US 20060137262A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2006/0137262 A1

Crowder-Moore et al. (43) Pub. Date: Jun. 29, 2006

(54) SELF-ADHERED FLANGE FOR USE WITH NON-FLANGED WINDOWS

(76) Inventors: **Barbara Jean Crowder-Moore**, Church Road, VA (US); **Robert Bates Hagood**, Wilmington, DE (US); **James Dean Katsaros**, Midlothian, VA (US); **Barbara Klimowicz O'Rourke**, Richmond, VA (US)

Correspondence Address:
E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
BARLEY MILL PLAZA 25/1128
4417 LANCASTER PIKE
WILMINGTON, DE 19805 (US)

(21) Appl. No.: **11/011,669**

(22) Filed: **Dec. 14, 2004**

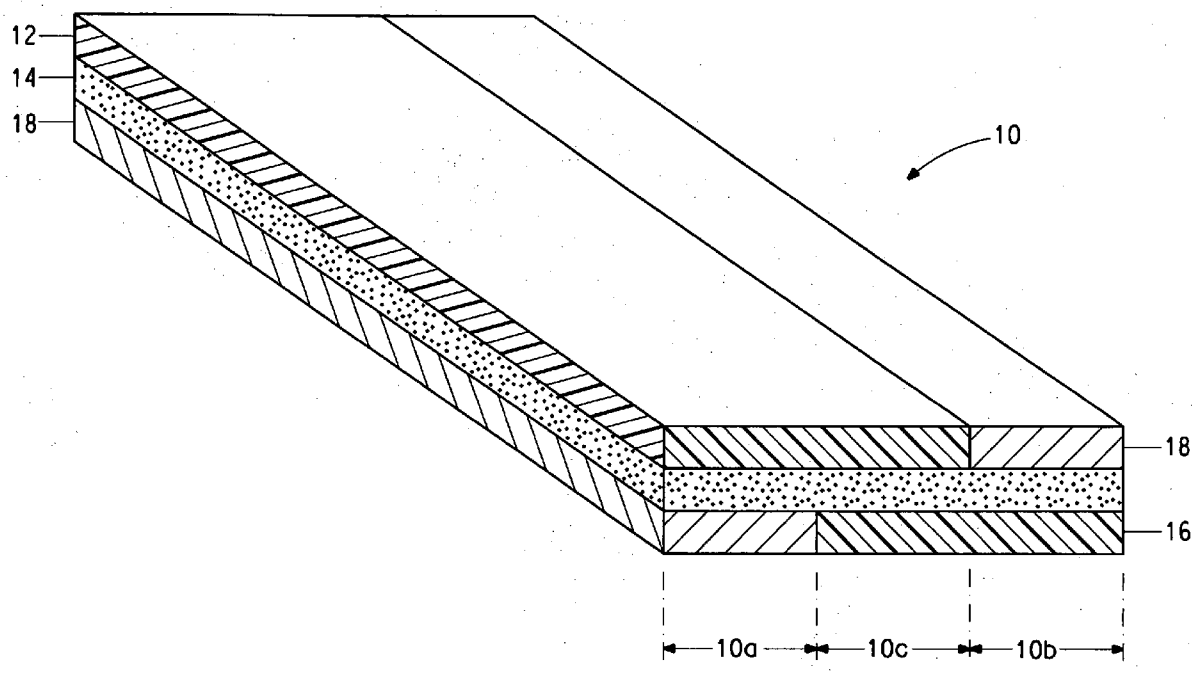
Publication Classification

(51) **Int. Cl.**
E04D 13/14 (2006.01)

(52) **U.S. Cl.** **52/58**

(57) **ABSTRACT**

An elongated flange material for forming a flange and a method for use in sealing a non-flanged window, door, or other fenestration product in a wall opening, wherein the flange material comprises at least one top coversheet and at least one bottom coversheet with a pressure-sensitive adhesive layer sandwiched between the two coversheets, wherein the coversheets occupy an appreciable width of the flange but do not extend across the entire width of the flange and thereby are offset with respect to each other thereby providing opposing first and second exposed surfaces of the pressures sensitive adhesive layer.



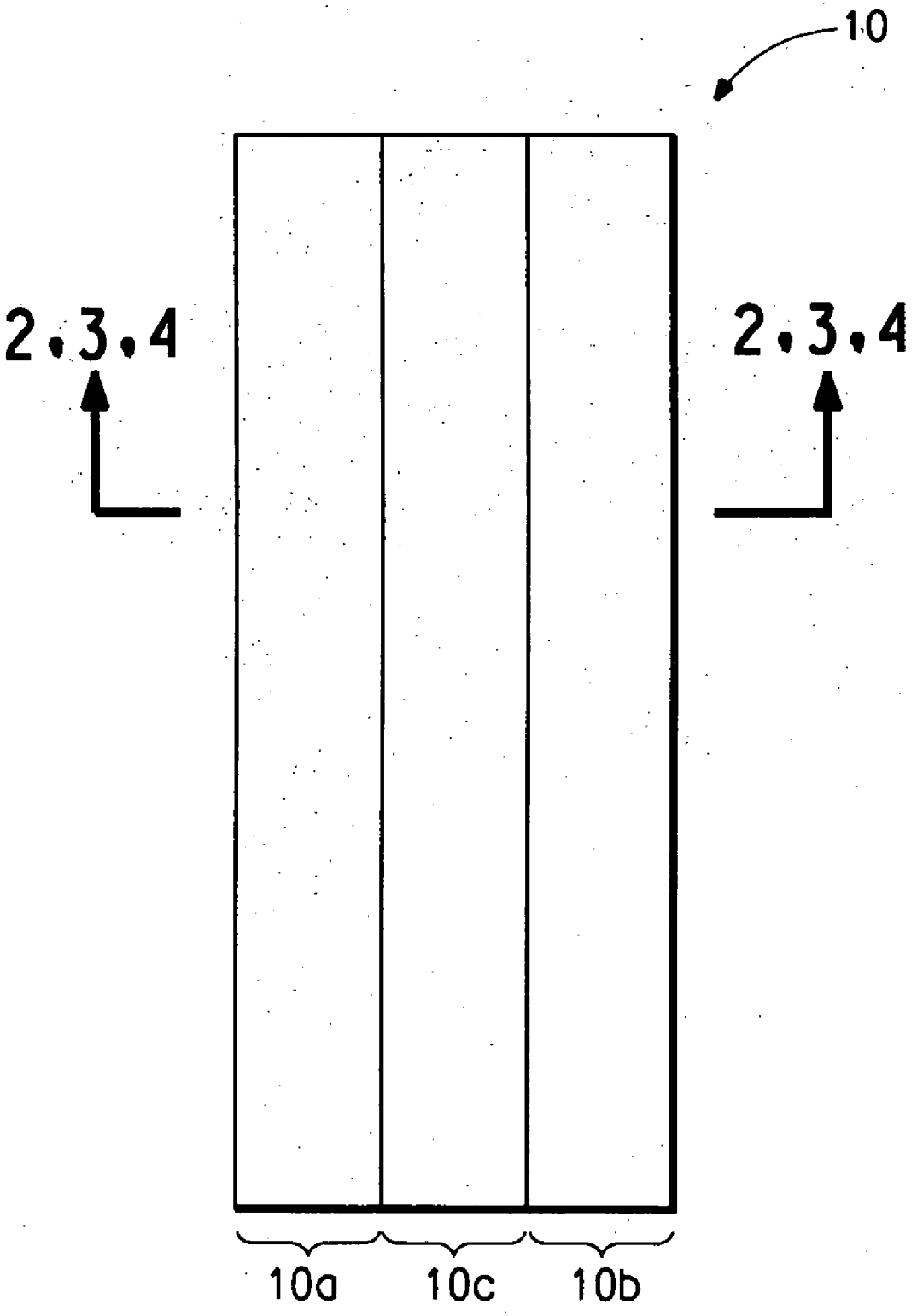


FIG. 1

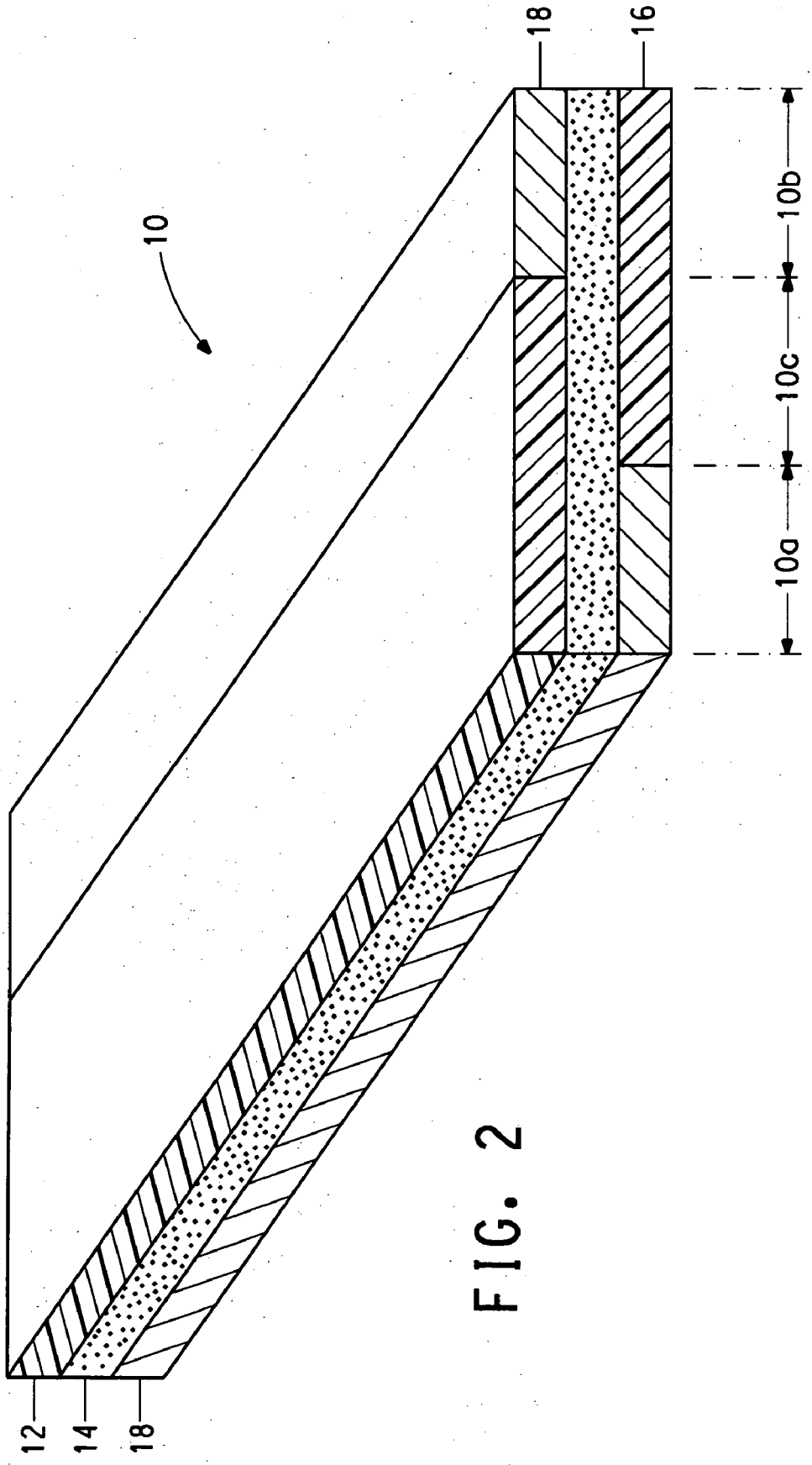


FIG. 2

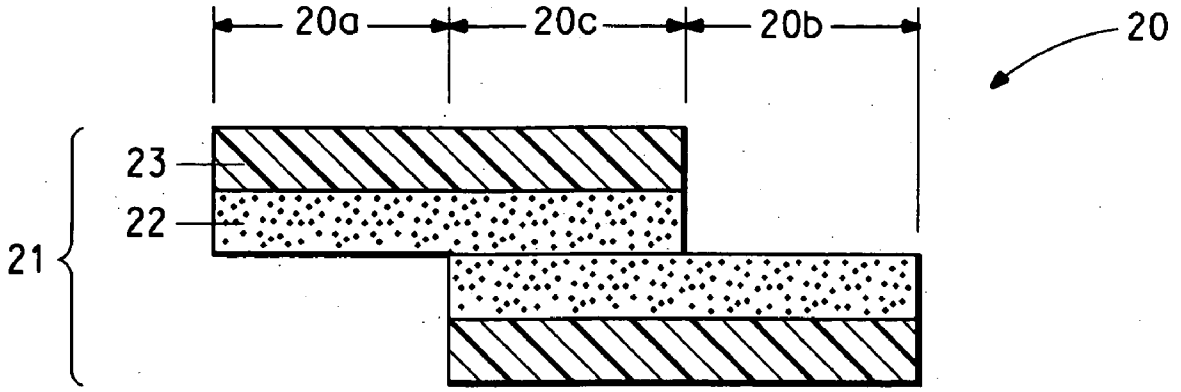


FIG. 3

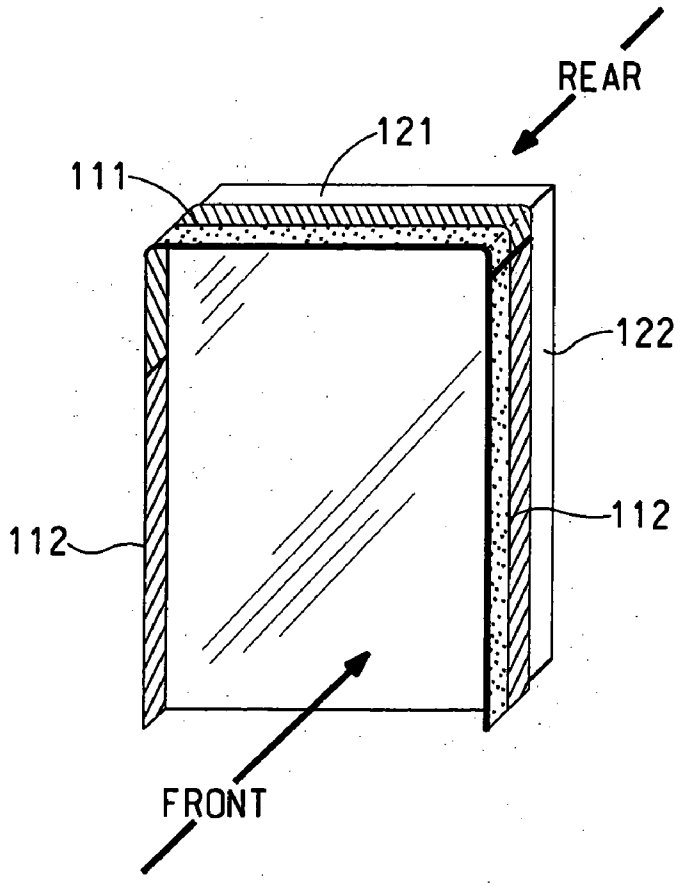


FIG. 4

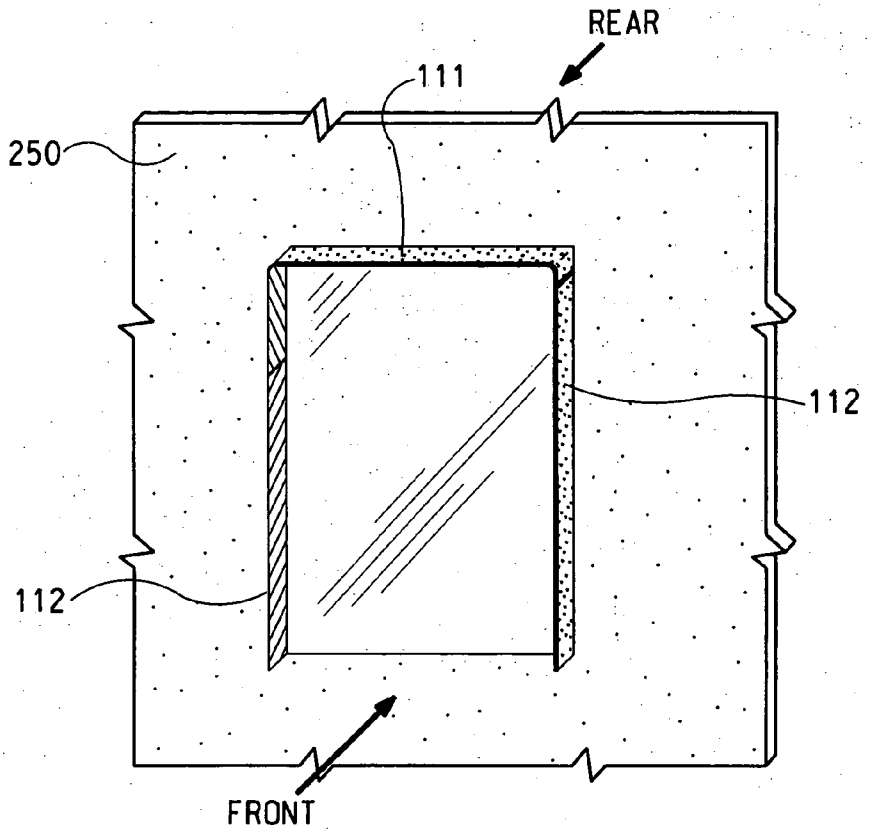


FIG. 5

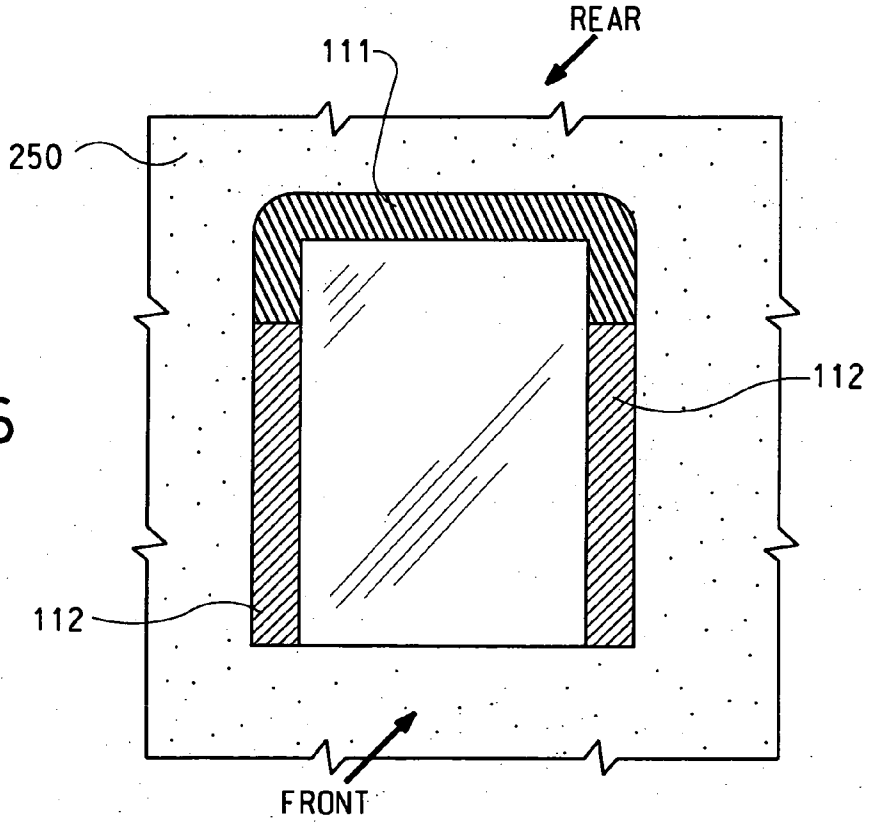


FIG. 6

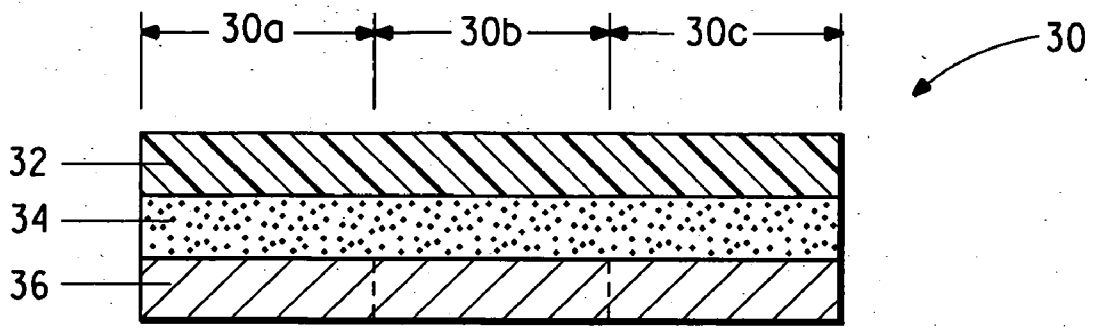


FIG. 7

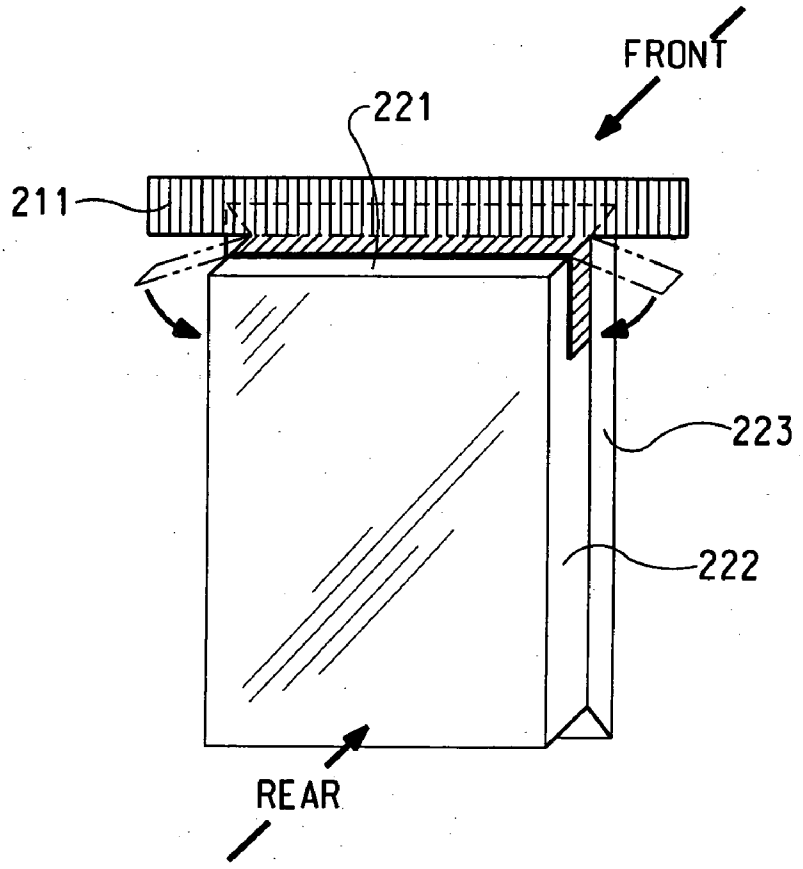


FIG. 8

FIG. 9

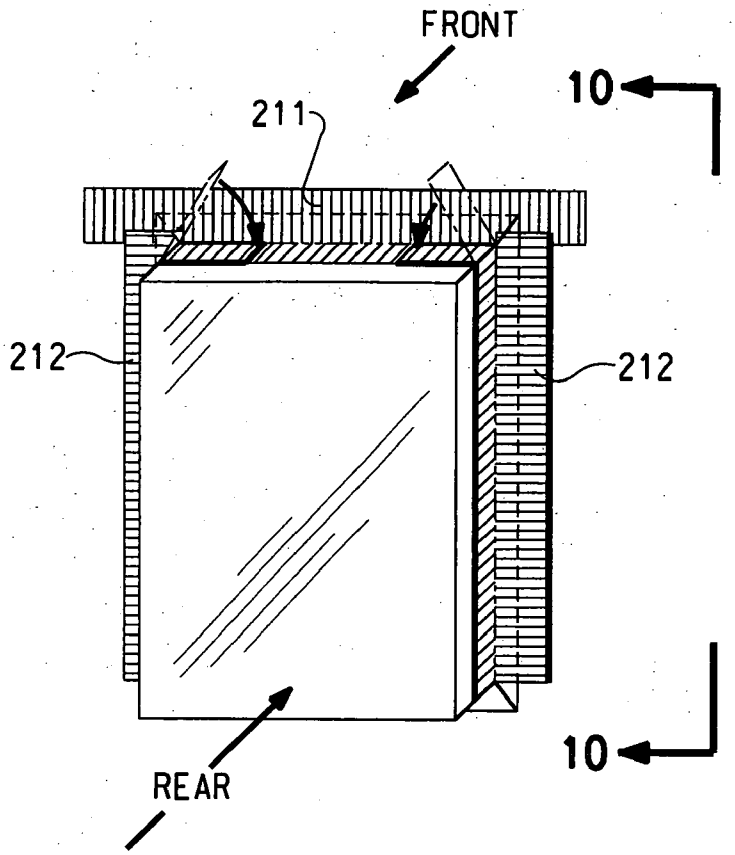
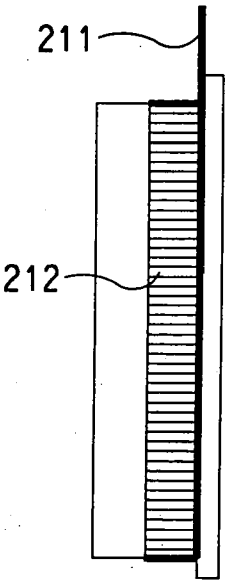


FIG. 10



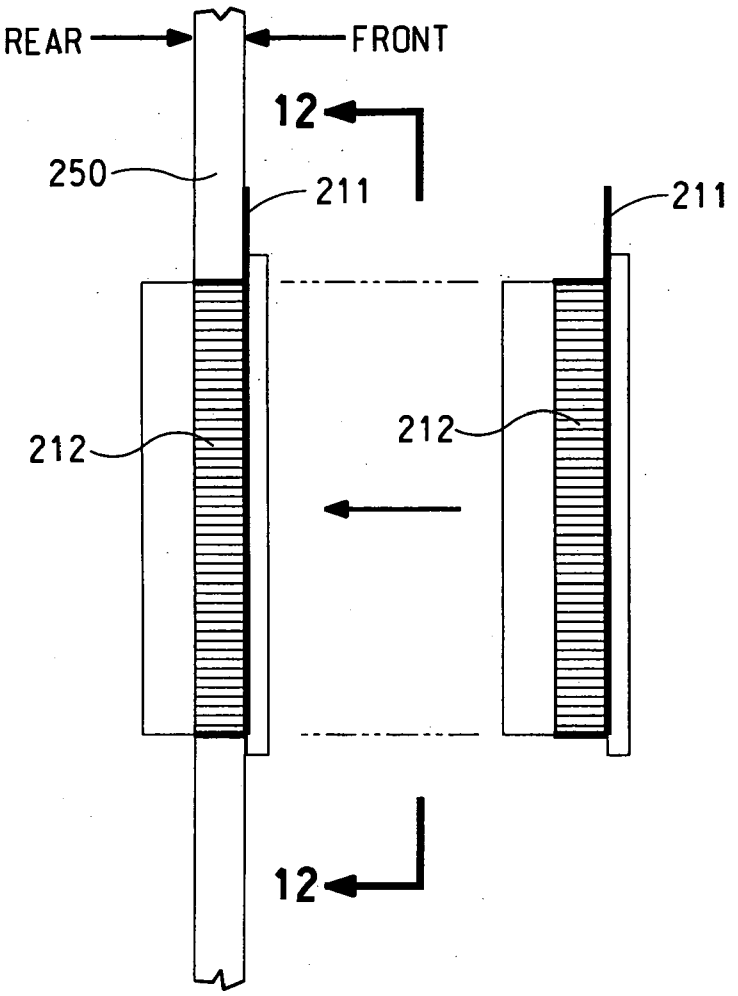


FIG. 11

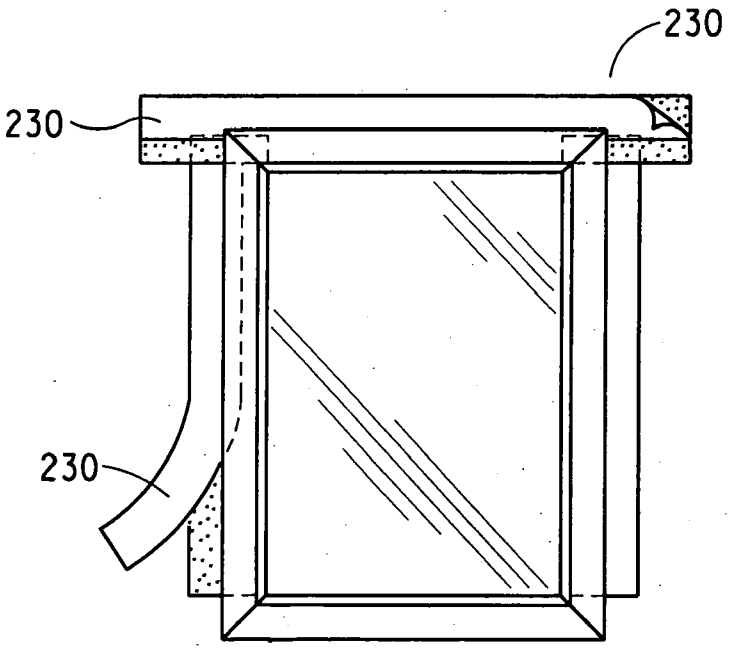


FIG. 12

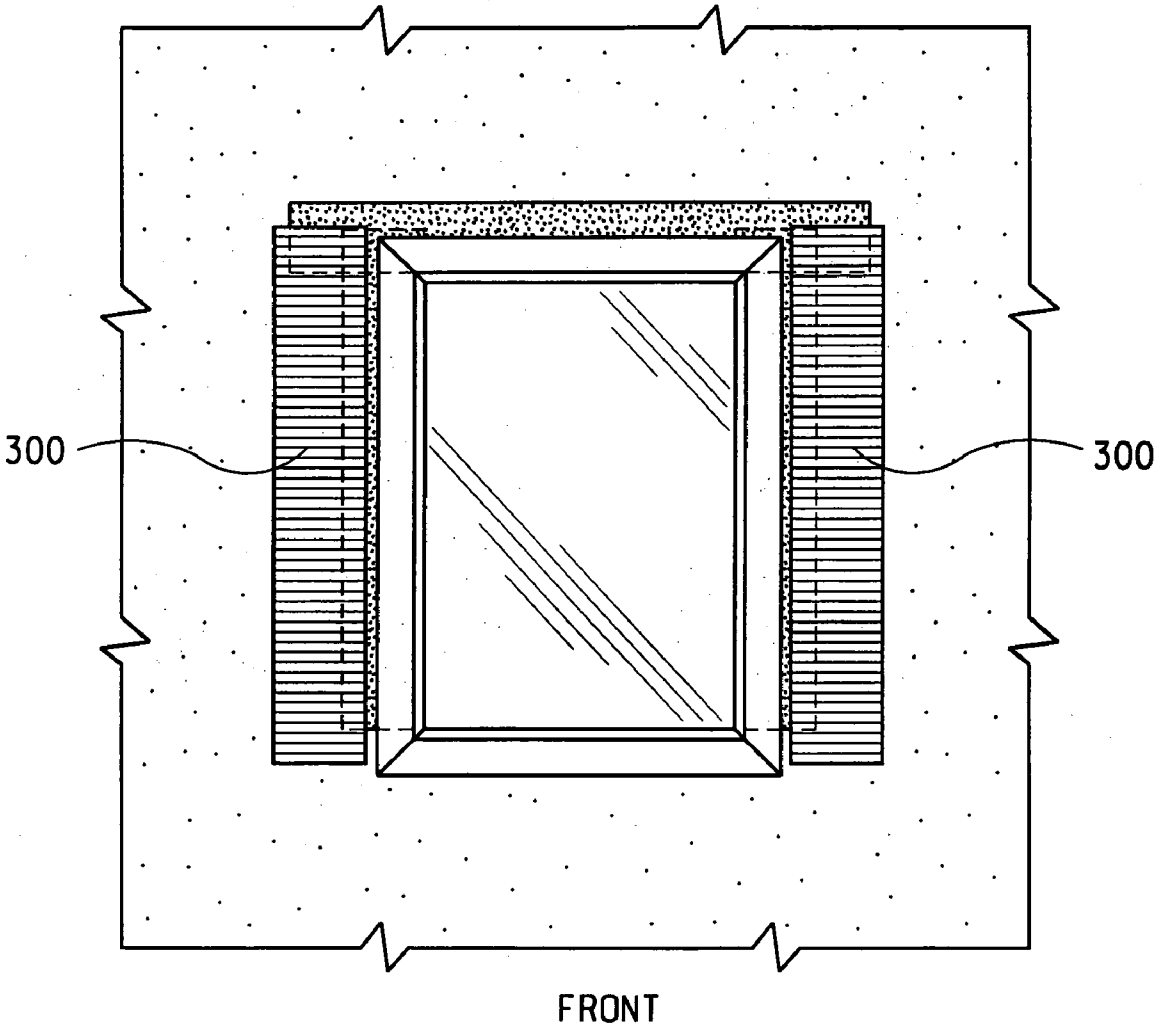


FIG. 13

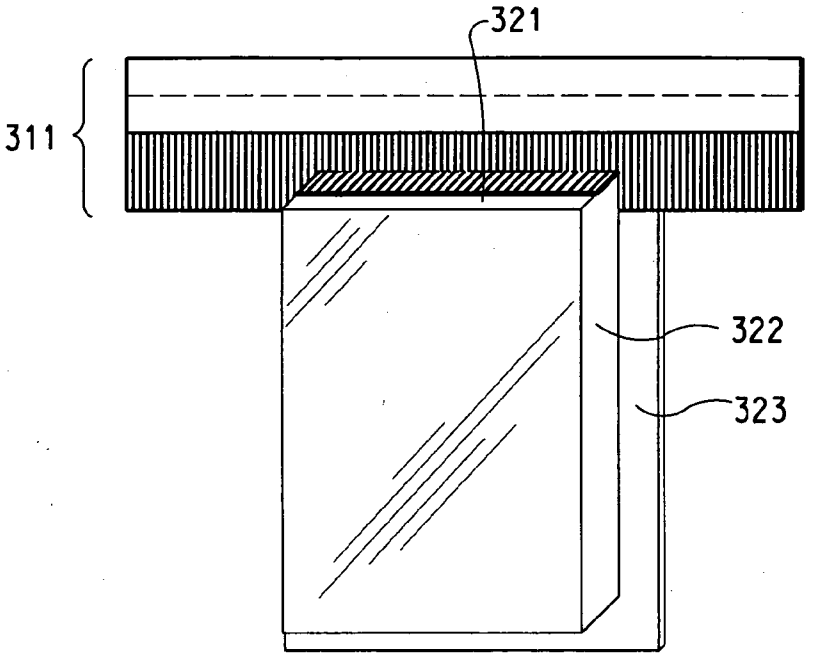


FIG. 14

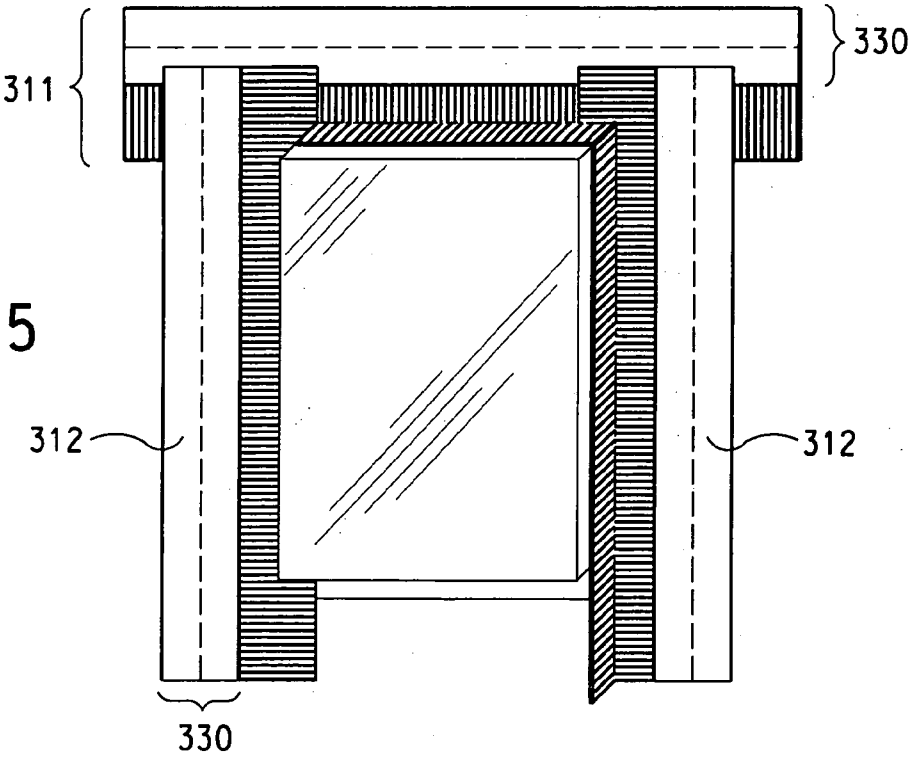


FIG. 15

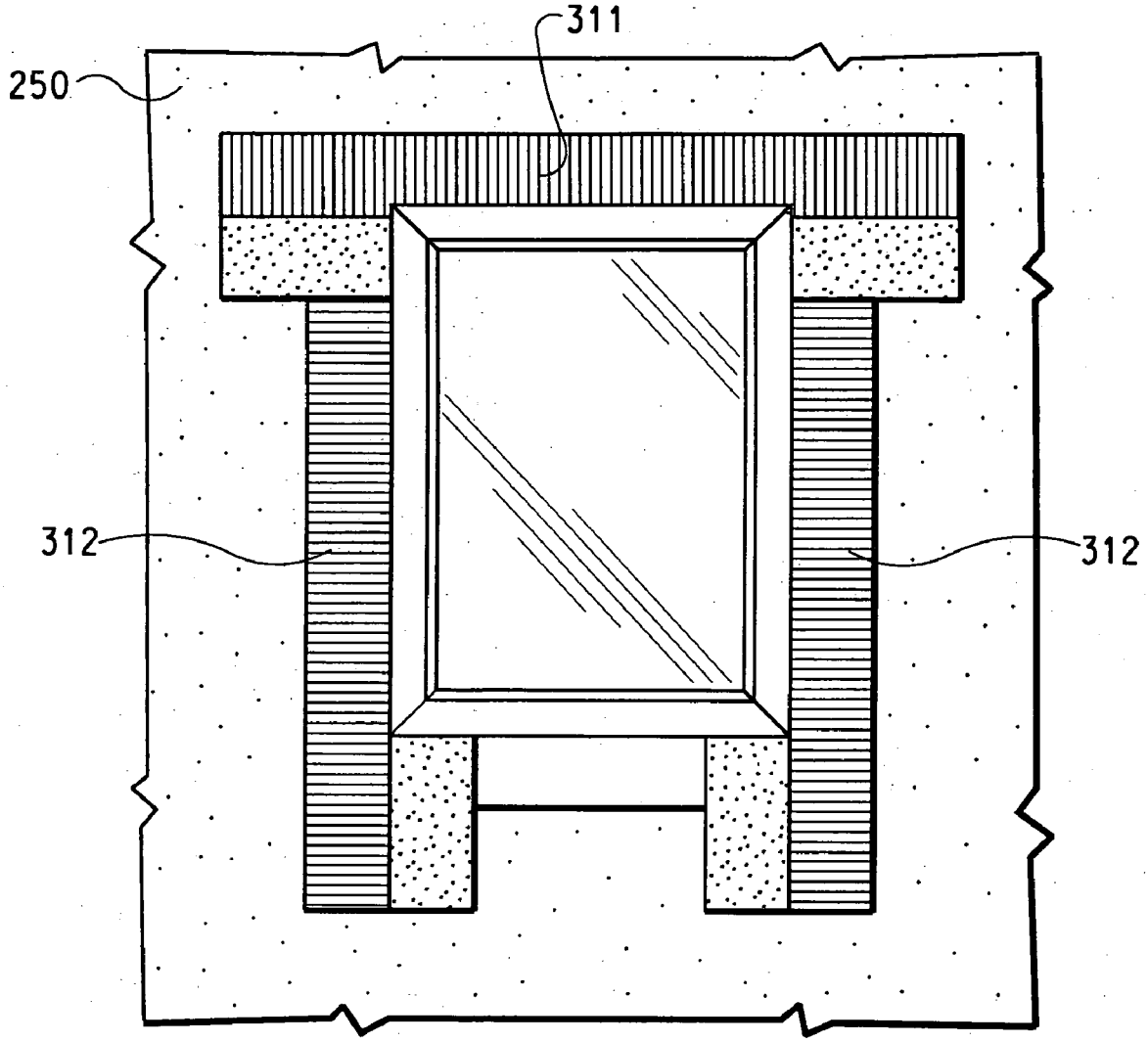


FIG. 16

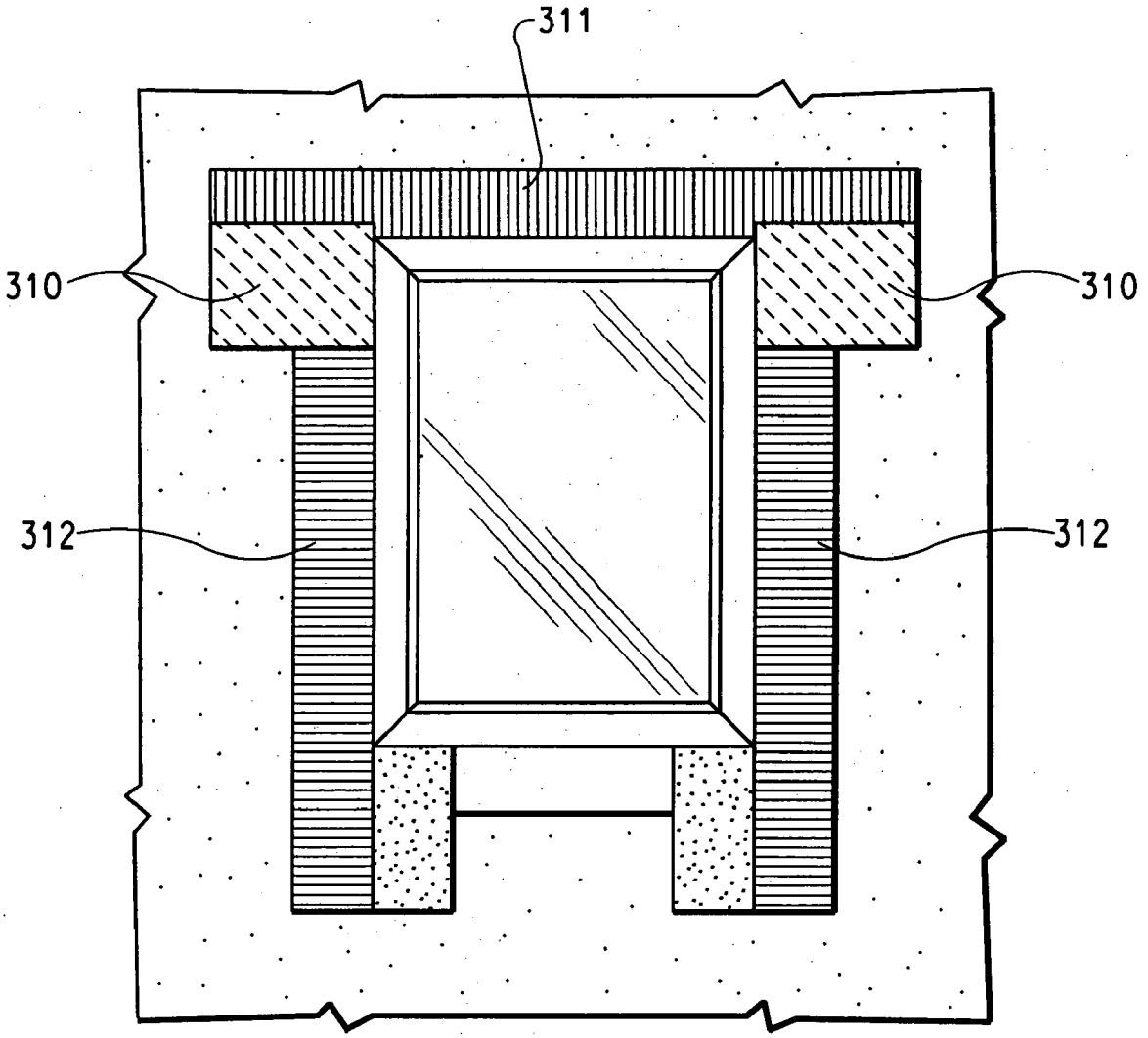


FIG. 17

SELF-ADHERED FLANGE FOR USE WITH NON-FLANGED WINDOWS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention is directed to materials and methods for sealing windows and other fenestration products from moisture intrusion.

[0003] 2. Description of Related Art

[0004] Flanges or nailing fins on windows, doors and other fenestration products, in which the flange is integral to and continuous with the window frame, provide a surface that is fully connected to the window for adhesive flashing materials to adhere to, enabling the flashing product to create a continuous watertight seal at the window-wall interface in structures, such as buildings. However, flanges are not present in all windows or fenestration products (hereinafter referred to as "windows"). Non-flanged windows and windows with brickmold frames (hereinafter referred to as "brickmold windows") are prone to moisture intrusion, due to difficulty in achieving a continuous flashing integration between the window and the wall. Thus, the typical installation method for these types of windows involves a bead of building sealant between the fenestration product and the wall, which is not a durable, continuously integrated moisture seal and is prone to failure after environmental exposure. This results in a higher tendency for moisture damage to the window and the surrounding wall, including rot and mold growth. No known methods exist to install non-flanged and brickmold windows in a way that effectively seals the window-wall interface with a continuous integration of self-adhered flashing to prevent moisture intrusion. It would be desirable to have a product and window installation method, which would integrate the window-wall interface in window systems using windows without flanges.

[0005] In addition, applied rigid flanges, which may or may not be integral to the window, can be problematic in sealing the window-wall interface due to bending or cracking of the flange, or poor joint sealing. It would be desirable to have a product and window installation method that would obviate the need for rigid flanges.

SUMMARY OF THE INVENTION

[0006] This invention is a self-adhering flange material for sealing interfaces between fenestration products and walls, comprising at least one top coversheet and at least one bottom coversheet with a pressure-sensitive adhesive layer sandwiched between the two coversheets, wherein the coversheets occupy an appreciable width of the flange but do not extend across the entire width of the flange and thereby are offset with respect to each other thereby providing opposing first and second exposed surfaces of the pressures sensitive adhesive layer.

[0007] This invention is also encompasses various methods for installing fenestration products into walls using the subject flange material.

DEFINITIONS

[0008] The term "flanged windows" refers to windows, doors, or other fenestration products that include a flange or nailing fin intended to cover any space between the window frame and the rough opening in the wall. The flange or fin may be integral to the fenestration product, or may be applied.

[0009] The term "non-flanged windows" refers to windows that do not include a flange intended or nailing fin to cover the space between the window frame and the rough opening in the wall.

[0010] The term "brickmold frame" refers to decorative trim attached to or integral to the window frame that covers any space between the window frame and the opening in the wall into which the window is installed. The term "brickmold window" refers to a window having a brickmold frame.

[0011] The term "window jamb" or "jamb" refers to the side of the window frame. The window jamb is typically vertical.

[0012] The term "windowsill" or "sill" refers to the bottom portion of the window frame. The windowsill is typically horizontal.

[0013] The term "window head" or "head" refers to the top portion of the window frame. The window head is typically horizontal.

[0014] The term "window" refers to any window, door, or other fenestration products intended to be installed in an opening in a wall.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate, without limitation, the presently contemplated embodiments of the invention and, together with the description, serve to explain the principles of the invention.

[0016] **FIG. 1** is a perspective cross-sectional view of one embodiment of the flange material of the invention.

[0017] **FIG. 2** is a cross-sectional view of another embodiment of the flange material of the invention.

[0018] **FIG. 3** is a cross-sectional view of another embodiment of the flange material of the invention.

[0019] **FIGS. 4 through 6** are perspective views useful in illustrating the method of installing the flange material of the invention on a non-flanged window frame, and subsequently installing the window in an opening in a wall.

[0020] **FIG. 7** is a cross-sectional view of yet another embodiment of the flange material of the invention.

[0021] **FIGS. 8 through 13** are perspective and side views of a brickmold window frame useful in illustrating the method of installing the window into an opening in a wall in such a way that the flange material of the invention is formed as the window is installed.

[0022] **FIGS. 14 through 17** are perspective and plan views of a brickmold window frame useful in illustrating the method of installing the window into an opening in a wall using the flange material of the invention to seal the window to the wall.

DETAILED DESCRIPTION OF THE INVENTION

[0023] The flange material of this invention can be applied to all non-flanged windows, brickmold windows, and windows having applied flanges to form a self-adhering flange that provides a means for achieving a continuous moisture seal integration of the window-wall interface. The flange additionally prevents moisture from entering around fasteners, such as nails, that penetrate the flange material and the window frame. As further described below in various installation methods, pieces of flange material are positioned at the window wall interface to form the flange. Upon installation, the flange typically comprises a headpiece of flange material positioned at the top of the window-wall interface and two jamb pieces of flange material positioned at the sides of the window wall interface.

[0024] As depicted in **FIG. 1**, one embodiment of flange material **10** is an elongated laminate structure formed from at least one top and one bottom coversheet (**12** and **16**, respectively) with a pressure-sensitive adhesive layer **14** sandwiched between the two coversheets. The coversheets occupy an appreciable width of the flange but do not extend across the entire width of the flange and thereby provide an apparent overlap with respect to each other. Release papers **18** that cover the adhesive surfaces are not necessarily required but aid considerably in handling and during installation as will be presented in the various installation methods to be described below. For purposes of convenience in designating portions of the flange material in **FIG. 1**, the width of one release paper is labeled as **10***a* and the portion of the second and opposite release paper is designated as **10***c*. A portion **10***b* can designate the extent of overlap between the first and second coversheets in the width of the flanges.

[0025] If desired, the flange material can be fabricated in the field. For example, flange material **20** as shown in **FIG. 3** can be fabricated by contacting an elongated portion of the adhesive surfaces **22** of two pieces of flexible self-adhering flashing **21** together such that the flashing pieces overlap as represented by portion **20***b* and an elongated portion of each of the two adhesive surfaces as represented by **20***a* and **20***c* remain exposed. When fabricated in the field, the flange material of the invention can utilize, for example, flexible self-adhering flashing material that will provide a durable moisture seal to the window-wall interface. Various sizes and styles of suitable flashing material are DuPont FlexWrap™ flexible flashing or DuPont StraightFlash™ flashing, available from E. I. du Pont de Nemours and Company, Wilmington, Del. (hereafter DuPont).

[0026] There is a method for installing a non-flanged window into a wall opening whereby the interface between the window and the wall is sealed using either of the flange materials described above in FIGS. **1** or **3**. The method described as follows uses the flange material of **FIG. 1** and as illustrated in **FIGS. 4-6**, however it is recognized that the structure depicted in **FIG. 1** is not intended to limit the steps of the method. It is further noted that **FIG. 4** includes notation indicating whether the view is from inside or outside of the structure. These notations are used in **FIG. 4** and other figures as matter of convenience. The steps of the method are as follows:

[0027] a) adhering a first adhesive surface as represented by **10***a* of a piece of the flange material (the "headpiece"**111**) to the outer surface of the head **121** of the window and extending to the outer surface of the upper portion of each jamb of the window;

[0028] b) adhering a first adhesive surface as represented by portion **10***c* of a second piece of the flange material (the "jamb piece"**112**) to the outer surface of the entire length of each jamb **122** of the window, thereby overlapping the headpiece adhered to each jamb in step (a) as shown in **FIG. 4**;

[0029] c) installing and securing the window **114** in the opening of wall **250**, per normal procedures, such that the head of the window is located at the top of the wall opening and the remaining unadhered portions, as represented, for example, by portion **10***c* in **FIG. 1** of the headpiece and jamb pieces of step (a) and step (b) extend outward from the wall as shown in **FIG. 5**;

[0030] d) adhering the remaining unadhered portions of the pieces of flange material of step (a) and step (b) to the wall above the head of the window and adjacent each jamb of the window such that the headpiece covers an upper portion of each of the jamb pieces in a shingled manner as shown in **FIG. 6**.

[0031] The window is thereby sealed to the surrounding wall and any water that contacts the outer surface of the headpiece will be directed downward below the top of the jamb pieces so that there is virtually no opportunity for the water to penetrate the window-wall interface.

[0032] Another embodiment of the invention is useful for sealing brickmold windows. According to this embodiment as shown in **FIG. 7**, the flange material **30** is an elongated material having a coversheet **32** on one surface thereof and a pressure sensitive adhesive **34** on the other surface thereof. The pressure sensitive adhesive surface is covered with release paper **36** that has perforations **37** extending along substantially parallel lines that are also substantially parallel with the lengthwise edges of the flange. As previously note in embodiments above, release papers are not necessarily required but aid considerably in handling and during installation. The release paper covers three elongated portions of the adhesive surface (**30***a*, **30***b* and **30***c*), the portions defined by the perforations in the release paper. It is noted that the number of perforations and the resultant defined portions can vary as may be required for proper installation. The flange of this embodiment is suitable for the installation of windows having brickmold frames.

[0033] One method for installing a brickmold window into a wall opening whereby the interface between the window and the wall is sealed is described in the following steps as Brickmold Method 1. This method may also be applied to windows having integral and applied flanges. The window is sealed by means of a flange material as shown in **FIG. 7** having release paper perforated along two length-wise lines. Although the method will be described by reference to **FIG. 7**, there is no intent to limit the steps of the method. In this method, the flange is formed as the window is installed. This method is illustrated in **FIGS. 8-13**.

[0034] a) A first adhesive surface exposed by removing portion **30***a* of release paper **36**) of a piece of flange material ("headpiece"**211**) is adhered to the upper surface **221** of the window frame such that the line formed between portion **30***a* and the remaining width-wise

portion of the headpiece (represented by **30***b* and **30***c* together) is positioned in the corner between the upper surface of the window frame and the back surface **223** of the brickmold frame of the window. The presence of the release paper on the remaining width-wise portion of the flashing provides a straight edge, facilitating positioning the flange material in the corner.

[**0035**] b) A second adhesive surface exposed by removing the central portion **30***b* of release paper **36**, of the headpiece is adhered to the back surface **223** (i.e., the interior-facing side) of the brickmold frame of the window. The remaining edge portion **30***c* of release paper remains adhered to and covering the corresponding adhesive surface.

[**0036**] c) As shown in **FIG. 8**, a cut is made in the headpiece **211** in the corners between each window jamb and the back surface of the brickmold frame on both sides of the window frame and the headpiece of flashing on both sides of the window frame is adhered to the outside (upper) surface **222** of each window jamb.

[**0037**] d) As shown in **FIG. 9**, a first adhesive surface exposed by removing portion **30***a* of release paper **36** of another piece of self-adhering flashing material (the "jamb piece"**212**) is adhered to the outer surface **222** of one of the window jambs such that the line formed between portion **30***a* and the remaining width-wise portion of the jamb piece (represented by **30***b* and **30***c* together) is positioned in the corner between the outer surface of the window jamb and the back surface of the brickmold frame. Preferably, the top of the jamb piece **212** should not extend more than about one inch above the window head.

[**0038**] e) A second adhesive surface exposed by removing the central portion **30***b* of release paper **36**, of the jamb piece is adhered to the back surface **223** (i.e., the interior-facing side) of the brickmold frame. The remaining edge portion **30***c* of release paper remains adhered to the corresponding adhesive surface.

[**0039**] f) As shown in **FIG. 9**, a cut is made in the jamb piece directly above the adhered portion **30***a* along the outside corner between the outer surface of the jamb and the outer surface of the head, and the portion of the jamb piece above the cut is adhered to the top surface **221** of the window head.

[**0040**] g) Steps (d)-(f) are repeated on the other window jamb using a separate jamb piece of flange material (i.e., a third piece of flange material). A side view of the window frame with the installed pieces of flange material is shown in **FIG. 10**.

[**0041**] h) As shown in **FIG. 11**, the window frame is then installed in the opening in the wall **250** per the window manufacturer's recommended procedure. As shown in **FIG. 12**, the remaining edge portion **30***c* of release paper **36** is intact on each piece of flange material so that the remaining release paper is facing out away from the wall (on the outside surface of the wall) surrounding the window.

[**0042**] i) The remaining, third adhesive surface of one of the jamb pieces is exposed along one side of the window by removing the remaining portion of release paper.

[**0043**] j) As shown in **FIG. 13**, the adhesive surface of a covering piece of flashing **300** is adhered directly to the exposed third adhesive surface and the adjacent wall surface thereby forming a strong adhesive-to-adhesive seal (forming the flange) and sealing one side of the window to the wall.

[**0044**] k) Steps (i)-(j) are repeated on the other side of the window.

[**0045**] l) Optionally, the remaining release paper is removed from the headpiece and a drip cap is installed over the top of the window frame, and then covered by a piece of covering flashing overlapping the top of the drip cap and the wall.

[**0046**] m) If a drip cap is not used, the remaining release paper is removed from the headpiece and a covering piece of flashing is adhered overlapping the top of the headpiece and the wall.

[**0047**] Another method for installing a brickmold window frame into a wall opening is designated as Brickmold Method 2, whereby the interface between the window and the wall is sealed includes the following steps. Again, this method may be used to install windows having integral and applied flanges. In this method, the flange is prepared first, and then attached to the window before the window is installed. The flange material as depicted in **FIG. 2** may be used advantageously in this method. For purposes of convenience in designating portions of the flange material in **FIG. 2**, the width of one release paper is labeled as **18***a* and **18***a*' and the portion of the second and opposite release paper is designated as **18***c* and **18***c*'. A portion **18***b* can designate the extent of offset or overlap between the first and second coversheets in the width of the flanges. Further, it is recognized that the structure depicted in the figure is not intended to limit the steps of the method.

[**0048**] The method for installing a brickmold window frame using the aforementioned flange is described as follows and illustrated in **FIGS. 14-17**.

[**0049**] A length of the flange material (the "head flange"**311**), advantageously several inches longer than the width of the brickmold frame, is folded along one of the perforations **19** in the release paper to expose a line of adhesive as between **18***a* and **18***a'*.

[**0050**] The line of adhesive is positioned in the corner along the top of the window frame between the back surface **323** of the brickmold frame and the upper surface **321** of the window head.

[**0051**] a) The release paper **18***a* is removed from the portion of the head flange in contact with the back surface of the brickmold frame and adhered to the back surface of the brickmold frame. As shown in **FIG. 14**, the head flange is cut at the outer corners between the upper surface of the window head and the outer surfaces of the jambs, and folded down on the back surface of the brickmold frame.

[**0052**] b) Another length of the flange (the "jamb flange"**312**), advantageously a few inches longer than the height of the brickmold frame is folded along one of the perforations **19** in the release paper to expose a line of adhesive as in step (a).

[0053] c) As in **FIG. 15**, the line of adhesive on the jamb flange is positioned in the corner along one side of the window frame between the outer surface **322** of the jamb and the back surface **323** of the brickmold frame so that the flange slightly overlaps the head flange **311** and extends below the window frame.

[0054] d) The release paper **18***a* is removed from the portion of the jamb flange in contact with the surface **322** of the jamb and adhered thereto. The release paper **18***a*' is removed from the portion of the jamb flange in contact with the back surface **323** of the brickmold frame and adhered to the back surface of the brickmold frame.

[0055] e) As shown in **FIG. 15**, the jamb flange is cut at the outer corners between the lower surface of the window frame and the outer surface of the jamb and folded onto the back surface of the brickmold frame.

[0056] f) Steps (e) through (h) are repeated to install a separate jamb flange on the other side of the window as shown in **FIG. 15**.

[0057] g) The window is installed in a wall opening per the window manufacturer's recommended installation procedure. The installed window is shown from the outside in **FIG. 16**.

[0058] h) The remaining release paper **18***c* and **18***c*' is removed from the head flange and the jamb flanges and the exposed adhesive surfaces are adhered to the outside wall surface.

[0059] i) Optionally, most of the exposed adhesive on the head flange is cut away, leaving a small amount of adhesive remaining along the edges of the flange.

[0060] j) Self-adhering flexible flashing material **310** is adhered over the intersection of the head and jamb flanges as shown in **FIG. 17**.

[0061] The flange material may be applied to the window during window fabrication. In this case, the window could be provided as it is at the end of step (i) above, and the remaining steps (j) through (m) would be carried out, for example, by the installers at a building site.

[0062] In each of the previous embodiments, the pressure sensitive adhesive used in the flange material of the invention can be butyl rubber adhesive, bituminous adhesive, acrylic, or combinations thereof (layers or blends). Additionally, the pressure sensitive adhesive can be neoprene, polymers based on epdm (ethylene propylene diene monomer), or other adhesives generally used in construction applications. The thickness of the pressure sensitive adhesive is between about 15 mils (0.38 mm) and 25 mils (0.64 mm). The pressure sensitive adhesive provides a watertight seal around fasteners that penetrate the flange material.

[0063] The material used as the coversheet material in the flange material of the invention can be any nonwoven sheet, film, coated paper, coated nonwoven sheet, or nonwoven-film laminate suitable for use in a flexible flashing material. The coversheets can be polyolefin plexifilamentary film-fibril sheet, available under the trade name Tyvek® from DuPont.

[0064] Alternatively, the coversheet of the flange can be made from a relatively rigid material such as metal or plastic formed into the required shape for the various installations noted above. The rigid material would have a pressure-sensitive adhesive layer applied to provide attachment to the windows and building structure.

[0065] As will be appreciated by the skilled artisan, although reference is made herein to adhering the flange material to a wall, it is also expected that the flange material of the invention can be adhered to a wall covered by a weather resistive barrier sheet.

[0066] It may be further appreciated that the flange can likewise include a sill piece appropriately installed to form a total barrier system around the wall-window interface. to further preclude moisture intrusion.

TEST METHODS

[0067] The installations were tested for air leakage using ASTM E 283.

[0068] The installations were tested for water resistance using ASTM E 331.

[0069] The durability of the selected installations was then evaluated by subjecting the walls first to thermal cycling and re-testing for air leakage and water resistance, and secondly by subjecting the walls to wind load using ASTM E 330 for one hour in the positive direction and one hour in the negative direction, and then re-testing for water resistance. The thermal cycling of exterior walls was conducted according to AAMA (American Architectural Manufacturers Association) 501.5. Standard Test Method for Exterior Windows, Curtain Walls, and Doors for Water Penetration using Dynamic Pressure.

EXAMPLES 1-4

[0070] A series of laboratory tests was designed to determine water resistance, air leakage resistance, and durability of installation using different methods and different flashing materials. Installations were carried out installing JELD-WEN® double hung wood windows (available from JELD-WEN, Klamath Falls, Oreg.) with applied brickmold frames into wood frame walls. The testing was conducted in two phases. First, air and water resistance of window installations were evaluated. Secondly, air and water resistance were evaluated after thermal cycling followed by wind loading.

[0071] Four test walls were constructed for the testing. All four walls were constructed using Spruce-Pine-Fir nominal 2 in×4 in lumber and covered with oriented strand board sheathing applied to 16 in on center studs. All walls were 5 ft wide by 7 ft 6 in high and contained one brickmold window unit. The window used in each case was a JELD-WEN® wood double hung window with applied brickmold. The windows were each 2 ft 10 in wide×3 ft 4 in high. Four different flashing installations methods were utilized as described below in Examples 1-4.

Example 1

[0072] A wall unit as described above was wrapped with Tyvek® HomeWrap® (available from E. I. du Pont de Nemours and Company, Wilmington, Del.) prior to installing the window. DuPont FlexWrap™ (available from E. I. du Pont de Nemours and Company) was installed on the sill per normal installation procedures recommended by the manufacturer and an adhesive foam tape was installed under the DuPont FlexWrap™ to form a back dam.

[0073] In this installation, 4 in wide DuPont StraightFlash™ (available from E. I. du Pont de Nemours and Company) flashing having three perforated sections of release paper was the primary part of the flange material system. Head and jamb pieces of DuPont StraightFlash1υ were installed on the head and sides of the window prior to installation of the window into the rough opening, using the above-described Brickmold Method 1.

[0074] With the final pieces of the release liner still covering the adhesive on the flashing installed on the brickmold window frame, the window was installed per manufacturer's recommended procedure. Next, the final pieces of release paper remaining on the window were removed, exposing a strip of butyl adhesive on the exterior of the wall adjacent the window on each side. Next, another covering piece of 4 in wide DuPont StraightFlash™ flashing with similarly perforated release paper was applied over this as follows. One of the release papers along the edge of the flashing was removed, and the edge of the exposed butyl was placed flush adjacent the corner between the outer surface of the brickmold frame and the exterior surface of the wall such that the edge of the butyl touched the inside of the corner. Once the butyl edge adhered to the inside corner, the rest of the exposed butyl strip was laid down onto the already installed, exposed butyl strip adjacent the window. This created a very strong butyl-to-butyl seal. This seal created the flange material.

[0075] The procedure for installing a covering piece of flashing was repeated on other side of the window.

[0076] Finally, the flange material system was completed and integrated into the wall by removing the last two strips of release paper from the covering pieces of flashing and laying the exposed butyl adhesive smoothly onto the exterior wall surface to complete the seal of the window-wall interface.

[0077] A metal drip cap was installed and the DuPont StraightFlash™ was installed over the drip cap followed by a flap of the previously installed Tyvek® HomeWrap®. The Tyvek® HomeWrap® was taped over the drip cap and tape was applied in a shingled fashion to avoid leakage.

[0078] Air and water resistance of this window installation are given in Table 1. Air and water resistance after thermal cycling and water resistance after wind loading of this window installation are given in Table 2.

Example 2

[0079] A wall unit as described above was wrapped with Tyvek® HomeWrap® prior to installing the window. DuPont FlexWrap™ was installed on the sill and an aluminum angle was installed under the DuPont FlexWrap™ to serve as a back dam.

[0080] The flange material was prefabricated by attaching two 4 in wide pieces of DuPont StraightFlash™ together. The flange material was installed on the window at the window head and then the jambs.

[0081] The window was installed using Brickmold Method 2 and the final pieces of release papers were removed and adhered to the Tyvek® HomeWrap™. The remaining exposed butyl on the top flange was cut away and the remaining exposed flange area was covered with a 6 in to 8 in long piece of 4 in wide DuPont StraightFlash™.

[0082] Air and water resistance of this window installation are given in Table 1. Air and water resistance after thermal cycling and water resistance after wind loading of this window installation are given in Table 2.

Example 3

[0083] A wall unit as described above was wrapped with Tyvek® HomeWrap® after the window was installed. DuPont FlexWrap™ was installed on the windowsill and an aluminum angle was installed under the DuPont FlexWrap™ to serve as a back dam. The flange material was prefabricated by attaching two 4 in wide pieces of DuPont StraightFlash™ together. The flange material was installed on the window jambs. At the head of the window, a 4 in wide piece of DuPont StraightFlash™ was adhered to the top of the window frame and the back of the decorative brickmold with the final piece of release paper facing out above the decorative brickmold using Brickmold Method 2.

[0084] The window was installed, then the rest of the release paper on the flange material was removed and the flange material was adhered to the wall. A drip cap was installed at the head of the window and a piece of DuPont StraightFlash™ was placed over the drip cap. Then the wall was wrapped with Tyvek® HomeWrap® and the joints were taped.

[0085] Air and water resistance of this window installation are given in Table 1. Air and water resistance after thermal cycling and water resistance after wind loading of this window installation are given in Table 2.

Example 4

[0086] The window was installed into a wall unit as in Example 2 (that is using Brickmold Method 2) except that the wall unit was wrapped with Tyvek® HomeWrap® after the window was installed. The flange material for the head was fabricated in a "T" configuration by cutting a smaller piece of flashing the width of the window frame and centering it on a relatively larger piece of flashing.

[0087] Air and water resistance of this window installation are given in Table 1. Air and water resistance after thermal cycling and water resistance after wind loading of this window installation are given in Table 2.

TABLE 1

Ex. No.	Air Infiltration at 0.56 psf (cfm/ft^2)	Air Infiltration at 1.57 psf (cfm/ft^2)	Air Infiltration at 6.24 psf (cfm/ft^2)	Air Exfiltration at 0.56 psf (cfm/ft^2)	Air Exfiltration at 1.57 psf (cfm/ft^2)	Air Exfiltration at 6.24 psf (cfm/ft^2)	Water Test at 0.56 psf	Water Test at 1.56 psf
1	0.33	0.60	1.28	0.40	0.73	1.70	Pass	Pass
2	0.29	0.53	1.15	0.33	0.62	1.37	Pass	Pass
3	0.16	0.28	0.65	0.13	0.26	0.63	Pass	Pass
4	0.09	0.18	0.45	0.13	0.26	0.67	Pass	Pass

[0088]

TABLE 2

Ex. No.	Air Infiltration at 0.56 psf (cfm/ft^2)	Air Infiltration at 1.57 psf (cfm/ft^2)	Air Infiltration at 6.24 psf (cfm/ft^2)	Air Exfiltration at 0.56 psf (cfm/ft^2)	Air Exfiltration at 1.57 psf (cfm/ft^2)	Air Exfiltration at 6.24 psf (cfm/ft^2)	Water Test at 0.56 psf	Water Test at 1.56 psf	Static Load at +10.42 psf	Static Load at −10.42 psf	Water Test at 0.56 psf	Water Test at 1.56 psf
1	0.39	0.74	1.69	0.34	0.62	1.30	Pass/ Leak[1]	Pass/ Leak[2]	Pass	Pass	Pass/ Leak[1]	Pass/ Leak[2]
2	0.36	0.63	1.40	0.32	0.54	1.15	Pass/ Leak[1]	Pass/ Leak[1]	Pass	Pass	Pass/ Leak[1]	Pass/ Leak[1]
3	0.14	0.26	0.63	0.20	0.28	0.65	Pass	Pass/ Leak[1]	Pass	Pass	Pass	Pass/ Leak[1]
4	0.13	0.26	0.67	0.09	0.18	0.45	Pass	Pass	Pass	Pass	Pass	Pass/ Leak[3]

[1]Water laying on front edge of sill plate.
[2]Water percolating at right side of bottom corner of sill plate.
[3]Water entered at the right side interior windowsill leg.

In both Tables 1 and 2 cfm means cubic feet per minute and psf means pounds per square foot.

[0089] None of the leaks observed involved the installed flange material of the invention. None of the leaks were considered to be significant. In all examples, even after static load testing, the water did not get past the installed flange material of the invention to the interior plane of the installed window. These results demonstrate the durability of the flange in use.

We claim:

1. A self-adhering flange material, comprising at least one top coversheet and at least one bottom coversheet with a pressure-sensitive adhesive layer sandwiched between the two coversheets, wherein the coversheets occupy an appreciable width of the flange but do not extend across the entire width of the flange and thereby are offset with respect to each other thereby providing opposing first and second exposed surfaces of the pressures sensitive adhesive layer.

2. The flange material of claim 1 further comprising release paper covering the opposing first and second pressure sensitive adhesive layers.

3. The flange material of claim 2 wherein the release paper is perforated such that the release paper may be removed in strips having a width less than the width of the pressure sensitive adhesive surface that the release paper covers.

4. The flange material of claim 1 wherein the pressure sensitive adhesive is selected from the group consisting of butyl rubber adhesive, bituminous adhesive, acrylic, neoprene, epdm-based polymer and combinations thereof.

5. The flange material of claim 1 wherein the first and second coversheets are selected from the group consisting of nonwoven sheets, films, coated papers, coated nonwoven sheets, nonwoven-film laminates, plastic and metal.

6. The flange material of claim 1, wherein the first and second coversheets comprise polyolefin plexifilamentary film-fibril sheet.

7. A flange for sealing interfaces between fenestration products and walls comprising the flange material of either of claims **1-6**.

8. A method for installing a non-flanged window into a wall opening whereby the interface between the window and the wall is sealed, the method comprising the steps of:

a) adhering the first pressure sensitive adhesive surface of a headpiece of the flange material according to claim 1 to the top surface of the head of the window and the outer surface of the upper portion of each jamb of the window;

b) adhering a separate jamb piece of the flange material according to claim 1 to the outer surface of the entire length of each jamb of the window, thereby covering the headpiece of the flange material adhered to each jamb in step (a);

c) installing the window in the wall opening such that the head of the window is located at the top of the wall opening and the unadhered portions of the headpiece and jamb pieces of flange material of step (a) and step (b) extend outward from the wall;

d) adhering the unadhered portions of the pieces of flange material of step (a) and step (b) to the wall above and adjacent each jamb of the window such that the headpiece covers an upper portion of the jamb pieces.

9. A method for installing a non-flanged window into a wall opening whereby the interface between the window and the wall is sealed, the method comprising the steps of:

a) forming a piece of flange material by contacting the adhesive surfaces of a first and second length of flexible self-adhering flashing material along their length such that the adhesive surfaces are partially overlapped and two elongated pressure sensitive adhesive layers face in opposite directions;

b) adhering one of the pressure sensitive adhesive layers to the top surface of the head of the window and to the outer surface of the upper portion of each jamb of the window such that the remaining pressure sensitive adhesive layer faces up and away from the head;

c) forming two additional pieces of flange materials as described in step (a);

d) adhering one of the pressure sensitive adhesive layers of each of the additional pieces of flange materials to the outer surface of the entire length of each jamb of the window such that the remaining pressure sensitive adhesive layers of the flanges face away from the window;

e) installing the window in the wall opening such that the head of the window is located at the top of the wall opening and the remaining pressure sensitive adhesive layers extend outward from the wall;

f) adhering the remaining pressure sensitive adhesive layers to the wall above and adjacent each jamb of the window, such that the flange adhered to the head of the window covers an upper portion of the flanges adhered to the jambs.

10. A method for installing a brickmold window frame having two window jambs having outer surfaces, a window sill, a window head and a brickmold frame having a back surface into an opening in a wall having an exterior surface whereby the interface between the window and the wall is sealed, the method comprising the steps of:

a) adhering a first adhesive surface along a first edge-portion of a piece of flange material to the outer surface of one of the window jambs such that the line between the first edge portion and the remaining portion of the piece of flange material is positioned in the corner between the outer surface of the window jamb and the back surface of the brickmold frame,

b) adhering a second adhesive surface along a central portion of the piece of flange material to the back surface of the brickmold frame,

c) making a cut in the flange material flush with the window head directly above the adhered first edge portion and adhering the flange material above the cut to the back surface of the brickmold frame,

d) repeating steps (a)-(c) on the other window jamb using a separate piece of flange material,

e) installing the window frame in place in the opening in the wall,

f) exposing a third adhesive surface along one side of the window,

g) adhering the adhesive surface of a covering piece of flashing directly to the exposed third adhesive surface,

h) repeating steps (f)-(g) on other side of the window.

11. The method of claim 10 further comprising the steps of:

i) installing a drip cap over the window frame,

j) adhering a covering piece of flashing over the drip cap and the wall.

* * * * *