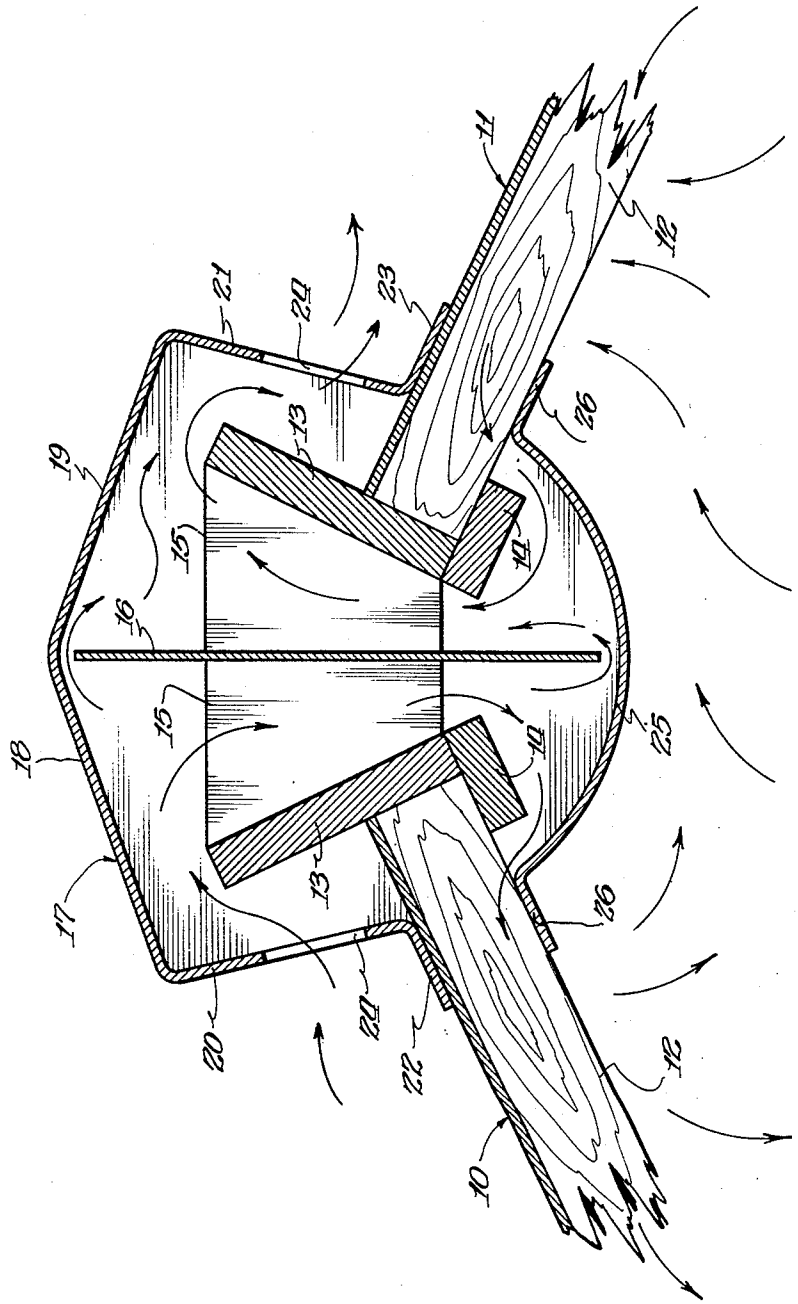
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ROOF STRUCTURE

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ROOF STRUCTURE

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6 Claims. (Cl. 98—42)

My invention relates to roof structures and particularly to the arrangement at the middle portion or ridge of a double sloped roof. It is the object of my invention to provide an improved arrangement in connection with a roof of this type whereby improved ventilation of the building may be effected.

As will be readily understood, in a factory in which a considerable number of men are working, it is quite necessary that there shall be thorough ventilation extending to all parts of the room so as to leave no so-called dead spaces, it being much more important that the ventilation effect shall extend through a wide zone to all parts of the room than that there shall be an extensive change of air at any particular point. An extensive spread of the ventilation effect is also very important in highly insulated buildings where a change of air is required in many instances for preventing condensation such as would cause the accumulation of objectionable amounts of water at points where no provision can be made conveniently for carrying the water away.

It is the principal object of my invention to provide an improved arrangement by which a widely spread ventilation effect shall be produced. To this end, it is the object of my invention to provide a ventilation opening extending lengthwise with respect to the building and preferably extending the full length of the building, along with means effective for causing air to enter through such opening so as to be distributed throughout the entire space underneath the roof. It is another object of my invention to provide an improved arrangement of this type by reason of which a wind from either side of the roof shall be effective for assisting in the desired movement of the air within the building. It has been one of the objects of my invention to provide an improved arrangement of this type in which a housing extending along the full length of the roof at the ridge and divided more or less completely into two parts by an intermediate baffle causes at least a part of the air which blows in at either side at substantially all points along said housing to pass downwardly into the building and substantially to the bottom of the space below the roof and thence across to the other side of said space and up and out at said other side of the housing.

It is another object of my invention to provide an improved arrangement of means for taking care of any water dripping from the ridge structure, such water handling means comprising preferably a trough or gutter extending across underneath the intermediate baffle so as to be of assistance in causing a portion of the air entering at one side of the housing to pass directly out at the opposite side of the housing so as to produce more or less of a suction effect throughout the entire space regardless of the normal sweep of the air currents through the space covered by the roof.

It is another object of my invention to improve devices of this type in sundry details hereinafter pointed out. The preferred means by which I have accomplished my several objects are illustrated in the drawing and are hereinafter specifically described. That which I believe to be new and desire to cover by Letters Patent is set forth in the claims.

The figure of the drawing is a vertical cross sectional view through the preferred form of my improved ridge structure.

Referring now to the drawing, 10 and 11 indicate two roof sections in oppositely inclined position with respect to each other with their upper edge portions in spaced relation to each other. In the arrangement shown, each of the roof sections is shown diagrammatically as comprising rafters 12 with any suitable type of roofing thereon. In that arrangement, the rafters 12 are connected at their upper ends with plates 13 reinforced along their lower edges by plates 14 at right angles thereto, the plates 13 being in downwardly convergent position with respect to each other and being connected together at intervals therealong by filler plates 15, the box-like structure comprising the plates 13, 14 and 15 being of sufficient strength to afford the required support for the roof sections at the peak of the roof.

Between the plates 13 and 14 in spaced relation to each, I have provided a vertically disposed baffle plate 16. In the arrangement illustrated, the plates 13 extend some little distance above the upper faces of the roof sections, and the baffle plate 16 extends some little distance both above and below the filler plates 15. Above the baffle 16 in position to cover the opening between the roof sections, there is a housing member 17 formed of sheet metal bent into shape to provide top sections 18 and 19, side sections 20 and 21, and attaching flange portions 22 and 23 which are secured in any suitable way to the roof sections in outwardly spaced relation to the plates 13 and 14. The side portions 20 and 21 of the housing are provided with openings 24 therethrough which in the arrangement shown are of such size as to permit large quantities of air to pass therethrough into or out of the housing. In the arrangement shown, the baffle 16 is spaced downwardly a short

distance from the wall of the housing at the top thereof so as to permit free movement of a limited amount of air between the upper edge of the baffle and the wall. Below the baffle 16 in spaced relation thereto, I have provided a trough or gutter 25 formed of sheet metal and secured in position in the arrangement shown by means of flanges 26 secured to the undersurfaces of the rafters 12. The trough 25 is of such size and so arranged as to enable it to catch any water dripping from the plates 13 or 14 or from the baffle 16, being preferably inclined slightly from one or both of the ends of the building so as to carry the water away.

With the wind blowing from the left in the drawing, air is caused to enter through the openings 24 in the side member 20 of the housing, such air being caused to divide into a plurality of streams flowing along different paths, as is indicated in part by the arrows. A part of this air passes over the top edge of the baffle and out through the openings 24 at the opposite side, the other part of such entering air being caused to pass downwardly between the plate 13 and the baffle 16. Such downwardly directed air in turn is caused to divide, a part of such air passing downwardly about the bottom edge of the baffle 16, and the remainder being turned abruptly toward the left by the influence of the trough 25 so as to pass downwardly along the inner face of the roof section 10. Such air passing downwardly and toward one side of the building normally continues its movement to the side of the building where it is turned downwardly toward the floor. At about the floor level, the air is caused to turn toward the opposite side, passing across the room and up at the opposite side of the room to the roof by which it is directed inwardly to the centrally located housing and thence upwardly between the plate 14 and the baffle 16 for escape through the openings 24 at the right of the housing. The stream of air as above described serves thus to change the air through a very wide zone of influence, the change, of course, being very slow and very gradual. At the same time, the passage of the air serves to cause additional air to flow out at the low pressure side of the housing, the stream of air having a slight suction effect upon the entire space underneath the roof.

As will be readily understood, when the wind is from the opposite direction the result is just reversed from that above indicated. When there is no wind effect from either side, the heated air rising within the building is caused to escape through the openings 24 at one or both sides of the housing, serving to cause fresh air to enter for insuring a moderate ventilation effect even when there is little or no wind.

I have found in practice that my improved construction is effective for ventilation at points where a change of air is desired, as in a factory. I have found that my improved arrangement is effective for causing sufficient movement of the air to prevent objectionable condensation such as would otherwise cause an accumulation of water on the walls where it is practically impossible to provide for carrying the water away.

While I prefer to employ the arrangement as shown in my drawing and as above described, it is to be understood that my invention is not limited to the form and arrangement shown except so far as the claims may be so limited, it being understood that changes might well be made without departing from my invention.

I claim:—

1. In a roof structure, the combination of two sections of roof having their edges in spaced relation opposite to each other, a housing formed of sheet metal with its top wall portion supported in elevated position by side sections secured at their lower edges to said roof sections, and a baffle secured in position independently of said housing extending downwardly between said roof sections in spaced relation thereto so as to provide passageways between the baffle and both of said roof sections, said housing being provided with openings thereinto at both sides at points below the level of the upper edge of the baffle adapted to admit air at one side so as to pass downwardly about the lower edge of the baffle and then upwardly and out at the opposite side.

2. In a roof structure, the combination of two sections of roof having their edges in spaced relation opposite to each other, a baffle between said roof sections in spaced relation thereto so as to provide passageways between the baffle and both of said roof sections, and a housing extending over the baffle from one roof section to the other in upwardly spaced relation to the baffle so as to provide a passageway between the upper edge of the baffle and the housing of substantially smaller effective size than either of the openings between the baffle and the roof sections and having openings thereinto at both sides so as to cause a stream of air flowing in at one side to divide and pass partly above and partly below the baffle and out at the opposite side.

3. In a roof structure, the combination of two sections of roof having their edges in spaced relation opposite to each other, a baffle between said roof sections in spaced relation thereto so as to provide passageways between the baffle and both of said roof sections, a housing extending over the baffle from one roof section to the other and having openings thereinto at both sides so as to cause a stream of air blowing in at one side to pass downwardly into the space covered by the roof and then upwardly and out at the opposite side of said baffle, and means directly below the opening between the roof sections adjacent to the lower edge of the baffle and extending upwardly and outwardly for causing a portion of the air passing downwardly between the baffle and a roof section to move outwardly substantially along the inner face of said roof section for exerting a ventilation effect at the side of the room.

4. In a roof structure, the combination of two sections of roof having their edges in spaced relation opposite to each other, a baffle between said roof sections in spaced relation thereto so as to provide passageways between the baffle and both of said roof sections, a housing extending over the baffle from one roof section to the other and having openings thereinto at both sides so as to cause a stream of air blowing in at one side to pass downwardly into the space covered by the roof and then upwardly and out at the opposite side of said baffle, and means extending across underneath said opening between the roof sections in downwardly spaced relation to said baffle in position to cause air passing downwardly along one face of said baffle to be directed back therefrom for passage upwardly and out along the opposite face of said baffle.

5. In a roof structure, the combination of two sections of roof having their edges in spaced relation opposite to each other, a baffle between said

roof sections in spaced relation thereto so as to provide passageways between the baffle and both of said roof sections, a housing extending over the baffle from one roof section to the other and having openings thereinto at both sides so as to cause a stream of air blowing in at one side to pass downwardly into the space covered by the roof and then upwardly and out at the opposite side of said baffle, and a trough extending across underneath said opening between the roof sections in downwardly spaced relation to said baffle in position to catch and carry away any water dripping through said opening and to cause air passing downwardly along one face of said baffle to be directed back therefrom for passage upwardly and out along the opposite face of the baffle and having its upper edge portions positioned to extend upwardly and outwardly for causing a portion of the air passing downwardly between the baffle and a roof section to move outwardly substantially along the inner face of said roof section for exerting a ventilation effect at the side of the room.

6. In a roof structure, the combination of two sections of roof in oppositely inclined relation to each other and having their upper edges in spaced relation to each other, a box-like structure about the opening between the roof sections serving as the lateral support for said roof sections at the peak of the roof and extending upwardly along its sides beyond the upper faces of the roof sections, a baffle secured in said box-like structure in substantially vertical position therein midway between the sides of the box-like structure so as to provide passageways for air either upwardly or downwardly along opposite faces of the baffle, and a housing over the baffle with openings thereinto at opposite sides below the level of the upper edges of the side plates of said box-like structure so as to cause air blowing in at one side to pass by a circuitous path upwardly about the upper edge of the adjacent side plate and then downwardly between the side plate and the baffle.

RAYMOND M. CALKINS.