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(54) **ALKALINE HUMIDIFIER**

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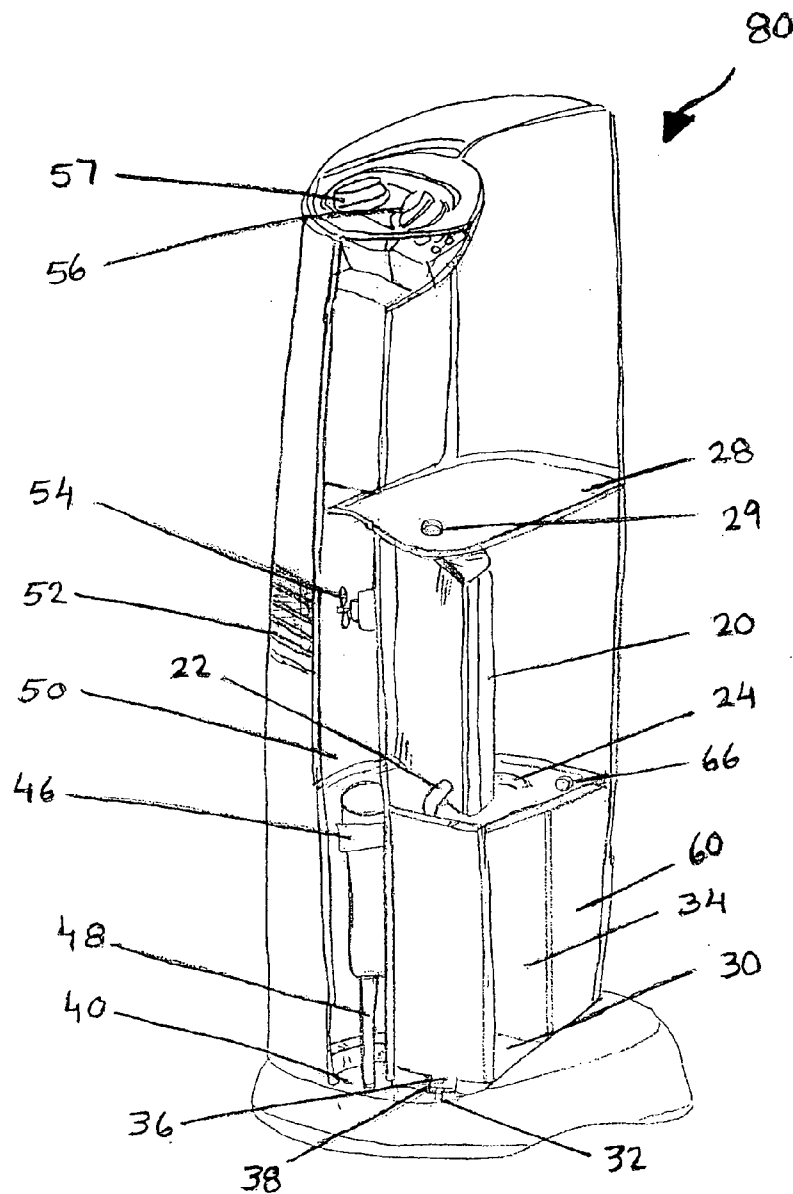
(57) **ABSTRACT**

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An alkaline humidifier for humidifying the environment with alkaline water ions, wherein water contained in a water tank and allowed to drain into the electrolysis unit where water is ionized into, negative alkaline water and positive acidic water and stored in respective reservoirs whereby the acidic water stored in the acidic reservoir is emptied at a later time and the alkaline water stored in the alkaline reservoir is allowed to drain into an evaporation cavity where it is vaporized by a heating element whereby humidifying the surrounding environment.

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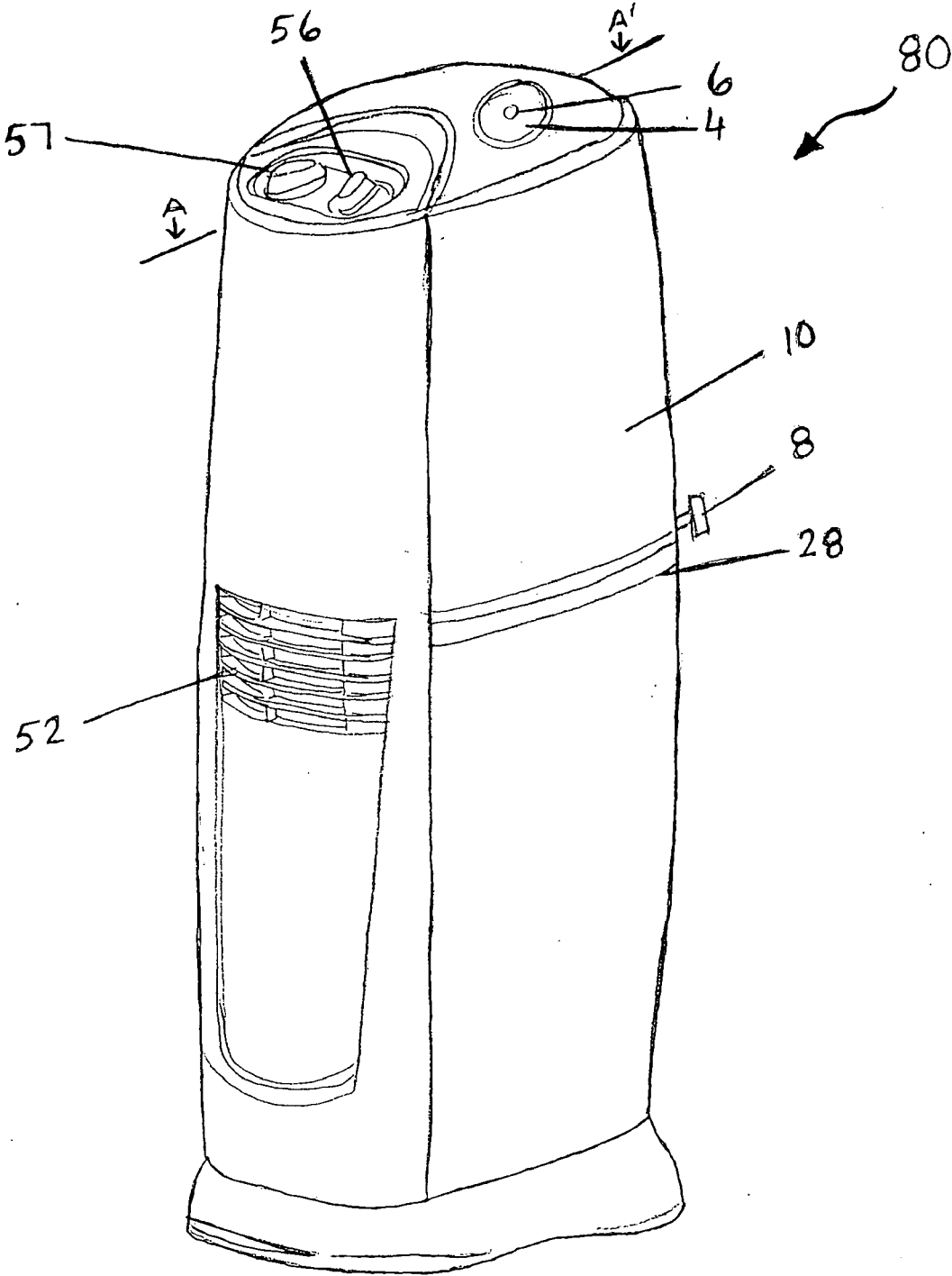


FIG. 1

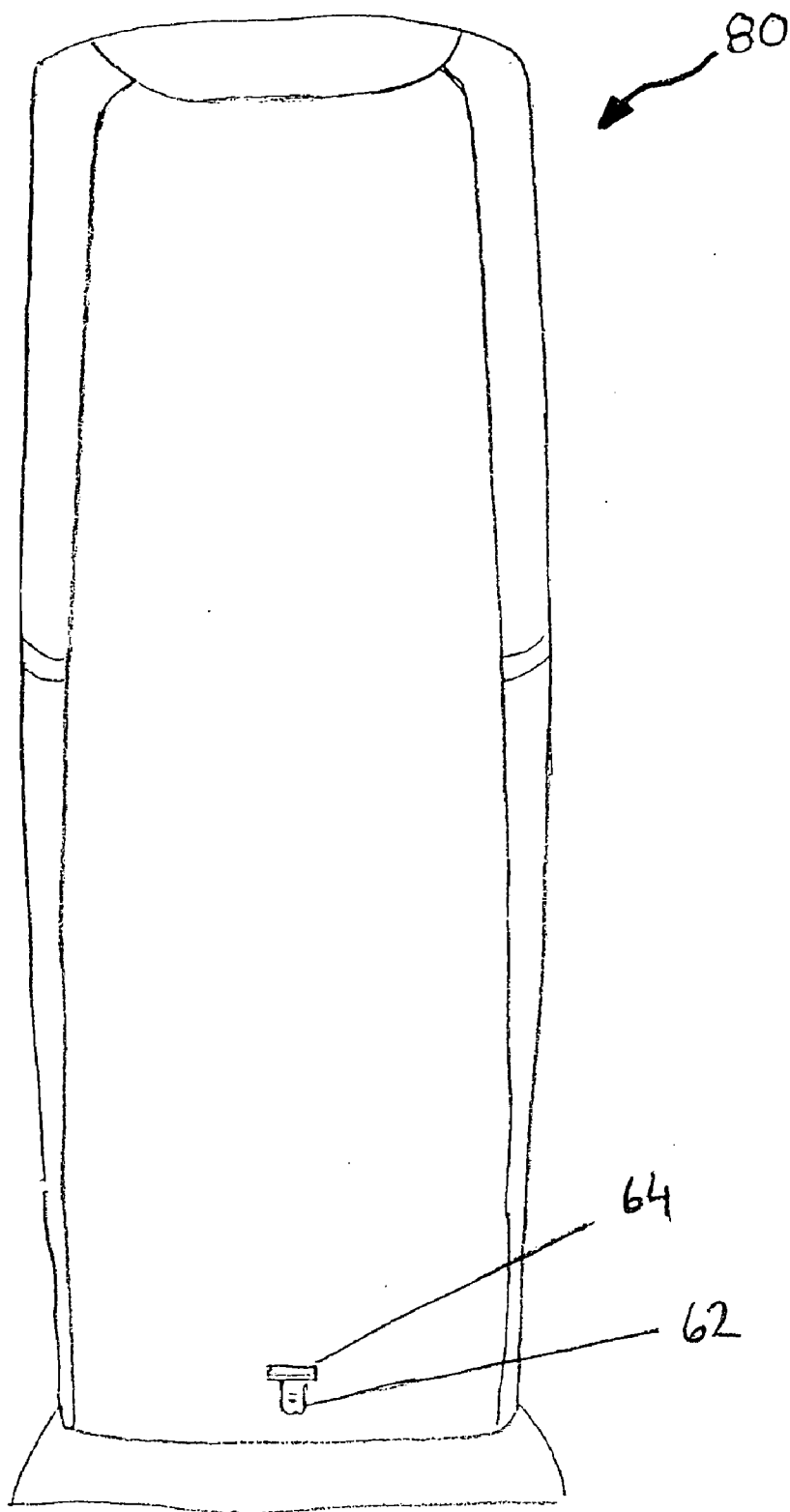


FIG. 2

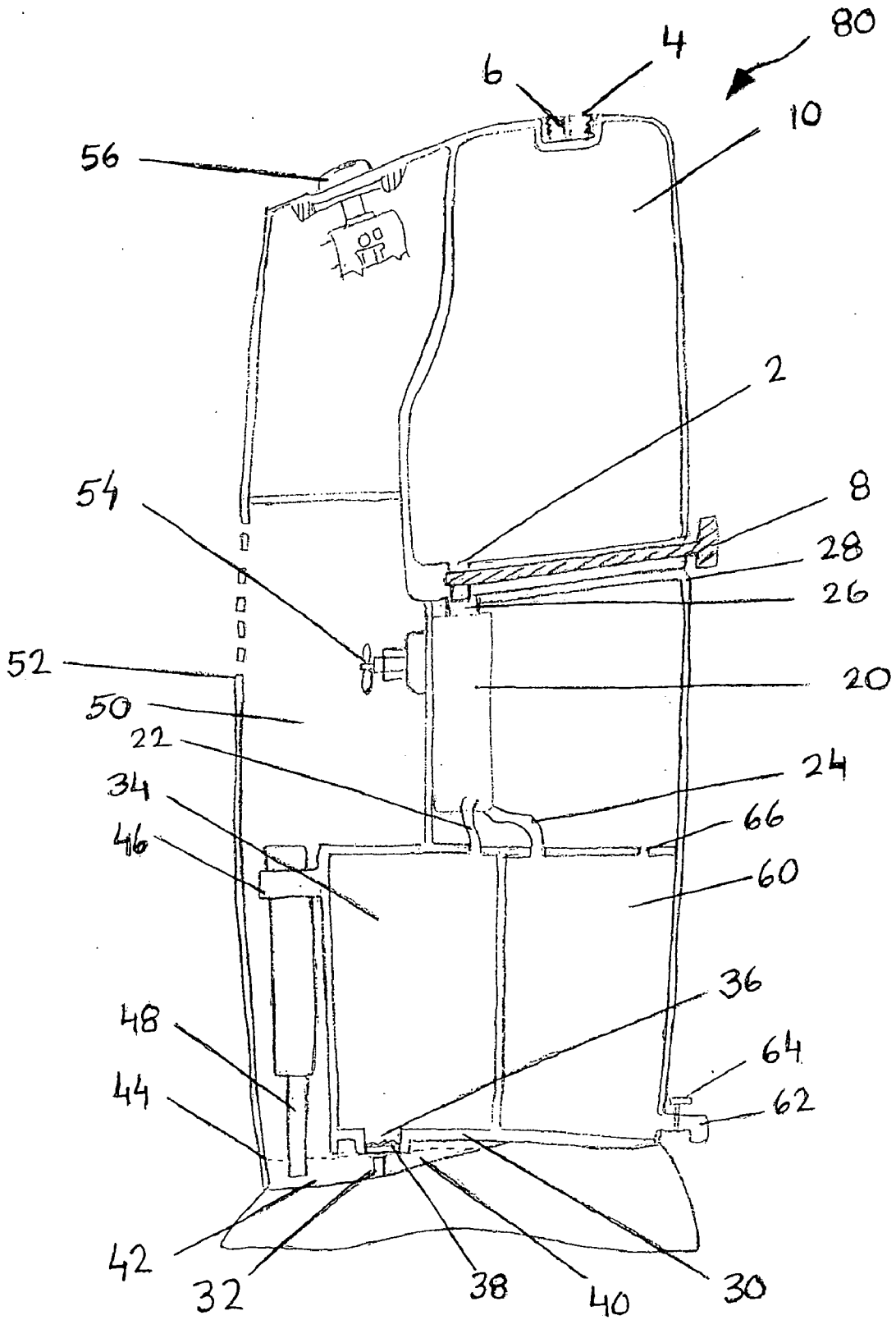


FIG. 3

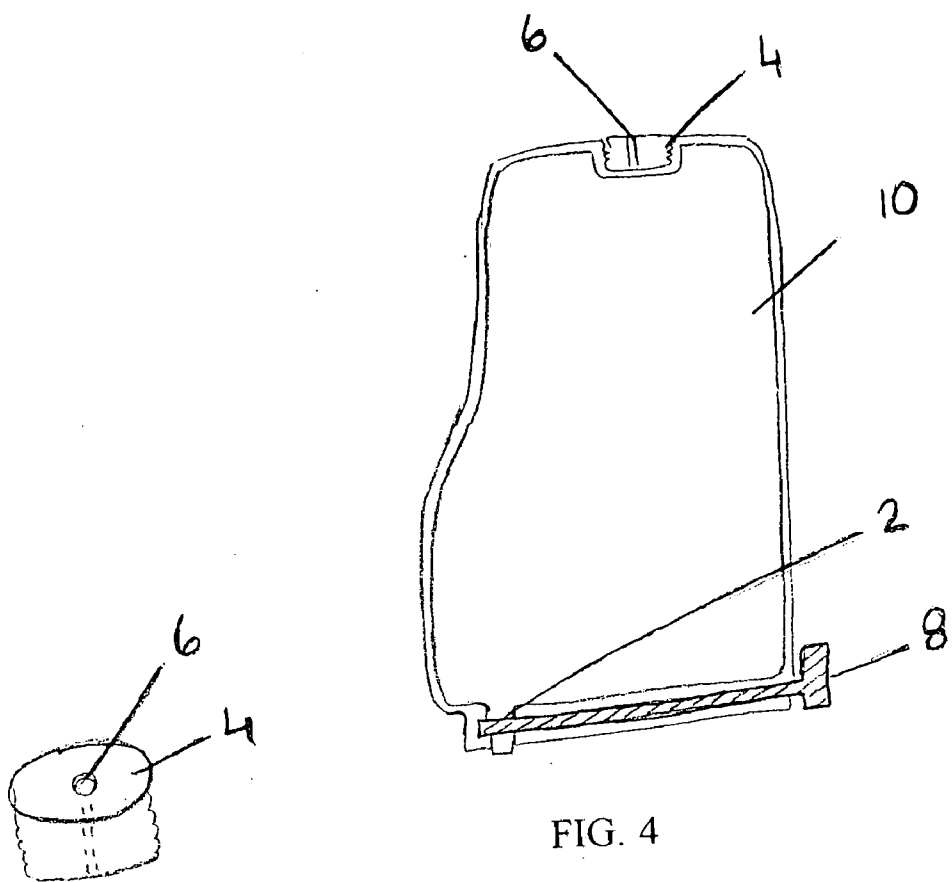


FIG. 6

FIG. 4

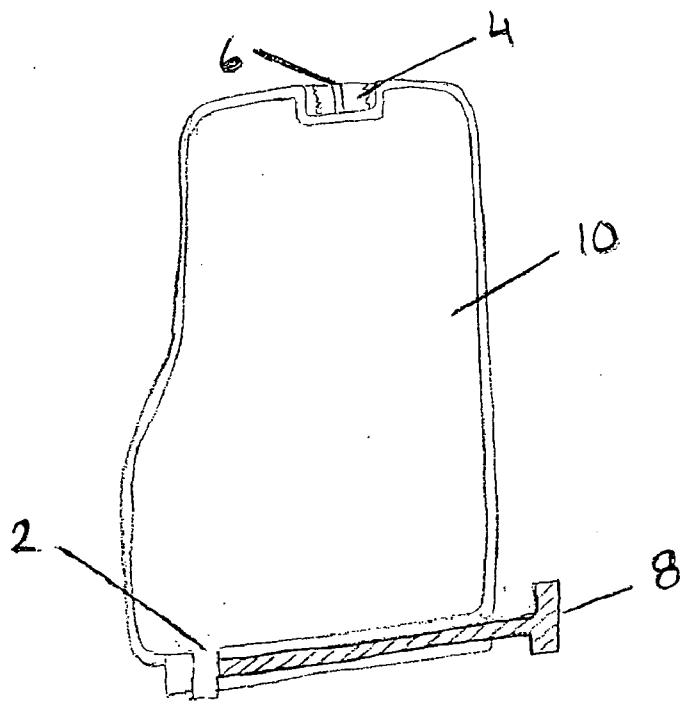


FIG. 5

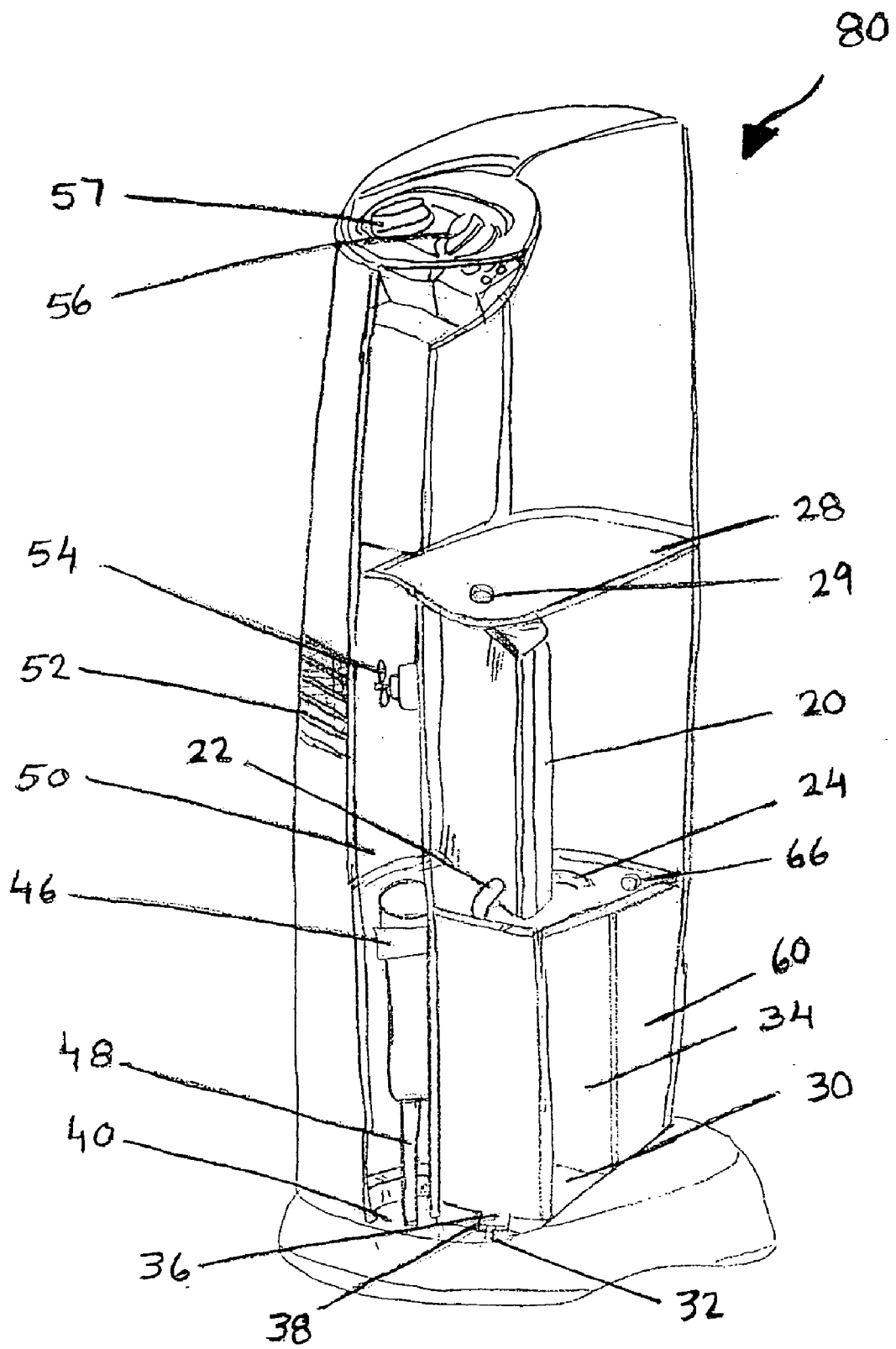


FIG. 7

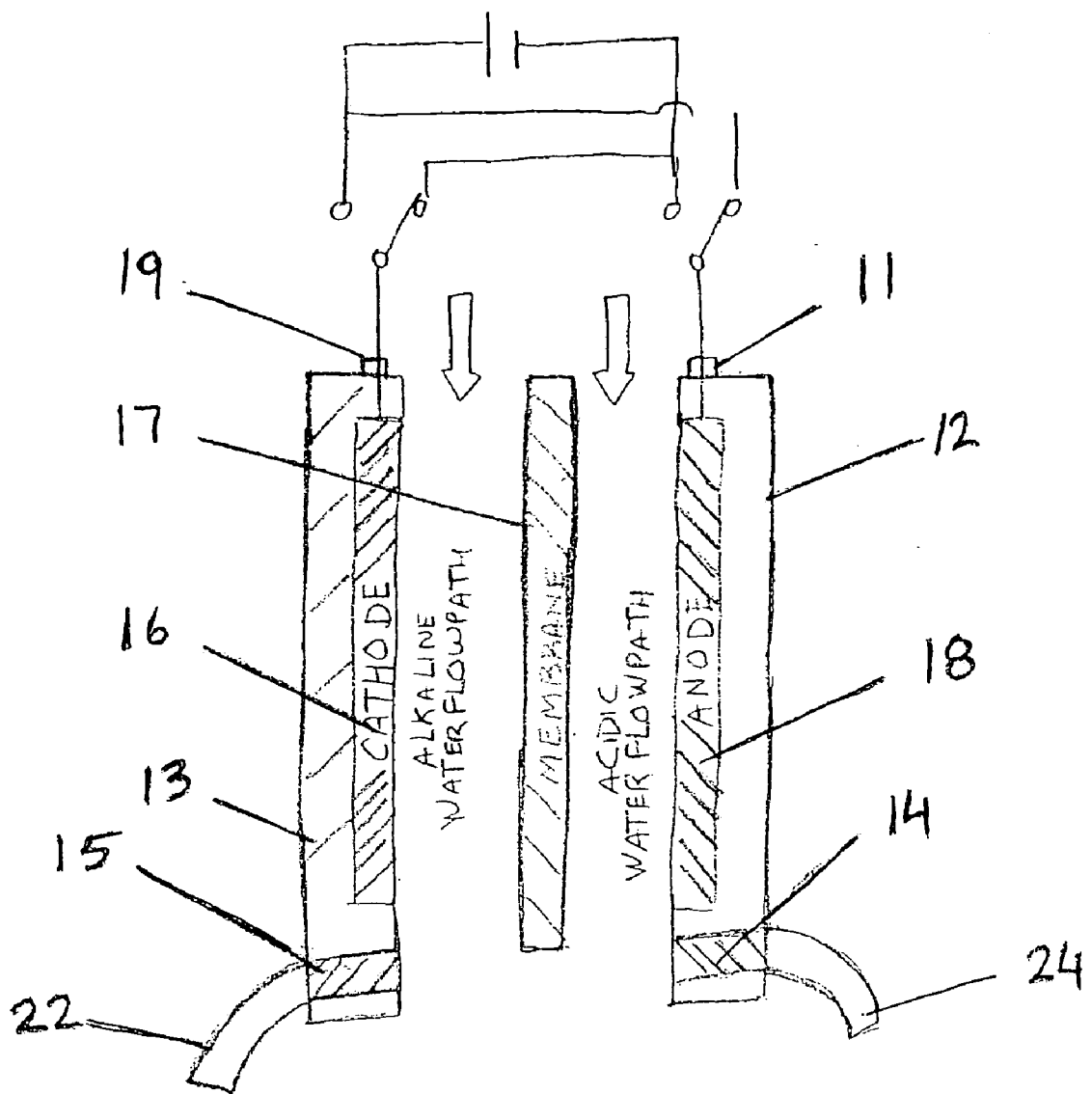


FIG. 8

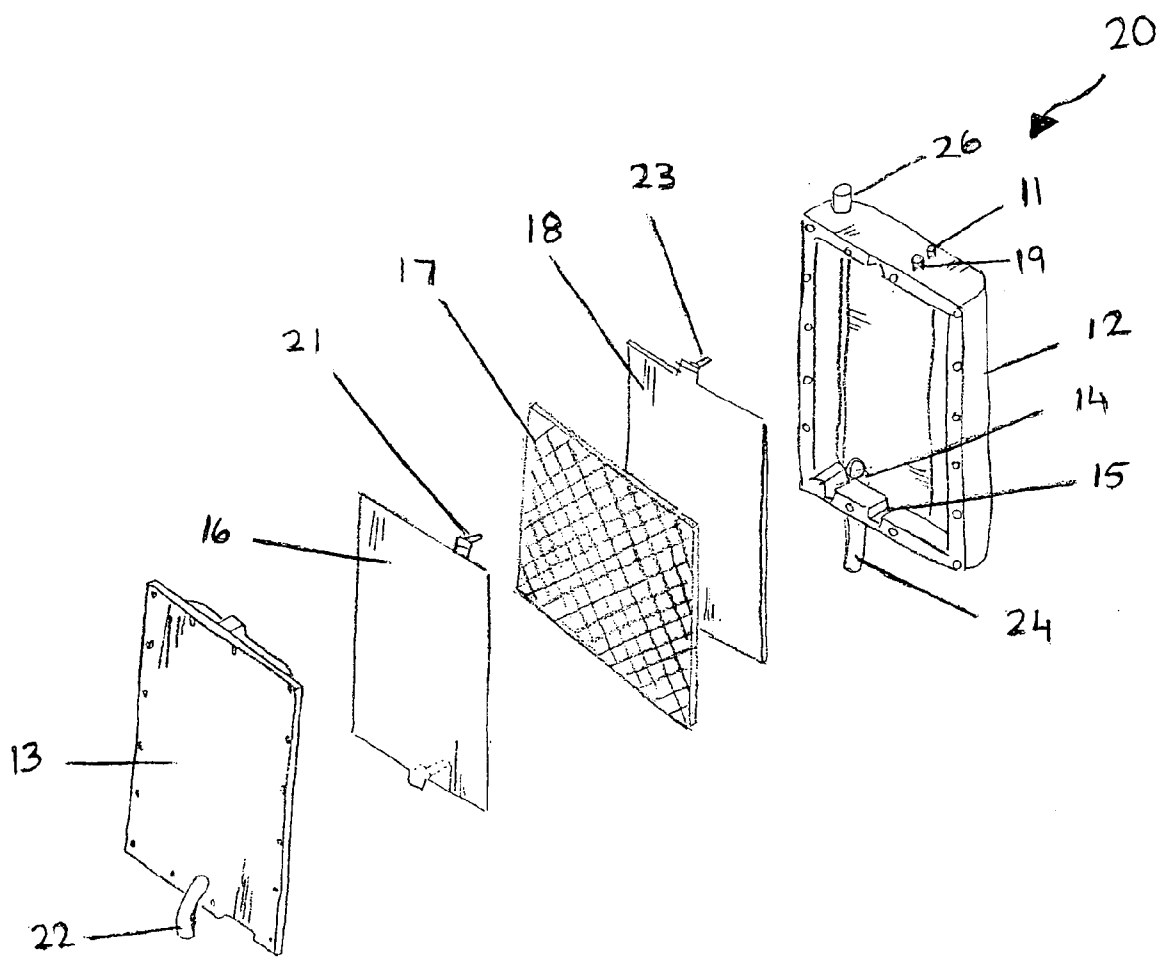


FIG. 9

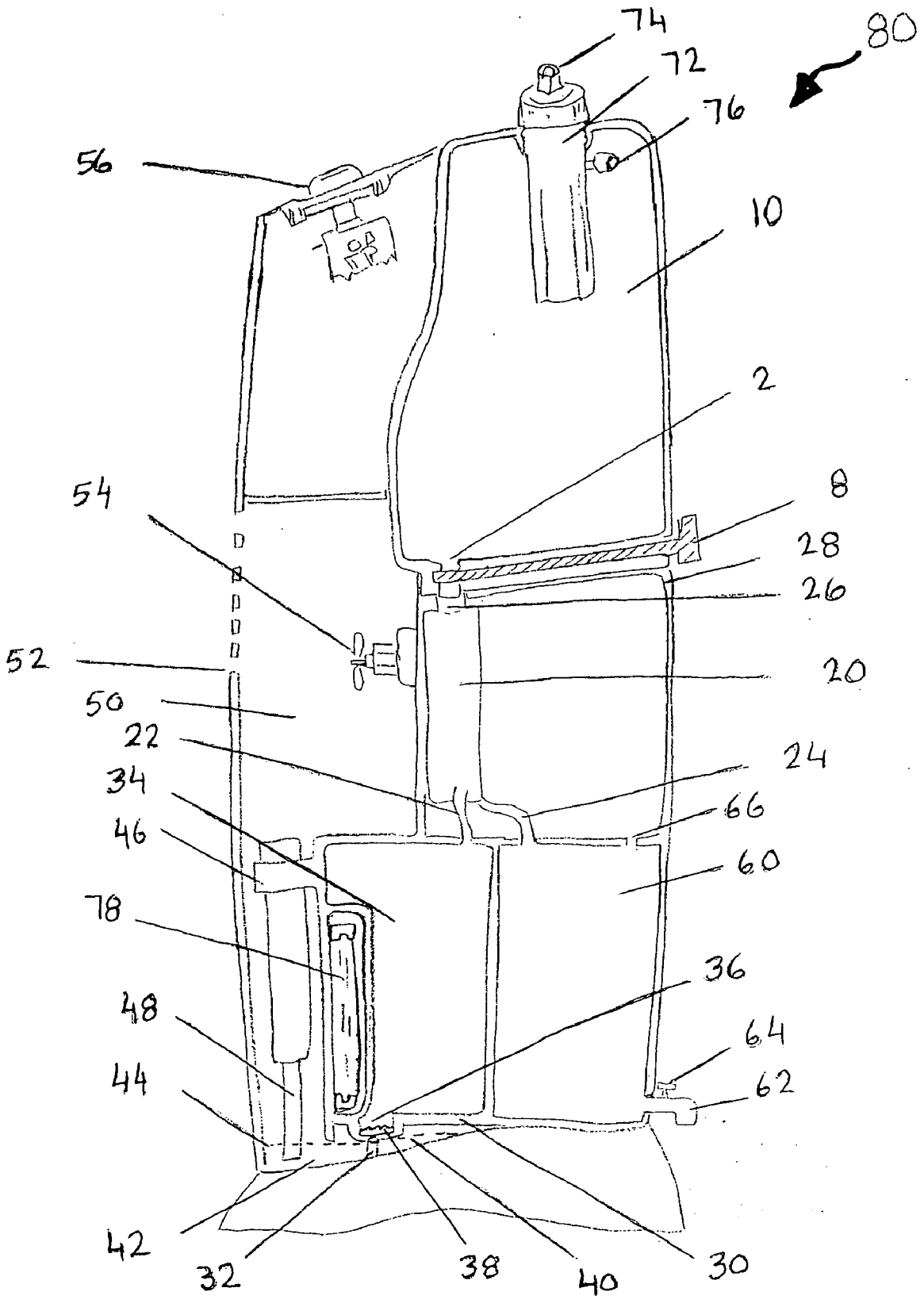


FIG. 10

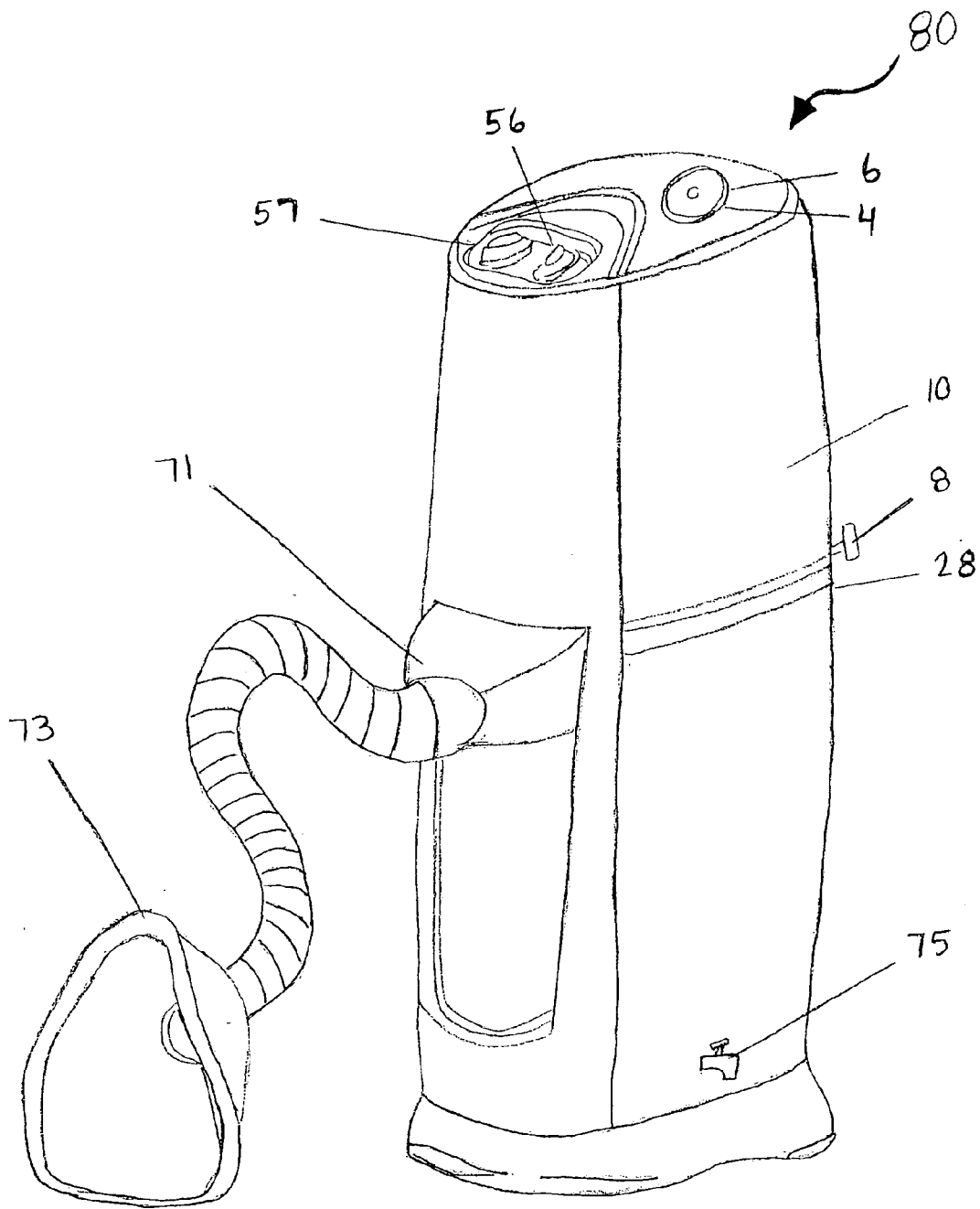


FIG. 11

ALKALINE HUMIDIFIER

FIELD OF THE INVENTION

[0001] The present invention relates to humidifiers, particularly alkaline humidifier. The invention relates to a humidifier producing ionized water through electrolysis of water, producing hydroxyl ion OH^- enriched alkaline water and producing hydrogen ion H^+ enriched acidic water, wherein the alkaline water is vaporized with a negative charge to humidify the air and the acidic water is stored and later drained from humidifier.

BACKGROUND OF THE INVENTION

[0002] A wide variety of methods have been utilized for conditioning the air by increasing the air humidity. Maintaining a proper humidity level in a home is important during periods of dry weather, winter and the summer so that the relative humidity within the home is comfortable.

[0003] Humidifiers vaporizes water and expel the vapor into the surrounding environment whereby increasing the moisture in the air. There are several types of humidifiers and they come in different shapes and sizes. There are small portable units to humidify small rooms and large console units to humidify entire homes and buildings. Humidifiers are well known in the art and they include ultrasonic, steam, warm air and evaporation type humidifiers. These types of humidifiers typically include a housing with an inlet and outlet, a tank for holding water and a fan to create airflow. The tank is usually removable and holds the water, which can be refilled. Water is usually transferred from the tank to base reservoirs through a valve assembly located at the bottom of tank. When the tank is placed on the humidifier unit the valve opens and allows water to flow into the reservoir. As water flows from tank to the reservoir, air simultaneously is drawn into tank through the valve by a vacuum created from the exiting water. When the water level in the reservoir rises to such a degree that the valve opening becomes covered with water, a hydrostatic balance is reached and the flow of water ceases. As water is vaporized, the reservoir level drops disturbing the balance and resulting in the continued flow of water from the tank. This controlled flow cycle ensures that the humidification device will have a supply of water with which to vaporize, as well as, limiting the amount of water such that no water spills over the edge of the base reservoir. There are many different concepts in humidifiers from utilization of ultraviolet light, having different types of filtration to having aesthetic appearance of the vapor mist. The invention disclosed in U.S. Pat. No. 7,073,781 B2 to Mulvanancy et al. utilizes ultraviolet radiation to sterilize the water from microorganism. The invention disclosed in U.S. Pat. No. 7,066,452 B2 to Rotering et al. has a reverse osmosis filter to trap small particles. The invention disclosed in U.S. Pat. No. 5,943,473 et al. has a heated cartridge for delivering humidified respiratory gases to patients.

[0004] Humidifiers primary goal is to provide moisture to the environment, but there is not a humidifier, which provides humidity to the air by alkaline water vapor ions. This not only increases humidity in the air but also aids in the health benefits associated with alkaline water. The air with negatively charged alkaline water molecule has beneficial effects in removing particulate contaminants such as smoking particles or pollens from the air by transferring charges to such particles. The charged particles are electrically attracted to

nearby surfaces that are electrically neutral or oppositely charged and are then deposited against surfaces, therefore purifying the air, similar to air ionizers, whereas alkaline humidifier also adds humidity to the air. Additionally, air with a high content of negative ions, alkaline vapor, is believed to have beneficial physiological effects on persons who breaths the air. This happens by increasing absorption and therefore hydrating and moistening the skin due to the microionization of the water molecule. Acidic water which are positively charged ions have a multitude of health hazards due to the acidification of air. Free radicals damage the mucous membrane in the lung, as well as skin, therefore it is not beneficial to vaporize. Thus it is desirable to provide a humidifier with an electrolysis unit, which transforms regular water to ionized water, which is then separated into alkaline and acidic water, wherein the negatively charged alkaline water is vaporized.

SUMMARY OF THE INVENTION

[0005] The present invention is an alkaline humidifier, which through electrolysis, disperses alkaline water ions, which are negatively charged, into the air to increase the healthy alkaline humidity in the air. Water treated by electrolysis to increase its reduction potential is the best solution to the problem of providing a safe source of free electron to block the oxidation of normal tissues by free oxygen radicals. The alkaline water ions (OH^-) can donate its free electron to the oxygen radical, whereby reducing damage to normal cell from oxidation process. Lung tissue and skin are directly exposed to this damage and this damage can be reduced by the antioxidant nature of the alkaline water ion vapors. Through electrolysis, reduced or alkaline water not only gains an excess amount of electrons but the cluster of water (H_2O) seem to reduce in size from about 10 to 13 molecule per cluster to about 5 to 6 molecule per cluster increasing absorption. Therefore this microionization of the water hydrates and moistens the skin and reduces wrinkles in skin whereby having anti-ageing effects. This reduced cluster size also reduces the boiling point of ionized water for faster vaporization. Ordinary tap water is placed in a water tank through an opening located at the top of the water tank and a tank bottom opening allows water to flow from the water tank into an electrolysis unit through gravitation force where tap water is broken down into smaller clusters and then separated into alkaline and acidic concentrations, which are then drained into separate holding reservoirs. The reservoir containing the alkaline water is vaporized and the reservoir containing the acidic water is held in the reservoir and removed when full. The acidic water can be used as a sterilizing agent, ideal for the following; cleaning food, kitchen utensils, treating minor wounds, athletes foot, minor burns, insect bites, scratches and much more.

[0006] The electrolysis unit through electrolysis process produces alkaline and acidic water. The electrolysis unit is equipped with a platinum-coated titanium electrode where electrolysis takes place. As a direct electric potential is applied between the electrode, the hydroxyl ions OH^- being present in water due to electrolytic dissociation of water molecule will donate electrons to the anode at the anode-water interface and are thereby oxidized to form oxygen gas which is then removed away from the system. As a result, the H^+ concentration is enhanced at the anode-water interface so that H^+ enriched acidic water is resulted at the anode-water interface. At the cathode-water interface, on the other hand, H^+ accepts electron from the cathode and is reduced to hydro-

gen to from hydrogen gas, which is similarly eliminated from the system. As a result, the OH^- concentration is increased whereby OH^- enriched alkaline water is generated at the cathode side. After electrolysis, alkaline water comes out of the cathodic side and acidic water comes out of the anodic side and deposited into its respective reservoirs. The alkaline reservoir holding the alkaline water solution will be vaporized. The alkaline reservoir sits in a base defining a water supply cavity and supported on the base is a valve actuating stem which interacts with a valve assembly located at bottom of the alkaline reservoir whereby having a discharge opening in communication with the water supply cavity and adapted to maintain a given level of liquid in water supply cavity; and an electrically energized heater projecting into the water supply cavity to induce evaporation of the alkaline water and a vapor chamber where the alkaline water vapor ions are blown out through an exhaust grill opening by a fan to the surrounding environment. The acidic reservoir holding the acidic water solution can be a removable reservoir from the humidifier or removed through a drainage pipe and used for cleaning and treating minor wounds. Another embodiment of the alkaline humidifier is to add a facial hose attached to the exhaust grill whereby allowing direct vapor application to the face. The microionization of the alkaline water molecule increases the absorption therefore reduces wrinkles on the skin.

[0007] Therefore, in accordance with the present invention the alkaline humidifier through an electrolysis process ionizes tap water and vaporizes the negative alkaline water to humidify the surrounding environment. The alkaline humidifier has many beneficial effects such as reducing oxidation therefore biological molecules, in particular the lung and skin, are less susceptible to infection and disease. Ionized alkaline water gives up an extra electron and reduces the free radical oxygen, rendering it harmless. Ionized alkaline water is more readily absorbed by the body than untreated tap water. Ionized alkaline water quickly permeates the body and blocks the oxidation of biological molecules by donating its abundant electrons to active oxygen, enabling biological molecules to replace themselves naturally without damage caused by oxidation that can cause diseases. Also ionized alkaline water also has a lower boiling point therefore ionized water is vaporized faster than untreated tap water. These and other objects, features and advantages of the present invention will become apparent from the following detailed description. It should be understood, however, that the detailed description and the specific examples, while indicating preferred embodiments of the invention, are given by way of illustrations only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The present invention will become more fully understood from the detailed description given herein below and the accompanying drawings, which are given by way of illustration only and are not limitative of the present invention, wherein:

[0009] FIG. 1 is a front perspective view of the alkaline humidifier;

[0010] FIG. 2 is a back perspective view of the alkaline humidifier;

[0011] FIG. 3 is a cross sectional view of the alkaline humidifier taken along line A-A' in FIG. 1;

[0012] FIG. 4 is a cross sectional view of water tank in closed position;

[0013] FIG. 5 is a cross sectional view of water tank in open position;

[0014] FIG. 6 is a plan view tank cap;

[0015] FIG. 7 is a perspective view of the alkaline humidifier without the water tank;

[0016] FIG. 8 is an illustrative view of the electrolysis unit;

[0017] FIG. 9 is an exploded view of the electrolysis unit;

[0018] FIG. 10 is a cross sectional view of the alkaline humidifier with water tank cap filter and ultraviolet light;

[0019] FIG. 11 is a perspective view of the alkaline humidifier with the facial hose and an alkaline pipe.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0020] Referring now to the drawings wherein the depictions are for purposes of illustrating a preferred embodiment of the present invention only and not for the purpose of limiting the same. FIG. 1 is a front view of an alkaline humidifier 80 of the present invention. The alkaline humidifier 80 will take on a tower like structure to utilize gravity to perform the electrolysis of water. FIG. 1 depicts a water tank 10 located on topside of humidifier where a tank cap 4 is removable and threaded onto the water tank 10. The tank cap 4 has a tank cap opening 6 which balances the pressure within the water tank 10 whereby allows the water to drain out of water tank 10. On the bottom side of water tank 10 is a tank opening regulator 8 which allows water to drain out of water tank 10 and into an electrolysis unit 20 as depicted in FIG. 3. The water tank 10 is removable and is removed from alkaline humidifier 80 to fill with water and then inserted back on to a top base 28, which supports the water tank 10. FIG. 4 depicts the water tank 10 in a closed position of the tank opening regulator 8, whereby stopping the water flow. FIG. 5 depicts the water tank 10 in an open position of the tank opening regulator 8, whereby allowing the water to flow through a tank bottom opening 2, which respectively inserted into an electrolysis opening 26 as depicted in FIG. 3. FIG. 6 is a plan view of the tank cap 4 with the tank cap opening 6 extending all the way through the tank cap 4 to balance the pressure within the water tank 10 to allow the water to flow freely into the electrolysis unit 20 when the tank opening regulator 8 is in the open position. FIG. 7 is a perspective view of humidifier with the water tank 10 removed, whereby exposing the top base 28 and a top base opening 29 where the electrolysis opening 26 fits tightly into and where the tank bottom opening 2 is inserted. An electrolysis control switch 57 is turned on to send power to the electrolysis unit 20 to perform electrolysis of water as water flows by gravitational force into the electrolysis unit 20 and the water is electrolyzed and separated into ionic water, which is alkaline water with a negative OH^- ion and an acidic water with a positive H^+ ion and flows out of the electrolysis unit 20 respectively through an acidic tube 24 corresponding to the collection of acidic water side and an alkaline tube 22 corresponding to the collection of alkaline water side. The ionized water respectively flows from the acidic tube 24 into an acidic reservoir 60 and from the alkaline tube 22 into an alkaline reservoir 34. The acidic water held in the acidic reservoir 60 is removed through an acidic pipe 62. The acidic pipe 62 has a pipe valve 64, which controls the flow of acidic water out of the acidic reservoir 60. The flow of water out of the acidic reservoir 60 is aided by an acidic pressure opening 66 located on top of the acidic reservoir 60,

which balances the pressure whereby allowing the water the flow out. The alkaline reservoir 34, holding the alkaline water, has a bottom base 30 containing an alkaline reservoir opening 36, which contains a valve assembly 38 extending into a water supply cavity 40. A valve actuator stem 32 of the water supply cavity 40 opens the valve assembly 38 to provide liquid communication between the alkaline reservoir opening 36 and the water supply cavity 40. The construction of the valve assembly is typical of those of the prior art. As alkaline water flows from the alkaline reservoir 34 into the water supply cavity 40, air simultaneously is drawn into the alkaline reservoir 34 through the valve assembly 38 by a vacuum, which is created from the exiting water. When the alkaline water level in the water supply cavity 40 rises to such a predetermined water level 44 and the valve assembly 38 becomes covered with water, a hydrostatic balance is reached and the flow of water ceases. When a humidifier control switch 56 is turned on to vaporize alkaline water by heating a heating element 48 and as alkaline water is vaporized and the alkaline water in the water supply cavity 40 drops below the predetermined water level 44 disturbing the balance and resulting in the continued flow of alkaline water from the alkaline reservoir 34. This controlled flow cycle ensures that the alkaline humidifier 80 will have a supply of alkaline water with which to vaporize, as well as, limiting the amount of alkaline water such that no alkaline water spills over the edge water supply cavity 40.

[0021] A portion of the heating element 48, held by a heating element holder 46, extends into an evaporation cavity 42 and evaporates the alkaline water and then the ionized alkaline vapor flows upwards into a vapor chamber 50, where the ionized alkaline vapor is expelled out of the vapor chamber 50 by a fan 54 through an exhaust grill 52 which provides vapor communication between the evaporation cavity 42 and the surrounding environment.

[0022] FIG. 8 is construction of the electrolysis unit 20, typical of those of the prior art. FIG. 8 is an illustrative view of a typical electrolysis unit where a cathode 16 and an anode 18 are platinum coated titanium and as a direct electric potential is applied between the electrodes through a cathode power connector 19 connected to the cathode 16 and an anode power connector 11 connected to the anode 18, therefore water is subjected to electrolysis, creating an alkaline water flow and an acidic water flow which is separated by a membrane 17.

[0023] FIG. 9 is an exploded view of the electrolysis unit 20, which will be described by way of an example, which includes an electrolysis cover 12 made of rigid plastics and is pressure resistant. Located on the electrolysis cover 12 is the electrolysis opening 26, cathode power connector 19 and anode power connector 11. As water is electrolyzed and flows through the electrolysis unit 20, the acidic water flows out of an acidic cavity 14 connected to the acidic tube 24 and the alkaline water flows out of an alkaline cavity 15 connected to the alkaline tube 22 protruding out of a fastening cover 13. The anode 18, the membrane 17 and cathode 16 are recessed within the electrolysis cover 12 and respectively connected to an anode terminal 23 and a cathode terminal 21 which is respectively connected to the anode power connector 11 and cathode power connector 19 for electrical connection to a DC power source.

[0024] FIG. 10 is another embodiment of alkaline humidifier 80 with a water tank cap filter 72 and an ultraviolet light 78 to kill microorganisms. The water tank cap filter 72 is threaded onto water tank 10 and a filter tube 74 extend out of

water tank cap filter 72 at one end and connects to the nozzle of water faucet (not shown). Tap water is forced through the water tank cap filter 72 by water pressure from faucet and filter out of a filter tube 76 and into water tank 10. The ultraviolet light 78 is placed adjacent to the alkaline reservoir 34 to radiate the alkaline water to kill microorganisms. When the humidifier control switch 56 is turned on it also activates the ultraviolet light 78.

[0025] FIG. 11 is yet another embodiment of alkaline humidifier 80 with a face hose 71 which attaches to the exhaust grill 52 at one end and attaches to a face hydration mask 73 at the other end for targeted spot alkaline vapor hydration to the face to reduce wrinkles and to obtain an anti-ageing effect. FIG. 11 also depicts an alkaline pipe 75 for the removal of the ionized water in the alkaline reservoir 34.

What is claimed is:

1) A humidifier comprising:

- a) a water tank;
- b) an electrolysis unit through electrolysis means ionizes water into alkaline water and acidic water;
- c) an alkaline reservoir;
- d) a humidification means to increase humidity into the surrounding environment;

2) The humidifier of claim 1, further comprising an acidic reservoir;

3) The humidifier of claim 2, wherein said acidic reservoir containing acidic water is removed by removable means;

4) The humidifier of claim 3, wherein said removable means is an acidic pipe;

5) The humidifier of claim 4, wherein said alkaline reservoir through an alkaline water supply means has a valve assembly to supply alkaline water for evaporation;

6) The humidifier of claim 5, wherein said humidification means includes a heating element whereby evaporating the alkaline water to have vapor communication between an evaporation cavity and the surrounding environment;

7) The humidifier of claim 6, wherein said water tank through regulation means supplies water into said electrolysis unit by a tank opening regulator;

8) The humidifier of claim 7, further comprising an ultraviolet light in the germicidal range;

9) The humidifier of claim 8, wherein said alkaline reservoir containing alkaline water is removed by removable means through an alkaline pipe;

10) The humidifier of claim 9, further comprising a water tank cap filter which removes any impurities out of water and stored in said water tank and a face hose and a hydration mask for direct hydration of skin.

11) A humidifier comprising:

- a) an electrolysis unit through electrolysis means ionizes water into alkaline water and acidic water;
- b) an alkaline reservoir;
- c) a humidification means to increase humidity into the surrounding environment;

12) The humidifier of claim 11, further comprising a water tank;

13) The humidifier of claim 12, further comprising an acidic reservoir where through removable means acidic water is removed through a acidic pipe

14) The humidifier of claim 13, wherein said alkaline reservoir through an alkaline water supply means has a valve assembly to supply alkaline water for evaporation by said humidification means which includes a heating element

whereby evaporating the alkaline water to have vapor communication between an evaporation cavity and the surrounding environment;

15) The humidifier of claim **14**, wherein said water tank through regulation means supplies water into said electrolysis unit by a tank opening regulator;

16) The humidifier of claim **15**, further comprising an ultra-violet light in the germicidal range and an water tank cap filter which removes any impurities out of water, a face hose and a hydration mask for direct hydration of skin;

17) The humidifier of claim **16**, wherein said alkaline reservoir containing alkaline water is removed by removable means through an alkaline pipe.

18) A humidifier comprising a water tank which through regulation means supplies water into an electrolysis unit by a tank opening regulator wherein said electrolysis unit through electrolysis means ionizes water into alkaline water and acidic water wherein the acidic water is stored in an acidic reservoir where through removable means acidic water is

removed through an acidic pipe; and the alkaline water is stored in an alkaline reservoir and through an alkaline water supply means having a valve assembly to supply alkaline water for evaporation by a humidification means which includes a heating element for evaporating the alkaline water to have vapor communication between an evaporation cavity and a vapor chamber whereby a fan expel the alkaline vapor into the surrounding environment;

19) The humidifier of claim **18**, further comprising an ultra-violet light in the germicidal range located adjacent to said alkaline reservoir and an water tank cap filter threaded onto said water tank which removes any impurities out of water and stored in said water tank and a face hose and a hydration mask for direct hydration of skin;

20) The humidifier of claim **19**, wherein said alkaline reservoir containing alkaline water is removed by removable means through an alkaline pipe.

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