June 22, 1954 W. DRAGER 2,681,609

FLOOR UNIT AIR-CONDITIONER

Filed Dec. 3, 1951 2 Sheets-Sheet 1

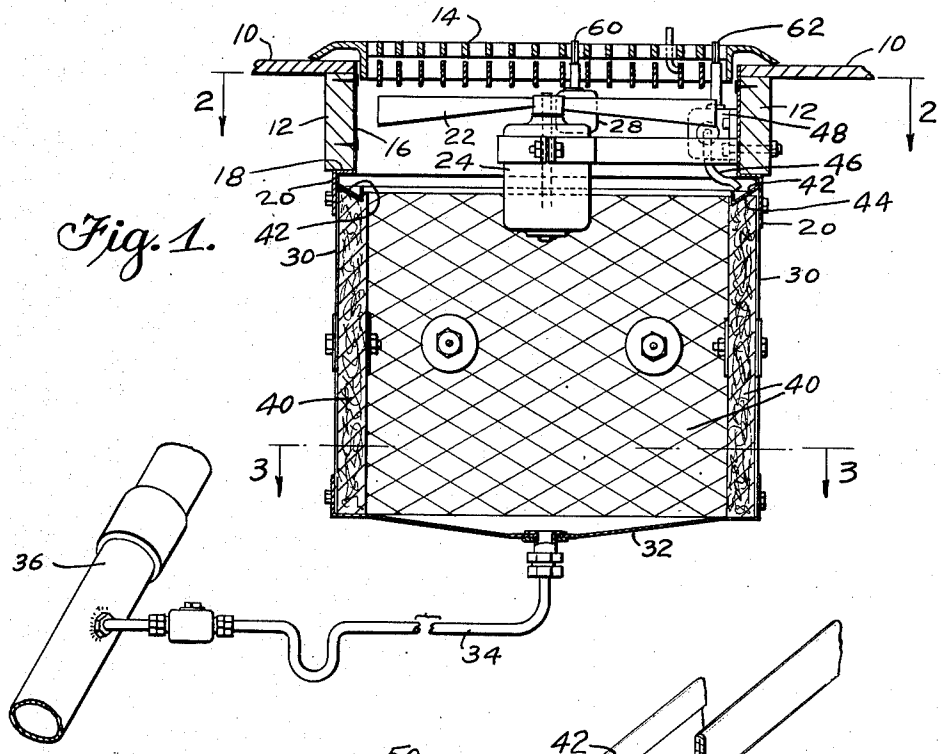


Fig. 1.

Fig. 6.

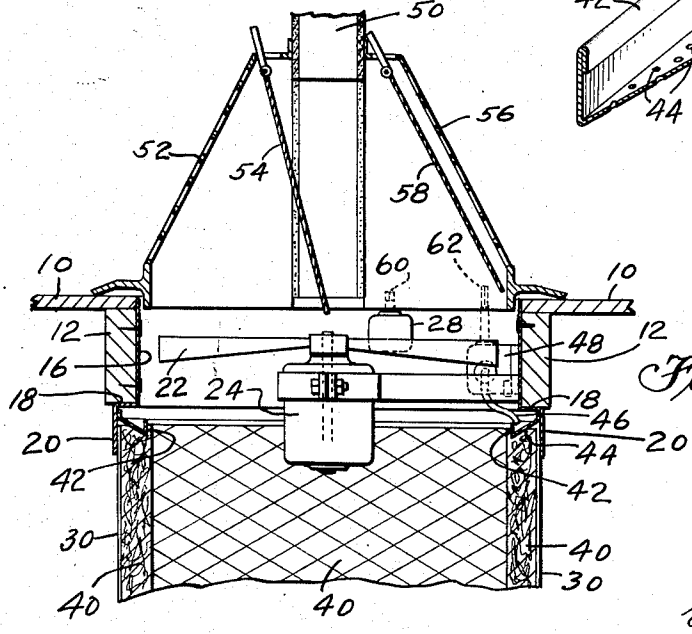


Fig. 7.

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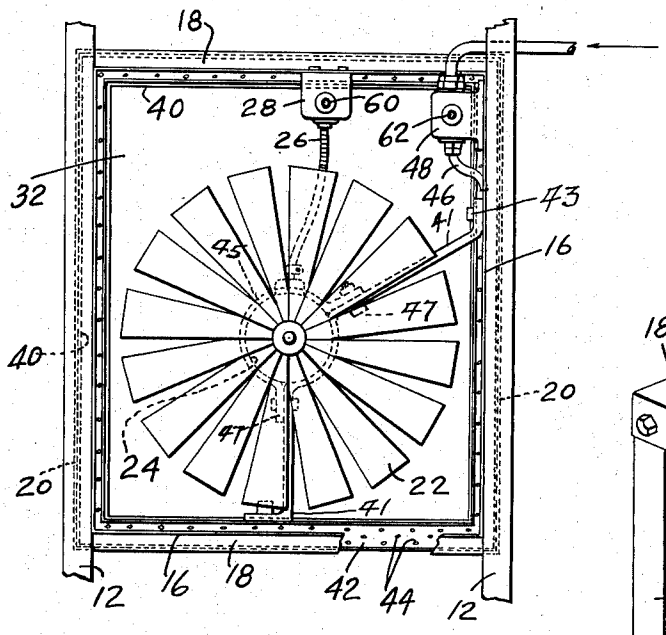
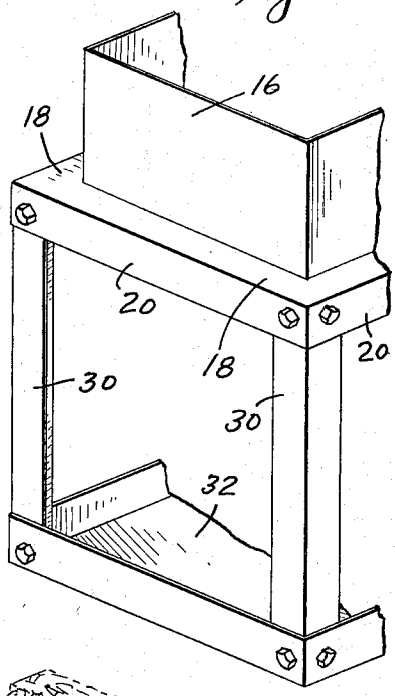


Fig. 2.

Fig. 4.



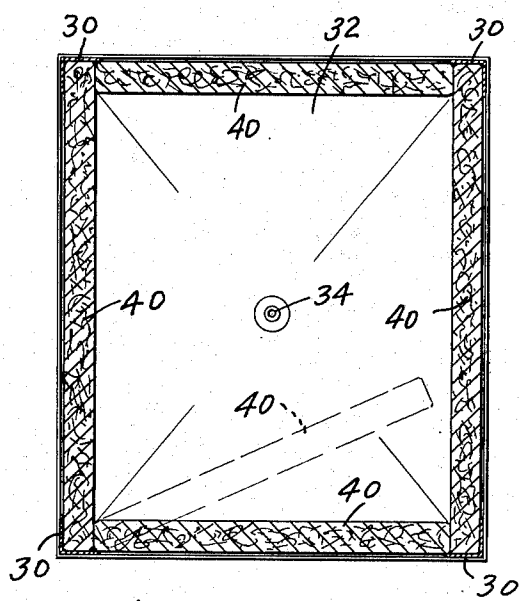


Fig. 3.

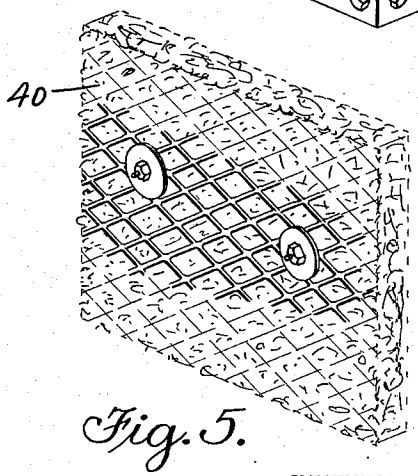


Fig. 5.

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FLOOR UNIT AIR-CONDITIONER

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2 Claims. (Cl. 98—105)

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This invention relates to an improved floor unit air-conditioner and has for one of its principal objects the provision of an air-conditioning unit which will provide permanent installation in a residence or home and which will produce cool humidified air circulation from under the house.

One of the important objects of this invention is to provide a means for cooling and humidifying the air in a building, which means is preferably installed in the floor of the building and which includes the use of water circulating through a porous pad for cooling purposes and wherein any surplus water can be readily drained off into a sewerage line or the like at a level below the lowermost point of the cooler.

A further object of the invention is to provide in a cooler and air conditioner of the class described, a motor driven fan which will produce an intake of air into the evaporator pads of the cooler, whereby the air is washed, humidified and reduced in temperature for subsequent introduction into the house itself.

Still another important object of the invention resides in the provision of an air-conditioning unit which, as a unit, can be readily installed in the floor of the ordinary residence and without disturbing any portions of the usual or regular construction and which will bring in its supply of air from under the house, which air is ordinarily cooler than the air adjacent other portions of the house, such as the sides or roof.

Yet another object is the provision in a floor cooler and evaporator of an improved structure for retaining the excelsior or other pads which are adapted to be moistened and through which the air to be cooled is drawn.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawings and following specification.

The invention, in a preferred form, is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a detailed view, partly in section, showing the improved floor level air-conditioning unit of this invention.

Figure 2 is a horizontal sectional view taken on the line 2—2 of Figure 1 looking in the direction indicated by the arrows.

Figure 3 is a sectional view on the line 3—3 of Figure 1 looking in the direction indicated.

Figure 4 is a detailed view illustrating a part of the frame construction which retains the air moistening pads.

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Figure 5 is a perspective view of one of the air moistening pads.

Figure 6 is a detailed perspective view illustrating a portion of the trough by means of which circulating water is allowed to dribble through the moistening pads.

Figure 7 is a detailed view, partly in section, and parts broken away, illustrating a slightly modified form of the invention.

As shown in the drawings:

The reference numeral 10 indicates generally a portion of the floor of a building or room into which is built the improved air-conditioning unit of this invention. The floor is supported by the usual joists or stringers 12. A grille 14, approximately square in shape, is mounted under an opening cut into the floor for the purpose of allowing the cooled air to be forced into the room.

Installed directly under the grille 14 and supported by the edges of the opening in the floor, is a metallic casing 16 of rectangular shape as shown in Figures 1 and 2 and which in turn is provided with a shoulder 18, having a downward flange 20 therein. Mounted in this opening is a fan 22, driven by a motor 24. Current is supplied to the motor by means of wires in a conduit 26 and controlled by a switch 28, operated by a stem 60 which projects upwardly through a portion of the grille 14. This stem is preferably turned by means of a removable key which can be kept in a location convenient to the conditioning unit. Other means of supplying current to the motor may be employed, as will be obvious.

The speed of the motor can be governed by a rheostat switch or other means and the motor itself is mounted in a hanger or frame comprising a metal strap portion 41 extending from one face of the frame to an adjacent face as best shown in Figure 2. This is held in position by bolts or the like 43. A complementary strap element 45 cooperates with the strap 41 clamped to the motor by means of bolts and nuts 47, whereby the motor and fan can be readily removed from the frame allowing dismantling of the parts when necessary.

Mounted below the motor and fan assembly is an open framework, preferably composed of fabricated galvanized sheet metal and generally in the shape of a rectangular parallelepipedon, as best illustrated at 30 in Figures 1 and 4.

This structure is open at the sides and top, but is provided with a bottom 32 which drains toward its center as best shown in Figure 1. A drain pipe 34 leads from an opening in the center of the bottom to a sewer or other disposal pipe 36.

Adapted to be fitted into the sides of the box-like frame **30**, is a plurality of water absorbent pads **40**, as shown in Figure 5. These are four in number and are preferably constructed of excelsior or some other suitable material which will readily absorb and as readily part with a considerable quantity of water, rendering evaporation efficient and satisfactory.

The framework **30** and the pads **40** are so designed both as to shape and contour, in that two of the longer pads are preliminarily placed in the framework and then the shorter pads are positioned in the ends as indicated by the dotted line in Figure 3, producing a locking arrangement which assures a proper positioning of the pads in the structure and a subsequent desirable operation at all times.

In order to replace the water absorbent pads **40**, all that is necessary is to remove the motor and fan by taking off the semi-circular strap **45**, which is held in place by the bolts **47** on the frame **41**. When the motor and fan are thus lifted out of the top of the structure, the pads **40** can be easily replaced as the entire lower part of the frame is then immediately and readily accessible.

Extending around the upper periphery of the framework **30**, is a trough or series of troughs **42**, as best shown in Figures 1 and 6. These are shaped as shown and have perforations **44** in their sloping bottoms so as to allow of a suitable and desired quantity of water to be delivered to the tops of the pads **40**, whence it gradually penetrates and permeates the pads, keeping the same desirably moist at all times during the entire operation. Water is supplied to the troughs **42** through an inlet pipe **46**, controlled by a valve **48**, which can be operated by the same key provided for the current controlling switch stem **60**. This key preferably fits a stem **62** incorporated into the water valve **48**. Any excess water will be drained off over the sloping bottom **32** and through the exit pipe **34**.

In Figure 7, substantially the same construction and device is illustrated with the exception that the same is adapted to be installed in the floor of a building at a point directly underneath a wall **50**, which separates two rooms.

A grill **52**, with an adjustable shutter **54**, is provided on one side of the wall and a further grille **56**, with an adjustable shutter **58**, is provided on the other side of the wall and in juxtaposed relationship. As will be noted, the shutters leading to either room can be entirely open or closed or intermediate positions can be adopted, depending upon conditions and the desires of the occupants.

It is evident that herein is provided an air-conditioning unit for residences, which is admirably adapted for smaller homes in that it is simple of construction, economical in operation and not too expensive to install. Additionally, all the parts are relatively simple, replacements are easy and the entire structure is so built that nothing is at all likely to get out of order. The fact that the air is drawn in from under the house provides an additional advantage, particularly in homes which have no basement, but

which are built a few feet off the ground. The air under such buildings is always relatively cool, thereby providing an added immediate advantage in operation so far as reduction in temperature of the interior of the building is concerned. The amount of water flowing through the absorbent pads can be readily controlled so that waste is reduced to a minimum while a high efficiency is always maintained.

I am aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than as necessitated by the prior art.

I claim as my invention:

1. A floor unit air-conditioner comprising an open box-like framework adapted to be inserted in an opening in the floor of a room, a grille for the floor opening, a motor and fan mounted beneath the grille, water evaporating pads removably positioned in the framework, a source of current for the motor, a source of water supply for the pads, manual control means for the current and water sources, said control means positioned in the grille, a bottom for the open framework, a drainage pipe in the bottom, water distribution troughs in the framework above the pads, said water distribution troughs having perforated sloping bottoms and extending around the upper periphery of the framework, the absorent pads being of a size and contour to be removably fitted into and interlocked with each other in the rectangular framework, said framework composed of angles.

2. A floor air-conditioning unit for rooms comprising an open box-like frame, water absorbing pads positioned in the sides of the frame, a drainage bottom in the frame, water distributing troughs in the top of the frame around the periphery thereof and adjacent the upper edges of the absorbent pads, valve means for supplying water to the troughs in regulated quantities, means for fastening the framework and pads beneath the floor of a building, a motor driven fan above the framework but beneath the floor, said floor having an opening therein and grillework in the opening, means in the grille-work for controlling the operation of the motor and water valve, adjustable shutters in the grillework, said grillework extending up to and forming a portion of a wall of the room adjacent the opening in the floor.

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