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HUMIDIFIER ATTACHMENTS FOR HOT AIR REGISTERS

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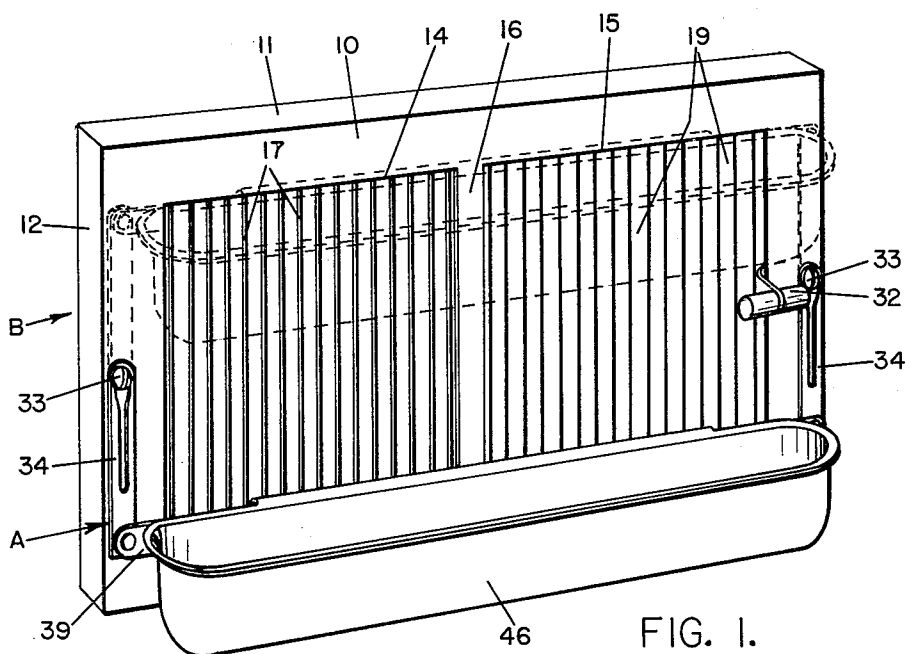


FIG. 1.

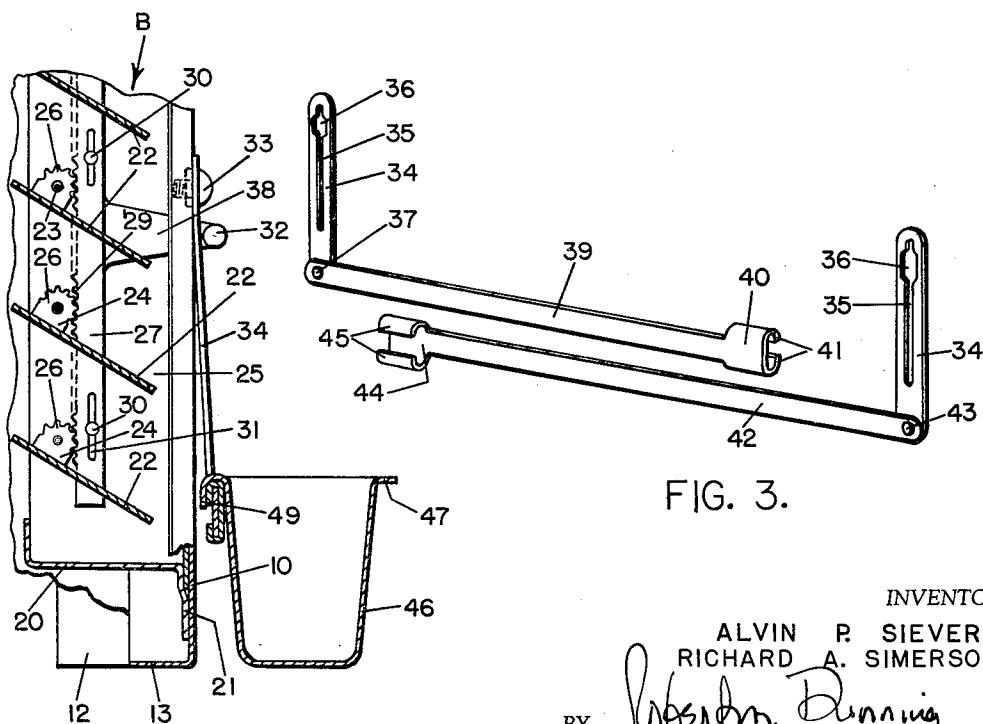


FIG. 2.

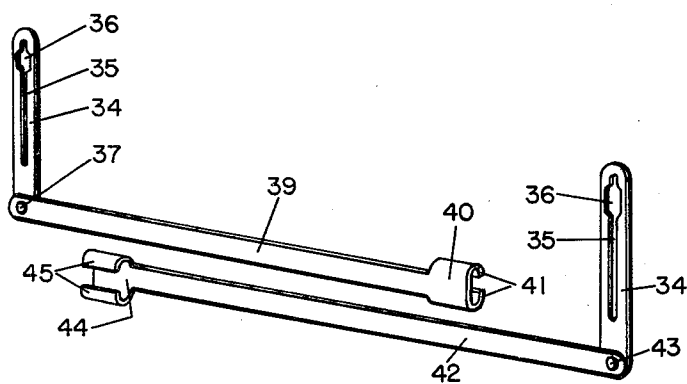


FIG. 3.

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HUMIDIFIER ATTACHMENTS FOR HOT AIR REGISTERS

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5 Claims. (Cl. 98—109)

This invention relates to an improvement in humidifier attachments for hot air registers and deals particularly with a simple and effective means of humidifying a home or the like.

During recent years the value of adding moisture to the air during cold dry weather has become more apparent. Many of the modern furnaces are equipped with humidifying apparatus designed to increase the moisture content of the air. While devices of this type are certainly useful and practical, they often do not provide sufficient moisture in the air to entirely solve the problem. Furthermore, humidifying devices of the type in question are oftentimes expensive and this is particularly true unless they are incorporated in the heating system of the house. It is the object of the present invention to provide a simple and effective means of increasing the moisture content in the air which is used in conjunction with the heated air register.

Hot air registers are usually attached in place by means of two fastening screws or bolts extending into a register frame and extending through the grill. This arrangement is provided so that the interior of the frame may be made accessible by removing the grill by unfastening the two anchoring bolts. Normally the register includes a series of pivotal louvers which may be opened or closed to a desired extent to control the amount of air passing through the register and to control the direction in which the air is guided. By removal of the grill, these louvers may be cleaned at desired intervals. The humidifier attachment comprises merely an elongated trough or pan designed to contain water, the pan being pivotally secured to a cross member which may be mounted to extend either across the top or bottom edge of the register grill. The cross member is supported by a pair of links having apertures therethrough for the accommodation of the bolts securing the grill to the register frame. Accordingly, by loosening or removing the fastening bolts, the humidifier supporting frame may be attached to the grill and the humidifier pan may be detachably connected to the cross member forming a part of the supporting frame.

A feature of the present invention resides in the fact that the cross member may be supported to extend across either the upper edge of the register grill or the lower edge thereof. The bolts which anchor the grill to the register frame usually are located at opposite ends of the grill midway between the top and bottom edges thereof. The humidifier supporting frame includes a transverse bar or cross member which is adjustable in length so as to fit upon registers of different lengths. A link is pivotally connected to each end of the cross bar and each link is longitudinally slotted. The slots are designed to accommodate the fastening screws or bolts which secure the grill to the register frame. The slots permit the distance between the cross member and the supporting bolts to be varied within wide limits. Thus, the humidifier supporting frame is not only adjustable to

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the length of the register but also to the height of the register and is capable of accommodating for variations in the position of the fastening bolts.

A further feature of the present invention resides in the provision of a device of the type described including an elongated humidifier pan provided with a rearwardly and downwardly projecting lip. This lip is designed to extend over the cross member of the humidifier supporting frame for support thereby. At the same time, the pan may be readily removed for cleaning and for refilling if it is so desired. Alternatively, the humidifier pan may remain attached in place and filled through the use of a pitcher or similar article.

As has been described, the humidifier supporting frame may be mounted with the cross member extending either above the grill or below the grill. If the pan is mounted below the surface of the grill, or below the openings through the grill, the louvers which direct the air through the register opening may be inclined so as to direct the heated air downwardly toward the receptacle and toward the liquid contained therein. If the humidifier is positioned at the top of the grill, the louvers may be arranged to direct at least some of the air against the undersurface of the humidifier pan so as to heat the water contained and to increase the rate of evaporation thereof. It has been found that directing air over the surface of the water as well as partially against the humidifier pan will normally result in a higher rate of evaporation than will occur when the humidifier pan extends over the top of the grill.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of the specification:

FIGURE 1 is a perspective view of a hot air register with the humidifier attachment mounted in conjunction therewith.

FIGURE 2 is a cross sectional view through a portion of a hot air register and through a portion of the humidifier attachment showing the arrangement of parts therein.

FIGURE 3 is a perspective view of the humidifier pan supporting frame, the parts of the frame being detached to simplify the disclosure thereof.

The humidifier attachment is indicated in general by the letter A and is designed for attachment to a hot air register indicated in general by the letter B. The specific form of the humidifier may vary considerably, the construction illustrated being typical of a common type of register employed. In this construction, the register includes a front panel 10 having a right angularly extending top flange 11 and parallel side flanges 12 extending rearwardly therefrom. The register grill may also include an intumed or rearwardly extending bottom flange 13 as illustrated in FIGURE 2 of the drawings.

The front panel 10 of the grill is provided with a pair of apertures 14 and 15 which are separated by a central reinforcing strip 16 integral with the front panel 10. The openings 14 and 15 expose a series of vertical bars 17 and 19 respectively which form a grill closure through which the heated air may pass and which may be directed at an angle to the direction of flow of the air so as to better diffuse the air throughout the room. In the particular arrangement illustrated, the bars 14 are arranged to incline toward one side edge of the grill

and away from the center strip 16 while the bars 19 are designed to direct air in the opposite direction from the center strip 16. Obviously this is a matter of choice.

A hollow rectangular frame 20 is mounted on the rear surface of the front panel 10 and is shown as having outwardly extending mounting flanges 21 which are in surface contact with the rear surface of the front panel 10 and which may be spot welded or otherwise fastened thereto. In the drawings, only the lower portion of the rectangular frame 20 is shown as the specific construction of the grill is not a part of the present invention. A series of wings or louvers 22 are pivotally supported on transverse pivots 23 and are swingable from substantially vertical overlap position to an upwardly inclined position. Each louver 22 is provided with a pair of ears 24 at opposite ends thereof which are bent into right angular relation with the louvers and extend into surface contact with the side walls 25 of the frame 20, one of which is shown in FIGURE 2. The ears 24 at one end of each louver is provided with angularly spaced teeth 26 which are engageable with a vertically slidable rack 27 mounted upon the end wall 25 of the frame 20. The rack 27 is provided with gear teeth 29 engageable with the teeth 26 of the ears 24 to rotate the various louvers in unison upon vertical reciprocation of the rack 27. The rack is supported by means of headed fasteners 30 such as rivets or the like which extend through longitudinally extending slots 31 in the rack and are anchored to the side wall 25 of the frame 20.

An arm 38 is integral with the rack 27 and extends through one side of the opening 15 to terminate in an operating handle 32. By raising or lowering the handle 32, the position of the rack 27 may be adjusted in order to change the angular position of the various louvers 22.

The grill thus formed is held in place to the frame of the conduit leading to the register by means of a pair of machine screws or bolts 33. These bolts 33 are usually located at opposite ends of the register midway between the upper and lower edges thereof. Obviously, however, the size of the grills may vary to some extent and accordingly the humidifier attachment is purposely made adjustable in nature so that it can be accommodated to fit grills of various types.

The humidifier attachment includes a generally U-shaped frame, the parts of which are illustrated in disconnected form in FIGURE 3 of the drawings. The frame includes a pair of links 34 which are similar in form and have accordingly been identified by similar numbers. The links 34 include elongated slots 35 preferably extending the major portion of their length. A portion of each slot 35 is preferably enlarged as indicated at 36, these enlargements being located intermediate the ends of the slots 35. The enlargements 36 are preferably of sufficient size to accommodate the heads of the screws or bolts 33 so that the attachment may be secured to the register without completely removing the bolts 33. By loosening these bolts, and inserting the links 34 over the heads of the bolts while these heads are in alignment with the enlargements 36, the links may be attached thereto and held firmly in place when the bolts 33 are again tightened.

One link 34 is pivotally connected at 37 to a cross arm 39. The cross arm 39 is provided with a channel shaped portion 40 at its extremity, the channel shaped portion 40 having opposed intumed flanges 41 on the edges thereof. The channel shaped portion 40 is designed to slidably accommodate a similar cross arm 42 pivotally connected at 43 to the other link 34. Both of the cross arms 39 and 42 are identical in form but are reversed in position. Thus, while the channel-shaped portion 40 of the arm 39 embraces the other cross arm 42, the arm 42 is provided with a similar channel-shaped portion 44 having intumed opposed ears 45 forming a structure designed to embrace the body of the arm 39. Thus, the two arms may be more or less overlapped or

telescoped together so as to provide an adjustment in the length of the cross arm structure.

The humidifying attachment also includes an elongated receptacle or humidifying tank 46. This tank 46 is preferably provided with a marginal reinforcing flange 47 and along the center portion of the rear of the receptacle, the flange 47 is provided with a downwardly extending lip 49 which is designed to hook over the cross arm structure for support thereby. The lip 49 is of sufficient length to effectively hold the receptacle 46 while at the same time the receptacle may be readily detached from the cross arm structure when desired by merely lifting the receptacle upwardly.

Thus, it will be seen that the humidifier attachment A may be easily attached to any register grill of usual construction by merely loosening the two fastening bolts at opposite ends of the grill and attaching the ends of the links 34 to these bolts. If the openings 17 and 19 are narrower in depth than is illustrated, the slots 35 in the links 34 permit the cross structure to be supported at an adjusted elevation. Furthermore, if it is desired to support the humidifying tray 46 at the upper edge of the grill B, this may be done by attaching the links 34 so that they extend upwardly from the mounting bolts 33 rather than downwardly therefrom as is illustrated in dotted outline in FIGURE 1 of the drawings. The tests which have been made indicate that more moisture is picked up by the air when it is directed over the water with the humidifying pan mounted below the level of the grill as shown in full lines in FIGURE 1. However, the arrangement shown in dotted outline in FIGURE 1 of the drawings has the advantage that the receptacle 46 may be easily removed or refilled as it is supported at a somewhat higher level than when it is below the register. The arrangement shown in dotted outlines is also of advantage when the grill is mounted at the floor level and rugs, carpets and other such obstructions make it impossible for the receptacle to be supported in the manner shown in full lines.

In accordance with the patent statutes, we have described the principles of construction and operation of our improvement in humidifier attachments for hot air registers, and while we have endeavored to set forth the best embodiment thereof, we desire to have it understood that changes may be made within the scope of the following claims without departing from the spirit of our invention.

We claim:

1. In combination with a hot air register having grill openings therethrough, and a pair of mounting bolts on opposite sides of said grill openings designed to secure said register in position, and a humidifying attachment attached to said register, said attachment including a cross member comprised of a pair of telescopically engaged parts to permit the length of said cross member to be adjusted, a pair of links pivotally connected to opposite ends of said cross member, said links having apertures therethrough to accommodate said fastening screws, and a water receptacle of elongated form detachably secured to said cross member, said receptacle having a lip designed to hook over said cross member and to hold said receptacle in side by side relation thereto.

2. In combination with a hot air register having grill openings therethrough and a pair of mounting bolts on opposite sides of said grill openings intermediate the upper and lower edges thereof designed to secure the register in position, a humidifying attachment attached to said register, said attachment including a cross member adjustable in length, a pair of links pivotally connected to the ends of said cross member, said links having apertures therethrough to accommodate said fastening bolts and a water receptacle of elongated form detachably secured to said cross member, said receptacle having a lip adapted to hook over said cross member and hold said receptacle in side by side relation thereto.

3. The structure of claim 2 and in which said links are

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of a length substantially equal to one-half the height of said grill openings, whereby said cross member may be secured by said fastening screws extending along either the upper or lower edges of said grill openings.

4. The structure of claim 2 and in which said apertures in said links comprise slots extending longitudinally of said links.

5. The structure of claim 2 and in which said cross member includes two members in telescopic relation.

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