US 20070234650A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0234650 A1**

Coulton et al. (43) **Pub. Date: Oct. 11, 2007**

(54) **VENTED SOFFIT ASSEMBLY AND METHOD OF INSTALLATION**

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(21) Appl. No.: **11/690,886**

(22) Filed: **Mar. 26, 2007**

Related U.S. Application Data

(60) Provisional application No. 60/743,809, filed on Mar. 27, 2006.

Publication Classification

(51) **Int. Cl.**
E04D 3/40 (2006.01)

(52) **U.S. Cl.** **52/95**

(57) **ABSTRACT**

A continuous, elongate, strip of openwork ventilation material is provided in roll form and is unrolled and installed in a soffit as a one-piece, continuous vent along a length of the soffit. The opposite longitudinally-extending side edges of the ventilation material are inserted within opposed, spaced-apart channels lining the periphery of the soffit opening or are provided with laterally-extending fastening strips that are fastened to boards lining the soffit opening.

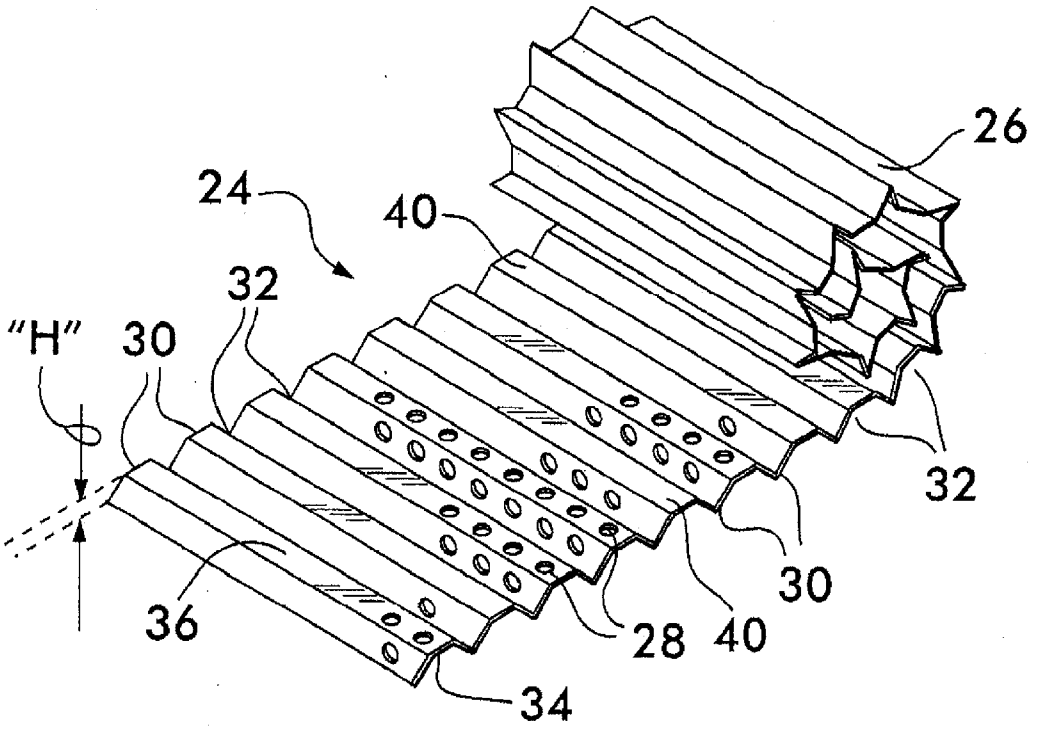
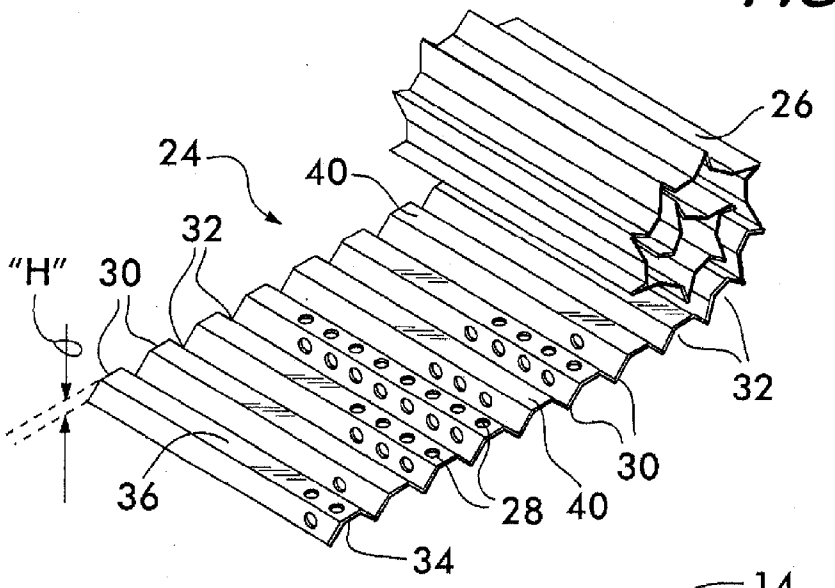


FIG.1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24
40
32
"H"
30
32
30
36
28
40
34

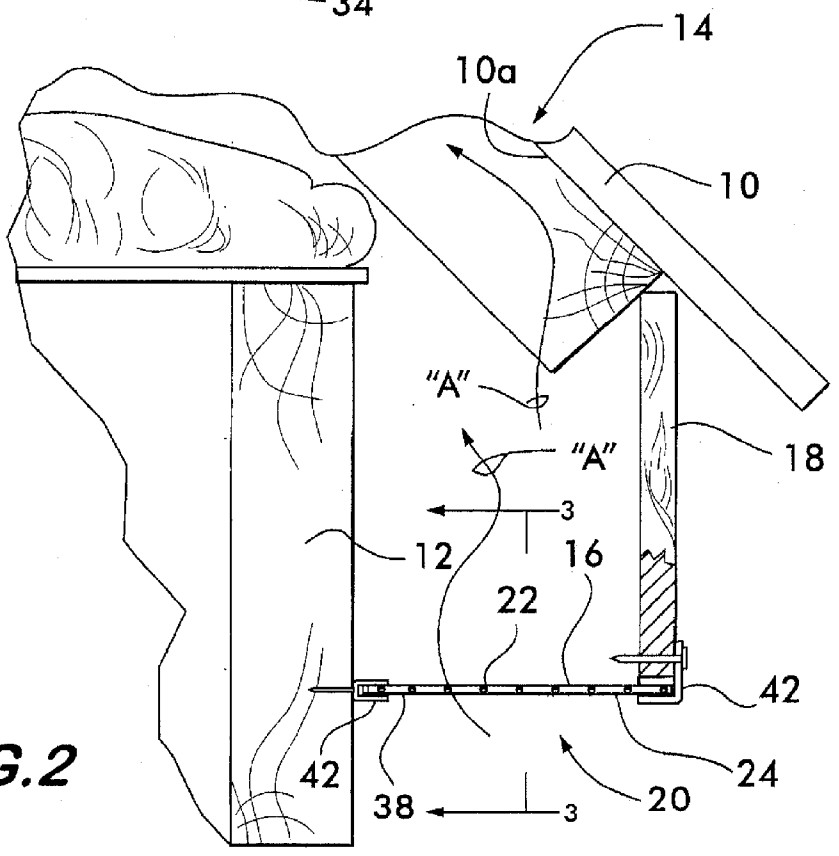

14
10a
10
"A"
"A"
18
3
12
16
22
42
42
38
3
20
24

FIG.2

FIG.3

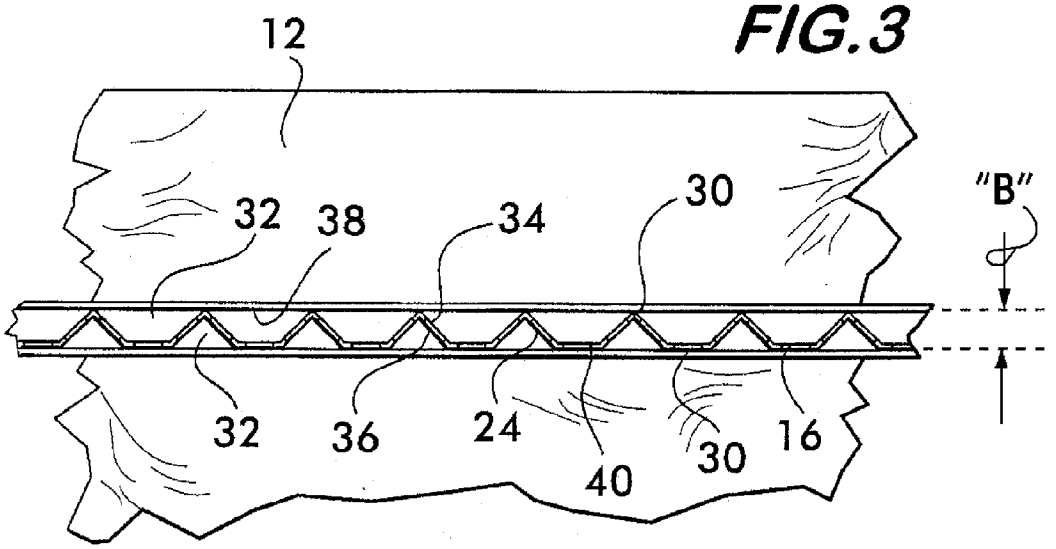


FIG.4

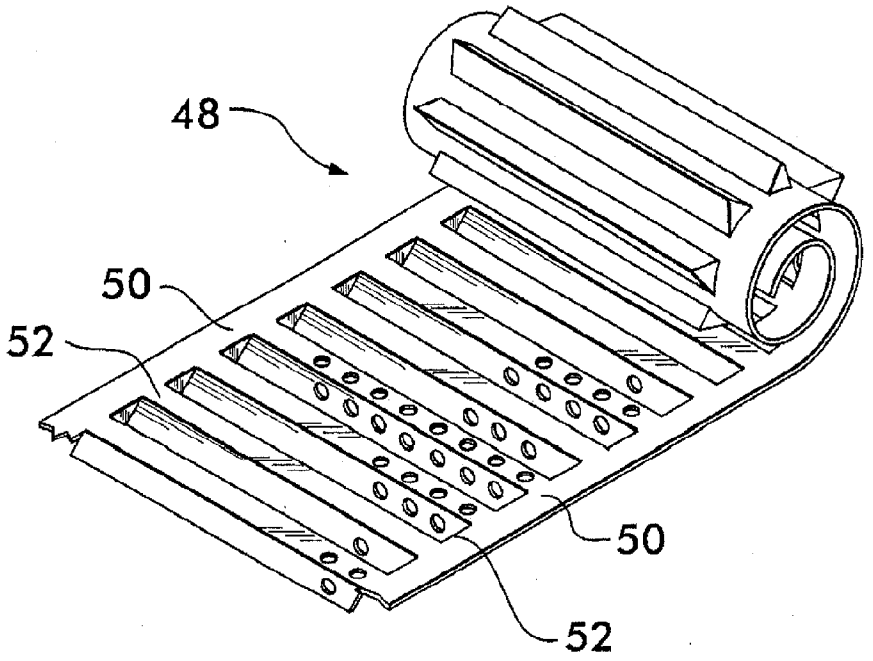
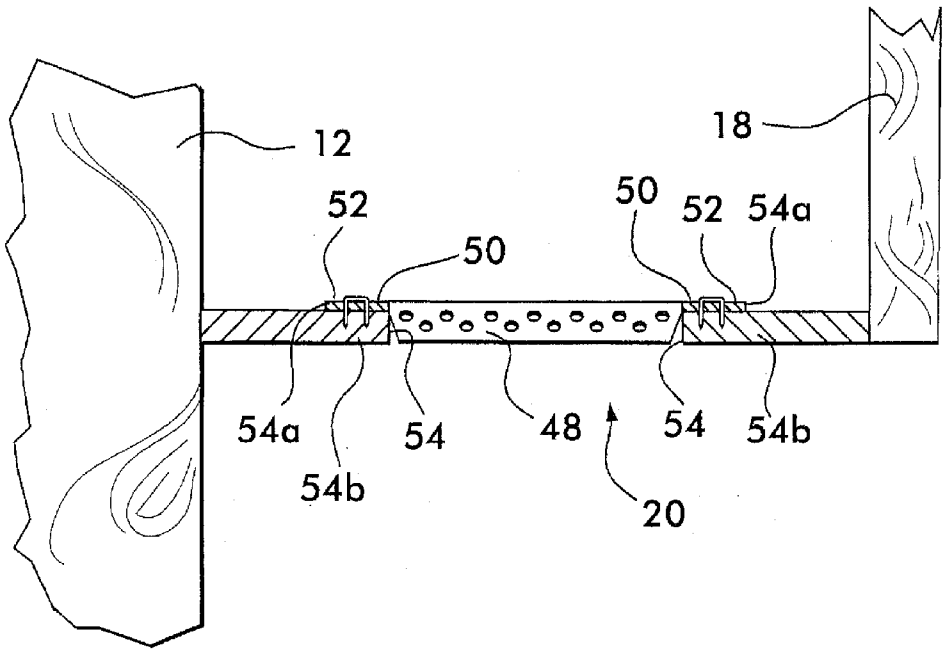


FIG.5



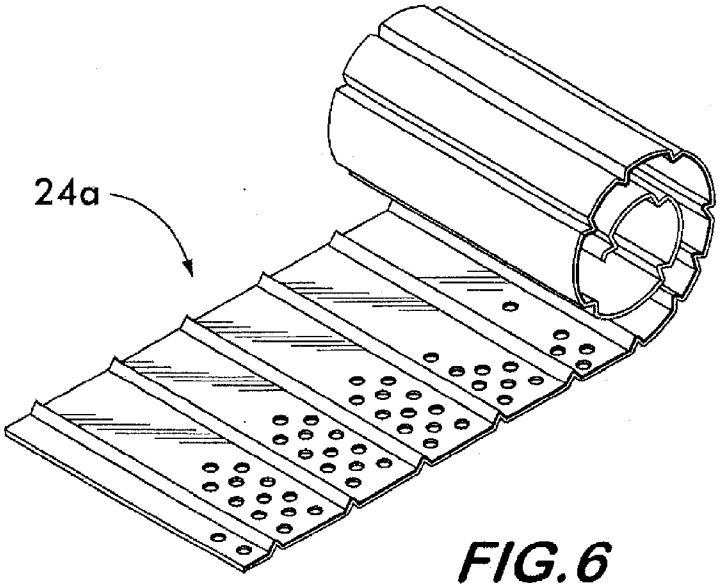
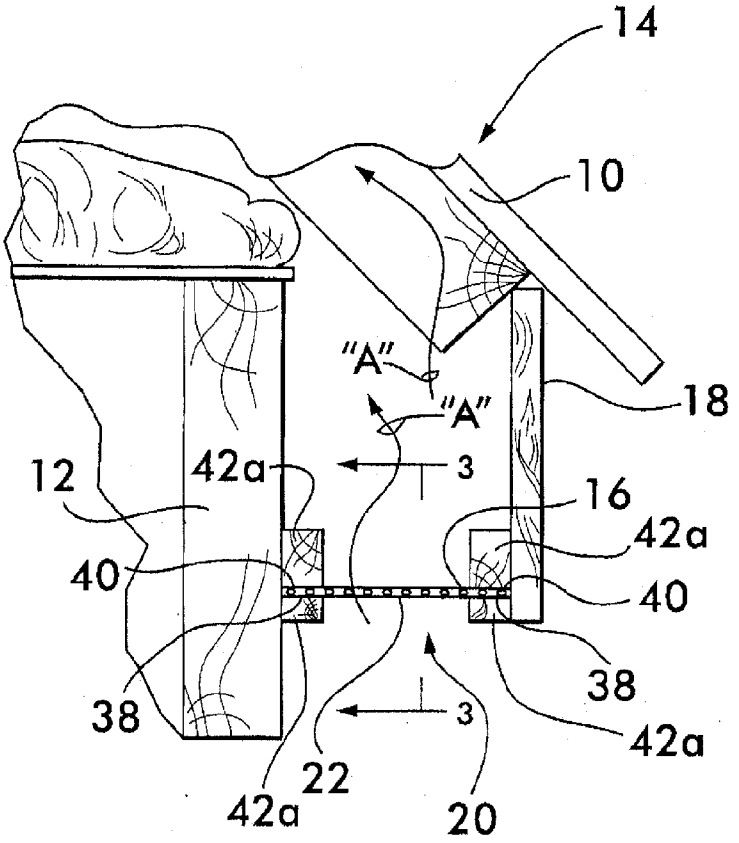
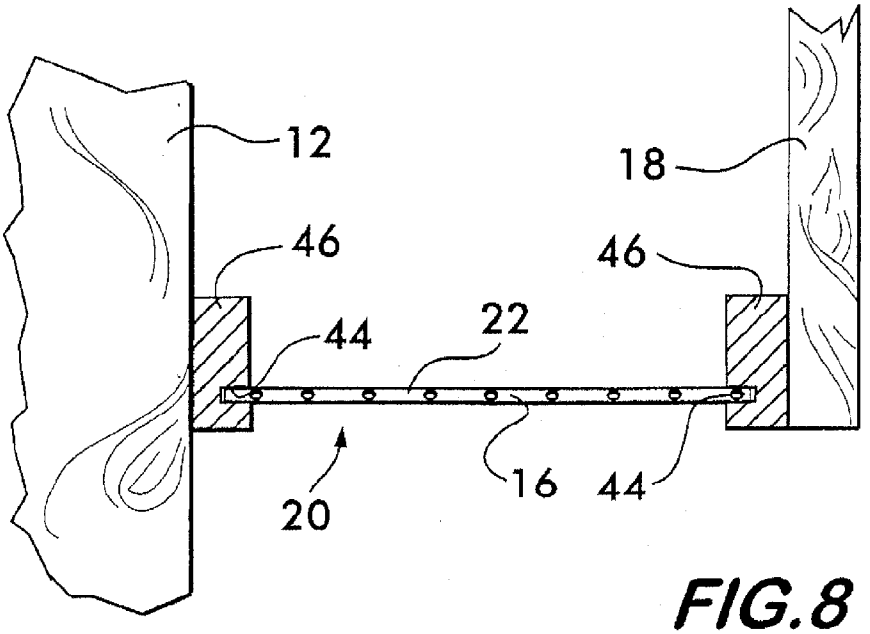


FIG.6

FIG. 7


14
10
"A"
"A"
18
12
42a
3
16
42a
40
40
38
38
3
42a
42a
22
20


12
18
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46
44
22
20
16
44

FIG. 8

VENTED SOFFIT ASSEMBLY AND METHOD OF INSTALLATION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit under 35 USC §119(e) of U.S. Provisional Patent Application No. 60/743,809, filed Mar. 27, 2006.

BACKGROUND OF THE INVENTION

[0002] The present invention relates to a vent for installation within an opening on the underside of a roof overhang of a building structure and to a method of its installation.

[0003] It is useful, and in many locales a building code requirement, that the attic area of a building underlying a roof be provided with a means to permit air exchange. Such ventilation prevents undue heat buildup, which can render the living quarters of the building uncomfortable and impose unreasonable energy requirements for cooling. Proper ventilation of the attic area also preserves the structural integrity of the roof and roof coverings.

[0004] A combination of ridge and soffit vents provides an example of a means for providing the desired ventilation. The ridge vent permits hot and/or humid air to rise up through the peak of the roof, and the soffit vent enables ambient air to be drawn into a lower part of the attic area to replace the hot and/or humid air escaping through the ridge vent.

[0005] Examples of ridge vents are provided by U.S. Pat. No. 5,960,595 issued to McCorsley et al., U.S. Pat. No. 6,298,613 B1, U.S. Pat. No. 6,308,472 B1, U.S. Pat. No. 5,902,432 and U.S. Pat. No. 5,673,521 issued to Coulton et al., 6,277,024 B1 issued to Coulton, and 4,942,699 issued to Spinelli and U.S. Patent Application Publications Nos. 2005/0136831 A1 and 2005/0090197 A1 of Coulton. Each of the above referenced patents and published applications are owned, or co-owned, by Benjamin Obdyke, Inc., the assignee of the present application.

[0006] Examples of soffit vents are provided by U.S. Pat. No. 6,145,255 issued to Allaster, U.S. Pat. No. 5,937,592 issued to Tamlyn, U.S. Pat. No. 5,718,086 issued to Dunn, U.S. Pat. No. 6,718,699 B1 and U.S. Pat. No. 6,705,052 B1 issued to Larson, U.S. Pat. No. 5,560,158 issued to Norton, U.S. Pat. No. 4,347,691 issued to Lloyd-Jones, and D503,225 S issued to Rodolfo et al. and U.S. Patent Application Publication No. 2002/0124484 A1 of Martin. Also see U.S. Pat. No. 5,947,817 issued to Morris et al., U.S. Pat. No. 6,468,453 B1 issued to Gaidjiergis et al., and U.S. Pat. No. 4,977,714 issued to Gregory, Jr. and U.S. Patent Application Publication No. 2003/0005649 A1 of Austin et al.

[0007] Typically, installation of a soffit vent includes measuring the width and length of an eave overhang, cutting one or more substantially-rigid perforated aluminum or PVC panels to a desired size, and installing the panel or panels to the eave overhang. If more than one panel is required, installation typically also requires the step of interlocking the ends of each adjacent pair of panels. Another method includes cutting circular or rectangular openings in sheets of plywood, oriented strand board, or other wooden material and placing individual vents or screens over the openings. However, this does not provide optimal intake ventilation and provides areas of exposed wood requiring periodic maintenance, such as painting, staining, cleaning, and the like.

[0008] While the soffit vents and vented eave assemblies disclosed in the above referenced patents and published applications may function in an acceptable manner, there continues to be a need for alternatives with respect to the design, materials, and installation of vented roof structures. To this end, a desired soffit vent and vented soffit assembly should provide an aesthetically-pleasing finish appearance and should permit improvements with respect to the time, labor and ease of vent installation. Further, a sufficient amount of intake air flow should be provided without compromising resistance to pest and weather infiltration, and the materials required to construct the soffit structure should be inexpensive and capable of efficient manufacture, storage, shipping, and handling.

BRIEF SUMMARY OF THE INVENTION

[0009] According to a first aspect of the present invention, a method is provided for installing a vent within a soffit. A continuous, elongate, strip of openwork ventilation material is provided in roll form to a building site. The ventilation material is unrolled at the site, and positioned within an elongate opening in the soffit. The opposite edges of the ventilation material are secured to the soffit along the elongate opening so that the installed ventilation material forms a one-piece, continuous soffit vent.

[0010] According to one embodiment of the present invention, the ventilation material has opposite longitudinally-extending side edges that are inserted within opposed, spaced-apart channels extending along a least a part of the periphery of the opening to thereby secure the ventilation material to the soffit. For example, the method can include the steps of inserting the ventilation material into an open end of the channels and sliding the ventilation material along the full length of the elongate opening until the ventilation material is properly positioned to cover the opening.

[0011] According to an alternate embodiment, the ventilation material has opposite longitudinally-extending side edges provided in the form of fastening strips. In this case, the fastening strips are nailed, stapled, adhesively bonded, or secured by other means to the structure of the soffit surrounding the elongate opening.

[0012] According to yet another aspect of the present invention, a vented soffit assembly of a building structure is provided. The assembly includes an eave of a roof having an elongate, continuous ventilation opening extending between a sidewall of the building structure and a fascia board of the eave. A one-piece, continuous strip of openwork ventilation material spans a full length and width of the opening between the sidewall and the fascia board. The strip of ventilation material is sufficiently flexible to enable it to be stored and shipped in a spiral roll and to be unrolled for installation within the assembly.

[0013] The assembly and vent is suited for use in prefabricated modular housing in which the eave overhang is typically of a constant width enabling the vent to be readily slid along the length of the eave overhang, or nailed thereto, during initial construction of the modular house. The assembly and vent can also be used during the initial construction or renovation of conventional building structures.

[0014] The strip of ventilation material can have opposite faces with alternating, transversely-extending ridges and grooves that, when installed, extend substantially perpendicular to the sidewall and fascia board. As an example, the strip of ventilation material can be an undulating perforated web of thermoplastic material or an undulating mat of fibers. Alternatively, a dimpled sheet of thermoplastic material or mat of fibers can be utilized. In some contemplated embodiments, the strip of ventilation material has substantially-planar fastening strips or tabs extending laterally therefrom.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The present invention should become apparent from the following description when taken in conjunction with the accompanying drawings, in which:

[0016] FIG. **1** is a perspective view of a first embodiment of a strip of ventilation material according to the present invention;

[0017] FIG. **2** is a cross-sectional view of a vented soffit assembly including the ventilation material of FIG. **1**;

[0018] FIG. **3** is a cross-sectional view of the assembly along line **3-3** in FIG. **2**;

[0019] FIG. **4** is a perspective view of a second embodiment of a strip of ventilation material according to the present invention;

[0020] FIG. **5** is a cross-sectional view of a vented soffit assembly including the ventilation material of FIG. **4**;

[0021] FIG. **6** is a perspective view of a third embodiment of a strip of ventilation material according to the present invention;

[0022] FIG. **7** is an alternate embodiment of a vented soffit assembly according to the present invention; and

[0023] FIG. **8** is another alternate embodiment of a vented soffit vent assembly according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0024] The present invention is a system for providing a flow of ventilating air beneath a roof structure **10** of a building. As best illustrated in FIG. **2**, the roof **10** typically extends to and overhangs an exterior wall **12** of the building adjacent the front, rear and/or sides of the building. The illustrated roof **10** is slanted at an angle relative to the horizontal and forms one or more peaks, or ridges, (not shown) adjacent an upper end thereof. A vent (not shown), such as a ridge vent or the like, is located at or near the ridge and allows hot humid air to rise into ambient atmosphere through the roof **10**. A lower part of the roof **10** provided by an eave, or overhang, **14** includes a soffit intake vent **16** enabling cooler ambient air to be drawn into the attic area to replace the hot humid air escaping through the ridge vent.

[0025] The eave **14** includes a fascia board **18** that extends substantially parallel to the wall **12** a spaced distance therefrom. By definition, the soffit **20** is the underside of the eave **14** that extends between wall **12** and fascia board **18**. An elongate opening **22** is formed in the soffit **20** between the wall **12** and fascia board **18** and provides a path of ventilation therethrough. See arrows "A" in FIG. **2**. The air flow path "A" is directed upwardly toward the underside **10***a* of the roof deck **10** where it communicates with the attic area providing a supply of cool ambient air thereto. Preferably, the opening **22** is continuous and extends substantially the full length of the eave **14**. Such a continuous soffit opening increases the amount and flow rate of intake ambient air and enhances uniform intake air distribution throughout the attic area.

[0026] A strip of openwork ventilation material is installed within the mouth of the soffit opening **22**. The ventilation material prevents debris, birds and other animals, insects, rain, snow and the like from infiltrating into the attic space. The ventilation material according to the present invention extends the full length and width of the opening **22** and is provided as one continuous piece without interruption and without the need for cutting, overlapping, interlocking, and/or joining of separate sections in an end-to-end or like configuration.

[0027] As best illustrated in FIG. **1**, a ventilation material **24** according to the present invention is provided as an elongate, indefinite-length strip of material capable of being stored and shipped in a spiral roll **26** and capable of being unrolled into a substantially planar configuration prior or during installation within the soffit **20**.

[0028] In the embodiment illustrated in FIG. **1**, the ventilation material **24** is provided as an undulating strip of plastic having perforations **28** providing ventilation passages. The undulations of the strip **24** form ridges **30** and grooves **32** on each face, **34** and **36**, of the strip **24**. In FIGS. **1-3**, the ridges **30** on the upper face **34** are triangular in cross-section while the grooves **32** have a trapezoidal cross-section. Lower face **36** has trapezoidal ridges **30** and triangular grooves **32**. Of course, the cross-section of the strip **24** can have uniform or non-uniform rounded grooves and ridges, uniform or non-uniform squared grooves and ridges, saw-toothed grooves and ridges, and/or any other configuration or shape of undulations. For example, see ventilation material **24***a* that is illustrated in FIG. **6**. Yet other ventilation material alternatives include the use of an undulating fibrous mat or thermoplastic sheet or a fibrous mat having arrays of dimples or the like projecting outwardly from one or both faces thereof.

[0029] In the embodiment illustrated in FIGS. **2** and **3**, the strip of ventilation material **24** is secured to the soffit **20** by being inserted in at least a pair of opposed longitudinally-extending channels **38**. For example, the opposed channels **38** can extend along and adjacent to the fascia board **18** and the wall **12** so that the channels **38** are capable of receiving the opposite longitudinally-extending side edges **40** of the strip of ventilation material **24**. See FIG. **2**. The remainder of the ventilation material **24** spans the full width and length of the soffit opening **22** without interruption. Preferably, each channel **38** is continuous; however, the channels **38** can also be discontinuous.

[0030] The channels **38** in FIG. **2** are provided by separate elongate, plastic or metal, clips **42** that define U-shaped channels. The clips **42** can be applied adjacent to or directly on the wall **12** and fascia board **18**. During installation of the ventilation material **24** in the soffit **20**, the side edges **40** of the ventilation material **24** can be inserted into an open end of the channels, and thereafter, the ventilation material **24** can be slid the entire length of the soffit opening **22**. Alternatively, the ventilation material **24** can be temporarily

positioned in a bowed position allowing its opposite side edges **40** to resiliently expand laterally into the channels **38**.

[**0031**] Preferably, the height "B" of the channels **38** is slightly shorter than the height "H" of the undulating strip of ventilation material **24**. Thus, when the ventilation material **24** is positioned within the channels **38**, the flexible, resilient undulations are slightly tensioned by the walls of the channels **38** and are thereby secured thereto without the use of fasteners or the like. Alternatively, staples, nails, adhesives or like fasteners can by used to secure the ventilation material **24** to the channels **38**.

[**0032**] Other alternatives for providing channels **38** within the soffit **20** are illustrated in FIGS. **7** and **8**. For example, channels can be provided by closely affixed strips of wood **42***a* or the like. Yet another example is to drill grooves **44** within boards or the like **46** that are applied to the wall **12** and fascia board **18**.

[**0033**] An alternate embodiment of a strip of ventilation material **48** according to the present invention is illustrated in FIGS. **4** and **5**. At least one fastening strip **50** extends laterally from each longitudinally-extending side edge **52** of the strip of ventilation material **48**. The fastening strip **50** can be provided as one continuous substantially-planar flange, or can be formed of a plurality of separate tabs. Preferably, the fastening strips **50** are formed integrally with the strip of ventilation material **48**. In use, a pair of opposed strips of wood **54** or the like are secured to the wall **12** and fascia board **18**, and the fastening strips **50** are secured thereto with a fastener, such as a nail or staple. See FIG. **5**. The fastening strips **50** can engage and be secured to an upper surface **54***a*, or an underside **54***b*, of the boards **54**.

[**0034**] Turning to another aspect of the present invention, a method of installing a soffit vent includes supplying a continuous, elongate, strip of openwork ventilation material, **24**, **24***a*, or **48**, in roll form to a building site or like construction area. The ventilation material is unrolled and its opposite longitudinally-extending side edges are positioned and supported within an opening **22** of the soffit **20**. The ventilation material forms a one-piece, continuous soffit vent along the full length of the soffit opening **22**.

[**0035**] The method can include the step of forming an opposed, parallel, spaced-apart pair of elongate, longitudinally-extending channels **38** along a predetermined length of the soffit **20**. The ventilation material is unrolled and its opposite longitudinally-extending side edges **40** are positioned and supported within the channels **38**. For example, the ventilation material can be inserted into an open end of the channels **38** and slid along the full length of the channels **38**. Alternatively, the ventilation material can be bowed to permit its side edges **40** to be simultaneously inserted laterally into the channels **38** until the ventilation material resiliently expands to its full width.

[**0036**] As an alternative to the use of channels, the strip of ventilation material **48** can have fastening strips **50** that are nailed or stapled to a confronting surface of the soffit **20**. For example, the laterally extending fastening strips **50** can be supported on top of the boards **54** or the like, or can be nailed or stapled to the board **54** from underneath the board **54**.

[**0037**] Preferably, the ventilation material has ridges **30** and grooves **32** that extend substantially perpendicular to the wall **12** and fascia board **18** when the vent is installed to the soffit. The strip of ventilation material can be provided in an indefinite length and can be cut to a desired length that matches the length of the soffit opening **22**.

[**0038**] The soffit vent of the present invention can be utilized in new construction as well as in existing soffit structures. For example, in an existing structure, an elongate, continuous opening **22** can be cut in the soffit and channels **38** or boards **52** can be installed. Thereafter, the ventilation material can be installed as discussed above. In new construction, such as the construction of a pre-fabricated modular structure, a continuous overhang can be provided at a constant width and the soffit vent of the present invention can be readily installed therein.

[**0039**] While a preferred soffit vent, assembly, and method of installation have been described in detail, various modifications, alterations, and changes may be made without departing from the spirit and scope of the vent, assembly, and method according to the present invention as defined in the appended claims.

1. A method of assembling a soffit in an eave of a roof, comprising the steps of:

supplying a continuous, elongate, strip of openwork ventilation material in a spiral roll;

unrolling said ventilation material;

positioning a continuous length of said ventilation material in an elongate opening of a predetermined length in the soffit; and

securing opposite edges of said unrolled continuous elongate ventilation material to the soffit such that said ventilation material forms a one-piece, continuous soffit vent within said opening.

2. A method according to claim 1, further comprising the step of forming an opposed, parallel, spaced-apart pair of elongate, longitudinally-extending channels within said elongate opening.

3. A method according to claim 2, wherein said securing step includes supporting opposite longitudinally-extending side edges of said unrolled continuous elongate ventilation material in said channels.

4. A method according to claim 3, wherein said securing step includes inserting an end of said ventilation material into an open end of said channels and sliding said ventilation material in said channels along a full length of said elongate opening.

5. A method according to claim 4, further comprising the step of cutting said continuous elongate ventilation material to a length that substantially matches said full length of said elongate opening.

6. A method according to claim 5, wherein said supplying step includes supplying a spiral roll of an openwork ventilation material that has opposite faces with alternating, transversely-extending ridges and grooves.

7. A method according to claim 6, wherein, when said ventilation material is supported in said channels, said ridges and grooves of said ventilation material extend transversely to said channels.

8. A method according to claim 7, wherein said channels are formed by applying elongate plastic or metal clips or channels to opposed surfaces of said soffit on opposite sides of said opening.

9. A method according to claim 1, wherein said securing step includes fastening opposite longitudinally-extending side edges of said unrolled continuous elongate ventilation material to the soffit.

10. A method according to claim 9, wherein said supplying step includes supplying a spiral roll of an openwork ventilation material that has opposite faces with alternating, transversely-extending ridges and grooves and opposite longitudinally-extending side edges with fastening strips.

11. A method according to claim 10, wherein said fastening strips are secured with a fastener, or are bonded, to opposing strips of board applied along a length of said opening.

12. A method according to claim 11, wherein said ridges and grooves of said ventilation material extend transversely across said opening and wherein said fastening strips are substantially planar.

13. A vented soffit assembly of a building structure, comprising:

an eave of a roof having an elongate, continuous ventilation opening extending between an exterior wall of the building structure and a fascia board of said eave; and

a one-piece, continuous strip of openwork ventilation material spanning a full length and width of said opening;

said strip of ventilation material being sufficiently flexible to be stored and shipped in a spiral roll and to be unrolled for installation within said assembly.

14. An assembly according to claim 13, further comprising channels that extend along at least a part of a periphery of said opening and that receive peripheral edges of said strip of ventilation material for supporting said strip of ventilation material in said opening.

15. An assembly according to claim 14, wherein said strip of ventilation material has opposite faces with alternating, transversely-extending ridges and grooves.

16. An assembly according to claim 15, wherein said ridges and grooves of said ventilation material extend substantially perpendicular to said exterior wall and fascia board.

17. An assembly according to claim 16, wherein said strip of ventilation material is an undulating perforated web of thermoplastic material or an undulating mat of fibers.

18. An assembly according to claim 17, wherein said channels are formed by elongate plastic or metal clips applied to said exterior wall and said fascia board.

19. An assembly according to claim 13, wherein said strip of ventilation material has opposite faces with alternating, transversely-extending ridges and grooves and opposite longitudinally-extending side edges with fastening strips.

20. An assembly according to claim 19, wherein said fastening strips are fastened to strips of board extending on said sidewall and said fascia board along said elongate opening.

21. An assembly according to claim 20, wherein said strip of ventilation material is an undulating perforated web of thermoplastic material having integrally-formed substantially-planar fastening strips.

* * * * *