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HUMIDIFIER.

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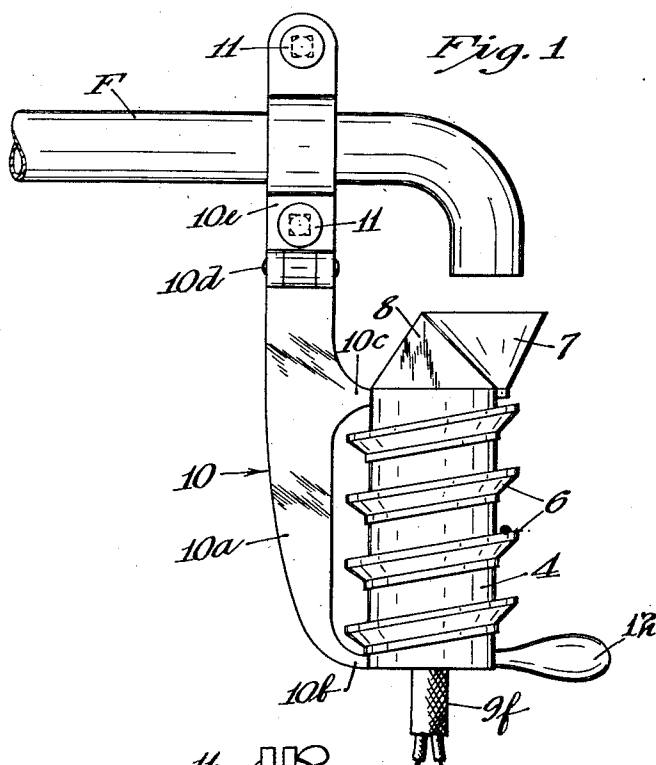


Fig. 1

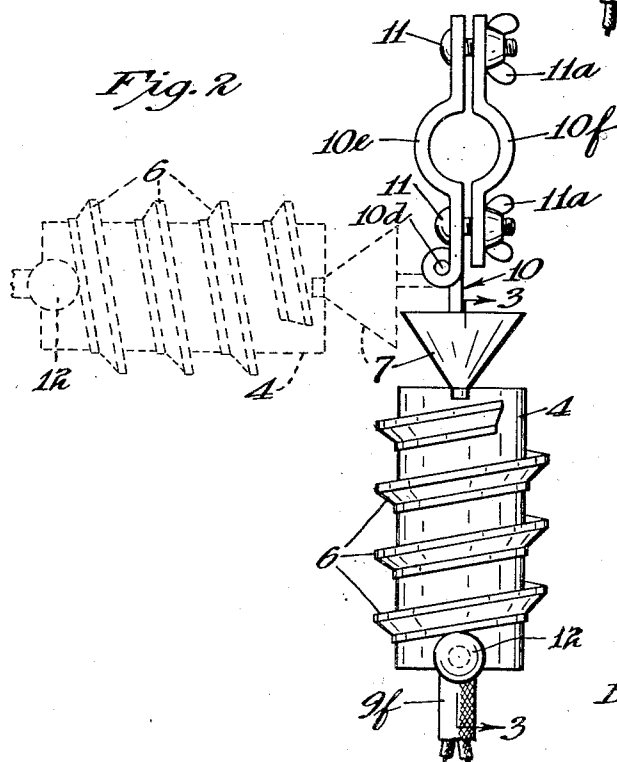


Fig. 2

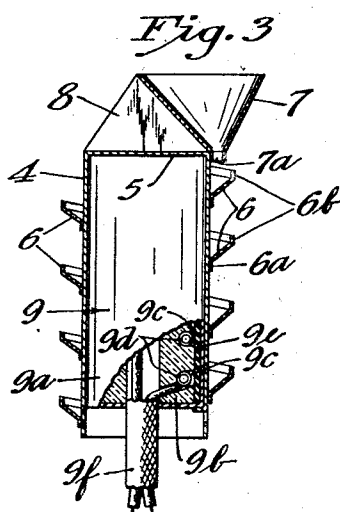


Fig. 3

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HUMIDIFIER

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9 Claims. (Cl. 219—39)

My invention relates to liquid evaporating apparatus and particularly to humidifiers.

Many types of humidifiers are now available but most of them are relatively expensive and require either an expenditure of time and effort in periodically filling a water receptacle therein or else the installation of water supply pipes and waste water drain pipes. Also, the usual types of humidifiers are relatively bulky and hence occupy space which could otherwise be put to other use.

An object of my invention is to provide a type of humidifier which requires neither a periodic manual filling of a water receptacle nor the provision of special pipes for supply of water thereto and disposal of waste water.

A more specific object is to provide a humidifier constructed for being quickly and easily associated with an ordinary kitchen sink or the like to receive water from a faucet thereof and to utilize the drain thereof for disposal of any waste water.

Another object is to provide such a humidifier in which electrically produced heat is employed to cause effective evaporation of water at a relatively rapid rate.

Still another object is to provide such a humidifier which may be kept attached to a water faucet and which may be shifted between operative association and non-obstructing relation with the faucet.

A further object is to provide such a humidifier of particularly simple, light, compact, rugged and inexpensive construction.

These and other objects and advantages of the invention will more fully appear from the following description made in connection with the accompanying drawing, wherein like reference characters refer to the same parts throughout the views, and, in which:

Fig. 1 is a general side view of an embodiment of my invention shown in operative association with the spout portion of a water faucet;

Fig. 2 is a front view showing the device in operative position in full lines and in inoperative or non-obstructing position in dotted lines; and

Fig. 3 is a vertical sectional view taken along the line 3—3 of Fig. 2, as indicated by the arrows, with the cartridge type electrical heating element thereof partly broken away to show a partial sectional view thereof.

Referring to the drawing, an embodiment of my invention is shown associated with the spout portion of a faucet F which would normally be associated in a conventional manner with an

ordinary kitchen sink or the equivalent thereof.

My device, in the form thereof shown in the drawing, includes a suitable body which I prefer to construct as a hollow, cylindrical member comprising a normally vertically disposed tubular element 4 having a closure disc 5 secured in the upper end thereof.

In connection with the tubular element 4, I provide suitable structure affording an elongated, open-topped, relatively narrow liquid-conducting channel extending helically downwardly about the periphery thereof. I find it economical to form this structure by bending a strip of material 6, which may be sheet metal, to somewhat of an S-shaped cross section, as shown, so as to have oppositely angularly bent flange portions 6a and 6b bent to an angle of preferably less than 90 degrees relative to the central portion of the strip 6. The strip 6, after being bent as described, is wound helically about the periphery of the tubular element 4, as shown in the drawing, with the inner one 6a of the angularly disposed flanges 6a and 6b lying flatly and snugly against the periphery of the tubular element 4 so that the central portion of the strip 6 projects upwardly and outwardly relative to the periphery of the tubular element 4 to form, in conjunction therewith, a trough structure affording a channel of the characteristics previously described. The strip 6, after being associated with the tubular element 4, as explained above, is secured thereto by any desired means such as soldering, brazing, welding, or other equivalent means.

Means for receiving water falling from thereabove is provided at the upper portion of the tubular element 4 and may consist, as shown, of a receptacle 7 made of sheet material in an inverted cone shape and having an outlet aperture 7a formed in the apex thereof. The receptacle 7 is mounted securely on the upper portion of the tubular element 4 at such a point on the circumference thereof that the outlet aperture 7a is disposed closely above the uppermost part of the strip 6 in position to discharge water collected in the receptacle 7 into the uppermost part of the trough formed in part by the strip 6. To brace the receptacle 7, a triangular member 8, which may be formed of sheet material, is wedged into the angular space between the receptacle 7 and the closure disc 5 and is secured to both thereof along corresponding edges of the member 8 by soldering, welding, or the like.

I provide means for heating the strip 6 and the tubular element 4 and this means preferably consists of a cartridge type electrical heat-

ing element 9 which may include an outer casing 9a containing a heat-resistive, electrical insulating member 9b carrying, in a helical groove 9c on its periphery, a coiled electrical resistance wire 9d insulated from the casing 9a by an insulating sleeve 9e and having an electrical supply cord 9f connected therewith.

Means is provided for supporting the tubular element 4 from a water faucet spout such as the spout of the faucet F with the receptacle 7 normally disposed below the outlet of the spout and the tubular element swingable to a position away from below the spout. For this purpose I provide a bracket 10 including a member 10a having projections 10b and 10c secured at their free ends to respectively the lower and upper end portions of the tubular element 4, as best seen in Fig. 1. The upper end of the member 10a is connected through a hinge 10d to a clamping member 10e. The clamping member is provided with a companion clamping member 10f and the medial portions of the respective clamping members 10e and 10f are arched as shown to fit on a faucet spout. Each of the clamping members 10e and 10f are apertured at respective sides of the arched medial portion thereof and bolts 11 equipped with wing nuts 11a are associated with the apertured portions of the clamping members 10e and 10f for use in drawing the respective clamping members toward each other to clamp a faucet spout therebetween as indicated in Fig. 1. The hinge 10d is constructed to have considerable friction so as to yieldably restrain the bracket member 10a from swinging movement relative to the clamping member 10e.

In use of the device the parts thereof are placed in the position shown in full lines in Fig. 2, the faucet F is turned on only enough to provide a dripping or small trickle of water therefrom. The falling water will be received in the receptacle 7 and will be delivered through the outlet aperture 1a thereof into the upper portion of the trough formed by the strip 6 to flow down the slope of the trough. Energization of the heating element 9 will cause heating of the tubular element 4 and the strip 6 to produce rapid evaporation of the water flowing down the slope of the trough. The joint between the strip 6 and the tubular element 4 need not be completely watertight since any small part of the water in the trough which might leak through said joint will encounter the hot exterior surface of the tubular element 4 and will be effectively evaporated therefrom. Should any unevaporated water drip from the lower end of the trough due to the faucet F being turned on too much or any other cause, the excess water will, of course, drop into the sink with which the faucet F would be normally associated and would be disposed of in the drain pipe of the sink. The amount of water to be evaporated per unit time may be controlled by adjusting the degree of opening of the faucet F.

When it is not desired to use the humidifier and the faucet F is to be used for its normal purpose, the tubular element and the parts of the device carried thereby may be swung to the positions thereof shown in dotted lines in Fig. 2 so as to be in non-obstructing relation with the spout of the faucet F. For convenience in swinging the tubular element 4 between its operative and inoperative positions I provide, on the lower forward portion of the tubular element 4 as shown, a handle 12 preferably formed from material of relatively low heat.

It is apparent that I have invented a novel and particularly simple, light, compact, rugged and inexpensive form of humidifier which needs no special water supply and drain pipes, does not require periodic manual filling of a water reservoir, and which may be quickly and easily placed in operative relation with a faucet and sink.

A full sized model of the device illustrated in the drawing and described above has been built, has been put in operation, and has been found to evaporate water at a very satisfactory rate.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:

1. A faucet humidifier comprising, structure providing a continuous narrow, open-topped, elongated, somewhat sloping, liquid-conveying channel, a support for said structure constructed for attachment to and for support from a water faucet, open-topped means for catching liquid issuing from a faucet to which said support is attached and for directing and delivering all of the received liquid into the upper portion of said channel, and means for externally supplying heat to substantially said entire channel.

2. A humidifier comprising, structure providing a narrow, open-topped, elongated, somewhat sloping, liquid-conveying channel, a support for said structure arranged for attachment to a water faucet, means carried on said structure for receiving liquid issuing from a faucet to which said support is attached and delivering the received liquid into the upper portion of said channel, said support being constructed to enable swinging said structure from a normal position thereof wherein said receiving means is situated under the outlet of said faucet to another position wherein no part of said humidifier is situated below said outlet, and means for supplying heat to said structure.

3. A faucet humidifier comprising, a vertically disposed, generally cylindrical body, structure carried on the periphery of said body forming a narrow, open-topped evaporating trough extending helically downwardly thereabout, means associated with the upper portion of said body and disposed exteriorly thereof for receiving liquid falling from thereabove and for directing and delivering the received liquid into the upper portion only of said channel, a support for said body arranged to be attachable to a water faucet to support said body in a position thereof wherein said liquid-receiving means is disposed in a position below the outlet of said faucet, and heat-producing means disposed within said body for transmissively heating through said body substantially said entire trough to evaporate water flowing therethrough.

4. The combination defined in claim 3 and, said support being constructed to enable swinging of said body from said position to another position thereof wherein said humidifier is out of obstructing relation with the outlet of said faucet.

5. A humidifier comprising, a vertically disposed, generally cylindrical, hollow body, structure carried on the periphery of said body forming in conjunction therewith a narrow, open-topped liquid-conveying channel extending helically downwardly thereabout, an open-topped liquid-receiving receptacle mounted on the upper portion of said body and having an outlet communicating with the upper portion of said chan-

nel, an electrical heating element contained within said body, and a bracket carried by said body and arranged for supportingly connecting the same to a water faucet with said receptacle disposed below the outlet of said faucet.

6. The combination defined in claim 5 and, said bracket being arranged to connect said body to said faucet for swinging movement relative thereto whereby said body may be swung away below the outlet of said faucet.

7. The combination defined in claim 5 and, said bracket being arranged to connect said body to said faucet for swinging movement relative thereto whereby said body may be swung away from below the outlet of said faucet, and frictional means provided in said bracket for yieldingly restraining said body from swinging movement thereof.

8. In combination with a member adapted to discharge a slow trickle of liquid, a compact humidifier comprising, a very narrow spiral

evaporating trough declined gradually from its upper to its lower end, a support for mounting said trough below said member, said trough having open-topped catching means at its upper end for receiving the discharged trickle of liquid and for directing all received into said trough, and means for externally heating said trough to evaporate said liquid as it travels down the same.

9. In combination with a member adapted to discharge a slow trickle of liquid, a humidifier comprising, an evaporating trough declined gradually from its upper to its lower end, means for supporting said trough from and below said liquid discharging member, said trough having means at its upper end for receiving the liquid discharged from said member and for directing the received liquid to the upper end of said trough, and electrical heating means associated with said trough for heating the same to evaporate said liquid as it passes down said trough.

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