Jan. 15, 1957 E. F. NOYES ET AL 2,777,381

ROOF VENTILATING DEVICES

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FIG. 1

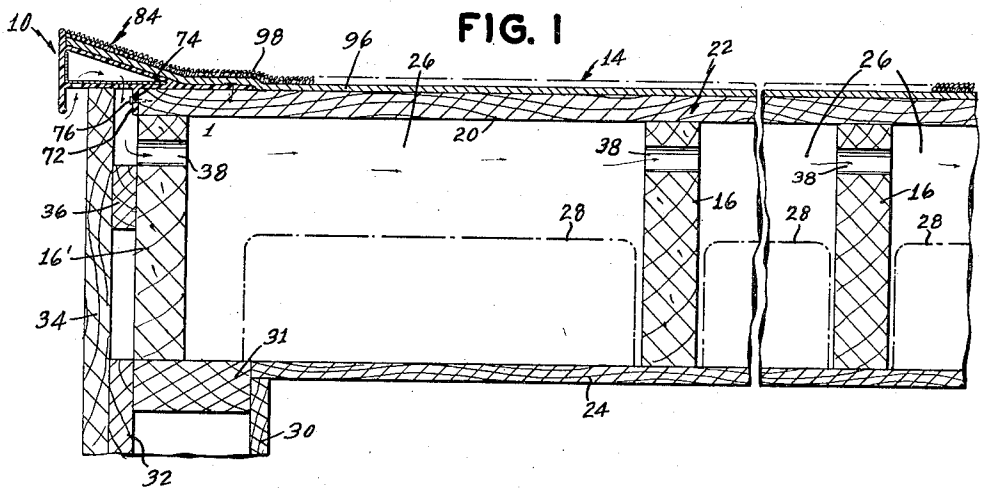


FIG. 4

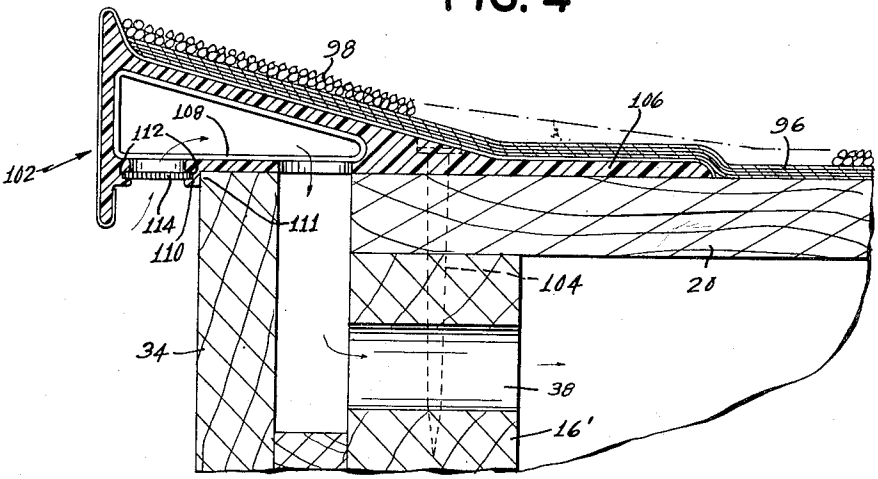
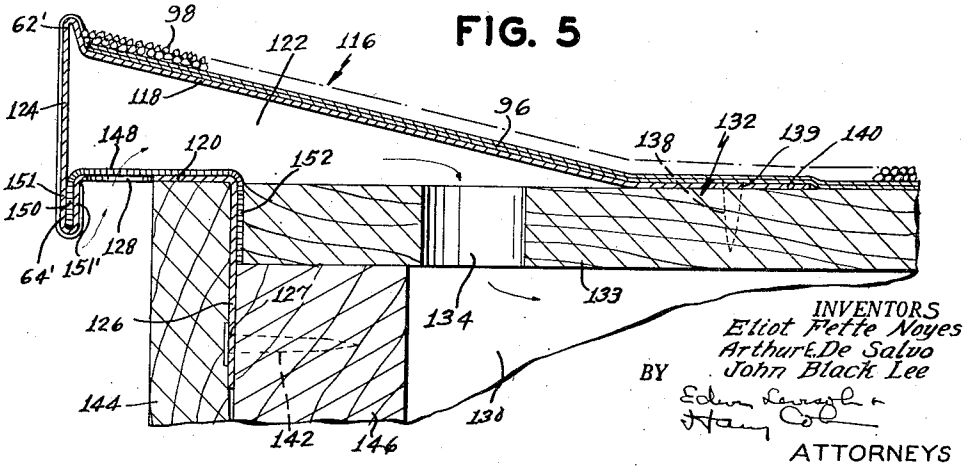


FIG. 5



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FIG. 2

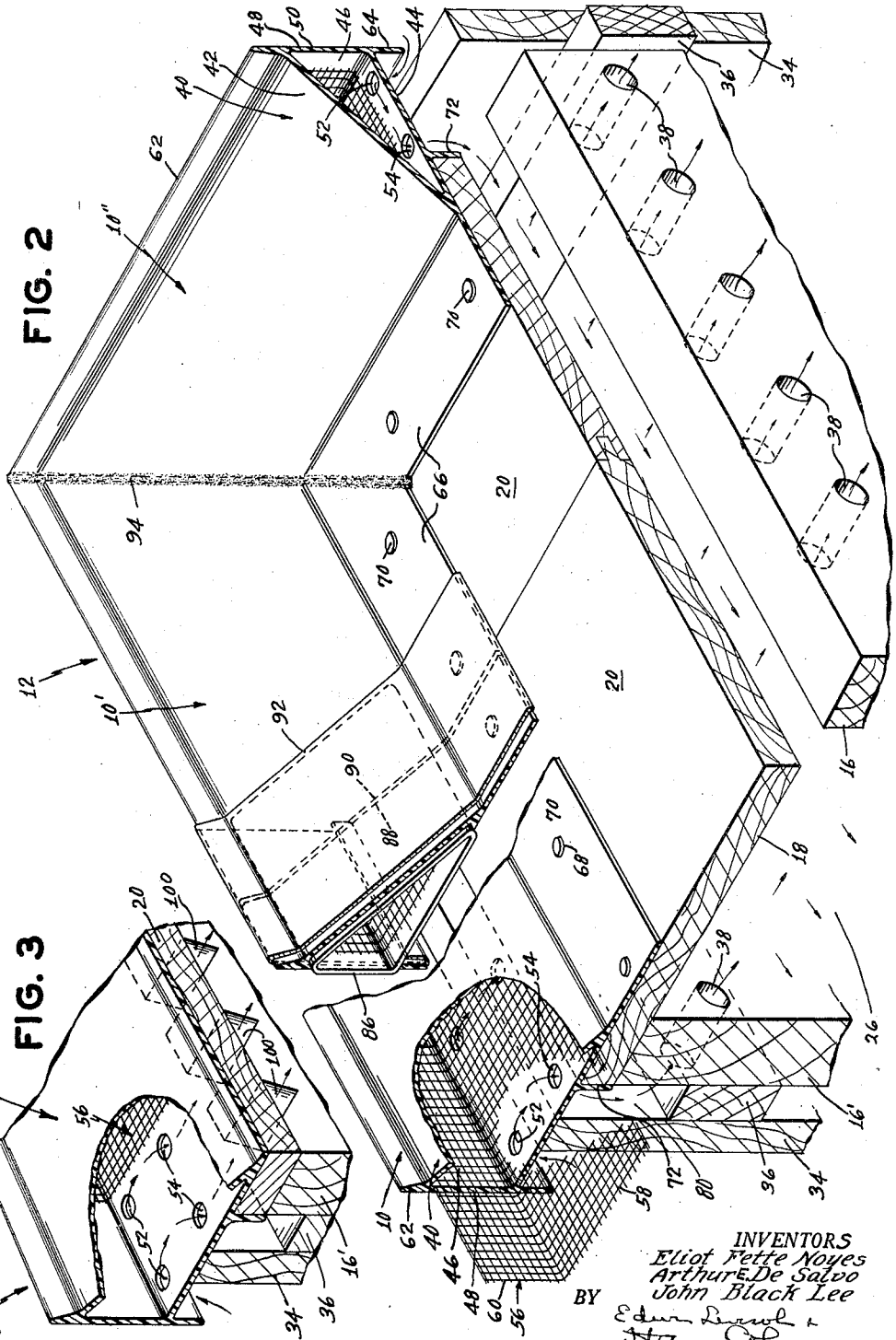


FIG. 3

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ROOF VENTILATING DEVICES

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10 Claims. (Cl. 98—37)

This invention relates generally to a roof ventilating device and, more particularly, to a roof ventilating device for a flat roofed building or for a building without an attic.

One object of the present invention is the provision of a roof ventilating device for ventilating the air space disposed below the roof of a building, said device being effective to prevent the formation of moisture in said air space.

Another object of the present invention is the provision of a roof ventilating device of the above character which functions as a gravel stop and finishing structure for the roof edge.

Another object of the present invention is the provision of a roof ventilating device of the above character which provides air flow to the air space defined below the roof of a building from the atmosphere free of insects and foreign matter.

Yet another object of the present invention is the provision of lengths of roof ventilating devices of the above character which are adapted to be interconnected to each other in fluid-tight relation to define a finished roof edge, said devices being of simple design and construction, economical to manufacture and highly efficient in the accomplishment of their intended purposes.

The above and other objects, features and advantages of the present invention will be more fully understood from the following description considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best modes now contemplated by me for carrying out my invention:

Fig. 1 is a sectional side elevational view of a fragmentary portion of a building roof;

Fig. 2 is a sectional perspective view of a corner of a roof with parts broken away to reveal structural details;

Fig. 3 is a sectional perspective view of a fragmentary portion of a roof pursuant to a slightly modified form of the present invention with parts broken away to reveal structural details;

Fig. 4 is a sectional side elevational view of a fragmentary portion of a roof according to another modified form of the present invention; and

Fig. 5 is a view similar to Fig. 4 of yet another modified form of the present invention.

Referring to the drawings and, more particularly, to Figs. 1 and 2 thereof, there are shown lengths of roof ventilating devices **10** secured to the building **12** in the manner to be described in detail hereinafter, said lengths of roof ventilating devices being secured to each other in end-to-end relation to define the finished roof edge of the building. The building **12** is provided with a generally flat roof **14** and said building may be of any conventional design and construction. The building **12** illustrated in Figs. 1 and 2 comprises a series of laterally spaced and longitudinally extending headers or roof supports **16** which are secured to the lower faces **18** of the roofing boards **20**, said roofing boards being connected to each other in any conventional manner to collectively define the base structure **22** of the roof **14**. The ceiling panel **24** is secured to a series of headers **16** in spaced disposition from the roofing boards **20** and suitably disposed in the air space **26** defined between the roofing boards **20** and the ceiling panel **24** are bags of insulation material **28** schematically indicated in Fig. 1. The inner wall **30** is suitably integrated with the ceiling panel **24** and the member **31**, there being provided sheathing **32** in laterally spaced relation with the inner wall **30** with the member **31** transversely extending therebetween. The siding **34** which constitutes an external building wall is secured to the sheathing **32** in face-to-face relation and said siding is secured to the outermost header **16'** through the intermediation of the member **36**. Pursuant to the present invention each of the headers **16** is provided with a series of spaced openings **38** which extend transversely therethrough, said openings in conjunction with the roof ventilating devices **10** being adapted to provide ventilation for the air space **26**. The devices **10** are provided in suitable lengths and are adapted to be secured to each other in end-to-end fluid-tight relation to define the finished edge **84** of the roof **14**.

The roof ventilating device **10** comprises an enclosure **40** having mutually converging upper and lower walls **42** and **44**, respectively which define the longitudinally extending opening **46**. The walls **42** and **44** are interconnected at their outer edges by the side or outer wall **48** which is provided with a finished outer face **50**. The walls **42**, **44** and **48** define the substantially triangular shaped enclosure **40**, and the generally triangular shaped opening **46** defined between said walls extends for the length of the enclosure. In order to provide for a flow of air through the opening **46** there is provided a series of air inlet openings **52** and a series of air outlet openings **54** laterally spaced therefrom, it being apparent that said inlet and outlet openings are in fluid communication with the opening **46**. Any desired number and shape of openings **52** and **54** may be provided and it is to be noted that the air inlet openings **52** are disposed in the wall **44** in the region of the wall **48** and the air outlet openings **54** are disposed in said wall inwardly of the openings **52**. Disposed in the opening **46** for the length thereof is screening **56** which in the illustrated embodiment of Figs. 1 and 2 is substantially L-shaped having a part **58** which is disposed in overlying relation with the inner face of the lower wall **44** and a part **60** which is disposed in overlying relation with the inner face of the upright connecting wall **48**, said screening preventing the entrance of insects and foreign matter into the air space **26** through the air inlet and outlet openings **52** and **54**, respectively, when the roof ventilating devices **10** are installed on the building **12** in the manner to be described in detail hereinafter. The upper wall **42** is inclined relative to the lower wall **44**, the latter wall being adapted to be disposed in horizontal disposition in the installed condition of the roof ventilating devices **10**, it being understood that if desired for certain installations said upper wall need not be so inclined and may be disposed parallel to said lower wall. The inclined upper wall **42** is adapted for the support of roofing material and said upper wall, at an outer edge portion thereof, is provided with an upstanding abutment **62** which constitutes a gravel stop as will be apparent from the description which follows. Forming a continuation of the wall **48** and depending from the outer edge of the lower wall **44** is a longitudinally extending portion **64** which is adapted to shelter and conceal the air inlet opening **52** from the elements. The

longitudinally extending portion 64 extends for the full length of the enclosure 40.

In order to secure the enclosure 40 to the roof there is provided a longitudinally extending strip 66 which forms a continuation of the wall 44, said securement strip being provided with a series of openings 68 which are adapted for the reception therethrough of suitable fastening devices such as nails 70. There is also provided a securement strip 72 which depends from an intermediate portion of the lower wall 44, said securement strip extending for the length of the enclosure 40 and being provided with a series of preformed openings 74 which are adapted for the reception of the nails or other suitable fastening devices 76.

In practice, the device 10 is installed on the building 12 by nailing or otherwise securing the securement strips 66 and 72 to the roofing boards 20. More particularly, the roof ventilating device 10 is fitted over associated roofing boards 20 with said device being secured to said roof boards through the intermediation of the securement strips 66 and 72. The siding 34 is secured in place subsequent to the installation of the roof ventilating devices, it being noted that in the installed condition of the roof ventilating devices the air inlet openings 52 will be in fluid communication with the atmosphere and the air outlet openings 54 will be in fluid communication with the air space 26 through the series of openings 38. Thus the air outlet openings 54 register with the air space 80 defined between the siding 34 and the header 16'. As previously pointed out, all of the headers 16 are provided with a series of ventilating openings 38 whereby to provide ventilation for the entire interior space 26 disposed below the roof 14 of the building 12.

The series or lengths of roof ventilating devices 10 are interconnected to each other in end-to-end relation to define the peripherally continuous roof edge 84 of the roof 14. In order to provide a fluid-tight securement between the lengths of ventilating devices 10, there is provided a generally triangular-shaped sleeve 86 which is dimensioned substantially complementary to the opening 46, said sleeve being adapted to interfit in an adjacent pair of openings 46 of an adjacent pair of devices 10. Thus the sleeve 86 internally covers the joint defined by the adjacent peripheral edges 88 and 90 of a companion pair of devices 10 which are interconnected by said sleeve, it being noted that said edges are spaced slightly from each other in order to provide for the normal expansion and contraction of the series of devices 10. The peripheral edges 88 and 90 are externally covered and the joint defined thereby is made externally fluid-tight by means of the peripherally extending cover strip 92, the latter conforming to the peripheral contour of the device 10. The cover strip 92 may be formed of sheet metal or any other suitable material and extends from the securement strip 66 to the shelter strip 64 with said cover strip being bent around said shelter strip in the manner shown in Fig. 2. Thus the joint defined between each adjacent pair of devices 10 is effectively internally and externally covered by means of the sleeve 86 and cover strip 92, to thereby provide a fluid-tight joint between adjacent sections or lengths of roof ventilating devices. Each section or length of roof ventilating device is secured to an adjacent ventilating device in the aforedescribed manner except at the roof corner portions where the adjacent peripheral edges of a companion pair of ventilating devices are secured together by welding or the like to define the peripheral welded seam 94. Thus the ventilating devices 10' and 10'', which define a corner portion of the roof edge 84, have their adjacent peripheral free edges formed with complementary interfitting inclinations to thereby form the peripherally extending welded seam 94 on the securement of said adjacent peripheral edges.

Superposed on the outer face of the roofing boards 20 are a series of layers of tar paper or similar roofing material 96, there being provided one or more layers of gravel 98 supported on said tar paper. It will be understood that the tar paper and gravel 96 and 98, respectively, will extend over the walls 42 of the devices 10 and will be supported thereby with the upstanding abutments 62 constituting a gravel stop for the layers of gravel 98. From the above it will therefore be apparent that the roofing material disposed on the roofing boards 20 extends onto the upper walls 42 of the roof ventilating devices 10 and terminates at the upright abutments 62. The devices 10 aforedescribed may be formed of any suitable material and may be of any desired construction and in the embodiment illustrated in Figs. 1–4 said devices are of one-piece extruded construction. Thus by way of example the roof ventilating devices 10 may be formed of a suitable metallic material such as aluminum, brass, copper or stainless steel or a non-metallic material such as a suitable plastic, and may be of a molded or extruded construction, or may be fabricated from sheet material.

With reference to Fig. 3, there is shown a slightly modified building construction arrangement in which the headers are provided with a series of V-shaped openings 100 in order to provide ventilation for the air space defined below the roof. Thus, if desired, the ventilating openings for the headers may be of circular shape as indicated at 38 or may be V-shaped as indicated at 100 in Fig. 3, it being understood that the V-shaped openings 100 in building construction 12' function in an identical manner with the ventilating openings 38 aforedescribed.

With reference to Fig. 4, there is shown a modified form of roof ventilating device 102 which is similar to the roof ventilating devices 10 aforedescribed except in the manner to be specifically pointed out hereinafter. The ventilating device 102 is secured to the roofing boards 20 by means of the nails or fastening elements 104, said nails extending through suitable openings provided in said device and through said roofing boards into the header 16'. It is to be noted that the laterally projecting longitudinally extending strip 106 of the device 102 is non-perforated and that said device eliminates the need of a depending securement strip corresponding to the strip 72 of the device 10 aforedescribed. The lower wall 108 has a shoulder portion 110 depending therefrom and said shoulder portion is adapted to interfit with an adjacent edge portion 111 of the siding 34. The bottom wall 108 is further provided with a pair of aligned longitudinally extending grooves 112 which are adapted for the reception of the screening strip 114, the latter being adapted to prevent the entrance of insects and foreign matter into the air space defined below the roof in the manner aforedescribed with reference to the screening 56. Except in the respects specifically noted above the ventilating device 102 is similar to the ventilating devices 10 aforedescribed and is similarly adapted for integration with the roofing material described above and to serve as a gravel stop.

With reference to Fig. 5 there is shown a modified form of the present invention in which the roof ventilating device 116 has spaced upper and lower walls 118 and 120, respectively which define a longitudinal opening 122 therebetween, said upper and lower walls being interconnected by the side wall 124 which has a finished outer face. The lower horizontal wall 120 is substantially narrower than the upper inclined wall 118 and terminates in a depending longitudinally extending securement strip 126 having preformed openings 127. The relatively narrow lower wall 120 is provided with a series of air inlet openings 128 which provide fluid communication between the atmosphere and the opening 122. The longitudinally extending opening 122 is adapted for fluid communication with the air space 130 defined below the roof 132 in the manner to be described hereafter. The roofing boards 133 are provided with a series of openings 134 which extend transversely therethrough and which are in fluid communication with the air space 130. In the installed condition of the roof ventilating devices 116

the air space **130** is ventilated by means of the air flow which enters the openings **128** and which flows through the openings **122** and **134**. The roof ventilating device **116** may be formed of any suitable material, for example sheet metal or any other suitable sheet material, and said device is adapted to be installed in a building structure by means of the nails **138** which extend through the openings **139** provided in the securement strip **140** constituted by a laterally projecting end portion of the wall **118** and by the nails **142** which extend through the openings **127** provided in the depending strip **126**. It is to be noted that the depending strip **126** is secured between the siding **144** and the roof support member **146** whereby it will be apparent that the siding **124** is secured in position subsequent to the installation of the device **116**. The device **116** is provided with an upstanding abutment **62'** corresponding to the abutment **62** above described and is further provided with a shelter strip **64'** corresponding to the shelter strip **64** above described. Screening **148** is provided to prevent the entrance of insects and foreign matter into the air space **130** and said screening overlies the series of air inlet openings **128**. Thus as shown in Fig. 5 the marginal strip **150** of screening **148** is claimed between the portions **151** and **151'** which define the shelter strip **64'** with the opposite marginal strip **152** being clamped in position between the roofing board **133** and adjacent portions of the depending securement strip **126**. Thus the roof ventilating device **116** is of an open construction with the openings **134** provided in the roofing boards **133** constituting the air outlet means for ventilating the air space **130** defined by and below the roof. The devices **116** are interconnected in fluidtight relation by means of cover strips **156** which correspond to the cover strips **92** aforedescribed.

From the above it will be apparent that in the installed condition of the roof ventilating devices aforedescribed, said devices will be effective to ventilate the air space disposed below the roof of a building and to prevent the formation of moisture in such air space. The roof ventilating devices function as a gravel stop and as a finishing structure for the roof edge, said devices being provided with screening to prevent the entrance of insects and foreign matter into the air space to be ventilated. The ventilating devices, above described, are adapted to be interconnected to each other in fluid-tight relation to define the finished roof edge, it being noted that the devices **10** and **102** are interconnected to each other by means of sleeves **86** and cover strips **92** with the devices **116** being interconnected to each other by the use of cover strips **156** which correspond to the cover strips **92**.

While I have shown and described the preferred embodiments of my invention, it will be understood that various changes may be made in the present invention without departing from the underlying idea or principles of the invention within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A roof ventilating device comprising an enclosure adapted for securement to marginal portions of a roof, said enclosure having mutually converging upper and lower walls interconnected by an outer vertically extending wall defining a longitudinally extending opening, means providing for the flowing of air through said opening comprising laterally spaced openings defined in said lower wall, one of said last mentioned openings being an air inlet opening and the other of said last mentioned openings being an air outlet opening, said upper wall being adapted for the support of roofing material with said upper wall at an outer edge portion thereof having an upstanding abutment constituting a gravel stop, and said outer wall having a longitudinally extending extension portion projecting beyond said lower wall to shelter and conceal said air inlet opening.

2. A roof ventilating device comprising an enclosure adapted for securement to marginal portions of a roof, said enclosure having mutually converging upper and lower walls interconnected by an outer vertically extending wall defining a longitudinally extending opening, means providing for the flow of air through said opening comprising laterally spaced openings defined in said lower wall, one of said last mentioned openings being an air inlet opening and the other of said last mentioned openings being an air outlet opening, said upper wall being adapted for the support of roofing material with said upper wall at an outer edge portion thereof having an upstanding abutment constituting a gravel stop, and said outer wall having a longitudinally extending extension portion projecting beyond said lower wall to shelter and conceal said air inlet opening, and means for securing said enclosure to a roof, said securing means comprising a longitudinally extending strip depending from an intermediate portion of said lower wall and a longitudinally extending lateral strip defined at an inner edge portion of said enclosure.

3. A roof ventilating device comprising an enclosure adapted for securement to marginal portions of a roof, said enclosure having spaced upper and lower walls defining a longitudinally extending opening therebetween, said upper and lower walls being interconnected by a side wall with said lower wall being substantially narrower than said upper wall and terminating in a depending longitudinally extending securement strip, means providing for the flow of air through said opening comprising an air inlet opening defined in said lower wall, said upper wall being adapted for the support of roofing material with said upper wall at an outer edge portion thereof having an upstanding abutment constituting a gravel stop, and said lower wall having a depending longitudinally extending portion at an outer edge portion thereof to shelter said air inlet opening.

4. In a building structure having a roof defining an air space therebelow and support structure for said roof, an enclosure extending along a peripheral portion of said roof in secured relation therewith, said enclosure having mutually converging upper and lower walls defining a longitudinally extending opening therebetween, means providing for the flow of air through said opening comprising laterally spaced openings defined in said lower wall, one of said last mentioned openings being an air inlet opening and the other of said last mentioned openings being an air outlet opening, said air inlet opening being in fluid communication with the atmosphere and said air outlet opening being in fluid communication with said air space whereby to provide airflow from the atmosphere to said air space, said roof comprising a roof member having roofing material superposed thereon, said upper wall being adapted for the support of said roofing material with said upper wall at an outer edge portion thereof having an upstanding abutment constituting a gravel stop, and said lower wall having a depending longitudinally extending portion at an outer edge portion thereof to shelter and conceal said air inlet opening.

5. A roof ventilating device comprising a longitudinally extending enclosure adapted for securement to marginal portions of a roof, said enclosure having upper and lower walls interconnected by an outer wall with said upper and lower walls being spaced from each other to define a longitudinal opening therebetween, and means providing for the flow of air through said opening, said means comprising a series of spaced openings in fluid communication with said first mentioned opening, said spaced openings being disposed inwardly of said outer wall and concealed and sheltered thereby.

6. A roof ventilating device comprising an enclosure adapted to extend along a peripheral portion of the roof of a building structure in secured relation therewith, said enclosure comprising upper and lower walls interconnected by an outer wall, said walls defining a longitudinally ex-

tending opening, and laterally spaced fluid inlet and outlet means for said enclosure in fluid communication with said opening whereby to provide for lateral air flow therethrough, said fluid inlet means comprising an opening disposed inwardly of said outer wall and concealed and sheltered thereby.

7. A roof ventilating device comprising a longitudinally extending enclosure adapted for securement to marginal portions of a roof, said enclosure having upper and lower walls interconnected by an outer wall with said upper and lower walls being spaced from each other to define a longitudinal opening therebetween, and means providing for the flow of air through said opening, said means comprising a series of spaced openings in fluid communication with said first mentioned opening, said spaced openings being disposed inwardly of said outer wall and concealed and sheltered thereby, said upper wall being upwardly inclined towards the outer edge thereof and adapted for the support of roofing material thereon, said inclined wall having at said outer edge thereof an upstanding portion constituting abutment means for said roofing material.

8. A roof ventilating device comprising a longitudinally extending enclosure adapted for securement to marginal portions of a roof, said enclosure having upper and lower walls interconnected by an outer wall with said upper and lower walls being spaced from each other to define a longitudinal opening therebetween, and means providing for the flow of air through said opening, said means comprising a series of spaced openings in fluid communication with said first mentioned opening, said spaced openings being disposed in said lower wall, said outer wall including a depending longitudinally extending portion to conceal and shelter said spaced openings.

9. A roof ventilating device comprising an enclosure adapted to extend along a peripheral portion of the roof of a building structure in secured relation therewith, said enclosure comprising upper and lower walls interconnected by an outer wall, said walls defining a longitudinally extending opening, and laterally spaced fluid inlet and outlet means for said enclosure in fluid communication with said opening whereby to provide for lateral airflow therethrough, said fluid inlet means comprising a series of openings disposed in said lower wall, said outer wall including a depending longitudinally extending portion to conceal and shelter said series of openings, and said upper wall being upwardly inclined towards the outer edge thereof and adapted for the support of roofing material thereon, said inclined wall having at said outer edge thereof an upstanding portion constituting abutment means for said roofing material.

10. In a building structure having a roof defining an air space therebelow and support structure for said roof, an enclosure extending along a peripheral portion of said roof in secured relation therewith, said enclosure having upper and lower walls interconnected by an outer wall with said upper and lower walls being spaced from each other to define a longitudinal opening therebetween, and means providing for the ventilation of said roof air space, said ventilating means comprising laterally spaced fluid inlet and outlet means in fluid communication with said opening, said fluid inlet means being in fluid communication with the atmosphere and said fluid outlet means being in fluid communication with said air space whereby to provide air flow from the atmosphere to said air space, said fluid inlet means comprising an opening disposed in said lower wall, said last mentioned opening being concealed and sheltered by said outer wall.

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