Dec. 20, 1960 R. P. SKERRITT 2,965,098

FURNACE-INSTALLED HUMIDIFIER

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Fig. 1.

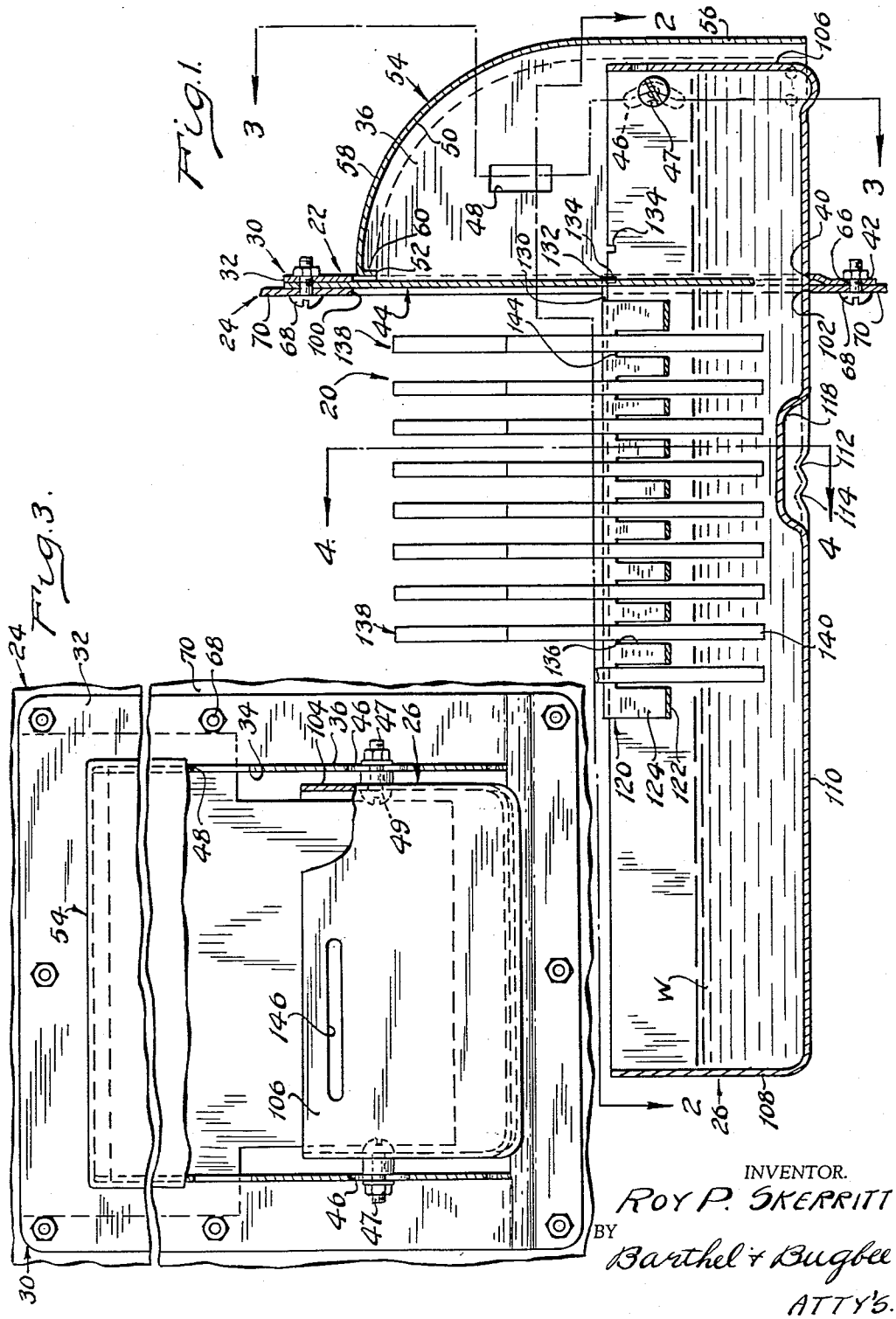


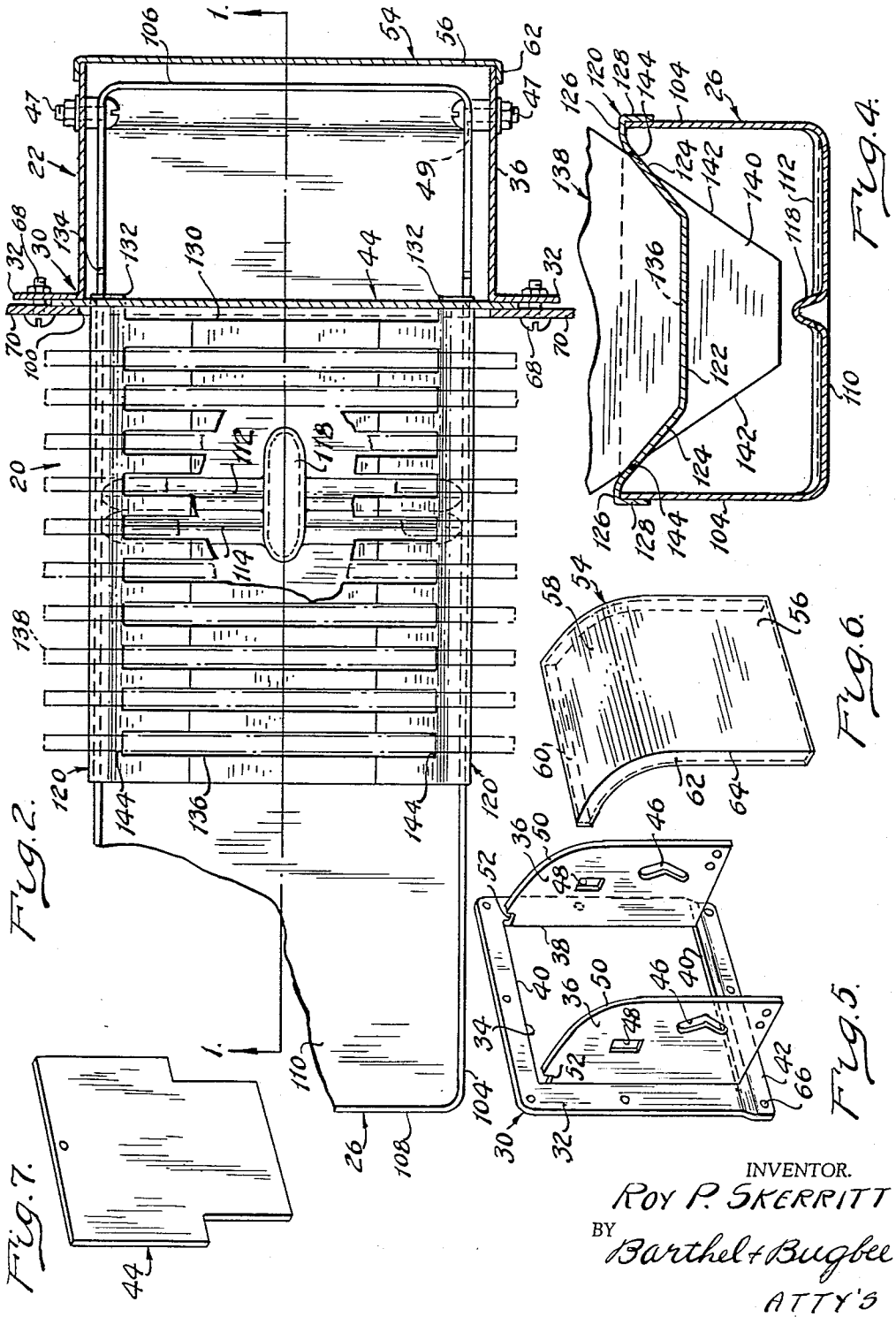
Fig. 3.

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2,965,098

FURNACE-INSTALLED HUMIDIFIER

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Original application Jan. 4, 1954, Ser. No. 402,075, now Patent No. 2,845,057, dated July 29, 1958. Divided and this application June 20, 1958, Ser. No. 743,435

1 Claim. (Cl. 126—113)

This invention relates to humidifiers and, in particular, to furnace-installed humidifiers.

One object of this invention is to provide a furnace-installed humidifier for hot air heating systems which is applicable to either new or existing furnaces with either sloping or vertical domes, and with either manual or automatic control of the water in the humidifier pan.

Another object is to provide a furnace-installed humidifier which can be initially installed as a manually-filled humidifier and subsequently converted to an automatically-filled humidifier merely by adding the necessary parts, and without requiring alteration of the parts already installed.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawings, wherein:

Figure 1 is a central vertical section through a furnace-installed humidifier according to one form of the invention, taken along the line 1—1 in Figure 2;

Figure 2 is a top plan view partly in horizontal section, along the line 2—2 in Figure 1;

Figure 3 is a vertical cross-section taken along the line 3—3 in Figure 2;

Figure 4 is a vertical cross-section taken along the line 4—4 in Figure 1;

Figure 5 is a front perspective view of the mounting bracket of the humidifier shown in Figures 1 to 4 inclusive, with the cover plate omitted;

Figure 6 is a front perspective view of the cover plate used with the mounting bracket of Figure 5; and

Figure 7 is a perspective view of a partition plate used with the mounting bracket shown in Figure 5.

This is a division of my co-pending application Serial No. 402,075, filed January 4, 1954, for Furnace-Installed Humidifier, now U.S. Patent No. 2,845,057, issued July 29, 1958.

Referring to the drawings in detail, Figures 1 to 4 inclusive show a furnace-installed humidifier, generally designated 20, according to one form of the invention as consisting generally of a mounting structure 22 applied to a furnace 24, such as to the dome of a conventional hot air furnace, and a humidifier pan 26 mounted upon the mounting structure 22.

The mounting structure 22 in turn consists of a mounting bracket, generally designated 30 (Figure 5), stamped from sheet metal and having an attachment plate 32 with an approximately rectangular aperture 34 therein and forwardly-projecting parallel plate wings or arms 36 projecting forwardly from the vertical edges 38 of the aperture 34 as fold lines, the aperture 34 having horizontal edges 40. The lower edge portion 42 of the mounting bracket 30 is offset slightly relatively to the remainder thereof in order to accommodate a partition plate 44 (optional) used with automatic refilling to protect the parts thereof from heat. The wings 36 have aligned elongated approximately V-shaped bent slots 46 in their lower portions to receive fasteners 47 (Figure 1) for the adjustably-tiltable mounting of a humidifier pan

for manual rather than automatic refilling, as described more specifically below.

Above the V-shaped slots 46, the wings 36 are further provided with aligned rectangular holes 48 for the mounting of the water supply unit, if subsequently installed for automatic refilling. The outer edges 50 of the wings 36 are preferably rounded and the wings 36 at their upper ends terminate in notches 52, both being provided for receiving and holding a cover, generally designated 54 (Figure 6).

The cover 54 is formed of sheet material or other suitable material and has a front face 56 with an upper curved portion 58 fitting the curved edges 50 of the wings 36, and a downwardly-projecting flange 60, the ends of which enter the notches 52 when the cover 54 is installed on the wings 36. Edge flanges 62 follow the contours of the lateral edges 64 of the cover 54 and overhang the edges 50 of the wings 36. The attachment plate 32 is suitably drilled as at 66 to receive fasteners 68 (Figure 1) by which it is secured to the wall 70 of the furnace 24.

The humidifier pan 26 is of elongated shape having side walls 104, front and rear walls 106 and 108, and a bottom wall 110 (Figure 1). The bottom wall 110 is provided with parallel laterally-extending grooves 112 and 114 respectively for receiving the upper edge of a fulcrum flange when arranged for automatic refilling of the pan 26. Two grooves 112, 114 are shown, but more or less may be provided to facilitate the proper balancing of the humidifier pan 26. In its mid-portion, the humidifier pan 26 is provided with an elongated longitudinal groove or recess 118 for receiving a locating lug (not shown) located near the fulcrum plate flange in the automatic refilling arrangement (also not shown).

The humidifier pan 26 is optionally provided with an evaporator plate support, generally designated 120 (Figures 1, 2 and 4) also made from sheet metal in trough-shaped form and having a flat bottom wall 122, inclined side walls 124, narrow top walls 126, adapted to engage the upper edges of the humidifier pan side walls 104, and vertical edge flanges 128 adapted to overhang the side walls 104. At its forward end the evaporator plate support 120 is cut back as at 130 (Figure 2) so that the top wall 126 projects slightly forward of the bottom and side walls 122 and front 124, terminating in downwardly-bent hook portions 132 engaging suitably located laterally-aligned notches 134 in the upper edges of the side walls 104 (Figure 1). This construction prevents accidental displacement of the evaporator plate support 120 lengthwise of the humidifier pan 26.

The bottom and side walls 122 and 124 of the evaporator plate support 120 are provided with multiple lateral slots 136 arranged in spaced parallel relationship. Mounted in the slots 136 and projecting downwardly through them are evaporator plates, generally designated 138, of any suitable porous material, such as molded glass fiber, rock wool, ceramic material, or the like. These evaporator plates 138 have truncated triangular lower end portions 140 formed by converging lower side edges 142 for the purpose of passing through the slots 136 and entering the water W in the pan 26 (Figure 4). The spacing of the slots 136 correspondingly spaces the evaporator plates 138 apart from one another. The side edges 142 of the evaporator plates 138 engage the evaporator plate support 120 at the ends 144 of the slots 136.

The front wall 106 of the humidifier pan 26 is provided with an elongated horizontal slot 146 (Figure 3) in which a valve-operating pin or rod (not shown) is adjustably mounted in the automatic refilling arrangement.

Operation

In the operation of the humidifier 20 shown in Figures

1 to 6 inclusive, let it be assumed that the owner of the furnace **24** prefers to install the humidifier for manually-filled operation rather than for automatic filling. Such preference may arise, for example, for reducing the first cost of the apparatus. In this instance, the valve unit and fulcrum plate are omitted. The rectangular aperture **100** of suitable size is cut in the side wall or dome **70** of the furnace **24** and the mounting bracket **30** is secured to the wall **70** by means of the fasteners **68**. Since the valve unit is omitted, it is unnecessary to provide a partition plate **44**, the principal purpose of which is to protect the water supply valve and which is inserted in position between the attachment plate **32** and the furnace wall **70** (Figure 1). The humidifier pan **26** is inserted through the furnace opening **100** and supported on its upper edge **102** and on the lower edge **40** of the aperture **34** of the attachment plate **32**, as shown in the lower right-hand corner of Figure 1. If desired, the evaporator plate support **120** and evaporator plates **128** may also be installed at this time. The fasteners **47** are then inserted through the V-shaped slots **46** and through suitable holes **49** in the humidifier pan **26** to secure the latter firmly in position.

With the manually-filled humidifier thus installed, the user inserts the water W from the front by means of a kettle or pitcher with a spout, after which he places the cover **54** in position by dropping its forward flange **60** into the notches **52** provided for it. The cover **54** then occupies the position shown in Figure 1, with the side flanges **62** thereof overlapping the side edges **50** of the wings **36**. The water W has to be replaced manually from time to time as it evaporates.

If, on the other hand, the owner wishes an automatically-filled humidifier **20**, either at the outset or after having installed the manual installation, he purchases and installs the fulcrum plate and water supply valve unit mentioned above and described and illustrated in detail in the Skerritt Patent No. 2,845,057, issued July 29, 1958, of which the present application is a division.

What I claim is:

A furnace-installed humidifier comprising a mounting bracket including a mounting plate adapted to be secured adjacent an opening in the furnace wall and having an aperture therethrough alignable with the furnace wall opening, said mounting plate adjacent said aperture having a substantially horizontal bottom edge and laterally-spaced substantially parallel approximately vertical side edges, said mounting bracket having a pair of wings integral with said plate extending perpendicularly thereto from said side edges in laterally-spaced parallel relationship with one another, said wings remote from said bottom edge having upstanding elongated slots therethrough, an elongated humidifier pan disposed in said aperture and having a bottom wall tiltably engaging said bottom edge and laterally-spaced substantially parallel side walls extending between said wings in close proximity thereto, and fasteners secured to said side walls and projecting laterally outward therefrom through said slots in said wings and adjustably yet fixedly securing said side walls to said wings in the position of tilt of said mounting bracket relatively to said pan whereby to adjustably hold the humidifier pan in a horizontal position regardless of the position of the mounting bracket whether vertical or inclined from being attached to a vertical furnace wall or to an inclined furnace wall respectively.

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