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[21] Appl. No. 843,363  
[22] Filed July 22, 1969  
[45] Patented July 13, 1971  
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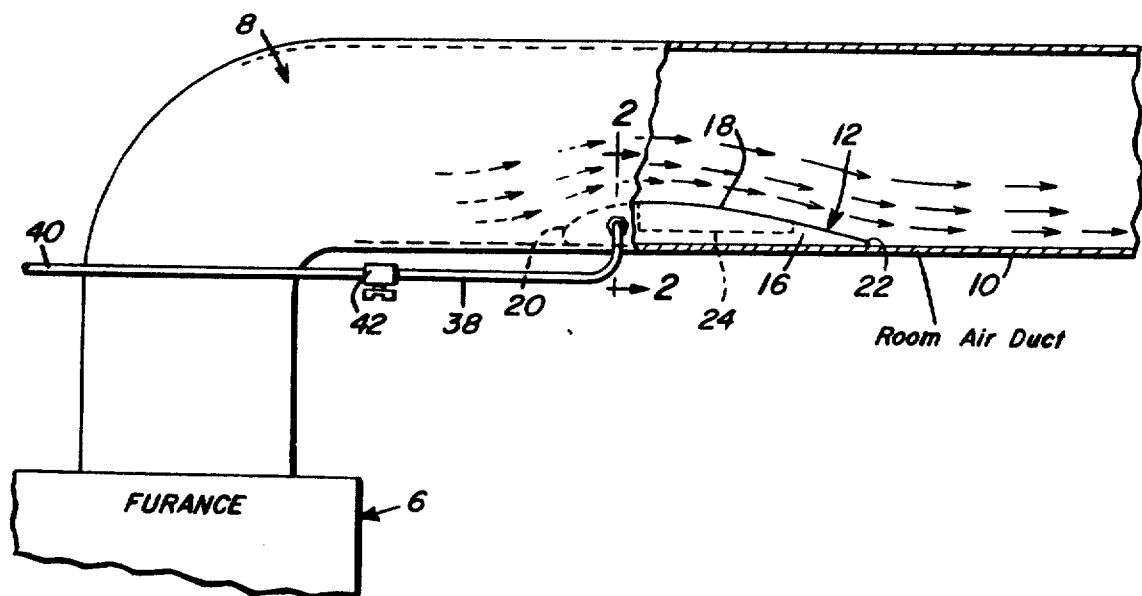
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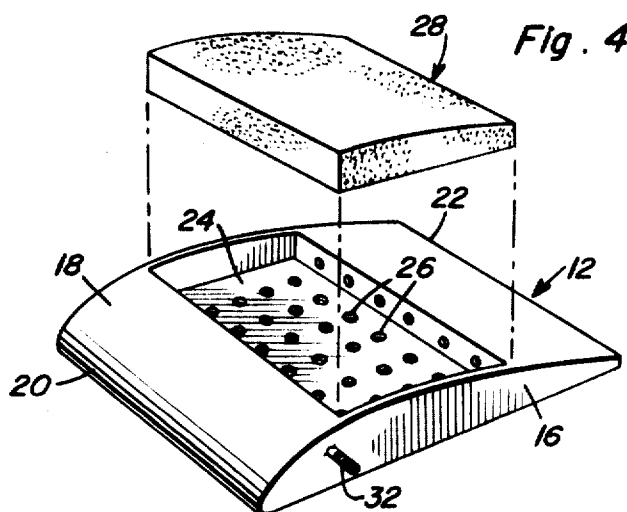
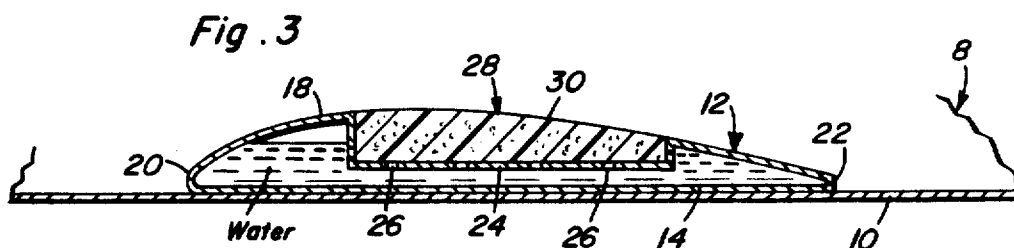
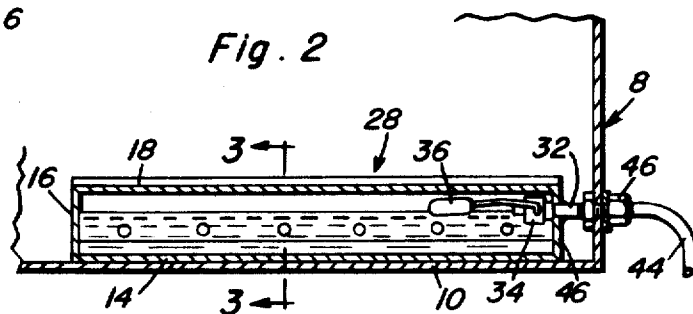
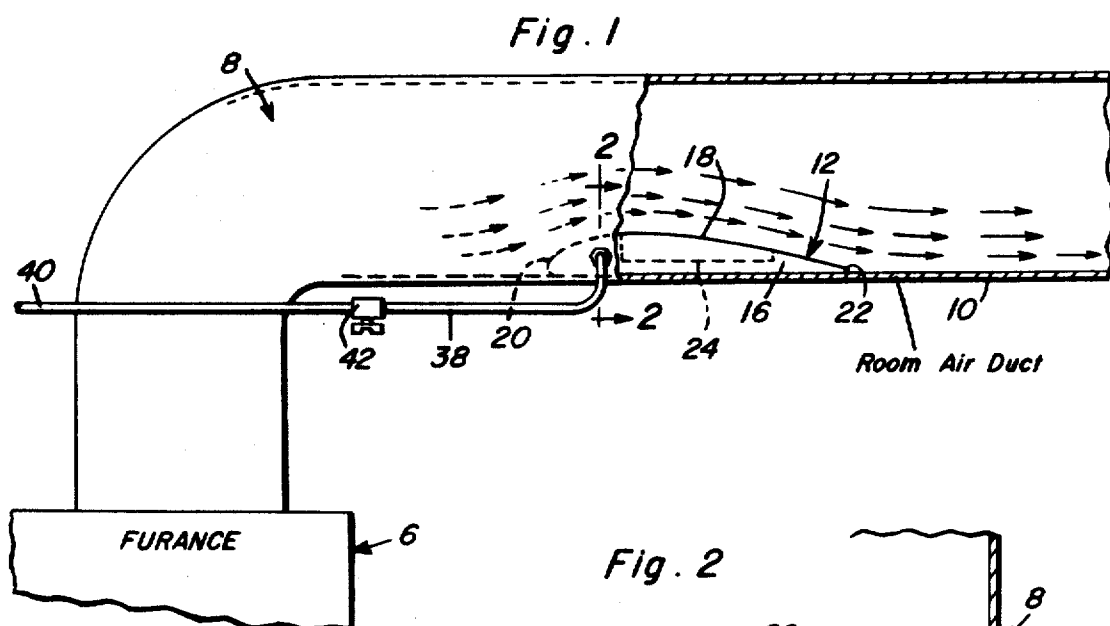
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[54] HUMIDIFIER  
5 Claims, 4 Drawing Figs.

[52] U.S. Cl. 126/113, 261/95  
[51] Int. Cl. F24f 3/14  
[50] Field of Search 126/113; 261/95, 99, 104

**ABSTRACT:** An airfoil-type humidifier for installation within the confines of a horizontal furnace duct. No electricity is needed. A hollow shell provides a water trapping container. The water level is controlled by a float valve. The airstream from the furnace blower flows across a pocketed sponge, is moistened, and is effectually humidified for room use.





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## HUMIDIFIER

This invention relates to certain new and significantly useful improvements in a humidifier which is distinct and unique in that it lends itself to capably acceptable installation and advantageously reliable use in a horizontal room air duct at a locale adjacent the plenum chamber of a conventional-type hot air furnace.

Briefly, the humidifier is characterized by a one-piece hollow shell which is constructed to provide a container for a predetermined amount of water. This shell is of a size and shape to assume an air moistening position within the confines of an ordinary furnace duct. The shell is provided with self-contained absorbent filler means. This means is located in the line or path of movement of the stream of air which is forcibly blown through the passageway of the duct. A float controlled water supply and level maintaining valve is arranged within the confines of the container portion of the shell. An appropriate pipeline communicatively joins with the valve and it, in turn, is provided with a readily accessible hand regulated cutoff valve.

In carrying out a preferred embodiment of the invention the shell embodies a flat horizontal bottom wall, longitudinal vertical sidewalls and a convex top wall which has a rounded blunt leading edge and reduced trailing edge, the profile of the shell being comparable in shape to the airfoil-shape of an airplane wing in a manner to promote and achieve maximum air travel efficiency.

Another feature of the invention has to do with the provision in the top wall of a perforated depression. This depression provides a well-like pocket or sump and is of suitable depth. The filler means comprises a porous blocklike sponge and this sponge is fittingly and removably lodged in the pocket and has an exposed top surface which is flush with the contour of the top wall.

The herein disclosed humidifier is wholly mechanical, requires no electricity and is economical in use. It requires no special tools for installation, is simple in construction and meets with the economical mass production needs of manufacturers. The likelihood of malfunctioning from corrosion or rusting is reduced to a practical minimum. The requirement of water level control is satisfactorily maintained by appropriate float valve means. The airfoil contour renders the device noiseless in operation. The use of a readily available replaceable easy-to-clean sponge contributes to the overall efficiency of the invention. Then, too, the construction of the shell can be one-piece and can be molded from suitable plastic material, aluminum or equivalent formable sheet material.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIG. 1 is a view in side elevation with parts broken away and appearing in section showing a fragmentary portion of a furnace, a portion of a duct connected with the plenum space at the top of the furnace and equipped with a humidifier constructed in accordance with the principles of the present invention, the humidifier being positioned in the approximate manner shown to facilitate connection of the valve water pipe or line therewith.

FIG. 2 is an enlarged fragmentary detail sectional view taken approximately on the plane of the section line 2-2 of FIG. 1 looking in the direction of the arrows.

FIG. 3 is a sectional view on a corresponding scale taken approximately on the plane of the vertical section line 3-3 of FIG. 2.

FIG. 4 is a view in perspective showing the shell-type container, also showing the perforated well or sump and the insertable and removable pad or sponge.

With reference now to FIG. 1 the furnace is denoted by the numeral 6 and the room air delivery duct is denoted at 8 and embodies a horizontal portion whose bottom wall is denoted at 10. In actual practice the area or zone in which the device is installed can be provided with openable and closable cover means (not shown) to permit access to be had to the device.

The humidifier is denoted as a unit by the numeral 12 and is fashioned into a simple pan or container. It comprises a substantially flat bottom wall 14, a pair of spaced parallel vertical sidewalls 16 and an arcuately curved convex top wall 18. The top wall has its ends merging into the cooperating edge portions of the bottom wall to provide a rounded or blunt leading edge at 20 and a reduced trailing edge at 22. This top wall has its intermediate portion provided with a comparatively shallow depression herein designated either as a well or a sump as at 24. The bottom and marginal walls are provided with water circulating holes 26. This sump provides a pocket for reception and retention of an insertable and removable porous filler. More specifically, this filler comprises a substantially rectangular properly contoured pad or sponge 28. The sponge is such in shape and size that it is fitted within the confines of the well-like pocket as brought out advantageously in FIG. 3. The thickness of the sponge corresponds with the depth and shape of the pocket and hence the convex surface 30 of the sponge is conformable with the contoured or convex surface 18 of the top wall. The water intake pipe is denoted by the numeral 32 and as shown in FIGS. 2 and 4 it has an end portion projecting into the container portion of the shell where it is equipped with valve means 34 which is controlled by a coordinating float 36. This type of inlet and float valve means is used in the construction of prior art humidifiers.

The water delivery pipe or line is denoted by the numeral 38 and has an end portion 40 connected (not shown) with an appropriate source of supply. The pipe is also provided with a manually regulatable off-on as well as control valve 42. The suitably bent end portion 44 (FIG. 2) of the pipeline is connected with fittings at 46 in a manner to deliver a controlled supply of water to the float valve whereby to maintain the desired level of the water in the container portion of the shell.

The manner in which the main component parts are constructed is shown in FIGS. 3 and 4 in particular. The manner in which the device is installed and the level of water is controlled is shown in FIG. 2. The overall installation and use is shown in the horizontal branch of the duct as illustrated in FIG. 1. Accordingly, the construction and use of the herein disclosed invention is believed to be substantially self-evident.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What I claim as new is as follows:

1. A humidifier designed and adapted to be installed for use within the confines of a hot air furnace duct comprising: a hollow shell constituting a container for a predetermined amount of water, said shell being of a size and shape to assume an air moistening position in said duct, said shell having self-contained highly absorbent filler means in line with the path of the airstream flowing through the air passage of said duct, a float controlled water supply and level maintaining valve within the confines of the hollow container portion of said shell, and a water delivering pipeline communicatively joined to said valve, said shell embodying a flat horizontal bottom wall, longitudinal vertical sidewalls and a convex airfoil-type top wall having a rounded blunt leading edge and a reduced trailing edge, the profile of the shell being comparable in shape to the shape of an airplane wing to promote and achieve maximum air travel efficiency.

2. The humidifier defined in and according to claim 1, and wherein said top wall is provided with a highly perforated depression providing a well-like pocket of requisite depth, said

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filler means comprising a porous blocklike sponge and said sponge being fittingly but removably lodged in said pocket and having an exposed top surface which is flush with the contour of said top wall.

3. A humidifier designed and adapted to be installed for use within the confines of a duct which is communicatively connected with the plenum of a hot air furnace comprising: a hollow shell embodying a flat bottom wall, elongated vertical sidewalls joined with marginal edges of the bottom wall, and a convex airfoil-type top wall having a rounded blunt leading edge joined with the cooperating edge of the bottom wall and a reduced trailing edge joined with the trailing edge of the bottom wall, the profile of the shell being comparable in shape to the airfoil shape of an airplane wing in a manner to promote and achieve maximum air travel efficiency, the median portion of said top wall being provided with a relatively shallow perforated sumplike depression, said depression providing an

open top pocket, a porous readily insertable and removable blocklike sponge, said sponge being fittingly but removably lodged in said pocket and having a convex exposed top surface which is contoured and substantially flush with the top surface of said top wall.

4. The humidifier defined in and according to claim 3 and wherein one sidewall is provided with pipe means with one end projecting into the interior of the container portion of the shell and the other end positioned exteriorly of the sidewall, said inward projecting end being provided with a float controlled water inlet level maintaining valve.

5. The humidifier defined in and according to claim 4 and, in combination, a valved water supply and delivery line having an end communicatively joined with the aforementioned water inlet pipe.

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