

July 27, 1954

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2,684,621

ATTIC VENTILATOR

Filed Dec. 5, 1952

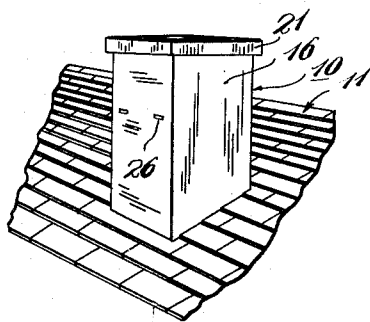


FIG. 1

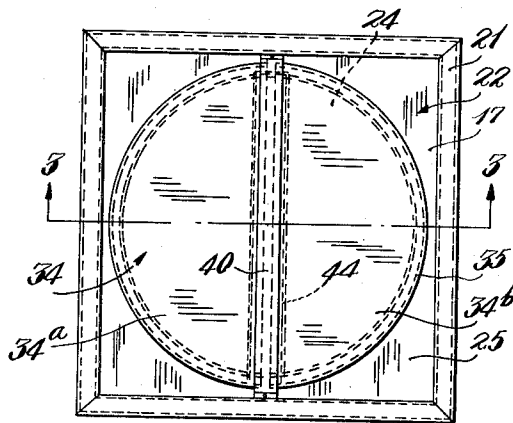


FIG. 2

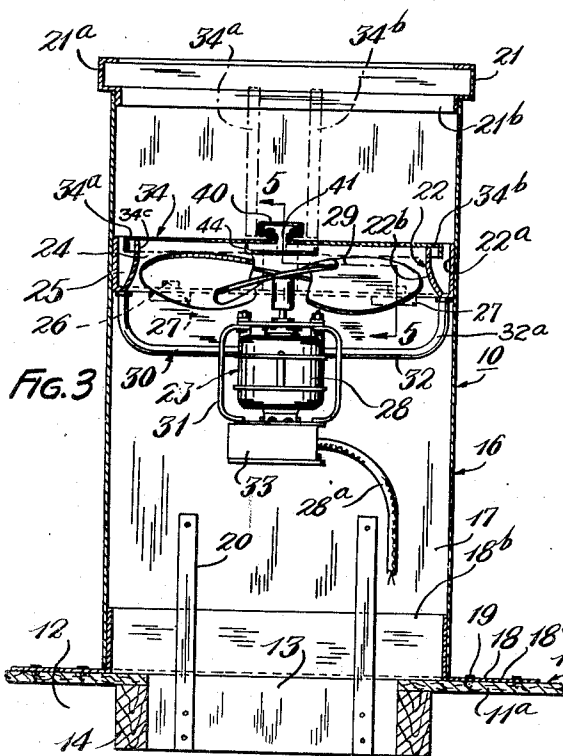


FIG. 3

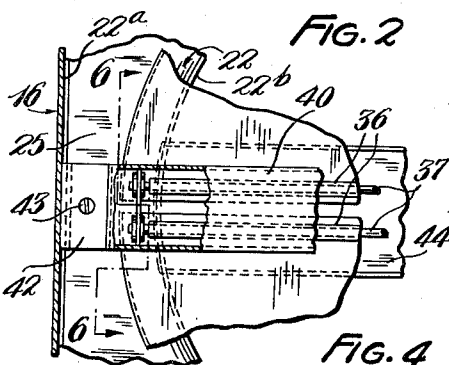


FIG. 4

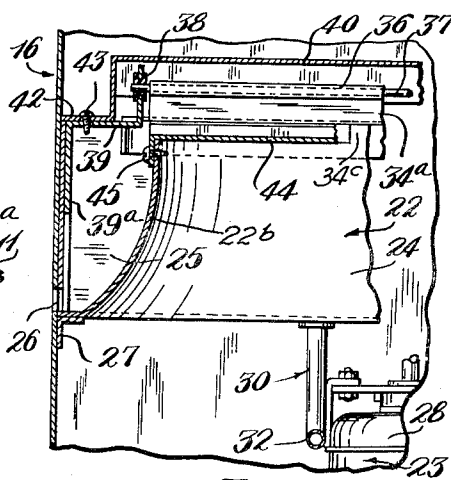


FIG. 5

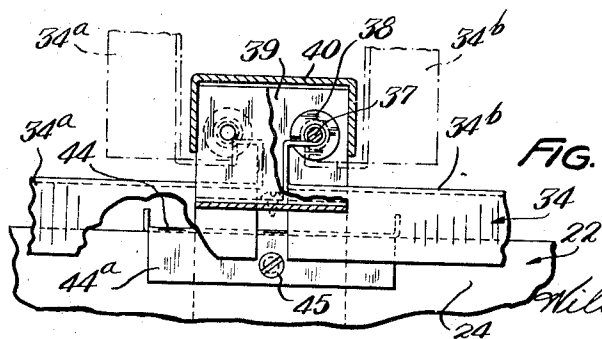


FIG. 6

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2,684,621

ATTIC VENTILATOR

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Application December 5, 1952, Serial No. 324,168

2 Claims. (Cl. 98-43)

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This invention relates to ventilating devices of the exhaust fan type and, as its principal object, aims to provide a novel form of attic ventilator.

Another object of this invention is to provide a novel attic ventilator having a sheet metal housing and embodying a fan and motor unit and which has the size, shape and appearance of a chimney, such that when the ventilator is mounted on the roof of a building, it will not detract from the architectural lines and appearance of the building.

Still another object is to provide a novel attic ventilator of the character referred to in which the sheet metal housing is provided internally thereof with a mounting member defining a throat opening, preferably of a Venturi shape, and in which the fan and motor unit is supported by such member and the fan is rotatable in the throat opening.

A further object is to provide a novel attic ventilator of the character mentioned in which the mounting member for the fan and motor unit also defines a drainage pocket or channel for collecting rain, or the like, and in which a drain opening leading from such pocket or channel extends through the wall of the housing to a point outside thereof.

Yet another object is to provide a novel attic ventilator of the kind mentioned above in which air-flow responsive cover means pivotally connected with the mounting member, has an effective or closed position covering the throat opening.

The invention can be further briefly summarized as consisting in certain novel combinations and arrangements of parts hereinafter described and particularly set out in the claims hereof.

In the accompanying sheet of drawings forming a part hereof:

Fig. 1 is an elevation showing an attic ventilator embodying the present invention;

Fig. 2 is a top plan view of the ventilator;

Fig. 3 is a vertical section taken through the ventilator on section line 3-3 of Fig. 2;

Fig. 4 is a fragmentary plan view corresponding with the portion of Fig. 2 which includes the pivotal mounting for the movable cover means, but showing such portion on a larger scale;

Fig. 5 is a fragmentary vertical section on a larger scale and taken through the mounting ring and cover means, substantially as indicated by section line 5-5 of Fig. 3; and

Fig. 6 is another fragmentary vertical section on a larger scale and taken through the mount-

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ing ring and cover means, substantially on section line 6-6 of Fig. 4.

As one practical embodiment of this invention, the drawings show this novel attic ventilator 10 mounted on the roof 11 of a building having a space therein, such as an attic space 12, to be ventilated. At the point where the ventilator 10 is mounted on the roof 11, the roof is provided with an opening 13 which is formed therein by cutting away the roof structure or roof boards 11^a between a pair of adjacent rafters 14. The opening 13 is of a size and shape to permit a direct flow of air from the attic space 12 into and through the ventilator 10.

The ventilator 10 comprises an upright open-ended tubular sheet metal housing or duct structure 16 which is preferably, though not necessarily, of a quadrangular cross-sectional shape. The housing 16 defines an upright ventilating passage 17 whose lower end is in direct communication with the attic space 12 through the roof opening 13.

The housing 16 is provided at the lower end thereof, with flashing means 18 constituting a base which forms both a mechanical and a weather-tight connection between the ventilator 10 and the roof 11. The base 18 is here shown as comprising a lateral flange portion 18^a which extends around the opening 13 and is suitably attached to the roof as by means of the nails 19. The base 18 also includes an upright tubular portion 18^b of substantially the same size and cross-sectional shape as the lower end of the housing 16 and over which such lower end of the housing extends in a telescoping relation, as shown in Fig. 3.

The telescoping engagement of the lower end of the housing 16 with the tubular portion 18^b of the base 18 assists in connecting the ventilator with the roof 11 by preventing any lateral shifting of the housing and also forms a weather-tight connection by which the leakage of rain, or the like, past the lower end of the housing and into the roof opening 13 will be effectively prevented. The ventilator 10 can also be suitably anchored on the roof 11 as by means of straps or rods 20 having their upper ends bolted or otherwise attached to the housing 16 and their lower ends extending through the opening 13 and attached to the rafters 14 or available portions of the roof 11.

At the upper end thereof, the housing 16 is provided with a cap 21 simulating a chimney cap and which is here shown as being in the form of a sheet metal frame having a plan shape

corresponding with the cross-sectional shape of the housing. The sheet metal frame forming the cap 21 includes a channel-shaped portion 21^a defining the perimeter of the cap and disposed with the channel recess thereof facing inwardly. The channel portion 21^a is also disposed so as to project laterally outwardly in overhanging relation to the upper edge of the housing 16 so as to have the appearance of a chimney cap. The sheet metal frame forming the cap 21 also includes a depending axial flange 21^b which telescopes into the upper end of the housing 16 and is bolted or otherwise suitably attached to the wall of the housing. The cap 21 also serves to reinforce the upper end of the housing 16.

At an intermediate point thereof, the housing 16 is provided with a mounting member or fan ring 22, and a fan and motor unit 23 which is supported by such mounting member. The mounting member 22 is preferably a sheet metal member comprising integrally connected, laterally spaced outer and inner axial ring portions or walls 22^a and 22^b. The outer ring portion 22^a lies against, and is suitably secured to, the wall of the housing 16 and has the same perimetral shape as that of the housing. For example, when the housing 16 is of a quadrangular shape as here shown, then the outer ring portion 22^a also has a quadrangular perimetral shape. The inner ring portion 22^b is in the form of an annularly-extending wall defining a circular throat opening 24 in the housing passage 17 and preferably has a Venturi shape, as shown in Fig. 3, for facilitating a smooth flow of air through the throat opening.

The mounting member 22 also defines an upwardly facing permanently open drainage pocket or channel 25 extending entirely around the throat opening 24 and formed by the intervening space between the outer and inner ring portions 22^a and 22^b. One or more drain passages communicate with the pocket 25 and lead from the bottom thereof to a point outside of the housing 16 for discharging rain or other collected moisture externally of the ventilator.

Drainage passages can be provided for this purpose which are in the form of the slots 26 which extend through the outer ring portion 22^a and through the wall of the housing, as shown in Figs. 1 and 5. At the locations of these drain slots 26, the housing 16 is provided with clips 27 which are secured to the wall of the housing immediately below the mounting member 22 to prevent leakage of water downwardly from the pocket 25 into the ventilating passage 17 by seeping between the mounting member and the housing wall.

The fan and motor unit 23 comprises an electric motor 28, a propeller fan 29 mounted on the shaft of the motor, and a motor mount or hanger 30. The mount 30 is here shown as comprising a bracket or yoke 31 in which the motor 28 is suitably held and a pair of support rods 32. The bracket 31 is disposed between and secured to the support rods 32 at an intermediate point of the latter. The fan and motor unit 23 is disposed with the fan 29 in the throat opening 24 of the mounting member 22 and is secured in this position by having the upwardly curved ends 32^a of the support rods welded or otherwise suitably attached to the bottom of the mounting member. When the fan and motor unit is mounted in this position, the motor 28 is suspended in the passage 17 substantially on the axis of the throat opening 24. Electric current is supplied to the motor 28 through a conductor cable 28^a which is con-

nected with the motor through an outlet box 33 provided on the bracket 31. The fan and motor unit 23 is controlled by switch means (not shown) located at a suitable point in the building and connected with the motor 28 by the conductor cable 28^a.

The ventilator 10 also includes an air-flow responsive cover means 34 for the throat opening 24 to prevent rain, leaves, or other foreign matter from passing downwardly through the ventilating passage 17 when the ventilator is not in operation. The cover means 34 comprises a pair of complementary substantially semicircular cover members 34^a and 34^b which, in their closed position, overlie the throat opening 24 as shown in Figs. 2 and 3. These cover members are provided along the curved outer edge thereof with a downturned lip portion or flange 35 which lies outwardly of the inner ring portion 22^b and facilitates the drainage of water from the cover means into the pocket 25 when the cover means is closed. The flange 35 also forms a stiffening means for the cover members. At diametrically opposite points thereof the inner wall 22^b of the mounting ring 22 has portions 34^c extended upwardly forming seats which are engaged by the cover members 34^a and 34^b when the latter are in their closed position as shown in Fig. 3.

The adjacent straight edges of the cover members 34^a and 34^b are provided with beads 36 extending therealong and by which these edges of the cover members are attached to a pair of substantially parallel pivot shafts 37. The ends of the shafts 37 are pivotally mounted in suitable bearings 38 which are carried by the upper ends of angular sheet metal brackets 39. These brackets are located at diametrically opposite points of the mounting member 22 and are suitably connected with the latter as by having a depending leg 39^a secured against the outer ring portion 22^a, as shown in Fig. 5.

A cover strip 40 of a downwardly facing channel-shaped cross-section extends diametrically across the throat opening 24 at a point above the pivot shafts 37. This cover strip houses the pivot shafts and assists in preventing rain, or the like, from passing downwardly through the intervening slot or joint 41 formed by the adjacent straight diametral edge portions of the cover members 34^a and 34^b when the latter are in their closed position. The cover strip 40 is secured in this position by having end flanges 42 which are secured to the brackets 39 by means of the screws 43.

In addition to the cover strip 40, a gutter strip 44 is provided for preventing leakage of water past the cover members 34^a and 34^b. This gutter strip is a channel-shaped sheet metal member extending across the throat opening 24 and disposed beneath the pivot shafts 37 with its channel recess facing upward. The gutter strip 44 has flanged ends 44^a secured to the inner ring portion 22^b by the screws 45 and forms a drip pan into which water draining from the cover members 34^a and 34^b will fall when these cover members are standing in their open position.

When the fan and motor unit 23 is idle, the cover members 34^a and 34^b swing downwardly by gravity by rotation of the pivot shafts 37 in the bearings 38 to assume the laterally aligned closed position shown in Fig. 3, in which these cover members overlie and close the throat opening 24. In this closed position, these cover members prevent the entry of rain, leaves or other foreign matter into the building through the ven-

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tilating passage 17, as mentioned above, and also prevent the loss of heated air from the building through the ventilating passage during winter weather.

When the fan and motor unit 23 is placed in operation, the fan 29 draws air from the building through the roof opening 13 and discharges the same to the outside atmosphere for effectively ventilating the building by the removal of heated, stale or contaminated air from the space 12. The stream of air being impelled by the fan 29 swings the cover members 34^a and 34^b upwardly to their broken line open position shown in Figs. 3 and 6 and in which position these cover members remain as long as the fan and motor unit continues in operation.

From the foregoing description and the accompanying drawings, it will now be readily understood that this invention now provides a novel ventilator which can be economically manufactured and readily installed on the roof of a dwelling house or other building and which will operate very effectively in removing heated, stale or contaminated air from the attic or other building space to be ventilated. It will now also be seen that this novel ventilator has the appearance of a chimney and when mounted on the building will enhance rather than detract from the architectural appearance thereof. This is particularly true in the case of central housing units which frequently do not have any chimney at all, and hence, the use of this ventilator or such units will produce a distinct improvement in the architectural appearance thereof, as well as accomplishing its important ventilating function.

Likewise, it will be seen that the novel self-closing air-flow responsive cover means will automatically close the ventilating passage when the ventilator is not in use to prevent rain, and other foreign matter from entering the building and to conserve the heat of the building during winter weather. Additionally it will now be understood that this novel ventilator can be produced as a prefabricated unit which can be readily transported and installed.

Although the novel ventilator of this invention has been illustrated and described herein to a somewhat detailed extent, it will be understood, of course, that the invention is not to be regarded as being limited correspondingly in scope, but includes all changes and modifications coming within the terms of the claims hereof.

Having thus described my invention, I claim:

1. In a ventilator, an open-ended upright sheet metal housing of a quadrangular cross-sectional shape and having a passage extending therethrough, a mounting ring located in and secured to said housing at an intermediate point thereof, said mounting ring comprising connected laterally spaced axially extending inner and outer walls and defining an upwardly opening drainage pocket between said walls, said outer wall having a perimeter of quadrangular shape and lying against the wall of said housing and said inner wall being of an annular shape defining a substantially circular throat opening in said passage, air flow responsive cover means comprising a pair of cooperating substantially semicircular

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cover members having an effective position closing said throat opening at the upper end thereof and having diametral edges disposed in adjacent relation, pivot means connecting said diametral edges with said mounting ring for an upward opening swinging movement of said cover members, said housing and ring having portions defining a drainage path leading from said drainage pocket to a point outside said passage, and a fan and motor unit supported by said ring with the motor extending in depending relation thereto and with the fan rotatable in said throat opening beneath said cover means.

2. In an attic ventilator, an open-ended upright sheet metal housing of a quadrangular cross-sectional shape and having a passage extending therethrough, a cap on the upper end of said housing comprising a sheet metal frame having an axially extending portion in telescoping engagement with the housing, sheet metal base means adapted for supporting engagement with a roof structure and having an axially extending portion in telescoping engagement with the lower end of said housing, a mounting ring located in and secured to said housing at an intermediate point thereof, said mounting ring comprising connected laterally spaced axially extending inner and outer walls and defining an upwardly opening drainage pocket, said outer wall having a perimeter of quadrangular shape and lying against the wall of said housing and said inner wall being of an annular shape defining a substantially circular throat opening in said passage, air-flow responsive cover means comprising a pair of cooperating substantially semicircular cover members having an effective position closing said throat opening at the upper end thereof and having diametral edges disposed in adjacent relation, pivot means connecting said diametral edges with said mounting ring for an upward opening swinging movement of said cover members, support means connected with said ring and extending across said throat openings adjacent the lower end thereof, said housing having an opening extending through the wall thereof, the outer wall of said mounting ring having an opening therein, the openings of said housing wall and said outer wall being in register with each other and defining a drain opening leading from said drainage pocket to a point outside said passage, a fan and motor unit having the fan thereof rotatable in said throat opening between said cover means and said support means, and means connecting said motor with said support means in depending relation to the latter and substantially on the axis of said throat opening.

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