Feb. 1, 1966 A. D. BUMSTEAD 3,232,205

ATTIC VENTILATING SYSTEM WITH COVER MEANS

Filed April 24, 1964

FIG-1

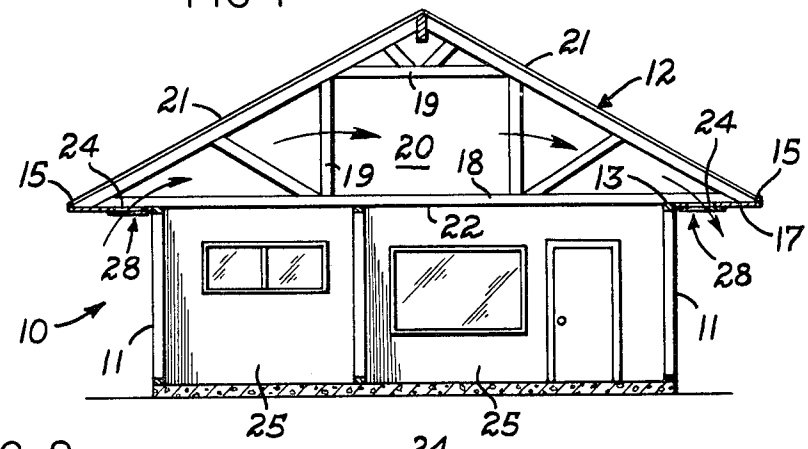


FIG-2

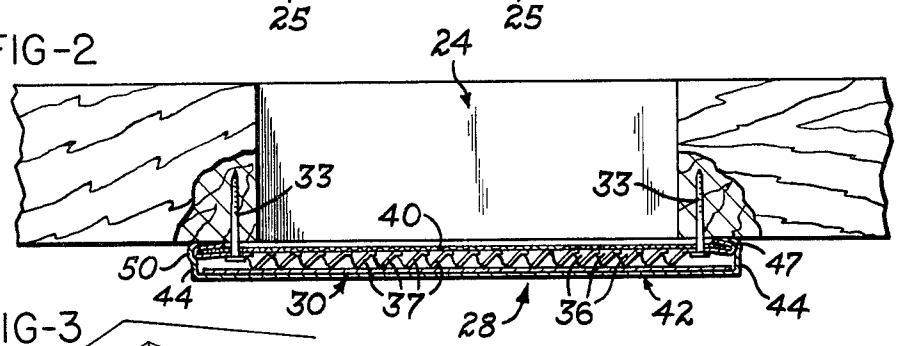


FIG-3

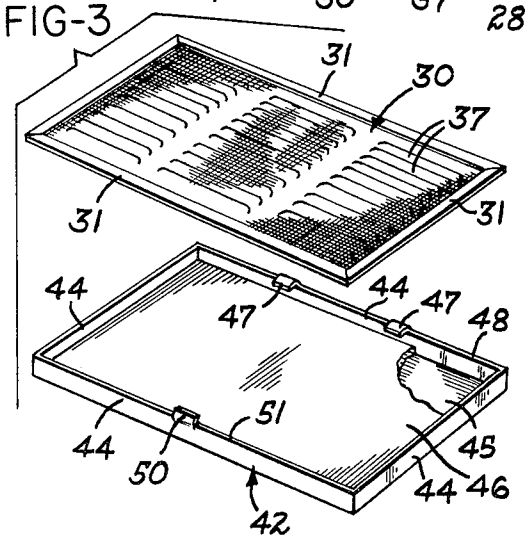


FIG-4

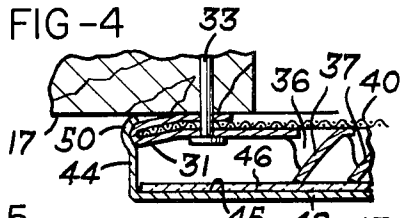
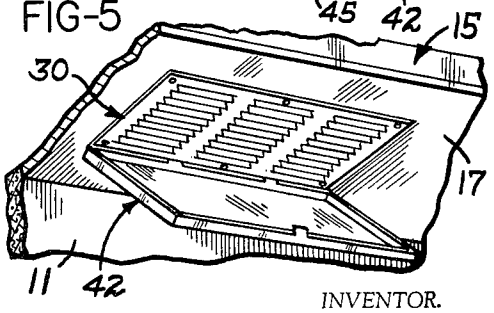


FIG-5



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ATTIC VENTILATING SYSTEM WITH COVER MEANS

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This invention relates to a system for controlling the flow of outside air through an attic space, and particularly for removing heat from this space in the summer while retaining heat therein in the winter.

A large percentage of modern homes and other buildings include the usual vertical side walls which have a roof supported thereon and projecting horizontally beyond the side walls so that an overhang is created. In order to ventilate the attic space during the summer months, openings are provided to this space through the horizontal surface beneath the overhangs so that even a slight breeze will force cooler fresh air into the openings in one side of the house thereby causing a similar amount of hot stale air to flow from the attic space through the openings in the other side. This action thus reduces the temperature within the attic space and a corresponding change is also effected within the living areas of the house to increase the comfort of the occupants.

However, during the winter months the above system works to the disadvantage of the home owner since it removes heated air from the attic space and thus tends to cool the house. That is, the heat within the occupied spaces rises through the ceiling and gradually passes into the attic space wherein it is quickly removed by the continuous flow of outside air therethrough. The result is a substantial increase in the heating cost of the home owner since, in effect, the ceiling is exposed to the outside air.

Accordingly, it is an important object of the invention to provide an attic space ventilating system which is free of the above disadvantages without losing the advantages which occur during the warmer summer months, and particularly to provide such a system which exhausts the heat from the attic space during the summer while retaining it during the winter.

Another object of this invention is to provide a system of the aforesaid type which opens the attic space during the summer months and seals it during the winter period, and particularly to provide a system which is easily adapted for use on existing homes by the home owner in minimum time without the use of tools.

A further object of this invention is to provide the aforesaid system with structure that is simple in design and dependable in performance as well as which is inexpensive in cost, and further to provide a closure member which is easily secured to and removed from standard louvered ventilator grills which are used to cover the ventilator in the roof overhangs.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claims.

In the drawings:

FIG. 1 is a vertical section view taken centrally through a typical home using the invention;

FIG. 2 is an enlarged fragmentary sectional view of one of the inlet openings to the attic space;

FIG. 3 is an exploded view of the ventilation assembly;

FIG. 4 is an enlarged fragmentary sectional view of one edge portion of the ventilation assembly; and

FIG. 5 is a perspective view showing the ventilation assembly in the process of being disassembled.

Referring to the drawings wherein a preferred embodiment of the invention is shown, FIG. 1 illustrates a typical building structure 10, an attic space ventilating system in accordance with this invention. In particular, this structure may be a small home having the vertical side walls 11 which support the roof assembly 12 on the upper edges 13 thereof. The roof assembly 12 extends horizontally beyond the side walls 11 so that an overhang 15 is created on opposite sides of the house, and each of these overhangs has a lower horizontal surface 17 thereunder. The interior of the roof assembly 12 has a plurality of rafters 18 and braces 19 in the usual manner, and the surrounding space is open and defines attic space 20 generally between the sloping roof 21 and the ceiling 22.

A plurality of openings 24 are provided through each of the horizontal surfaces 17 on opposite sides of the house 10 so that the flow of air in the atmosphere around the house causes air to flow into the openings 24 on one side of the house, through the attic space 20, and out through the openings 24 on the opposite side. In practice, there usually are a large number of openings along each of the overhangs so that there is uniform flow through the entire attic space 20, and in some house designs there are overhangs 17 on all four sides so that the air flows through the attic space 20 in more than one direction.

As indicated above, the flow of outside air through the attic space 20 is highly desirable during the summer months when the hot sun shines on the roof 21 and heats the air within the attic space. If this heated air is not removed, it gradually transfers some of the heat to the ceiling 22 and into the living spaces 25 of the house thus decreasing the comfort of the occupants. With this ventilation system there is a continuous flow of air through the attic space 20, and as a result, the temperature therein is always substantially equal to the outside air temperature. This is particularly important during the evening and nights of the summer months, since when the sun goes down the attic space is quickly cooled to the temperature of the outside air, and residual heat therein is thus eliminated and the temperature of the living spaces 25 correspondingly decreases.

As shown in FIG. 2, each of the openings 24 has a ventilation assembly 28 secured adjacent the lower opening thereof for the purposes to be explained. These ventilation assemblies include a rectangular frame 30 which has an outer configuration and size slightly larger than the opening 24 so that the peripheral edges 31 thereof can be secured to the horizontal surface 17 by the nails 33 or other conventional fastening means to thus completely cover the associated opening 4. The frame 30 is constructed of light weight sheet metal having the four edges 31 thereof bent over as shown in FIGS. 2 and 4 to eliminate any sharp edges and strengthen the assembly. The inner portion of the frame 30 has a plurality of aligned parallel louvered openings 36 formed by punching the downwardly extending louvers 37 therefrom in a conventional manner. Thus as shown in FIG. 5, there are three rows of the louvers 37 which allow a substantial flow of air therethrough while retaining rigidity for the frame 30. A fine mesh screen 40 is secured to the frame 30 immediately above the louvers 37, and this screen is clamped in place by the bent over edges 31 of the frame which extend over the edges of the screen. The screen 40 prevents the passage of insects and other foreign elements into the opening 24 and the attic space 20.

An important part of this invention lies in the rectangular cover or closures 42 which is utilized to seal the openings 24 during the winter months. The closure has a configuration similar to the frame although it is slightly larger in size, and along the side walls 44 are formed the four edges which have a depth equal to the thickness of the frame 31, including the louvers 37, so that the cover will enclose the frame 30. The inner surface 45 of the cover 42 has a resilient pad 46 therein for the

purpose of engaging the lowermost portions of the louvers 37 and to eliminate any noise or rattling that otherwise could occur.

The cover 42 is secured in place on the frame 30 by inserting the two inwardly extending projections 47 on the uppermost edge 48 of the rear wall 44 between the edge 31 of the frame 30 and the surface 17 of the overhang 15, as shown in FIGS. 2, 4 and 5. The cover is then pivoted upwardly about these projections so that the short clamp 50 on the upper edge 51 of the opposite side wall 44 snaps past the adjacent side edge 31 of the frame 30 thus locking the cover 42 in place on the frame 30. The cover 42 snaps easily into place since the wall 44 on which the projections 47 and clamp 50 are integrally formed of sheet metal and thus are somewhat resilient so that the application of a slight amount of force will engage or remove the cover 42. The projections 47 may be easily slipped between the edge 31 and the surface 17 due to their relatively thin thickness and the resilience of the frame 30. The uppermost edges of the walls 44 are in contact with the horizontal surface 17 or at least in close proximity thereto so that the flow of air through the associated opening 24 is substantially blocked when the cover 42 is in place.

A cover 30 is secured in place on each frame 30 during the winter months, so that the usual flow of air through the attic space is eliminated. As a result, the heat from the furnace and the living space 25 of the house 10 passes through the ceiling 22 and into the attic space 20, and then very slowly through the roof 21 to the atmosphere rather than being removed quickly through the openings 24. The gradual dissipation of the heat through the ceiling 22 and the roof 21 is much slower than that which exists when the covers are not in place so that the home owner finds that the living spaces in the home are generally warmer and that the heating bill is substantially reduced.

The covers 42 are easily mounted in place during the fall, and they are simiarly removed during the spring without the use of tools, other than perhaps a screwdriver. The home owner himself can easily snap these covers in place and remove them so that, other than an initial relatively low cost for the covers, there is no expense to the home owner to operate the system and it has been found that the savings in the heating bill in the first year may well more than pay for the cost of the covers.

While the form of apparatus herein described constitutes a preferred embodiment of the invention it is to be understood that this invention is not limited to this precise form of apparatus and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed:

1. A ventilating system for the continuous circulation of air through attic space of a building during the summer months and for sealing the attic space during the winter, the building including vertical side walls and a roof supported on and overhanging the side walls on at least two opposite sides of the building to provide a generally horizontal surface between the edge of the roof and the adjacent side walls, said system comprising means defining a plurality of openings in said horizontal surfaces connected to the attic space for air flow between the exterior of the building and the attic space, a protective screen member secured over each of said openings, said screen member including a rectangular sheet metal frame having a plurality of parallel louvers cut therein and having edges which extend downwardly therefrom for free flow of air between said louvers, said screen members having an outer configuration similar to but larger than each of said openings, means for securing one of said frames to said horizontal surface to cover each of said openings, a fine mesh screen on said frame between said louvers and said opening to block the passage of insects and foreign objects into the attic space, said frame having its peripheral edges bent over to clamp the screen in place, a rectangular cover for each said frame corresponding in size to said frame and having a flat central surface with side walls which extend perpendicularly therefrom around the entire periphery of said central surface a distance equal to the thickness of said frame member, a pair of inwardly extending projections on the edge of one of said side walls for insertion between said bent over edges of said frame and the adjacent horizontal surface, a resilient clamp on the edge of another of said side walls opposite said one side wall adapted to grasp the adjacent edge of said frame to hold said covers on said frames to seal said openings and reduce the flow of heat outwardly from said attic space, and a resilient pad disposed snugly between said edges of said louvers and said central surface to seal the openings between said louvers and eliminate rattling of said covers.

2. A ventilating system for the continuous circulation of air through attic space of a building during the summer months and for sealing the attic space during the winter, the building including vertical side walls and a roof supported on and overhanging the side walls on at least two opposite sides of the building to provide a generally horizontal surface between the edge of the roof and the adjacent side walls, said system comprising means defining a plurality of openings in said horizontal surfaces connected to the attic space for air flow between the exterior of the building and the attic space, a protective screen member secured over each of said openings, said screen member including a rectangular sheet metal frame having a plurality of parallel louvers cut therein and having edges which extend downwardly therefrom for free flow of air between said louvers, said screen members having an outer configuration similar to but larger than each of said openings, means for securing one of said frames to said horizontal surface to cover each of said openings, a fine mesh screen on said frame between said louvers and said opening to block the passage of insects and foreign objects into the attic space, said frame having its peripheral edges bent over to clamp the screen in place, a rectangular cover for each said frame corresponding in size to said frame and having a flat central surface with side walls which extend perpendicularly therefrom around the entire periphery of said central surface a distance equal to the thickness of said frame member, a pair of inwardly extending projections on the edge of one of said side walls for insertion between said bent over edges of said frame and the adjacent horizontal surface, and a resilient clamp on the edge of another of said side walls opposite said one side wall adapted to grasp the adjacent edge of said frame to hold said covers on said frames to seal said openings and reduce the flow of heat outwardly from said attic space.

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