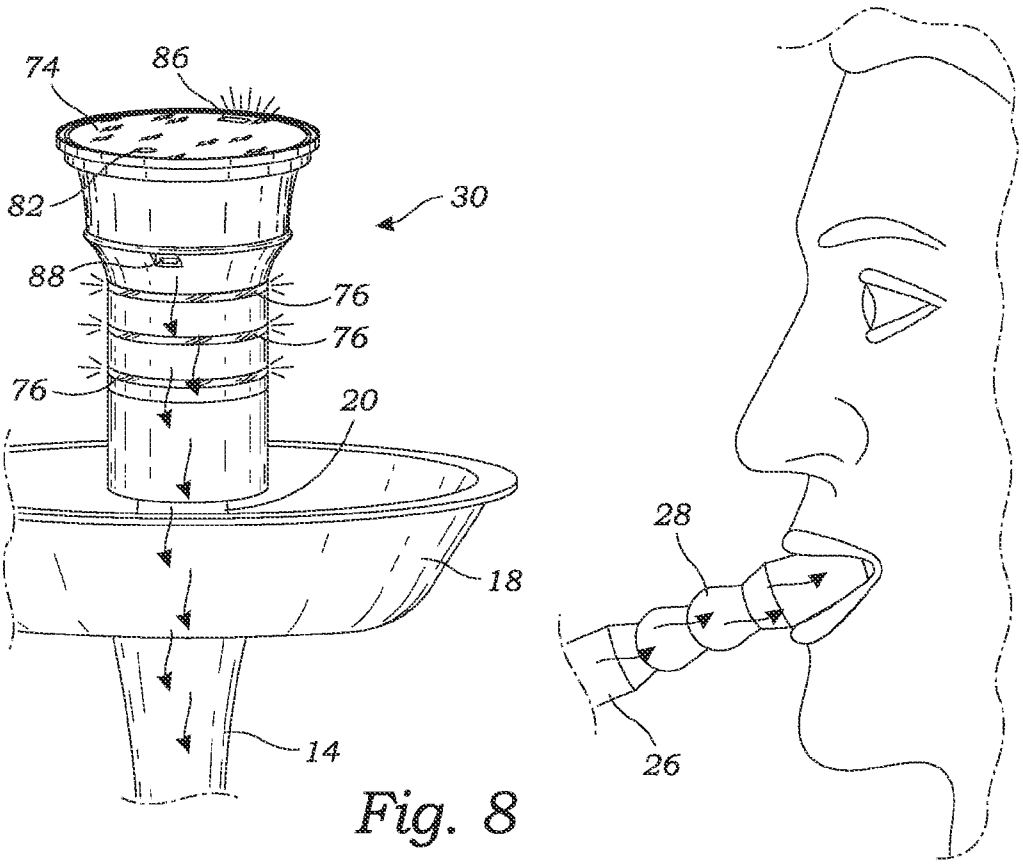
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Fig. 8

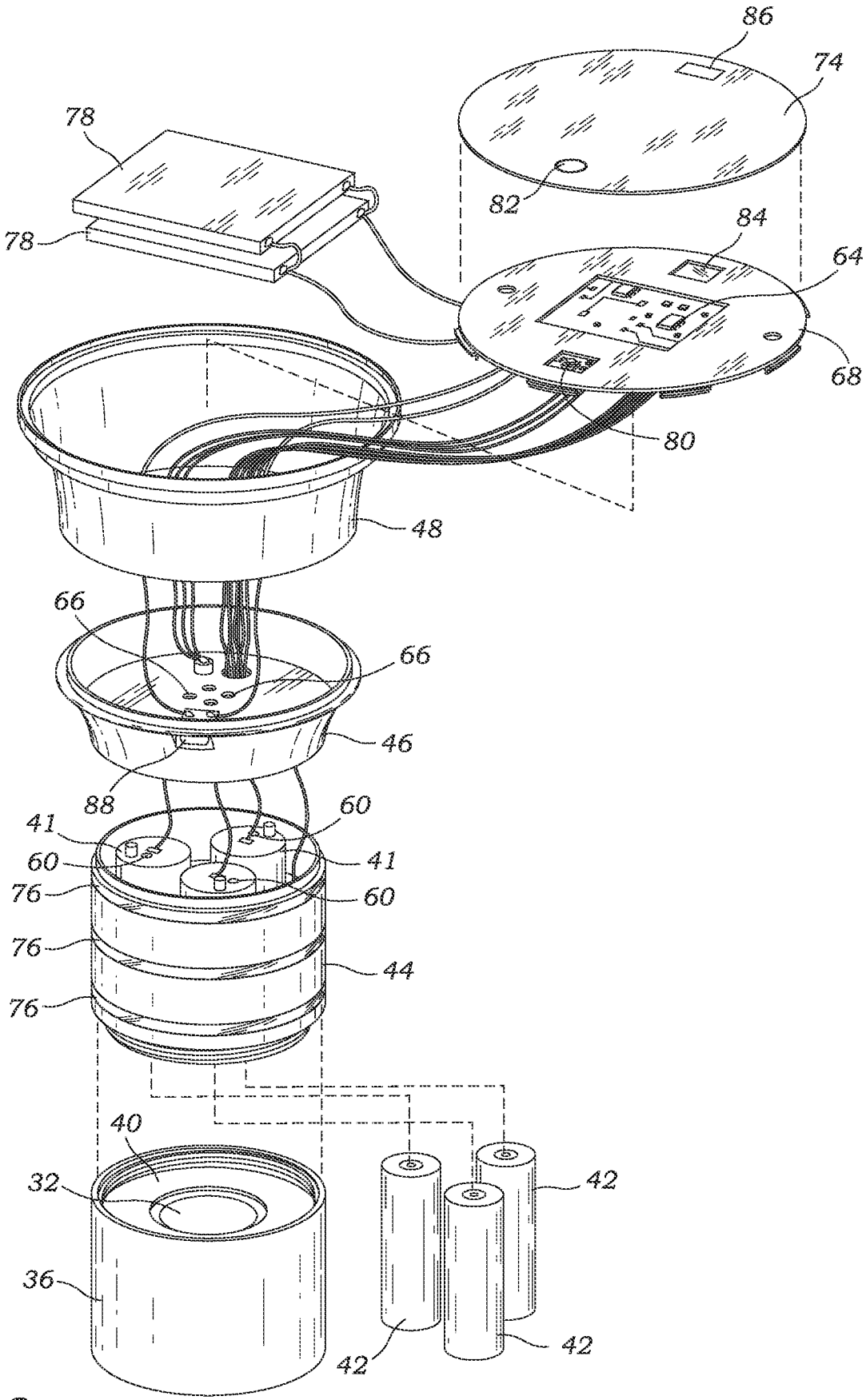
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Fig. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2015/040042

A. CLASSIFICATION OF SUBJECT MATTER

A24F 1/30(2006.01)i, A24F 47/00(2006.01)i

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)
A24F 1/30; A24F 47/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & keywords: e-hookah, bowl, air-flow sensing circuit, LED, cartomizer, wick, absorbent

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2014-020539 A1 (WHITE MIST ELECTRONICS INC) 6 February 2014 See claims 1, 9; paragraphs [0013]-[0016], [0023]-[0032]; figures 2a-2c.	1-20
A	US 2012-0042884 A1 (MUKADDAM, N.) 23 February 2012 See abstract; claims 1-21.	1-20
A	US 8757170 B2 (KAPLANI, F.) 24 June 2014 See abstract; claims 1-15.	1-20
A	CN 202445136 U (BAOMING, Y.) 26 September 2012 See abstract; claim 1.	1-20
A	US 2014-0053856 A1 (LIU, Q.) 27 February 2014 See abstract; claims 1-10.	1-20

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 October 2015 (16.10.2015)	**16 October 2015 (16.10.2015)**

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2015/040042

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2014-020539 A1	06/02/2014	None	
US 2012-0042884 A1	23/02/2012	None	
US 8757170 B2	24/06/2014	US 2014-083441 A1	27/03/2014
CN 202445136 U	26/09/2012	None	
US 2014-0053856 A1	27/02/2014	WO 2014-029078 A1	27/02/2014