United States Patent [19]

Koontz

[11] **3,863,553**

[45] **Feb. 4, 1975**

[54] **COMBINATION INSULATION STOP AND VENTILATION BAFFLE**

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[21] Appl. No.: **426,821**

[52] **U.S. Cl.** **98/32,** 98/37, 98/42, 52/95, 52/198

[51] **Int. Cl.** **F24f 7/00**

[58] **Field of Search** 98/37, 42, 32, 35; 52/199, 52/303, 302, 198, 11, 22, 92, 95

[56] **References Cited**

UNITED STATES PATENTS

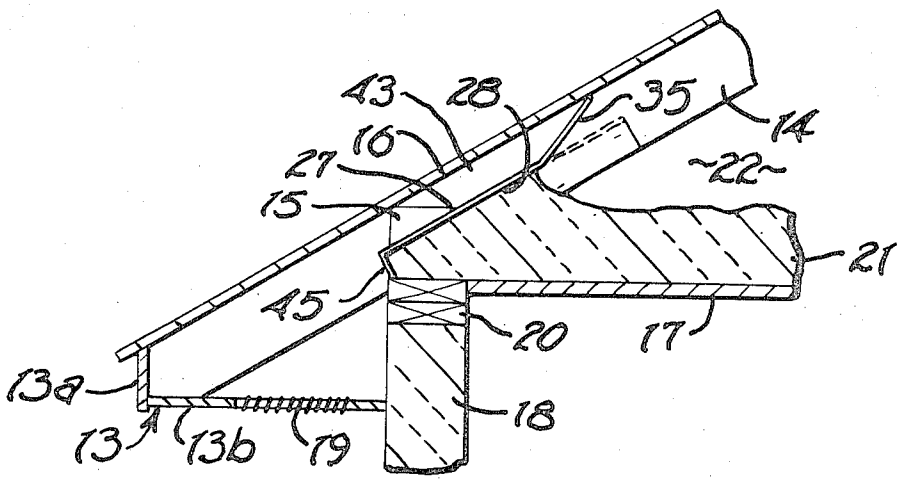
2,477,152 7/1949 Stevenson 98/37

Primary Examiner—Meyer Perlin
Assistant Examiner—Henry C. Yuen
Attorney, Agent, or Firm—Wells, St. John & Roberts

[57] **ABSTRACT**

A combination ventilation baffle and insulation stop (referred to as "article") is described for use in building structures to provide air passage to the space between the roof and ceiling. The article may be further utilized to prevent insulation from clogging the passage or otherwise prevent free circulation of air therethrough. The article comprises a flat rectangular body having foldable side sections to facilitate mounting between roof rafters or joist members at a location adjacent the bearing plate of an outside wall. When installed, the apparatus defines an air passage between its central section and the structure roof. The passage may be selectively sealed through use of a pivotable tab during application of insulation then subsequently reopened thereby insuring proper ventilation.

1 Claim, 11 Drawing Figures



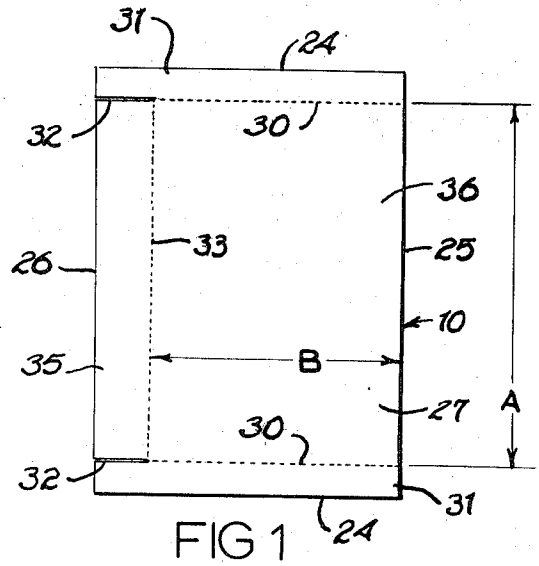


FIG 1

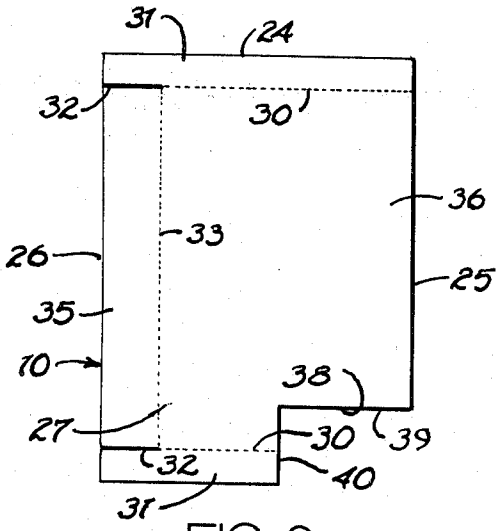


FIG 2

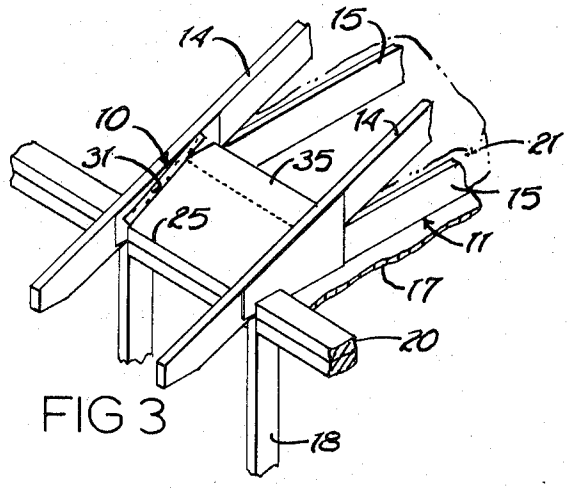


FIG 3

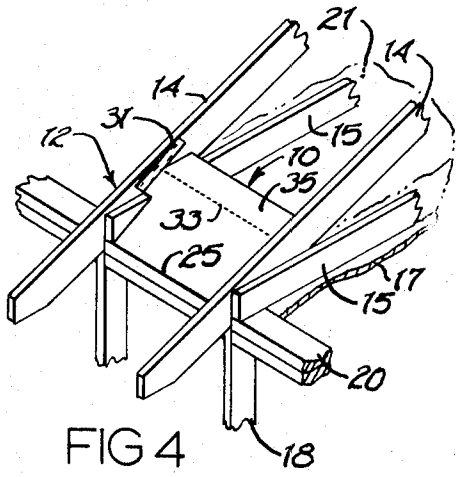


FIG 4

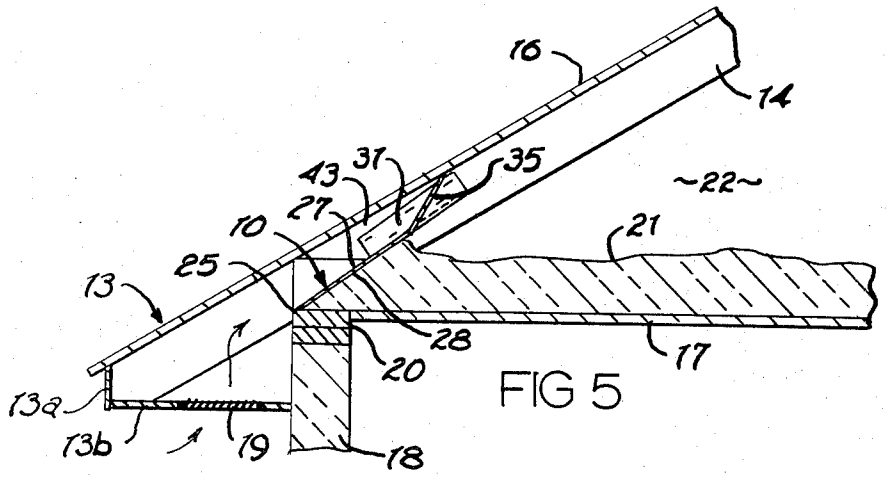


FIG 5

FIG 6

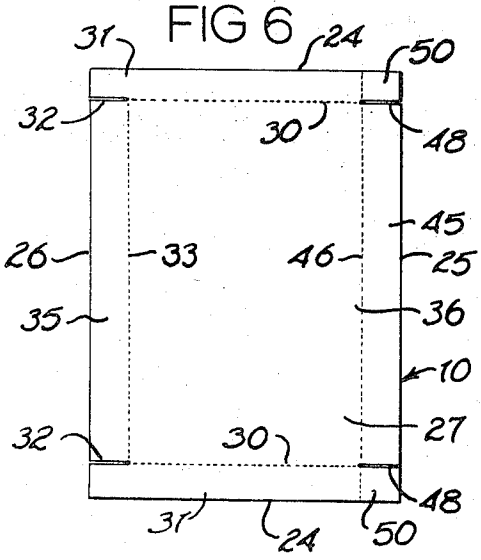


FIG 7

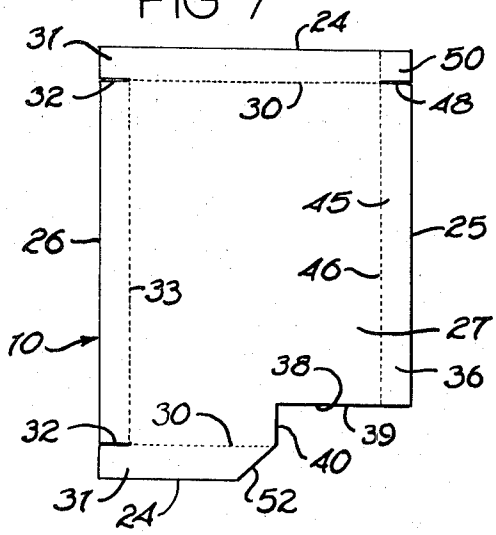


FIG 8

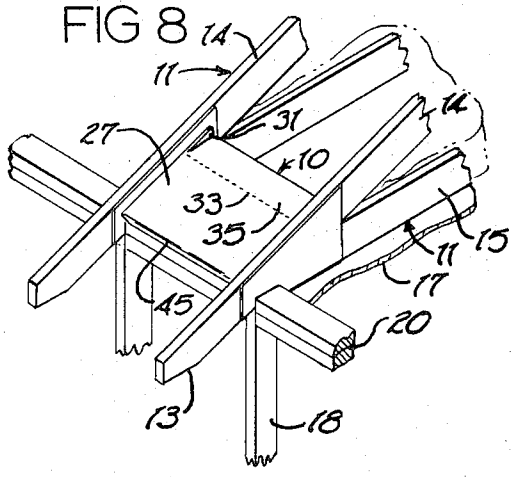
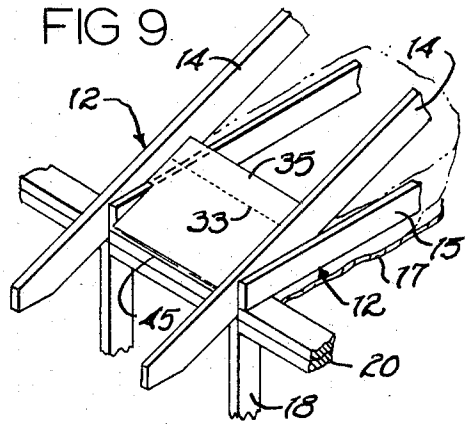


FIG 9



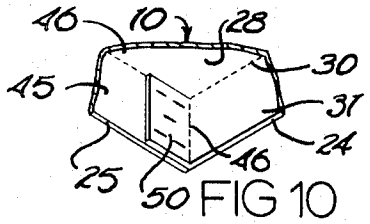
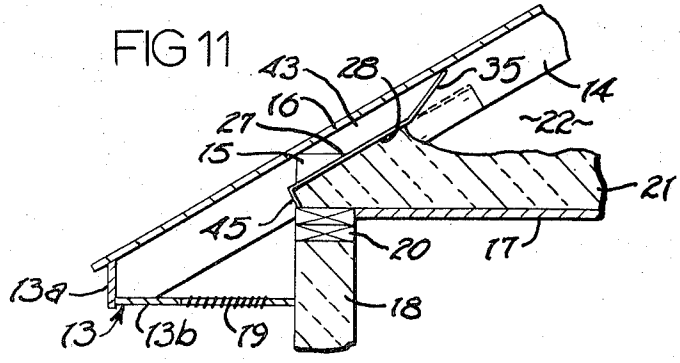


FIG 10

FIG 11



COMBINATION INSULATION STOP AND VENTILATION BAFFLE

BACKGROUND OF THE INVENTION

The present invention relates to ventilation baffles and insulation stops which are utilized to allow heat loss through the ceilings of building structures to be removed via proper ventilation and to prevent water damage to ceilings and walls.

Water damage is normally attributed to inadequate insulation of the ceiling and inadequate ventilation of air spaces immediately below the roof. If there is inadequate insulation and ventilation, heat lost through the ceiling will be confined to heat the roof overlying the ceiling causing any snow on the upper part of a roof to melt and run down the roof toward the eaves. Since the eaves are normally at the same temperature as the outside environment, the melted snow as it reaches the eaves will frequently refreeze at the eaves causing subsequently melted snow to build up behind the formed ice and flow back under the roofing material and onto the ceiling and down the inside of the outside walls. To prevent water damage it is necessary to adequately insulate the ceiling to minimize the heat loss through the ceiling, and to provide good ventilation to the attic or air space between the roof and the ceiling joist to maintain the temperature of the roof close to the outside environment to prevent snow melting and refreezing.

Loss of heat through the ceiling of a building is normally due to inadequate insulation coverage of the area directly above the ceiling and between the ceiling joists. The development of economical, effective insulation materials however, has greatly reduced such heat loss. Further, new methods have been developed allowing fiber or particulate insulation material to be pneumatically blown into the crawl or attic space below the roof and directed between the ceiling joists. Such methods are especially effective for applying blown-in insulation to areas where access is normally limited.

It has been found, however, that unless unusual caution is exercised during application of the blown-in insulation, poor ventilation can result. It is not uncommon for applicators to entirely fill the space between the ceiling and roof over the bearing plate of an outside wall where the ceiling joist and roof rafters intersect and clog soffit ventilators. When this occurs air circulation through the soffit ventilators is restricted if not prevented.

The present invention, heretofore referred to as the article, was conceived to provide means for preventing blown-in insulation from clogging soffit ventilators and to provide an air passageway to allow air to freely circulate through the attic or crawl space and out the passageway.

The present invention comprises a rectangular body of substantially stiff sheet material having parallel perforated side fold lines which allow the body to be inserted between two roof rafters or truss members with one end edge abutting the bearing plate of an exterior wall and the other end extending into the attic or air space. An air passage is defined between the roof and sidefolds and body of the article. A perforated end fold line is also provided opposite the end abutting the wall plate which may be pivoted upward into abutment with the roof to temporarily seal one end of the passage to prevent the blown-in insulation from filling the passageway. During the application of the insulation, the body forms a barrier at the outside wall plate against which the insulation abuts. After the insulation has been applied, the fold may be pivoted downwardly to re-open the air passage.

Prior art ventilators are illustrated in the Stevenson U.S. Pat. No. 2,477,152, the Bottom U.S. Pat. No. 2,969,726 and the Lind U.S. Pat. No. 3,240,144.

The Stevenson patent discloses a method for equalizing temperatures through use of tubular ventilator ducts for placement between ventilated and crawl or sealed spaces in building structures. The Bottom Patent illustrates a louvered plate for vertical placement between roof rafters on the plate of an outside wall. The Lind Patent discloses a similar baffle comprising a rigid elongated rectangular sheet for controlling air flow at the plate between roof rafters.

It is a first object of my invention to provide an insulation stop and ventilation baffle which may be placed between roof rafters on the plate of an outside supporting wall and adapted to allow soffit ventilators to be sealed while insulation is being applied.

A further object is to provide such an article that is also adapted to allow free passage of air to the adjacent interior crawl space or attic areas subsequent to installation of insulation.

An additional object is to provide such an article that will fit angularly between roof rafters or truss members to allow insulation to cover the adjacent bearing plate of an exterior wall.

Another object of the invention is to provide such an article that may be adapted to fit between rafter members of standard framed roofs or truss roofs.

Another object is to provide such an article that may be utilized in structures having boxed cornices with soffit ventilators or open cornices with frieze mounted ventilators.

A further object is to provide such an article that is extremely simple in construction and easy to install.

These and further objects will become evident from reading the following description of a preferred and alternate embodiment with reference to the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a combination ventilation baffle and insulation stop;

FIG. 2 is a plan view of the article shown in FIG. 1 with a section cut away to allow clearance for a ceiling joist of standard framing construction;

FIG. 3 is an isometric view showing the article mounted between two roof trusses;

FIG. 4 is an isometric view showing the article mounted between roof rafters and a ceiling joist of standard framing;

FIG. 5 is an orthographic fragmentary section of a wall and roof showing the operation of the article;

FIG. 6 is a plan view of a combination ventilation baffle and insulation stop comprising a second embodiment of the invention;

FIG. 7 is a plan view of the article shown in FIG. 6 with a section cut away to allow clearance for a ceiling joist of standard framing construction;

FIG. 8 is a fragmentary isometric view of a structure showing the article as illustrated in FIG. 6 installed between two roof trusses;

FIG. 9 is a fragmentary isometric view of a structure showing the article installed between roof rafters and a ceiling joist of standard framing;

FIG. 10 is a fragmentary isometric view of the article showing one folded corner thereof; and

FIG. 11 is a fragmentary elevational view of a section of wall and roof showing the operation of the article.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A preferred and alternate embodiment of the present invention is illustrated in the accompanying drawings. The preferred form is illustrated by FIGS. 1-5 and the alternate by FIGS. 6-11. The combination ventilation baffle and insulation stop (referred to as "article") of both embodiments include similar elements and therefore, similar elements of each will be indicated by identical reference numerals.

The article is generally indicated by the reference numeral 10 comprising a body of relatively thin, wax coated corrugated paper or other substantially stiff, moisture proof material. Although not necessary, moisture-proof material is preferred.

The article 10 illustrated in FIGS. 1, 3 and 6, 8 is specifically designed to be used with truss roofing members 11, whereas that illustrated in FIGS. 2, 4 and 7, 9 is utilized in structures having standard roof framing 12.

Both the above construction forms include rafter members 14 resting upon and extending over an exterior wall 18 to form a cornice 13 along the structure exterior. A roof section is shown at 16 in FIGS. 5 and 11 affixed to rafters 14 and extending outwardly over cornice 13.

Cornice 13 is of the boxed variety having a fascia board 13a fixed to the rafter ends and a plancier 13b extending horizontally from fascia 13a to wall 18. A soffit ventilator 19 is frequently used in such boxed cornice construction to provide ventilation to an enclosed attic or air space 22 between roof 16 and a ceiling 17. Ceiling joists 15 support ceiling 17 and, in turn, are supported by a bearing plate 20 on wall 18.

The disparity between the two forms or roof framing, truss and standard, may be seen in FIGS. 3 and 4 respectively. In standard framing (FIG. 4), ceiling joist 15 is affixed to one side of each rafter 14 and rests at their juncture upon bearing plate 20 of the exterior wall 18. Where truss construction is utilized (FIG. 3), rafters 14 and joists 15 are joined along their bottom and top edges respectively in a vertical, coplanar relationship by gusset plates. Trusses 11 also rest on a plate 20 at the juncture of rafter 14 and joist 15.

Both embodiments of the article are basically rectangular in configuration having spaced longitudinal side edges 24 and spaced transverse end edges 25, 26 which border upper and lower planar surfaces 27 and 28 respectively.

A scissile side fold line 30 comprised of a number of aligned perforations is spaced inwardly from each side edge 24 to extend longitudinally across the body from end edge 25. In the first embodiment (FIG. 1), the ends of the perforated fold line 30 are separated to form colinear slots 32. Each slot extends from the termination of a fold line 30 to end edge 26. An opposed pair of pivotable side fold sections 31 are thereby defined as the sections of the body portion bordered by side edge 24, a fold line 30 and coextensive slot 32, and those portions of end edges 25, 26 between side edge 24 and fold line 30 or slot 32.

Fold sections 31 are utilized to mount article 10 to oppositely facing sides of roof rafters 14 as seen in FIGS. 3 and 8.

A second perforated fold line 33 extends transversely across device 10 from the inner ends of slots 32 to provide a pivot axis for a tab 35. The periphery of tab 35, then, includes fold line 33, slots 32 and end edge 26.

The remainder of article 10 which is bordered by fold lines 30, end edge 25 and fold line 33 will be referred to as central section 36.

The distance designated by the letter "A" between fold lines 30 (assembled width) is slightly less than the distance between roof rafters 14. Since standard rafter and truss spacing may vary, for example from 16", 18" through 24" on center, it is intended that the article 10 be manufactured in varying sizes with distance A corresponding to any standard rafter or truss spacing. It is further intended that the article be produced without pre-formed slots 32 to enable the user to select the slot depth himself by tearing along the scissile perforated fold lines 30.

The longitudinal dimension, designated by the letter "B" between edge 25 and fold line 33 shall be a set dimension sufficient to allow the article 10 to be angularly placed between rafters 14 with edge 25 abutting the upper, outside corner of plate 20 and fold line 33 elevated above the top of the ceiling joists 15 (FIG. 5).

In order to utilize article 10 in conjunction with standard framing as illustrated in FIGS. 4 and 5, a section must be removed to allow clearance for a ceiling joist 15. The article 10 shown in FIG. 2 includes a notch 38 cut from one fold section 31 and part of central section 36. The dimensions of notch 38 are such that when article 10 is placed between rafters 14, the edges 39, 40 of notch 38 abut corresponding sides of ceiling joist 15 as shown in FIG. 4.

To install the article 10 as illustrated in FIG. 3 and 4, the builder first bends fold sections 31 upwardly in relation to central section 36 in the form of a U-shape. The article 10 may then be inserted between trusses 11 with end edge 25 abutting wall plate 20. The angular relationship of the article 10 to rafter members 14 is then adjusted to bring the upper end corners of the side edges 24 into engagement with the roof 16 to insure proper spacing between surface 27 and roof 16. Once in proper position, article 10 may be secured by driving nails or staples through side fold sections 31 and into adjacent rafter members 14.

Roof 16, the sides of rafters 14 and upper surface 27 of body section 36 define an air passage 43 leading from one eave inwardly to an attic or air space 22 between roof 16 and ceiling 17.

Air passage 43 may be selectively sealed during application of insulation 21 by forming slots 32 and pivoting the resulting tab 35 upwardly, bringing edge 26 into abutment with roof 16. Tab 35 is shown in the described closed position in FIG. 5 with the open position shown in dotted lines.

Tab 35 may be temporarily fixed in the closed position by a staple or nail to prevent clogging of passage 43 and soffit vent 19 (FIG. 5) during application of insulation. The closed position of tab 35 facilitates application of blonw-in insulation without requiring special care to avoid clogging of passage 43 or soffit vent 19.

This feature greatly reduces normal application time as surface 28 creates a barrier against the insulation.

Once insulation 21 has been applied, passage 43 may be reopened by pivoting tab 35 downwardly to the open position shown in FIGS. 3 and 4 and in dotted lines in FIG. 5. The open position of tab 35 facilitates free movement of air through passage 43.

The article 10 of the second embodiment includes a second tab 45 which is utilized as shown in FIG. 11 to allow a greater accumulation of insulation on plate 20. This feature is particularly advantageous in extremely cold regions where it is not uncommon for plates to freeze when not well insulated.

Tab 45 is an integral portion of central section 36 and is bordered by end edge 25, an inwardly spaced parallel fold line 46, and a second pair of transversely spaced slots 48. Like slots 32, the slots 48 are made by cutting or tearing the material along the fold lines 30 forwardly from edge 25. Fold line 46, also perforated to assist folding extends along the full length of article 10 between side edges 24. Slots 48 each extend inwardly from end edge 25, colinear with fold lines 30, to terminate at fold line 46. A pair of corner tabs 50 are thereby formed from part of each side fold 31 bordered by end edge 25, a side edge 24, a slot 48 and fold line 46.

Before installation, side fold sections 31 are folded downwardly along lines 30 into a perpendicular relationship with central section 36. Corner tabs 50 may then be folded inwardly along the vertical sections of fold line 46 to a position perpendicular to tabs 31. Tabs 50 present an abutment surface for tab 45 as it is folded downwardly about the horizontal section of fold line 46. Tab 45 may be secured to tabs 50 by staples or other fastening means as illustrated in FIG. 10.

As may be seen in FIG. 11, a substantial amount of insulation may be applied to plate 20 since tab 45 elevates the central section 36 a substantial distance above the outer edge of plate 20.

To enable use of article 10 of this embodiment with structures having standard roof framing 12, a notch 38, similar to that described for the first embodiment must be cut to allow clearance for a ceiling joist 15. Additional clearance for rafter 15 must be provided since fold sections 31 of this embodiment are folded downwardly. This is done by removing a portion of a fold 31. The resulting angular edge 52 abuts the top edge of joist 15 upon installation as shown by dotted lines in FIG. 9.

Installation of the article 10 illustrated in FIGS. 6-11 is accomplished by inserting it between two adjacent rafter members 14 with edge 25 abutting the outer corner of plate 20 (FIG. 11). The angular relationship of the article 10 to the rafters 14 may then be set and the downwardly folded sections 31 secured to the rafters by staples or other fastening means. The remaining installation and operational procedures are similar to those described above for the first embodiment.

It may be obvious from the above disclosure and appended drawings that various changes in the details of construction and the combination and arrangement of parts thereof may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

What I claim is:

1. A combination insulation stop and ventilation baffle for mounting over an exterior wall and between a roof and ceiling of a building structure to provide a ventilation passageway to an air space between the ceiling and the roof and to prevent insulation which is subsequently applied to the ceiling from clogging said passageway, in which the exterior wall has a bearing plate on which ceiling joists and inclined parallel roof rafters are supported, said rafters being spaced from each other a first predetermined distance and said roof and bearing plate spaced from each other a second predetermined distance, said combination insulation stop and ventilation baffle comprising:

a body of stiff sheet material having (1) a length dimension between end edges greater than the second predetermined distance, and (2) a width dimension between side edges greater than the first predetermined distance;

said body having parallel side fold lines formed therein adjacent and spaced from the side edges defining side sections between the side fold lines and the side edges and a central section between the parallel side folds, in which the distance across the central section between the side fold lines is slightly less than the first predetermined distance to enable the side sections to be pivoted in the same direction relative to the central section and the body inserted between two rafters over the exterior wall at an inclined angle to the ceiling joist with the side section bearing against the rafters and one end edge engaging the bearing plate, the other end edge projecting into the air space to define a ventialtion passageway between roof rafters to the crawl space;

said body being scissile along said side fold lines, enabling slots to be formed therein extending inward from the other end edge with the distance between the slots being less than the first predetermined distance; and

said body having an end fold line formed therein extending perpendicular between the side fold lines forming a flexible end tab which may be freely pivoted about the end fold line upward between the rafters relative to the central section to block one end of the ventilation passageway and prevent insulating material from passing into the ventilation passageway as the insulation is applied between the ceiling joists and which may be subsequently pivoted downward in the other pivot direction relative to the body central section to open said end of the ventilation passageway to permit a flow of air therethrough to the crawl space after the insulation has been applied between the ceiling joist.

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