

March 27, 1962

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3,027,090

AUTOMATIC ROOF VENTILATOR CONTROL

Filed Aug. 19, 1957

3 Sheets-Sheet 1

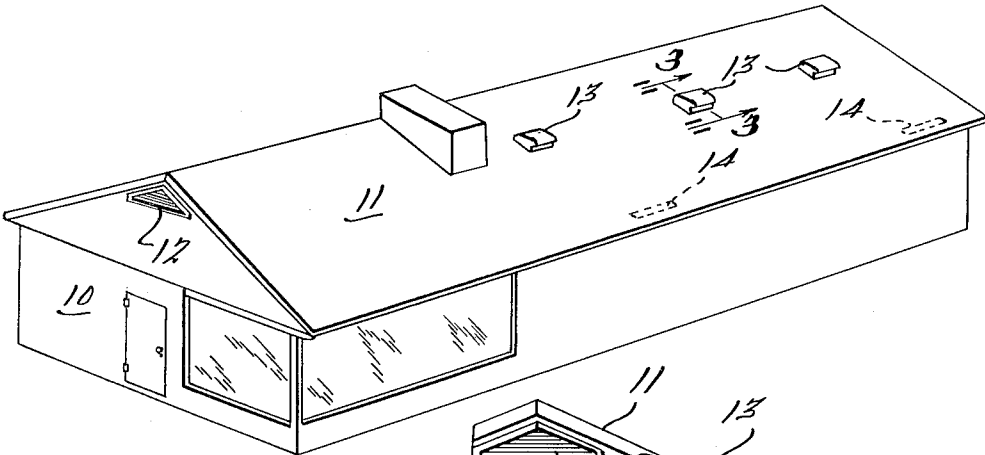


FIG. 1.

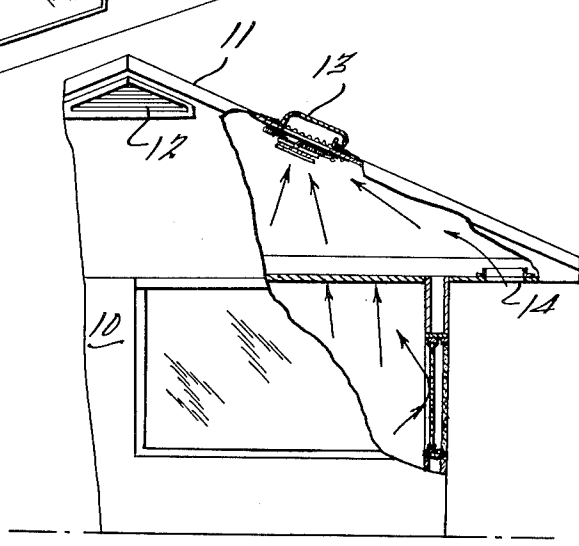


FIG. 2.

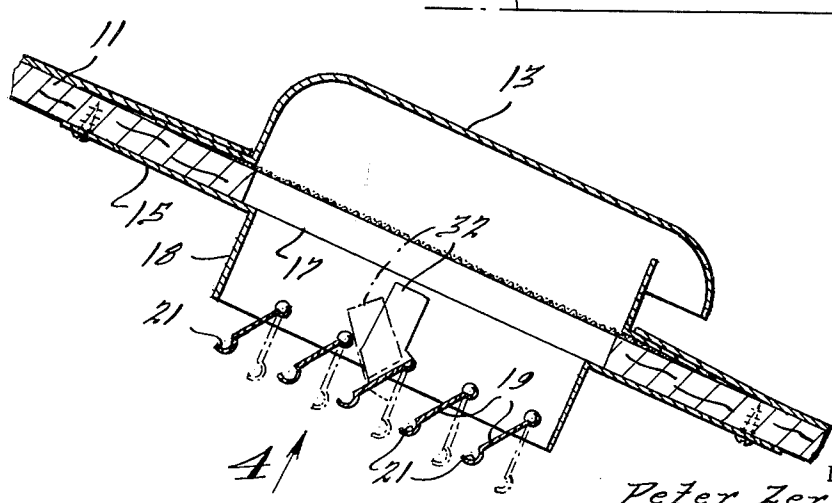


FIG. 3.

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3 Sheets-Sheet 2

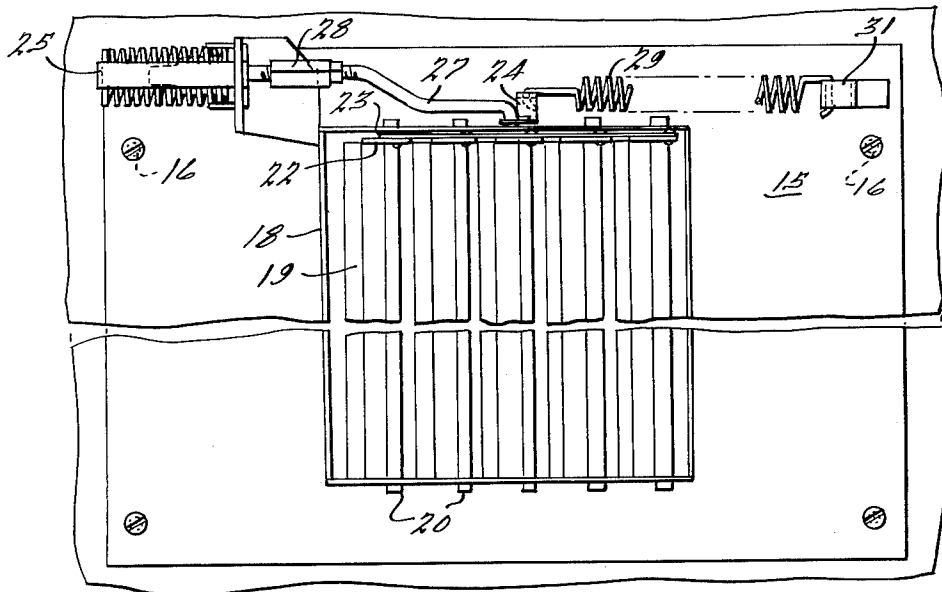


FIG. 4.

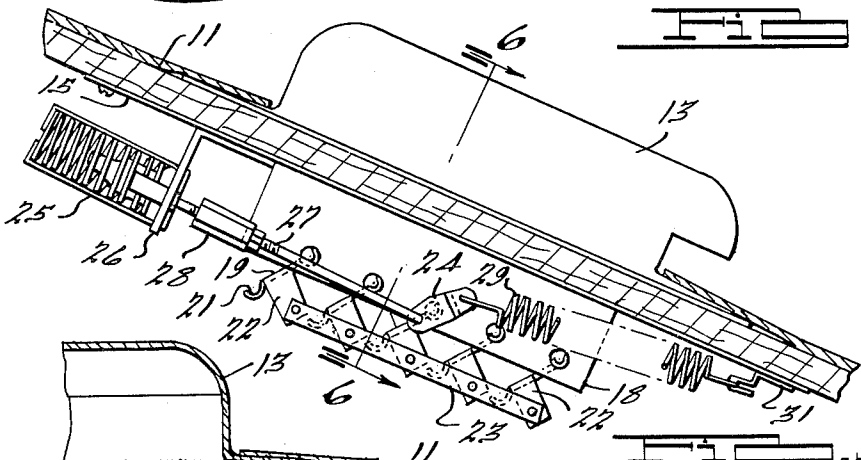


FIG. 5.

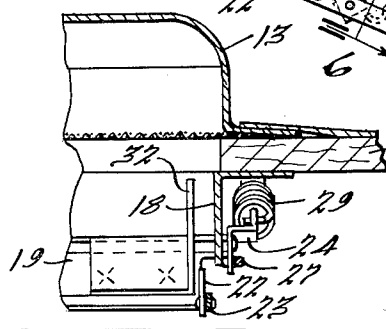


FIG. 6.

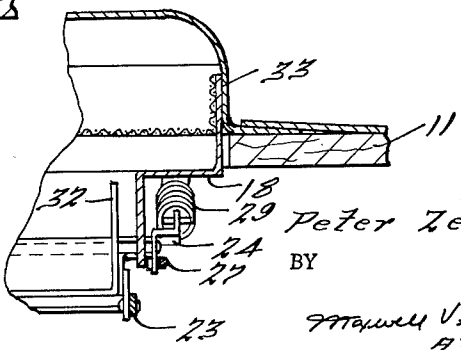


FIG. 7.

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3 Sheets-Sheet 3

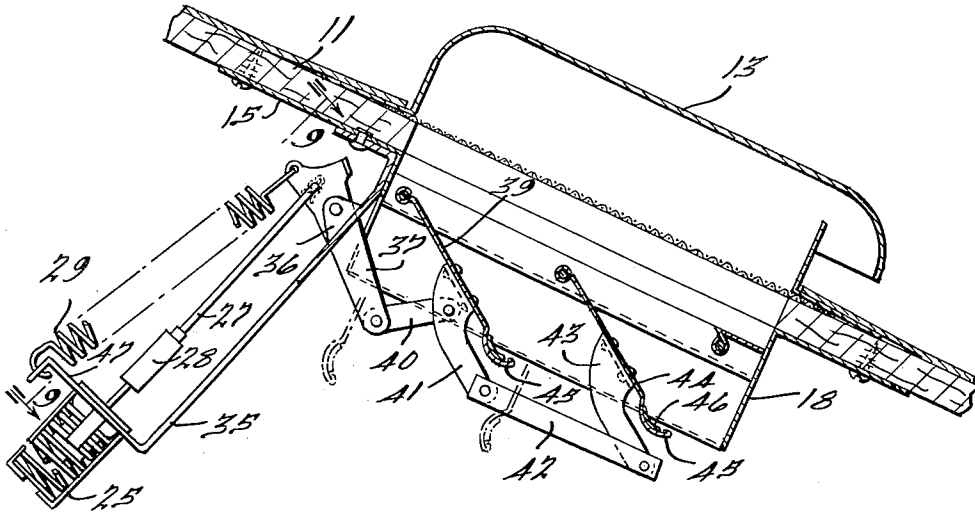


FIG. 8.

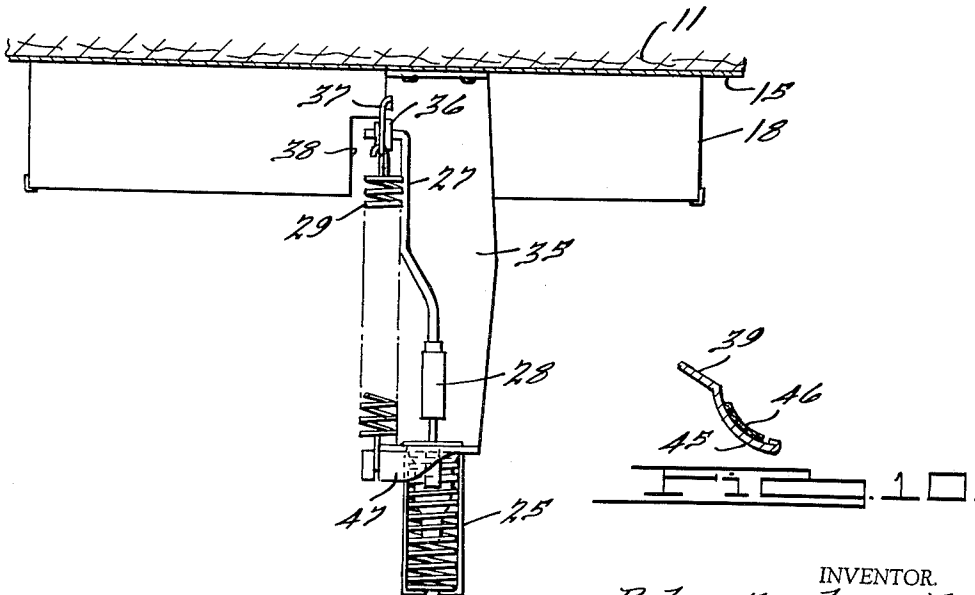
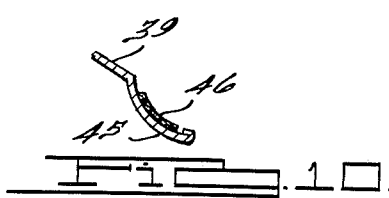


FIG. 9.



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AUTOMATIC ROOF VENTILATOR CONTROL

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2 Claims. (Cl. 236-49)

This invention relates to ventilators, and more particularly to a new and improved ventilator that may be automatically controlled and quickly installed on attic end ventilators, roof ventilators or over the air intake screens in home soffits.

In the past it has been the custom in building of homes to simply provide attic end ventilators that comprise a plurality of angled louvers with a screen back of them—a plurality of roof ventilators which comprise a pipe inserted in the roof proper with a cap thereon and a screen member inserted in said pipe, or a plurality of air intake screens located in the soffit or overhang under the roof which allows air to pass into the attic portion of the building. All of these ventilator members are stationary and have to be baffled during the winter months if the users wish to prevent rain or snow from seeping in and spoiling the insulation laid between the ceiling joists of most attic spaces.

The present invention provides a new and unique automatic roof ventilator that can be quickly installed in a finished home, or may be installed by the builder during the building of a new home. The ventilator is fully automatic and once installed does not have to be adjusted in any way, the same having been set at the time of installation to open or close at a predetermined temperature.

The above and other objects of the invention will appear more fully from the following more detailed description, and from the drawings wherein:

FIG. 1 is a view of a house showing vents installed in the attic end, in the roof and in the soffit.

FIG. 2 is a view, partly in section, showing the device installed under a roof ventilator and above one of the intake screens in the soffit.

FIG. 3 is a section taken substantially on line 3-3 of FIG. 1.

FIG. 4 is a bottom view of the vent taken in the direction of the arrow shown in FIG. 3.

FIG. 5 is a view showing a portion of the roof in section and the vents in side elevation.

FIG. 6 is a section taken substantially on line 6-6 of FIG. 5.

FIG. 7 is a view showing a modification of the device, the automatic vent being assembled in one piece.

FIG. 8 is a longitudinal section of a modified form of the invention.

FIG. 9 is a view taken on line 9-9 of FIG. 8; and

FIG. 10 is a view of the felt padding secured to the shutter bead.

Referring now to the drawings, the numeral 10 designates a house having a roof 11 and the conventional end attic ventilator 12 and a plurality of roof ventilators 13 in said roof 11, and also a plurality of air intake screens 14 which are usually installed in the soffit or overhang of the roof, as shown best in FIG. 2. These ventilator openings have been the standard method of controlling heat in attic areas for various seasonal changes for many years.

The automatic ventilator per se consists of a metal plate member 15 having holes 16 drilled therein to provide means for securing the plate to the underside of a ventilator or screened opening, said plate 15 having a cut-out portion 17, a portion of which is bent outwardly and welded at the corners to form a casement or frame 18, the same being adapted to pivotally receive a plurality

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of shutter members 19, each shutter being mounted upon a rod member 20 and the ends of said rod members 20 being pivotally mounted in opposed sides of casement 18. The lower or leading edge of each shutter 19 has formed therein a longitudinal lip or bead 21 and the shutters are so mounted within casement 18 that when they are in a closed position the longitudinal lip portion of each leading edge nests upon the rod upon which an adjacent shutter is mounted, making a tight close fit. Also each shutter 19 has formed on one end thereof a tab member 22, and each tab member is pivotally connected to a controller bar 23, FIG. 5. One of the shutter rods 20 extends beyond casement 18 and has mounted thereon a rocker arm 24, FIG. 5. To automatically control said shutters 19 there is provided a specialized or conventional bi-metal or thermo-plastic controlled thermostat 25 mounted upon a laterally extending flange member 26 which is supported by said plate 15. Connecting the thermostat 25 and one side of rocker arm 24 there is provided an offset shaft 27 having an adjustment sleeve 28 interposed between the thermostat and shaft 27. Connected to the other side of rocker arm 24 is one end of a spring member 29, the opposite end of said spring member being secured by means of a hanger member 31 secured to plate 15. On the back of one of the shutters 19 there is provided a tab member 32, which acts as a stop to allow the shutters to open but a predetermined distance, FIG. 3.

In FIG. 7 there is disclosed a modified form of the invention. In place of the plate member 15 being secured beneath the already installed vent in a home, the back of casement 18 is formed so that an opposed casement 33 may fit snugly up into the installed vent, or the vent and automatic vent can be made as a complete unit and installed as a unit in a new home, or when remodeling a home.

FIGS. 8, 9 and 10 cover a modified form of the invention wherein the thermostat 25 instead of being mounted on one side of plate 15, and parallel therewith, is mounted within a vertical supporting member 35 and member 35 is mounted vertically upon plate 15 approximately in the center of casement 18. Supporting member 35 has formed thereon a projection 36 and the same has pivotally mounted thereon an arm 37—casement 18 having a portion thereof removed, FIG. 9, as at 38 to allow arm 37 to extend out over the center of shutter member 39. Arm 37 is connected to link member 40 which in turn is pivotally connected to link member 41 which in turn is secured to shutter 39. Link members 41 and 43 being pivotally connected to bar member 42, while one end of link member 43 is secured to shutter 44. Shutters 39 and 44 have the lower edge thereof bent to form a lip portion 45 which has secured thereto felt member 46 to act as a seal when the shutters are closed. The upper end of thermostat shaft 27 engages arm 37 and spring member 29 has one end thereof secured to arm 37 and the other end to thermostat support 47.

The manner in which the device operates is as follows:

The device may be installed in a home having standard ventilators therein by simply attaching plate 15 of the device to supports placed back of one side of attic ventilators or to supports placed beneath roof ventilators or above the intake screens found in the soffit of most homes having an overhanging roof portion. The above mentioned types of ventilators have screens therein as standard equipment. Once the instant automatic ventilator has been attached in alignment with the standard end or roof ventilator, the device is ready to automatically operate. As an illustrative example, if the device is mounted beneath a roof ventilator in a house attic, the bi-metal or thermo-plastic controlled thermostat controller unit 25 is suspended in the attic air. It is set at the factory to

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be fully open and closed at predetermined temperatures. Depending on location of the country where they are used, with the instant device it has proven satisfactory to have the thermostat, as an example, set to be fully open when the temperature in the attic space reaches 75° F., and to be fully closed when it drops to 50° F. As the outside temperature becomes warm, radiant heat warms the attic space through the end ventilators, roof ventilators or soffit openings. When the temperature surrounding the thermostat controller unit reaches above 50° F., the thermostat actuates offset shaft 27 so that it moves upwardly, which movement is imparted to rocker arm 24, which in turn is pivotally supported upon one end of shutter shaft 34. As rocker arm 24 is tilted upwardly, this movement is imparted to all of shutters 19 inasmuch as they are all connected together by means of shutter control bar 23. The shutters will continue to open until they are prevented from opening farther by means of stop 32 secured to the back of one of said shutter members 19. With the shutters in a fully opened position, the warm air in the attic space is allowed to pass on out and will continue to do so just so long as the temperature remains at 75° F., or above. After sundown, or as the air becomes cool and the temperature drops to 75° F., or below, the bi-metal or thermo-plastic controlled thermostat will automatically initiate closing shutters 19, the action of shaft 27 being to retract and pull downwardly on rocker arm 24. At the same time spring member 29, secured to the other side of rocker arm 24, tends to pull upwardly and force shutters 19 into sealed relationship with each other, each lip portion 21 formed on the lower edge of each shutter member nesting over the shutter rod 20 of the shutter directly below when the thermostat is fully closed in 50° F. or lower temperature. The shutter members will then remain sealed and closed shutting out the cold air from the attic space until the outside air again becomes warm and reaches at least 50° F. It will thus be seen that the device is fully automatic, and once it is installed the user can forget it. As above described, the operation of the thermostat is gradual, that is, the shutters gradually open when temperature rises from below 50° F. to above 75° F., and gradually close when the temperature falls from above 75° F. to below 50° F. However, if so preferred, a snap-action thermostat may be used to instantly open the shutters when temperature reaches 75° F. and to instantly close them when temperature falls to 50° F.

Although the device as shown in FIGS. 8 and 9 operates the same as the device disclosed in FIGS. 1 through 7, in this modified form of the invention the thermostat is mounted vertically upon the base supporting the casement and instead of operating the shutters from linkage secured to one end of each shutter, the supporting member holding the thermostat extends out vertically above the casement approximately in the center of same and the links used to open and shut the shutters are secured to the center of each shutter. As rod member 27 is pulled upwardly by action of the thermostat, arm 37 is tilted upwardly which movement is imparted to link mechanism 40, 41, 42 and 43 forcing each shutter to close, while spring member 29 aids in completing the shutter to shutter seal with felt members 46 completing the operation.

There has been disclosed herein a new and improved fully automatic ventilator that can be either owner or builder installed and will truly solve the heat loss found in homes where conventional ventilators only have been installed. Even with insulation between the joists above

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the lower rooms of a home, there is still a terrific heat loss where warm and cold air is allowed to continually pass through an attic crawl space and is not checked in any way. Experimentation has proven that with the instant device installed in a home, heating bills have been greatly reduced and storm windows are more efficient in their operation. It has also been proven that with the instant device installed where hot air is allowed to pass out of the attic space during hot summer days, the lower portion of the home is much cooler than homes using conventional ventilators.

While the instant disclosure shows the automatic ventilator in use in a home, it is to be thoroughly understood that the invention is not limited to home use, but the ventilator may be used anywhere where heat and cold is to be controlled automatically by means of automatically controlled shutters or the like.

While I have described and illustrated a satisfactory device that has proven highly successful in practical operation, it will be understood that the invention is not limited to specific constructional details shown and described, but that many changes, variations and modifications may be resorted to without departing from the principles of my invention.

I claim:

1. A self-contained automatic ventilator, comprising in combination a mounting plate provided with an opening, a casement provided on said plate at the edges of said opening, a plurality of swingable shutter members pivotally mounted in said casement for opening and closing movement, a plurality of actuating tabs provided respectively on the shutter members, a bar member having said tabs pivoted thereto whereby said shutter members may be selectively opened and closed in unison, a bracket provided on said mounting plate exteriorly of said casement, an expansible and contractable self-contained temperature-responsive element carried by said bracket, a reciprocable shaft actuated by said element, an arm swingably mounted on said bracket and having said shaft pivotally connected thereto, means operatively connecting said arm to one of said tabs for opening and closing the shutter members in response to expansion and contraction of said element, respectively, a coil spring connected at one end thereof to said bracket and at its other end to said arm for urging the shutter members to their closed position, and means provided on said shaft for varying the length thereof.

2. The device as defined in claim 1 wherein said means operatively connecting said arm to one of said tabs comprise a link pivoted at one end thereof to said arm and pivoted at its other end to one of said actuating tabs.

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