

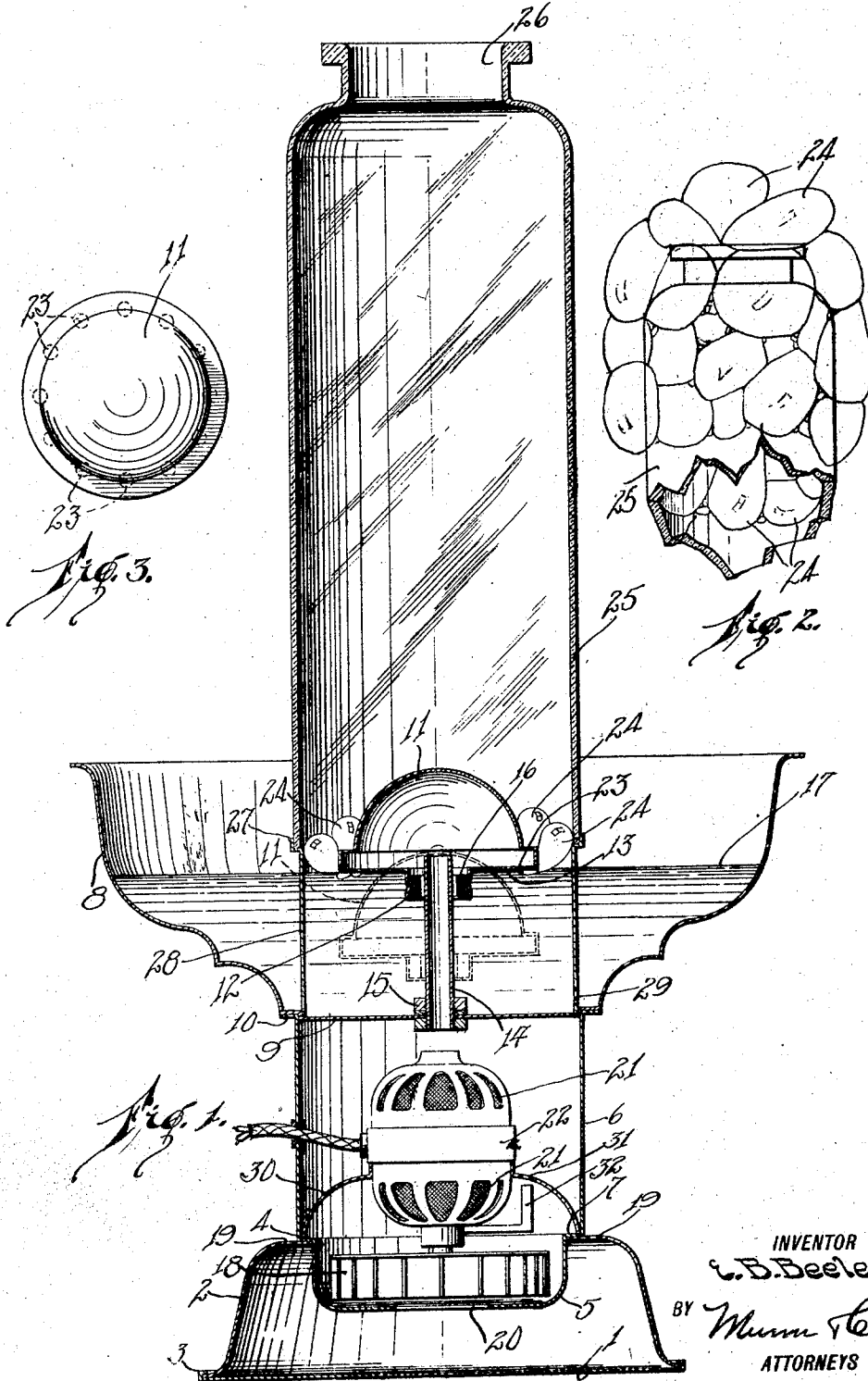
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COMBINED SOAP BUBBLE DEVICE AND HUMIDIFIER

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# UNITED STATES PATENT OFFICE.

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## COMBINED SOAP-BUBBLE DEVICE AND HUMIDIFIER.

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*To all whom it may concern:*

Be it known that I, ESTEN B. BEELER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Combined Soap-Bubble Devices and Humidifiers, of which the following is a full, clear, and exact description.

My invention relates to improvements in combined soap bubble device and humidifier, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a combined soap bubble device and humidifier that is adapted to furnish the required amount of water vapor to the air in the room for the purpose of humidifying the air, and at the same time to provide a device which makes a pleasing appearance to the eye.

A further object of my invention is to provide a device of the type described which is adapted to form bubbles when desired for display, amusement, or other purposes.

A further object of my invention is to provide a device of the type described in which the air that forms the bubbles is forced through the motor that actuates the fan, whereby the motor is kept cool during the operation of the device.

A further object of my invention is to provide a device of the type described in which the motor is provided with means by which it may be readily oiled without the necessity of disassembling the entire device.

A further object of my invention is to provide a device of the type described which consists of a minimum number of parts and which is not likely to get out of order easily.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this invention, in which

Figure 1 is a vertical section through the device, portions thereof being shown in elevation,

Figure 2 is a side elevation of a portion of the device, and

Figure 3 is a plan view of a portion of the device.

In carrying out my invention I provide a

base 1 upon which an inverted cup-shaped member 2 is disposed. In the present form of the device I have shown the base as being constructed of metal, but it is obvious that any other kind of material desired may be used. The cup-shaped member 2 is secured to the base 1 by means of a "spun-over" portion 3. The cup-shaped member 2 has a large central opening 4 in the top thereof, this opening receiving a depressed portion of a cylindrical member 6. The shoulder merges the portion 5 into the cylindrical portion 6. From this construction it will be noted that the cylindrical member 6 is supported by the shoulder 7 and is prevented from movement with respect to the cup-shaped member 2 by the portion 5 that is inserted in the opening 4.

A water containing receptacle 8 is disposed upon the cylindrical member 6 and is prevented from lateral movement with respect to the cylindrical member by means of a depression 9 that is received within the upper end of the cylindrical member 6. A flange 10 of the cylindrical member 6 supports the water reservoir 8. In the present form of the device, I have shown the reservoir 8 as being provided with a side fashioned in a scroll. It should be noted that the shape of the reservoir 8 may be changed at will so as to readily change the design of the device. The bubble forming means is disposed within the reservoir 8 and consists of a spherical-shaped member 11 that has a tubular portion 12 that extends from its flat surface 13, the tubular portion 12 being slidably disposed upon a pipe 14 that is carried by the reservoir 8. The pipe 14 is centrally disposed with respect to the reservoir 8 and extends through the depression 9 so as to place the reservoir 8 in communication with the cylindrical portion 6. The pipe is held in place by means of the ordinary water tight packing 15. The tubular member 12 carries a rubber gasket 16 which has a central bore that is slightly larger in diameter than the outside diameter of the pipe 14. It will therefore be noted that the spherical-shaped member 11 is loosely received upon the pipe 14, and is adapted to move along the pipe.

The member 11 is slidably disposed on the pipe 14 so as to be on the surface of the liquid no matter at what level the liquid is. The member 11 can therefore make bubbles

until practically all of the liquid is lost through evaporation. In Figure 1 I have shown the spherical member as resting upon the surface of the liquid 17, (see full line position) and as being supported by the top of the pipe 14, (see dotted line position).

The spherical-shaped member 11 is supported by the stem 14 when the device is not being operated. The member 11 is adapted to be raised by air which is forced through the pipe 14 and into the member by a fan 18. The air which is forced into the member 11 is first drawn through openings 19 in the cup-shaped member 2, is then drawn through an opening 20 in the bottom of the depressed portion 5, and is forced through the openings 21 in an electric motor 22. This movement of air is caused by the rotation of the fan 18. It is obvious that as the air passes through the motor 22 it will cool the same, so as to prevent the motor from overheating even though the motor is run for relatively long periods. The air which passes through the motor 22 is conveyed into the member 11 by means of the pipe 14.

When the member 11 is in its lowermost position, it is practically filled with the liquid 17. The member 11 is moved upwardly as the air fills the interior of the member. This movement continues until the under side of the flat portion 13 rests upon the surface of the liquid 17. The flat portion 13 has a plurality of small openings 23 that are disposed adjacent to the edge of the portion. The air will pass through these openings 23 and form bubbles 24 when the flat portion 13 rests upon the surface of the liquid 17. The bubbles are forced upwardly through the interior of the glass jar 25 and out through the opening 26 in the top of the jar. The bubbles will then flow downwardly along the outside of the jar 25 and will condense back into the liquid when they strike the liquid 17. The glass jar 25 is carried by a flange 27 of a cylindrical member 28. The member 28 is snugly received in the depression 9, whereby the cylindrical member is prevented from lateral movement with respect to the reservoir 8. The member 28 has openings 29 adjacent to its lower edge, these openings permitting the liquid to flow from the reservoir 8 to the cylinder 28.

From the foregoing description of the various parts of the device the operation thereof may be readily understood. The motor is supported by a cup-shaped member 30 that in turn rests upon the shoulder 7. The member 30 not only supports the motor 22 but causes all of the air to pass through the motor and thus keep the motor cool.

The device is used as a humidifier when the motor is running, by forcing the air through water; and is used as a humidifier when the motor is not running by evapora-

tion. When it is desired to have the device form bubbles, it is merely necessary to start the motor. As heretofore stated, the air will be drawn into the device through the openings 19, will pass through the opening 20, the openings 21, and the motor 22, the pipe 14, the member 11, and the openings 23. As soon as the motor 22 is started, it will force the air into the member 11 so as to raise the member into the full line position shown in Figure 1. The air will pass through the openings 23 when the flat portion 13 is resting upon the surface of the liquid 17. The air will then escape through the openings 23 and will pass down between the under side of the portion 13 and the surface of the liquid. When the air escapes from the periphery of the member 11, it will carry a portion of the water therewith, this water forming a film which assumes a spherical shape, i. e., a bubble. The liquid 17 is preferably a soapy solution, and may be colored if desired, so as to provide the bubbles with the various hues of the rainbow. These colored bubbles move upwardly in the interior of the glass jar 25, out through the opening 26, and down along the exterior of the jar. As soon as the bubbles strike the liquid 17, they will condense back into the liquid. The level of the liquid in the reservoir 8 and the cylinder 29 is kept the same due to the fact that the openings 29 place the reservoir and the cylinder in direct communication with each other.

The cup-shaped member 30 is provided with an opening 31 which is disposed directly above an oil pipe 32 that communicates with the motor 22. When it is desired to oil the motor, it is merely necessary to remove the reservoir 8 from the cylinder 6 and drop the oil through the opening 31 and into the pipe 32. The pipe 32 will feed the oil to the motor so as to keep the motor lubricated.

The device is designed so as to make a pleasing appearance to the eye. The device provides a beautiful spectacle when it is in operation as the colored bubbles move upwardly through the interior of the glass jar 25 and downwardly along the exterior of the jar.

I claim:

1. A device of the type described comprising a reservoir adapted to hold a liquid therein, an air pipe projecting above the surface of the liquid, a bubble forming member slidably disposed on said air pipe and being in communication with said air pipe, said member having air outlet openings on its under side, whereby said member is moved when air is forced therein, so as to cause the under side to be carried by the surface of the liquid irrespective of the level of the liquid.

2. A device of the type described com-

prising a reservoir adapted to hold a liquid therein, an air pipe carried by said reservoir and projecting above the surface of the liquid, a bubble forming member slidably disposed on said air pipe and being in communication therewith, said bubble forming member having a flat under surface with air outlet openings therein, and means for forcing air through said pipe and into said bubble forming member, said member resting on the surface of the liquid when air is forced therethrough irrespective of the level of the liquid.

3. A device of the type described comprising a reservoir adapted to hold a liquid therein, an air pipe carried by said reservoir and projecting above the surface of the liquid, a bubble forming member slidably disposed on said air pipe and being in communication therewith, said bubble forming member having a flat under surface with air outlet openings therein, and means for forcing air through said pipe and into said bubble forming member whereby said member will rest on the surface of the liquid no matter what height the level of the liquid is, said means comprising a fan for forcing air into said pipe.

4. A device of the type described comprising a reservoir adapted to hold a liquid therein, a centrally disposed vertically extending air pipe carried by said reservoir and extending above the level of the liquid, a fan for forcing air through said pipe, a bubble forming member slidably disposed on said pipe and having a flat under surface with air outlet openings therein, said member being in communication with said pipe,

and adapted to rest on the surface of the liquid when air is forced therethrough and a transparent cylindrical casing extending from a point below the surface of the liquid to a point disposed above the top of said reservoir, said casing having an open top and surrounding said bubble forming member.

5. A device of the type described comprising a basin adapted to hold a liquid therein, a cylinder disposed in said basin and extending above the liquid, said cylinder having perforations adjacent to the lower end thereof, an air pipe disposed in said cylinder and projecting above the liquid in said basin, and a bubble forming member slidably disposed on said pipe.

6. In a device of the type described a basin adapted to hold a liquid therein, an air pipe disposed in said basin and projecting above the surface of said liquid, a bubble forming member slidably disposed on said pipe, a fan for conveying air to said pipe, a motor adapted to actuate said fan and being disposed between said fan and pipe, whereby the air current formed by the fan is forced through said motor to keep said motor cool during operation.

7. A device of the type described comprising a reservoir adapted to hold a liquid therein, an air pipe disposed in said reservoir, a bubble forming member slidably disposed on said air pipe and being in communication with said air pipe, said member having air outlet openings therein on its under side whereby said member is caused to rest upon the surface of the liquid irrespective of the depth of the liquid.

ESTEN B. BEELER.