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AIR HUMIDIFIER

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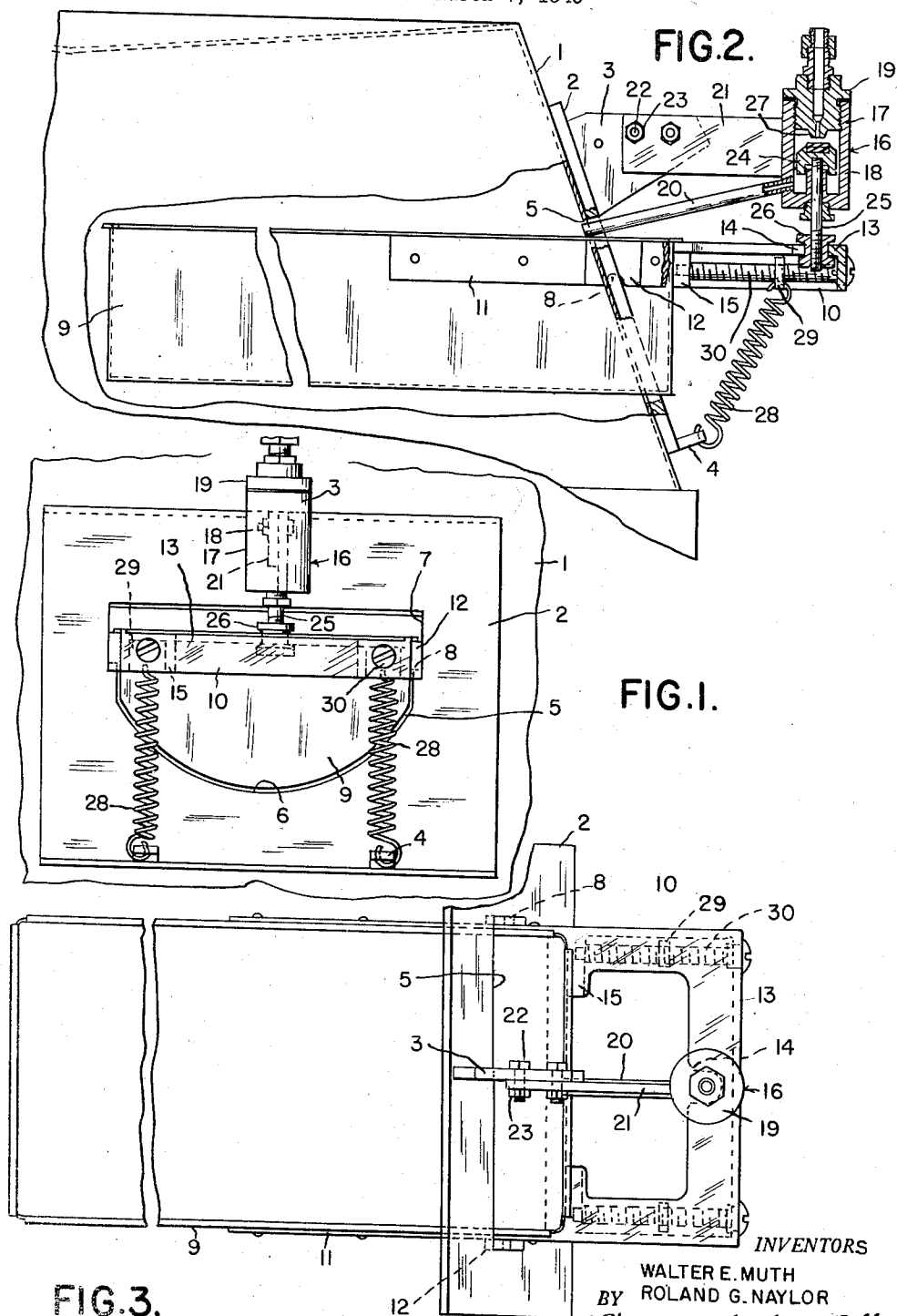


FIG. 1.

FIG. 2.

FIG. 3.

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## AIR HUMIDIFIER

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The invention relates to air humidifiers and refers more particularly to air humidifiers for use with hot air furnaces.

The invention has for one of its objects to provide an improved construction of air humidifier which may be readily attached to the crown of a hot air furnace.

The invention has for another object to provide an improved construction of air humidifier having a simple mounting for the evaporating pan on the supporting plate.

The invention has for a further object to so construct the air humidifier that its supporting plate may be readily secured to the side wall of either of the conventional types of furnace crown, in one of which the side wall extends vertically and in the other of which the side wall extends at an angle to the vertical or is inclined.

The invention has for still other objects to provide means for adjustably mounting the liquid controlling valve device upon the supporting plate and to provide adjustable spring means for counterbalancing the evaporating pan.

With these and other objects in view, the invention resides in the novel features of construction and combinations and arrangements of parts as more fully hereinafter set forth:

In the drawings:

Figure 1 is an end elevation of an air humidifier embodying the invention;

Figure 2 is a side elevation thereof with parts broken away and in section; and

Figure 3 is a top plan view thereof.

The air humidifier is designed particularly for use with a hot air furnace having the crown 1. The air humidifier comprises the supporting plate 2 adapted to be secured to the outer side of the crown by suitable means such as screws. This plate has secured to its upper portion the transverse bracket 3 and has secured to its lower portion the transverse lugs 4 and is formed intermediate the bracket and the lugs with the opening 5 therethrough. The opening has the generally semi-circular lower portions 6 and the generally rectangular upper portion 7 of greater width than the lower portion and terminating in end portions extending laterally beyond the lower portion and providing the horizontally aligned shoulders 8 at the lower edges of these laterally extending portions. 9 is the evaporating pan extending through the opening 5 and having its major portion located within the crown 1 of the furnace. 10 is a generally U-shaped frame carrying the pan and having its legs 11 extending through the opening 5 and fixedly secured to the

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pan as by means of rivets. These legs are provided with the lateral lugs 12 located within the laterally extending portions of the opening through the plate and fulcrumed on the shoulders 8. The portions of the legs 11 and base 13 of the frame beyond the pan are angle shaped and have top flanges in the same plane and transverse depending flanges. The top flange of the base 13 is formed with the inwardly opening slot 14. At the inner ends of the top flanges of the legs 11 there are the depending flanges 15 abutting the outer end of the pan.

16 is the valve device for controlling the flow of liquid, and more particularly water, from a source of supply to the pan. This valve device has the housing 17 which is formed of the body 18 and the cap 19, the body having an outlet opening communicating with the pipe 20 leading through the opening 5 above the pan and the cap having an inlet opening communicating with a suitable pipe for conducting the liquid and preferably water thereto. The valve body is provided with the integral arm 21 which is adapted to be secured by means of the bolts 22 and nuts 23 to the bracket 3 of the supporting plate.

24 is a valve reciprocable within the body 18 and secured to the stem 25 which slidably passes through the bottom of the body and has adjustably threaded upon its lower end the nut 26. This nut has a reduced center portion extending within the slot 14 and upper and lower flanges respectively above and below the flange having the slot. The cap 19 has the seat 27 adapted to be engaged by the valve 24 when the latter is raised to cut off the supply of the liquid through the inlet which passes substantially axially through the seat. The valve provides clearance between its side and the side wall of the body so that when the valve is in lowered position the liquid may flow downwardly to the tube 20.

28 are coil springs between the supporting plate 2 and the frame 10 for counterbalancing the frame and pan. These coil springs are secured at their lower ends to the lugs 4 and at their upper ends to the nuts 29 which are threaded upon the screws 30. The screws are journaled in the depending flange of the base 13 and the depending flanges 15, and the nuts are held from rotation preferably by engaging the lower sides of the horizontal flanges of the legs.

For the purpose of adapting the humidifier to hot air furnaces of the conventional type in which the side walls of the crowns are either vertical or inclined to the vertical and in either

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case position the valve device to extend substantially vertically, the arm 21 of the valve device is adjustably secured to the bracket 3 of the supporting plate. As shown in the present instance, there are three holes through the bracket with the line passing through the axes of the hole nearest the supporting plate and the intermediate hole at an angle to the line passing through the intermediate hole and the hole farthest from the supporting plate. Also there are two bolts 22 adapted to extend either through the hole nearest the supporting plate and the intermediate hole or through the intermediate hole and the hole farthest from the supporting plate depending upon whether the side wall of the crown extends vertically or is inclined to the vertical.

What we claim as our invention is:

1. An air humidifier for use with a hot air furnace, comprising a plate adapted to be secured to the crown of the furnace and having an opening therethrough formed with a lower portion and an upper portion of greater width than the lower portion, the upper portion having laterally extending portions at the opposite sides of the lower portion forming substantially aligned shoulders, an evaporating pan extending through the opening, means for fulcruming said pan on said shoulders, a valve device carried by said plate for controlling the flow of liquid to said pan and means connecting said pan to said valve device for operating said valve device upon rocking of said pan about said shoulders.

2. An air humidifier for use with a hot air furnace, comprising a plate adapted to be secured to the side wall of the furnace crown, said plate having a transverse bracket and an opening therethrough below said bracket, an evaporating pan extending through the opening and rockably mounted on said plate, a valve device controlling the flow of liquid to said pan and comprising a valve housing having a liquid inlet and a liquid outlet and provided with an arm, said bracket and arm being provided with a plurality of bolt holes, bolts extending through certain of said holes, a valve within said housing controlling the flow of liquid from the inlet to the outlet, and means rockable with said pan for operating said valve.

3. An air humidifier comprising a plate adapted to be secured to a side wall of an air heater, said plate having an opening therethrough, an evaporating pan extending through the opening, a frame secured to and carrying said pan and extending through the opening and rockably mounted on said plate, a valve device for controlling the flow of liquid to said pan comprising a valve housing carried by said plate having a liquid inlet and a liquid outlet and a valve within said housing for controlling the flow of liquid from the inlet to the outlet, a nut adjustably connected to said valve and operatively connected to said frame for operating said valve upon rocking of said frame and pan, spring means connected at one end to said plate and means adjustable longitudinally of said frame and carried thereby and connected to the other end of said spring means for varying the tension thereof.

4. An air humidifier comprising a plate having an opening therethrough, an evaporating pan, a frame secured to and carrying said pan and extending through the opening and rockably mounted on said plate, a valve device for controlling the flow of liquid to said pan com-

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prising a valve housing carried by said plate having a liquid inlet and a liquid outlet and a valve within said housing for controlling the flow of liquid from the inlet to the outlet, means operatively connected to said valve and frame for operating said valve upon rocking of said pan and frame, and means for counterbalancing said pan and frame comprising a spring connected at one end to said plate, a rotatably adjustable screw journaled in said frame and a nut held from rotation by said frame and threaded on said screw and connected to the other end of said spring.

5. An air humidifier for use with a hot air furnace comprising a plate adapted to be secured to the side wall of the furnace crown, said plate having a transverse bracket and an opening therethrough below said bracket, an evaporating pan extending through the opening, means for rockably mounting said pan on said plate, a valve device for controlling the flow of liquid to said pan comprising a valve housing having a body and an arm and provided with a liquid inlet and a liquid outlet, means for detachably securing said arm to said bracket in different positions of angular adjustment, said valve device also comprising a valve for controlling the flow of liquid from the inlet to the outlet, means operatively connecting said pan to said valve for operating said valve upon rocking of said pan relative to said plate, and means for counterbalancing said pan whereby the valve is opened upon evaporation of liquid from said pan.

6. An air humidifier comprising a plate adapted to be secured to a side wall of an air heater, said plate having an opening therethrough formed with a lower portion and an upper portion of greater width than and extending laterally beyond the sides of the lower portion forming substantially aligned shoulders, an evaporating pan, a frame secured to said pan and extending through the opening and rockably mounted on said shoulders, a valve device carried by said plate for controlling the flow of liquid to said pan, said valve device having a valve operatively connected to said frame for operating said valve, and means connected to said frame for counterbalancing said frame and pan.

7. An air humidifier comprising a plate adapted to be secured to a side wall of an air heater, said plate having an opening therethrough formed with a lower portion and an upper portion of greater width than the lower portion and having end portions laterally beyond the lower portion forming substantially aligned shoulders, an evaporating pan, a frame secured to said pan and extending through the opening and rockably mounted on said shoulders, a valve device carried by said plate for controlling the flow of liquid to said pan, said valve device having a valve operatively connected to said frame for operating said valve, and spring means connected to said plate and frame for counterbalancing said frame and pan.

8. An air humidifier comprising a plate member adapted to be secured to a side wall of an air heater, said plate member having an opening therethrough formed with a generally semi-circular lower portion and a generally rectangular upper portion of greater width than the lower portion and having end portions laterally beyond the lower portion forming substantially aligned shoulders, an evaporating pan, a generally U-shaped frame member secured to and carrying said pan and extending through the opening and

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having legs rockably mounted on said shoulders, a valve device carried by said plate member for controlling the flow of liquid to said pan, said valve device having a valve, means for adjustably connecting said valve to the base of said frame member, and spring means between said plate and frame members and adjustably connected to one of said members for counterbalancing said frame member and pan.

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