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(19) **United States**(12) **Patent Application Publication**
Hines(10) **Pub. No.: US 2010/0132288 A1**(43) **Pub. Date: Jun. 3, 2010**(54) **TOP SIDED VENTED TRIM FOR EXTERIOR
CLADDING SYSTEM**(52) **U.S. Cl. 52/302.6; 52/716.2; 52/717.05**(57) **ABSTRACT**(76) **Inventor: David C. Hines, Swanton, OH (US)**

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A trim member for an exterior wall cladding system of a residential or commercial building is provided. The trim member includes a nailing flange, a top flange extending perpendicularly from the top of the nailing flange, a front leg extending downwardly from the exterior end of the top flange, a vent leg projecting inwardly from the front leg, and a return leg extending upwardly toward the top flange. The vent leg may be perforated to allow the passage of air and moisture out of the trim member and oriented so that rain water cannot enter directly into the trim member. The trim member permits the wall cladding system to drain and ventilate, thereby removing unwanted water and moisture vapor or condensation from within the cladding system. The trim member may be installed on an exterior building wall beneath the soffit prior to the application of a wall cladding system.

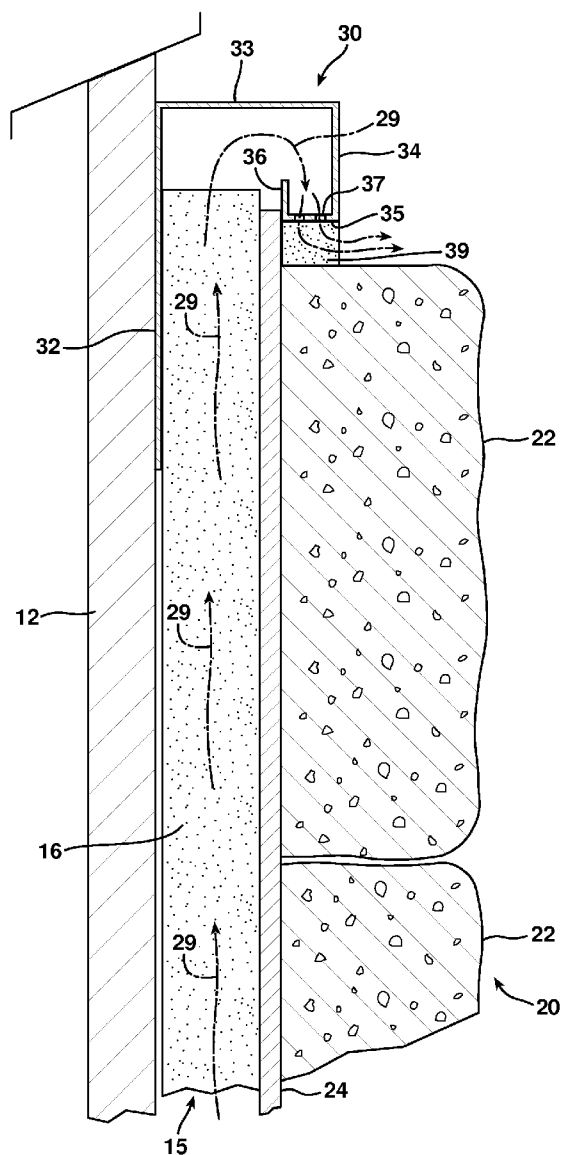


FIG. 1

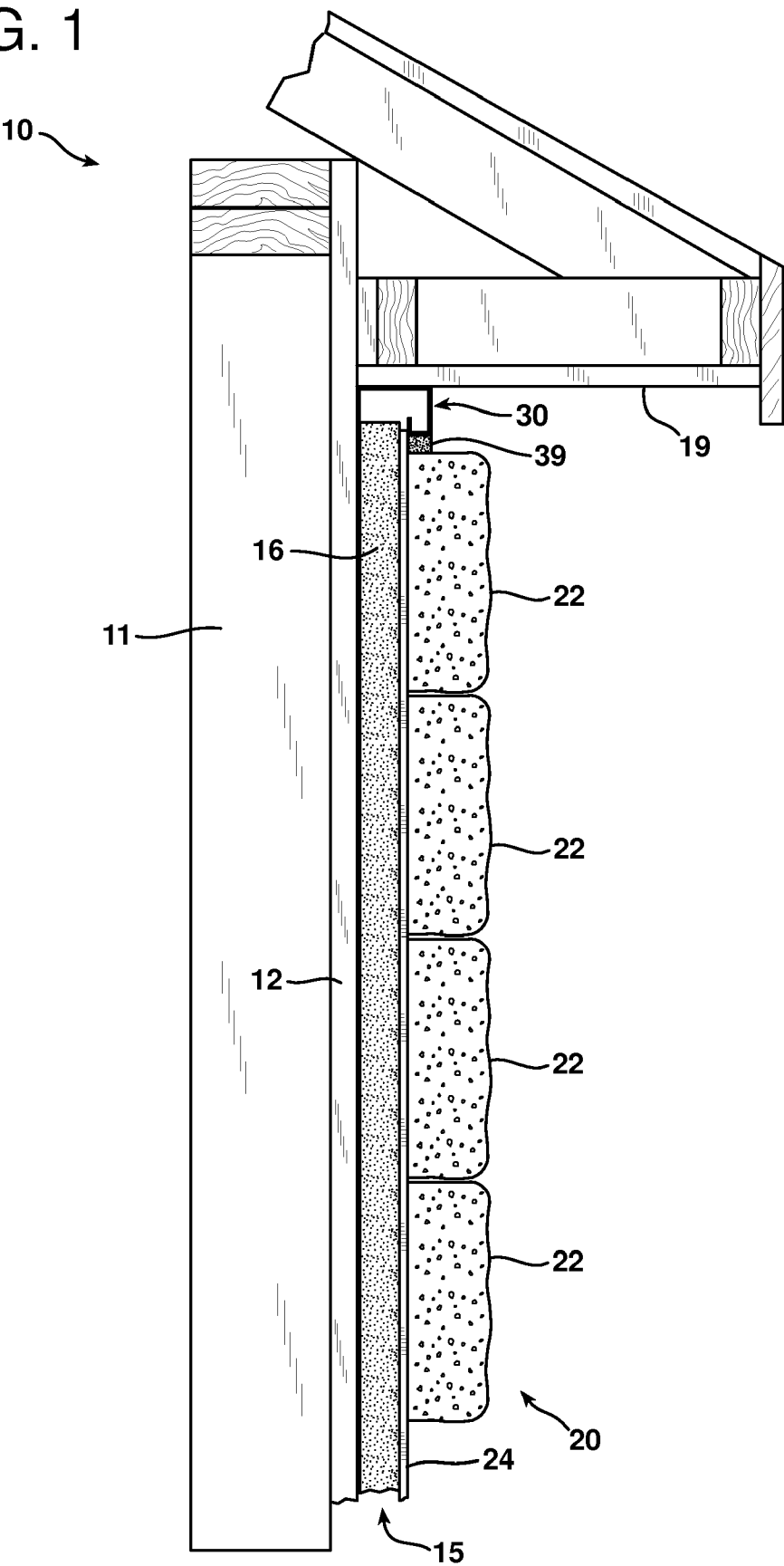


FIG. 2

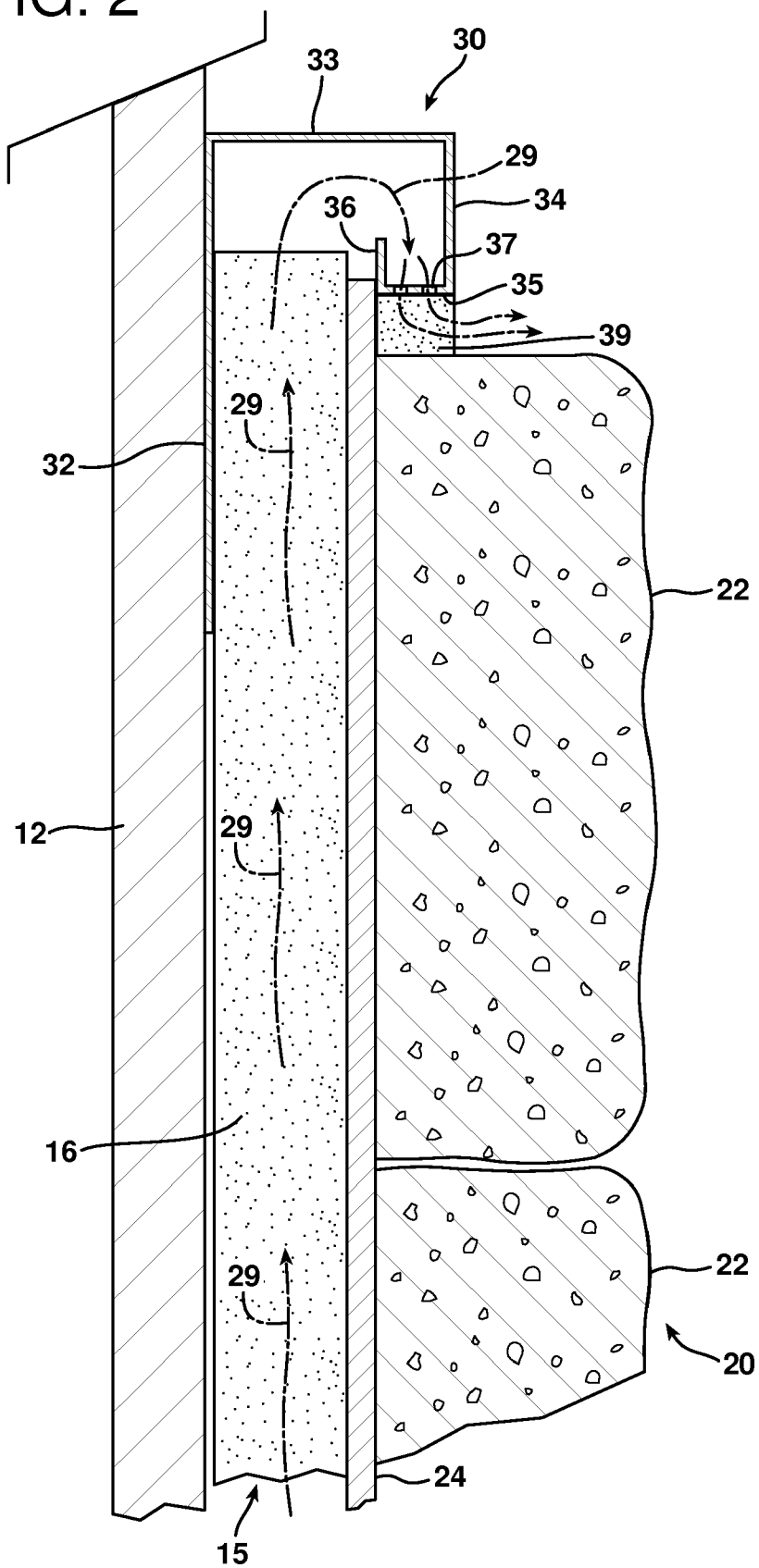


FIG. 3

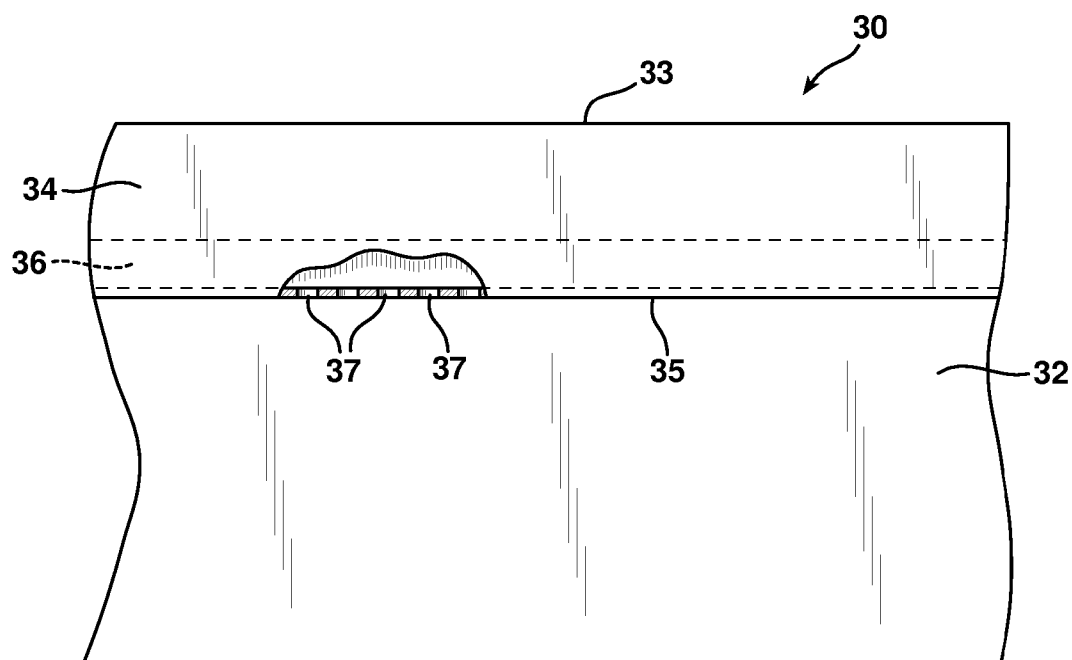
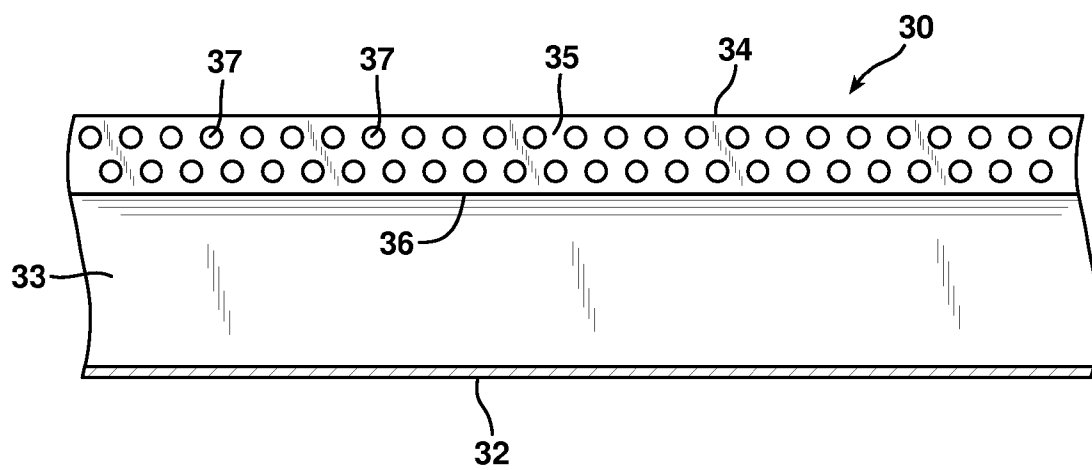


FIG. 4



TOP SIDED VENTED TRIM FOR EXTERIOR CLADDING SYSTEM

TECHNICAL FIELD AND INDUSTRIAL APPLICABILITY OF THE INVENTION

[0001] The present invention relates generally to exterior cladding systems, and more particularly, to a trim member for an exterior wall cladding system of a residential or commercial building that allows the cladding system to drain and ventilate.

BACKGROUND OF THE INVENTION

[0002] Most habitable buildings are made of vertical support members formed from wood or metal studs. These vertical support members form a substructure on which sheets of sheathing material are attached to form the walls of the building substructure. These walls require an external covering to keep rain, snow, sunlight, and other environmental factors off of the wall substructure, particularly when the sheathing material is formed of oriented strand board (OSB) or other products that are not tolerant to being in contact with significant amounts of moisture. A covering for the wall substructure that is often selected is a covering formed of a masonry construction, such as stucco, brick, or stone, which can be either natural or artificial.

[0003] When construction is complete, the building is intended to be constructed so that the flow of water and moisture from the external environment into the building structure is prevented. However, no building is waterproof. For example, water or moisture may accumulate behind the exterior wall covering as a result of condensation or high humidity. In addition, rain water may be driven behind the external wall covering by wind through cracks or imperfections in the exterior wall covering caused by poor workmanship, deterioration of the exterior wall covering over time, inferior window construction, plumbing faults, roof faults, and the like.

[0004] The presence of water behind the exterior wall covering is undesirable. For instance, moisture provides a breeding ground for microorganisms. When water and/or other microbial nutrients contaminate the space between the sheathing and the wall cladding, the water and nutrients provide a support medium for the growth of bacteria, fungi, and/or mold in and on the building materials. The bacterial, fungal, and mold growth may cause unpleasant odors, discoloration of the wall cladding, and a loss of vapor barrier properties for the water-resistant sheathing. In addition, many people are susceptible to severe allergic responses when exposed to fungal spores that may be emitted from contaminated building materials. Water can also cause degradation to the wall cladding, efflorescence, interior damage, and/or damage to the foundation.

[0005] Another problem with associated with masonry construction is that excess mortar and other construction debris may fall into the cavity and create places where moisture can accumulate. If mortar or other construction debris obstructs the weeps designed to direct water away from the building, or if the mortar or construction debris provides a place where water can accumulate, moisture builds up within the cavity. Similarly, the top portion of the drainage cavity can become obstructed and prevent the flow of moisture out of the cavity, thereby creating undesirable water within the cavity.

[0006] Accordingly, it is desirable to maintain an open end at both the top and the bottom of the drainage cavity so that unwanted moisture and water can be removed from within the cladding system. It is also desirable to prevent unwanted debris from entering the drainage system so that the drainage cavity can remain open. Thus, there exist a need in the art for a means to allow the wall cladding system to drain and ventilate, thereby removing unwanted water and moisture from within the cladding system, while simultaneously preventing debris from falling into the drainage cavity.

SUMMARY OF THE INVENTION

[0007] It is an object of the present invention to provide a trim member for use with an exterior cladding system affixed to an exterior sheathing of a building wall. The trim member includes a nailing flange extending vertically for attachment to the exterior sheathing, a top flange defining a depth dimension of the trim member and extending orthogonally from an upper portion of the nailing flange away from the exterior sheathing, a front leg extending downwardly from the top flange generally parallel to the nailing flange, a vent leg extending inwardly toward the nailing flange from the front leg, and a return leg projecting upwardly from the vent leg. The nailing flange, top flange, front leg, vent leg and return leg may be integrally formed. The vent leg is operable to allow the passage of air therethrough. In one embodiment, the return leg is sealed against the exterior cladding system. The trim member has a generally "L" shape in cross section and is designed to be installed on an exterior building wall beneath the soffit prior to the application of a wall cladding system and/or under a window or other interruption of the ventilation plane of the wall cladding system. The trim member allows the wall cladding system to drain and ventilate, thereby removing unwanted water and moisture from within the cladding system.

[0008] It is another object of the present invention to provide an exterior cladding system mounted to a building wall having exterior sheathing. The cladding system includes (1) an exterior cover affixed to the exterior sheathing, (2) a drainage gap formed between the exterior cover and the exterior sheathing to provide ventilation of air through the exterior cladding system from a bottom portion of the building wall to a top portion of the building wall, and (3) the trim member discussed in detail above. The trim member is secured to the exterior sheathing and/or framing members in flow communication with the drainage gap to direct a flow of air from the drainage gap externally of the building wall. For example, the vent leg permits the passage of air from the trim member to the atmosphere externally of the external cladding system. In at least one exemplary embodiment, the exterior cover is a masonry material secured to a masonry scratch coat affixed to the fluid conducting member.

[0009] It is an advantage of the present invention that the trim member allows the wall cladding system to drain and ventilate to remove water and moisture from within the cladding system.

[0010] It is another advantage of the present invention that the trim members are inexpensive and may be quickly and easily installed by a single individual.

[0011] It is also an advantage of the present invention that the vent leg of the trim member is oriented such that water cannot directly enter the cladding system.

[0012] It is further advantage of the present invention the trim member permits the flow of air and moisture from the drainage gap to be discharged through the trim member.

[0013] It is a feature of the present invention that the vent leg of the trim member is perforated to permit air and moisture to flow out of the drainage gap and into the atmosphere.

[0014] It is also a feature of the present invention that the trim member has a generally “L” shape in cross section.

[0015] It is yet another feature of the present invention that the drainage gap may include a fluid conducting member.

[0016] It is a feature of the present invention that the trim member may be installed on an exterior building wall beneath the soffit prior and/or under a window or other interruption of the ventilation plane of the wall cladding system.

[0017] The foregoing and other objects, features, and advantages of the invention will appear more fully hereinafter from a consideration of the detailed description that follows. It is to be expressly understood, however, that the drawings are for illustrative purposes and are not to be construed as defining the limits of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The advantages of this invention will be apparent upon consideration of the following detailed disclosure of the invention, especially when taken in conjunction with the accompanying drawings wherein:

[0019] FIG. 1 is a partial cross-sectional view of a building wall having a trim member according to at least one embodiment of the present invention;

[0020] FIG. 2 is an enlarged partial cross-sectional view of the top portion of the building wall depicted in FIG. 1 to view a side elevational view of the trim member according to the present invention, the flow path through the drainage gap and the trim member being depicted by directional arrows;

[0021] FIG. 3 is a partial front elevational view of the trim member depicted in FIG. 2; and

[0022] FIG. 4 is a bottom plan view of the trim member of FIG. 2 showing the perforated vent leg thereof allowing the passage of air and moisture from the building wall.

DETAILED DESCRIPTION AND PREFERRED EMBODIMENTS OF THE INVENTION

[0023] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which the invention belongs. Although any methods and materials similar or equivalent to those described herein can be used in the practice or testing of the present invention, the preferred methods and materials are described herein. All references cited herein, including published or corresponding U.S. or foreign patent applications, issued U.S. or foreign patents, or any other references, are each incorporated by reference in their entirety, including all data, tables, figures, and text presented in the cited references.

[0024] In the drawings, the thickness of the lines, layers, and regions may be exaggerated for clarity. It is to be noted that like numbers found throughout the figures denote like elements. It will be understood that when an element is referred to as being “on,” another element, it can be directly on or against the other element or intervening elements may be present.

[0025] The present invention relates to a trim member for an exterior wall cladding system. The trim member has a

generally “L” shape in cross section and is designed to be installed on an exterior building wall beneath the soffit prior to the application of a wall cladding system. In addition, the trim member may be positioned under a window or other interruption of the ventilation plane of the wall cladding system. The trim member allows the wall cladding system to drain and ventilate, thereby removing unwanted water and moisture from within the cladding system. Additionally, the trim member provides pressure equalization between the wall cladding system and the water-resistant barrier positioned on the exterior sheathing of the building. Further, the trim member advantageously allows air to enter the bottom of the wall and exit at the top without any interruptions. Further, the trim members are inexpensive and may be quickly and easily installed by a single individual.

[0026] Turning to FIG. 1, a building wall 10 of conventional construction with an exterior sheathing 12 fastened to vertical wall studs 11 is illustrated. The building wall 10 is typically wrapped in a water-resistive barrier (not shown) to restrict the flow of air and moisture through an exterior sheathing 12 and into the interior of the building wall 10. An exterior cladding system 20 is secured to the exterior sheathing 12 in a conventional manner with a drainage gap 15 located between the exterior cladding system 20 and the exterior sheathing 12 and water-resistive barrier. The drainage gap 15 can be defined by a fluid conducting member 16 fabricated from a material such as a fabric mesh bonded to a standard extruded foam insulation board, an impermeable membrane of high density polyethylene, wood strapping, or furring. Non-limiting examples of fluid conducting members (e.g. rainscreens) that may be utilized include Delta®-Dry, Home Slicker®, Sure Cavity™, and GreenGuard® DC14. Alternatively, the drainage gap 15 may be filled with a fluid conducting member. The fluid conducting member is a material that allows gases, including air, and liquids such as water to pass through it with negligible resistance. Additionally, the fluid conducting member generally prevents the passage of solid material. The drainage gap 15 can be defined as other configurations including grooves formed in the exterior sheathing 12 which can be covered by a fabric mesh or protrusions formed on the exterior sheathing 12. When the exterior cladding system 20 utilizes a stone material (e.g., natural or manufactured) or stucco as the exterior covering or cladding 22, a masonry scratch coat 24 is placed onto the exterior side of the drainage gap 15 to facilitate the attachment of the exterior covering 22 to the building wall 10.

[0027] In the construction of a conventional building wall 10 the drainage gap 15 is placed into flow communication with the soffit 19 so that the air and moisture, such as condensation, can flow upwardly through the drainage gap 15 and be expelled at the soffit 19. The use of the trim member 30, according to the principles of the instant invention, places the trim member 30 in flow communication with the drainage gap 15 to allow the flow of air and moisture from the drainage gap 15 to be discharged through the trim member 30, as will be described in greater detail below. Some exterior cladding systems 20 are constructed with a drainage gap 15 behind the exterior cover 22. For the exterior cladding system 20 having a physical ventilation space 15 behind the exterior cover 22 to work properly, the air must be able to enter the ventilation space 15 from the bottom of the building wall 10 and exit at the top of the building wall 10, or at any interruption of the exterior cladding system 20, such as at windows and doors. The use of a trim member 30 at the top of the exterior cladding

system 20 to intercept the ventilation space 15 and be in flow communication therewith addresses a need to exhaust air from the ventilation space 15 at all such areas, including beneath windows. The use of the trim member 30 will permit the exterior cladding system 20 to breathe properly to keep the exterior cladding system 20 dry both from liquid water that could be enter the ventilation space 15 and moisture vapor or condensation that accumulates behind the exterior cladding system 20.

[0028] The trim member 30 is best seen in FIGS. 2-4 and is formed with a vertically extending (when installed as shown in FIG. 2) nailing flange 32 that is fastened to the exterior sheathing 12 by mechanical fasteners, such as nails or staples. Extending perpendicularly from the top of the nailing flange 32, a top flange 33 defines the depth dimension of the trim member 30 from the exterior sheathing 12. A front leg 34 extends downwardly from the exterior end of the top flange 33 and terminates at a distance from the top flange 33 that is less than the length of the nailing flange 32. In exemplary embodiments, the front leg 34 is as small as possible because it is visible after final installation of the exterior covering 22. The vent leg 35 projects inwardly from the front leg toward the nailing flange 32 and is terminated in a return leg 36 that extends upwardly a short distance toward the top flange 33. In exemplary embodiments, the top flange projects a distance suitable to extend over a portion of the cladding 20. In at least one exemplary embodiment the top flange 33 extends approximately 1¼ inches from the nailing flange 32. The nailing flange 32, top flange 33, front leg 34 and return leg 36 are all impervious to air and moisture. The vent leg 35 is formed to allow the passage of air and moisture out of the trim member 30. One embodiment of the vent leg 35, as is shown in FIG. 4, has perforation holes 37 to allow the passage of air and moisture out of the trim member 30. The trim member can be constructed from an extruded thermoplastic (e.g., polyvinyl) as is well known in the art of manufacturing vinyl siding and trim members. However, the trim member can be fabricated from many moisture resistant materials, including aluminum, galvanized metal, copper, polymers, composites, wood, and recycled materials.

[0029] When installed, the trim member 30 has the vent leg 35 oriented generally horizontally so that rain water cannot enter into the trim member directly. A mortar net 39 can be positioned between the vent leg 35 and the top surface of the exterior cover 22, shown in FIGS. 1 and 2 as being stone. The mortar net 39 helps to prevent the direct entry of rain water and debris into the trim member 30. In exemplary embodiments, the mortar net 39 is approximately ½ long. Furthermore, the mortar net 39 prevents the direct entry of mortar, insects, debris and other foreign material into the trim member 30, which would restrict the effectiveness of the operation of the trim member 30. The location of the return leg 36 is designed to engage the masonry scratch coat 24 and form a seal therewith to further aid in the effective operation of the trim member 30 in allowing air and moisture to be discharged from the drainage gap 15.

[0030] In operation, the building wall 10 is constructed with the exterior sheathing 12 affixed to the vertical studs 11. The trim member 30 is installed on the exterior sheathing 12 before the exterior cladding system 20 or the fluid conducting member 16 are installed by mechanically fastening the nailing flange 32 to the exterior sheathing 12. The exterior cladding system 20 is then installed with the fluid conducting member 16 preserved between the exterior sheathing 12 and

the exterior covering 22 to define the drainage gap 15 that extends from the bottom of the building wall 10 to the top of the building wall 10 without extending through the soffit 19. It is to be appreciated that in some exemplary embodiments, the drainage gap does not contain a fluid conducting member 16. The trim member allows the wall cladding system to drain and ventilate, thereby removing unwanted water and moisture from within the cladding system and the fluid conducting member 16. The masonry scratch coat 24 is formed so that the return leg 36 is engaged therewith to form a seal therebetween. The uppermost stone member 22 is installed with a gap between the top surface of the stone 22 and the vent leg 35, this gap being filled with the installation of the mortar net 39. Once constructed, the air and moisture will move upwardly through the drainage gap 15, as indicated by the directional arrows 29, and flow into the trim member 30 to be deflected by the impervious top flange 33 and front leg 34 into the perforated vent leg 35 to be discharged into the atmosphere through the mortar net 39.

[0031] The invention of this application has been described above both generically and with regard to specific embodiments. Although the invention has been set forth in what is believed to be the preferred embodiments, a wide variety of alternatives known to those of skill in the art can be selected within the generic disclosure. The invention is not otherwise limited, except for the recitation of the claims set forth below.

Having thus described the invention, what is claimed is:

1. A trim member for use with an exterior cladding system affixed to an exterior sheathing of a building wall, comprising:
 - a nailing flange extending vertically for attachment to said exterior sheathing;
 - a top flange defining a depth dimension of said trim member and extending orthogonally from an upper portion of said nailing flange away from said exterior sheathing;
 - a front leg extending downwardly from said top flange generally parallel to said nailing flange; and
 - a vent leg extending inwardly toward said nailing flange from said front leg, said vent leg being operable to allow the passage of air therethrough.
2. The trim member of claim 1, further comprising a return leg projecting upwardly from said vent leg.
3. The trim member of claim 2, wherein said top flange and said front leg are impervious to the passage of air and moisture.
4. The trim member of claim 3, wherein said vent leg is perforated.
5. The trim member of claim 3, wherein said trim member is formed from extruded polyvinyl.
6. The trim member of claim 3, wherein said return leg is sealed against said exterior cladding system.
7. An exterior cladding system mounted to a building wall having exterior sheathing, comprising:
 - an exterior cover affixed to said exterior sheathing;
 - a drainage gap formed between said exterior cover and said exterior sheathing to provide ventilation of air through said exterior cladding system from a bottom portion of said building wall to a top portion of said building wall;
 - a trim member secured to said exterior sheathing in flow communication with said drainage gap to direct a flow of air from said drainage gap externally of said building wall.
8. The exterior cladding system of claim 7, wherein said trim member includes a vent leg oriented generally horizon-

tally, said vent leg permitting the passage of air from said trim member to the atmosphere externally of said external cladding system.

9. The exterior cladding system of claim **8**, further comprising a fluid conducting member defining said drainage gap.

10. The exterior cladding system of claim **9**, wherein said trim member further includes:

- a vertically extending nailing flange for attachment of said trim member to said exterior sheathing;
- a top flange defining a depth dimension of said trim member and extending orthogonally from an upper portion of said nailing flange away from said exterior sheathing; and
- a front leg extending downwardly from said top flange generally parallel to said nailing flange, said vent leg extending inwardly from said front leg toward said nailing flange.

11. The exterior cladding system of claim **10**, wherein said vent leg is perforated and said top flange and said front leg being impervious to direct air from said drainage gap to said vent leg for discharge from said trim member.

12. The exterior cladding system of claim **11**, further comprising an impervious return leg projecting upwardly from said vent leg.

13. The exterior cladding system of claim **12**, wherein said exterior cover is a masonry material secured to a masonry scratch coat affixed to said fluid conducting member, said return leg engaging said masonry scratch coat to form a seal therewith.

14. The exterior cladding system of claim **12**, wherein said nailing flange, said top flange, said front leg, said vent leg and said return leg are integrally formed.

15. In a building wall having an exterior sheathing, an exterior cladding system, and a drainage gap between said exterior sheathing and said exterior cladding system, the improvement comprising:

- a trim member mounted in flow communication with said drainage gap to vent air from said drainage gap externally of said exterior cladding system.

16. The building wall of claim **15** wherein said trim member includes a vent leg oriented generally horizontally, said vent member being operable to allow a passage of air from said trim member.

17. The building wall of claim **16** wherein said trim member further includes:

- a vertically extending nailing flange for attachment of said trim member to said exterior sheathing;
- a top flange defining a depth dimension of said trim member and extending orthogonally from an upper portion of said nailing flange away from said exterior sheathing; and
- a front leg extending downwardly from said top flange generally parallel to said nailing flange, said vent leg extending inwardly from said front leg toward said nailing flange.

18. The building wall of claim **17** wherein said top flange and said front leg are impervious.

19. The building wall of claim **18** wherein said drainage gap is defined by a fluid conducting member mounted to said exterior sheathing.

20. The building wall of claim **19** wherein said exterior cladding system includes an exterior cover formed of masonry material secured to a masonry scratch coat affixed to said fluid conducting member, said trim member further including a return leg projecting upwardly from said vent leg to engage said masonry scratch coat to form a seal therewith.

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