US00RE47495E

(19) **United States**

(12) **Reissued Patent**

MacKenzie

(10) **Patent Number: US RE47,495 E**

(45) **Date of Reissued Patent: Jul. 9, 2019**

(54) **RAIN SCREEN SIDING SYSTEM**

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(21) Appl. No.: **15/677,863**

(22) Filed: **Aug. 15, 2017**

Related U.S. Patent Documents

Reissue of:

(64) Patent No.: **9,109,368**
Issued: **Aug. 18, 2015**
Appl. No.: **13/524,292**
Filed: **Jun. 15, 2012**

U.S. Applications:

(60) Provisional application No. 61/497,244, filed on Jun. 15, 2011.

(51) **Int. Cl.**

E04B 1/70	(2006.01)
E04F 13/08	(2006.01)
E04F 19/06	(2006.01)

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

CPC ***E04F 13/0803*** (2013.01); ***E04B 1/7076*** (2013.01); ***E04F 13/0814*** (2013.01); ***E04F 13/0846*** (2013.01); ***E04F 19/065*** (2013.01); *E04F 19/064* (2013.01)

(58) **Field of Classification Search**

CPC E04F 13/0803
USPC 52/518, 520, 533, 539, 541, 543, 546, 52/553

See application file for complete search history.

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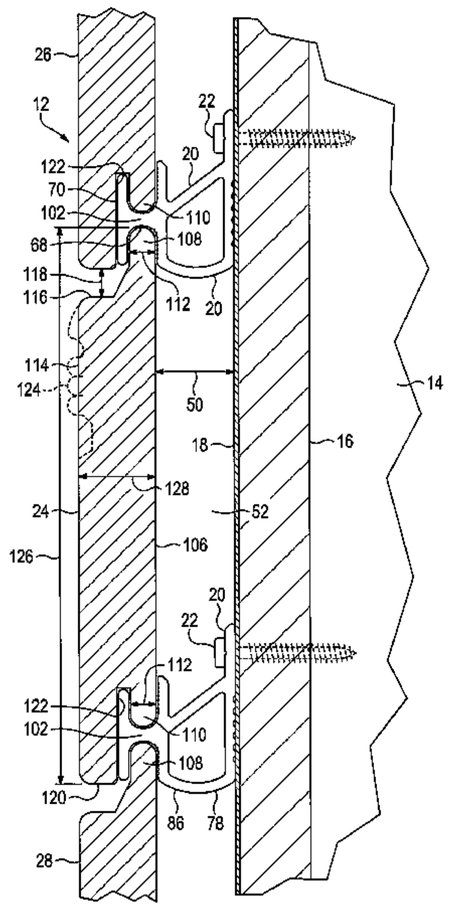
(57) **ABSTRACT**

A rain-screen siding system for buildings, including clips to support siding boards parallel with a flat surface of a building wall structure but spaced apart from the building wall to allow air to circulate between the building wall structure and the siding boards. The clips include paired, opposed channels and the siding boards have tongues that fit into the channels. Drainage grooves are defined in the clips. Bottom support members may extend horizontally to support the siding boards at the bottom of the rain screen siding. Corner closing members are provided to protect end faces of siding boards at an exterior corner of a building wall.

25 Claims, 11 Drawing Sheets



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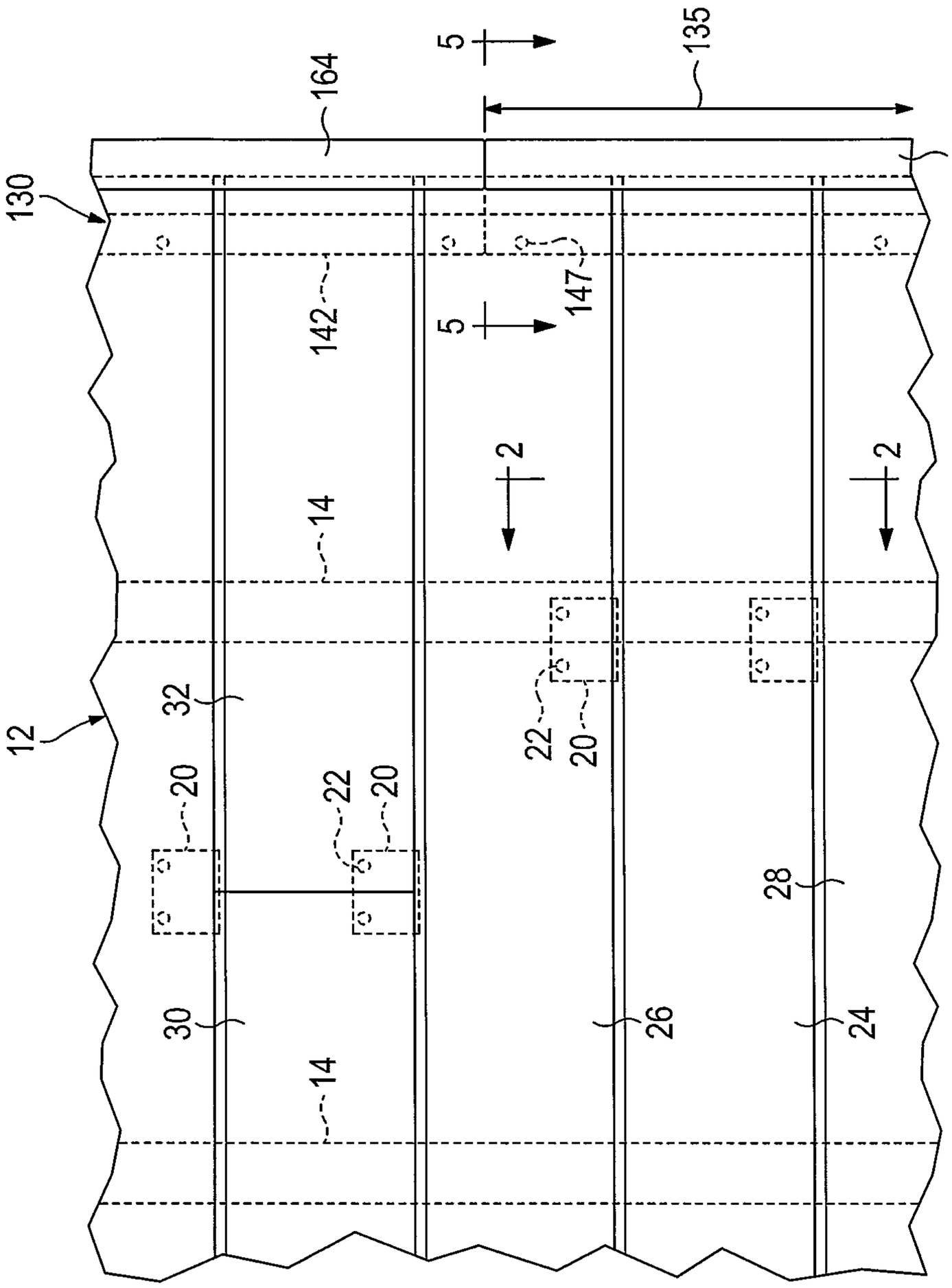

FIG. 1

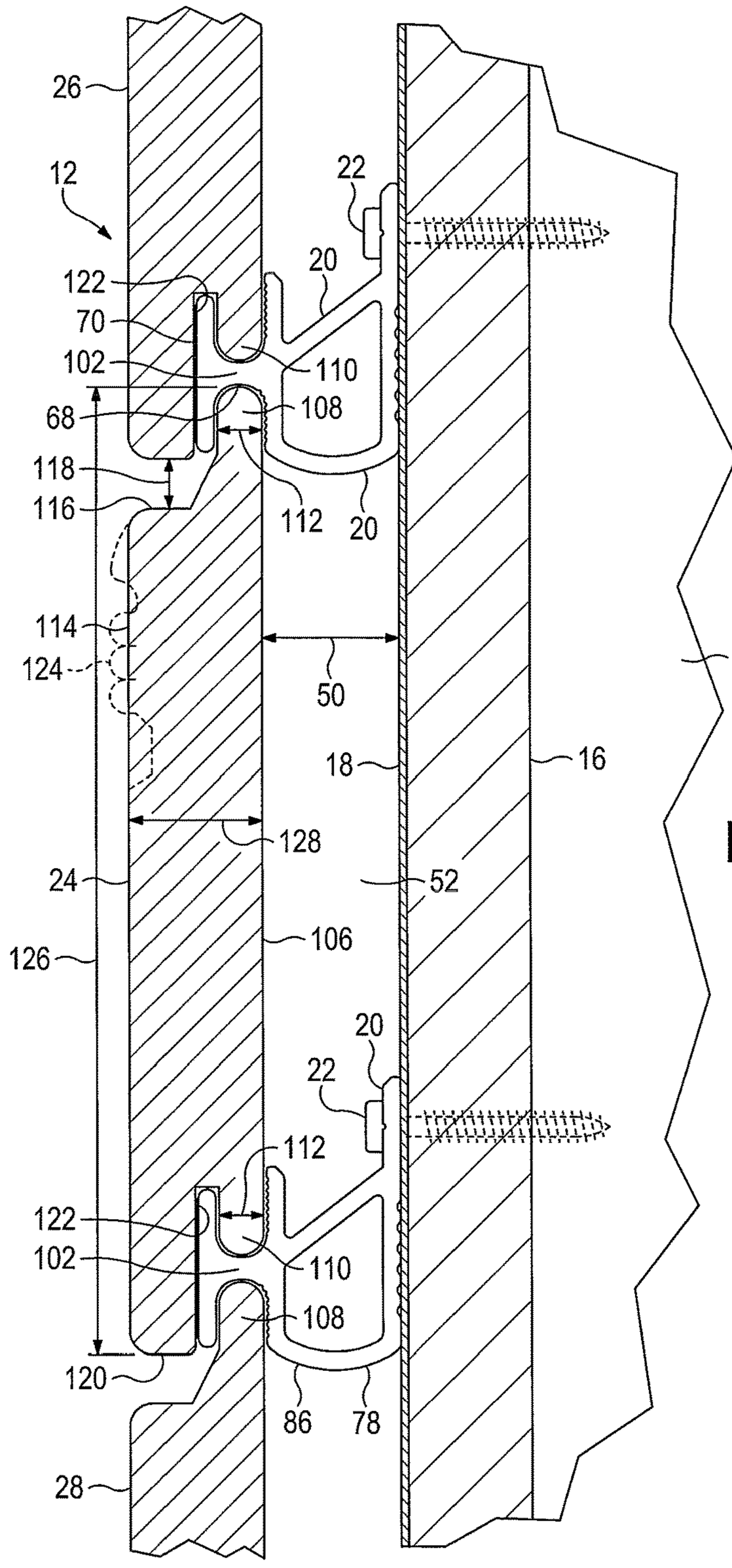
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FIG. 2

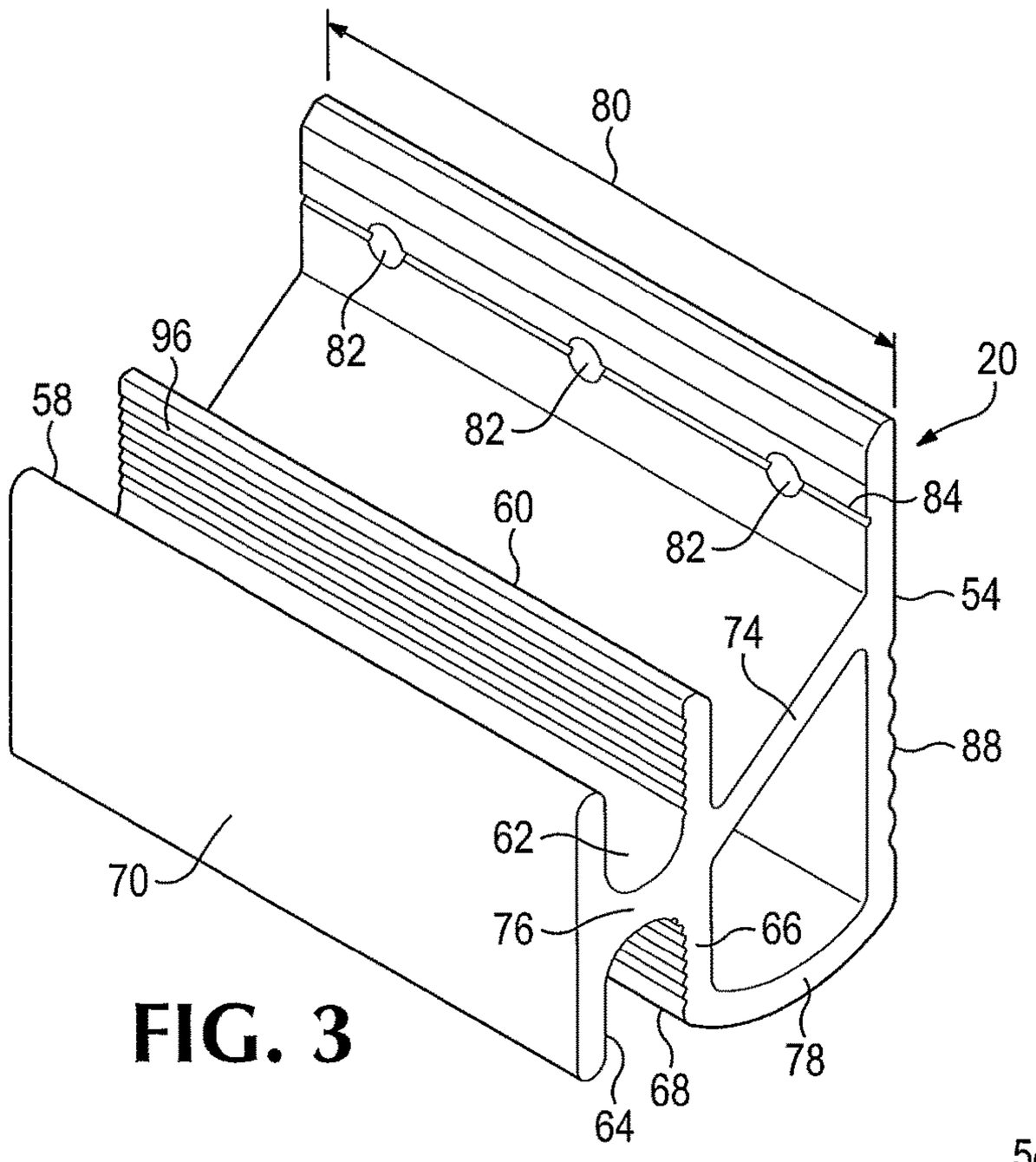
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FIG. 3

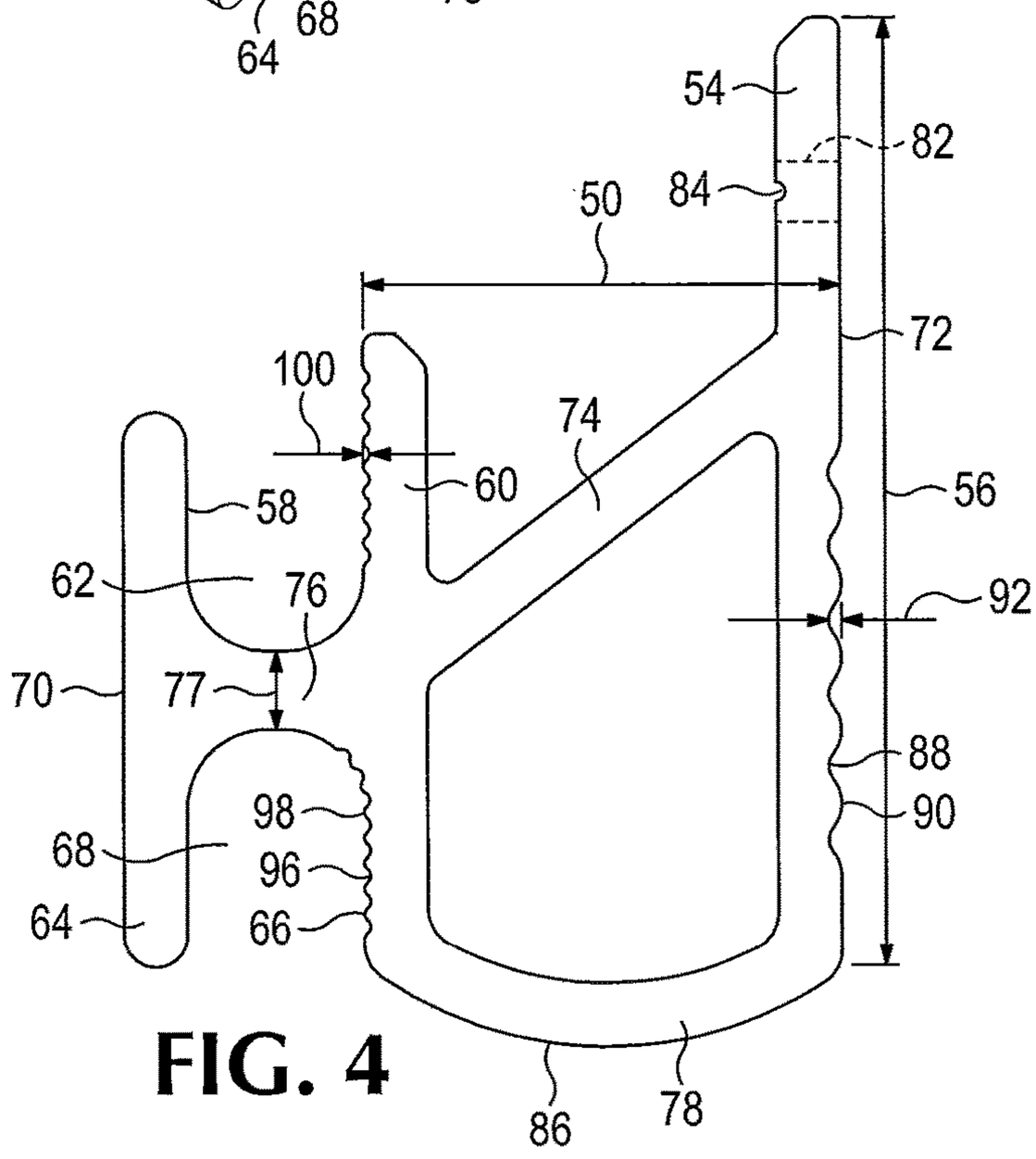
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FIG. 4

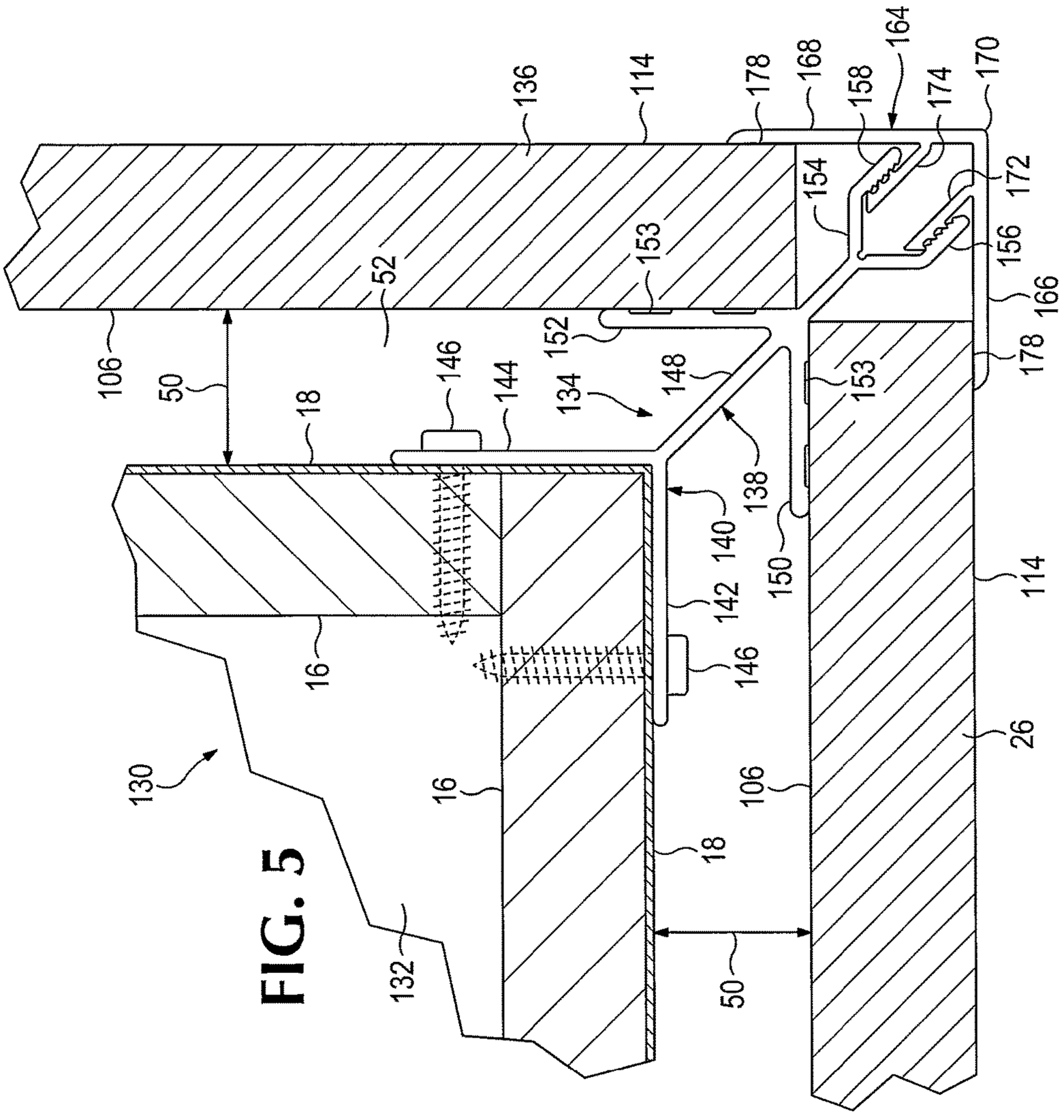
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FIG. 5

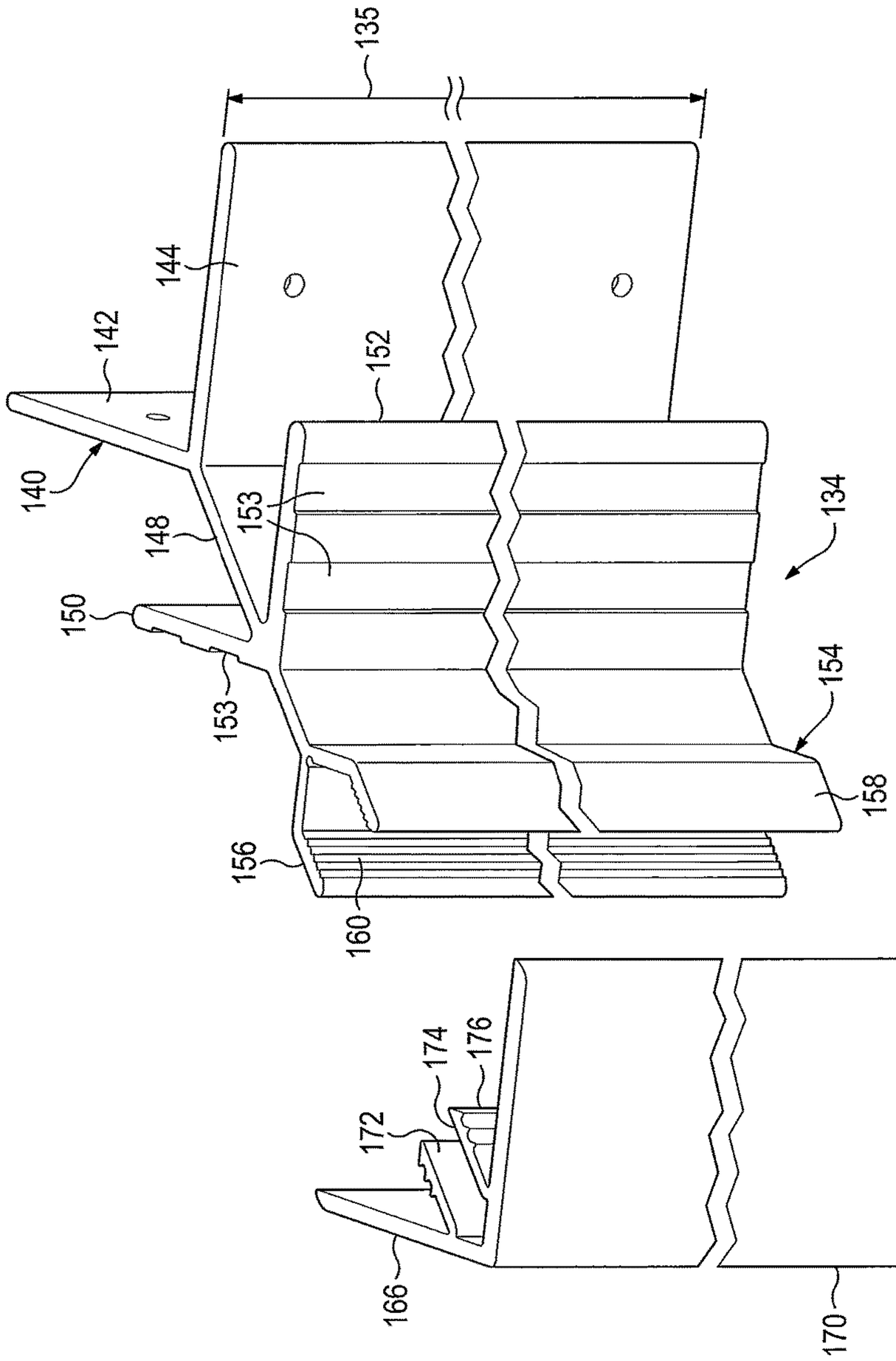
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FIG. 6

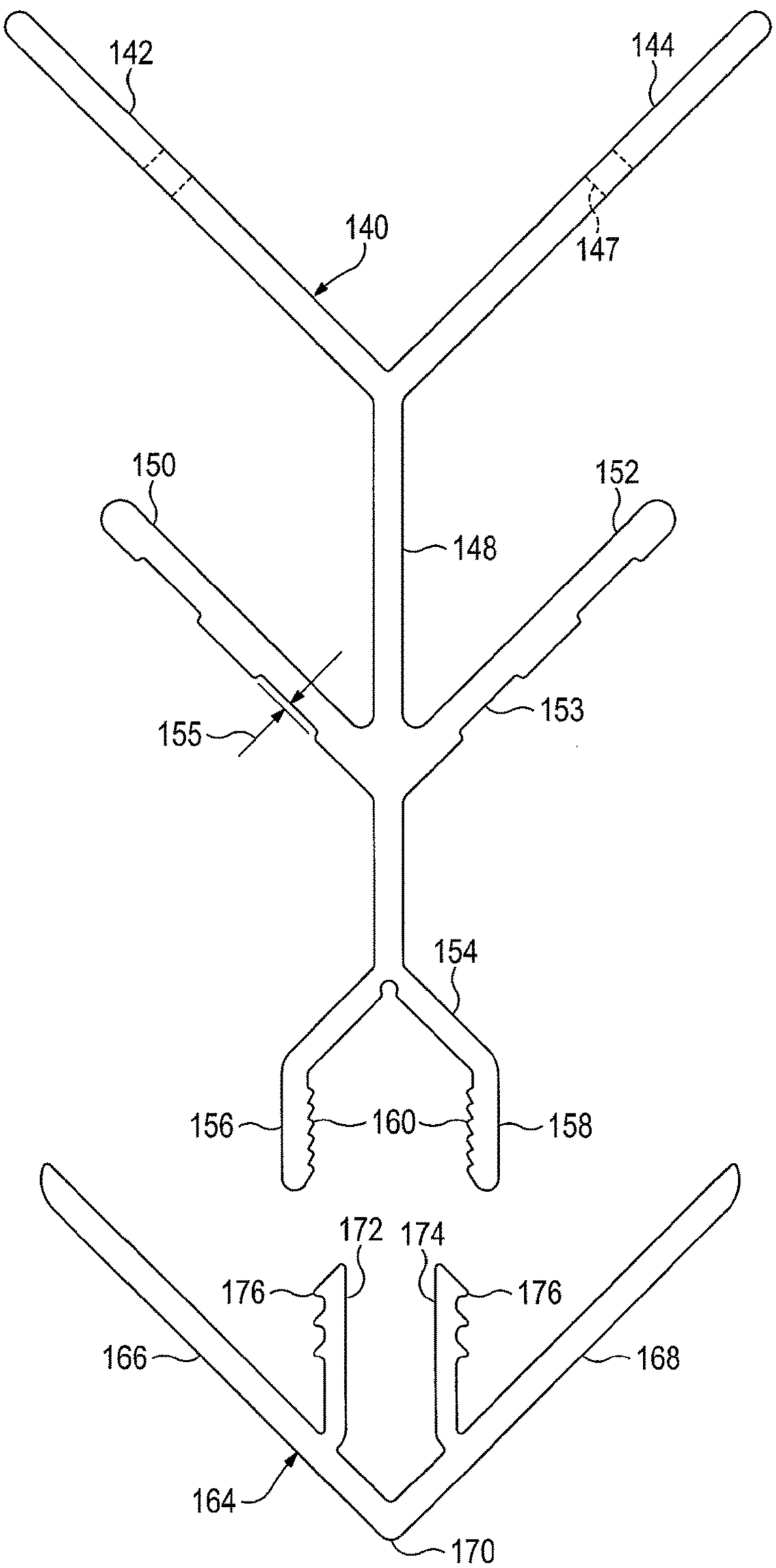
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FIG. 7

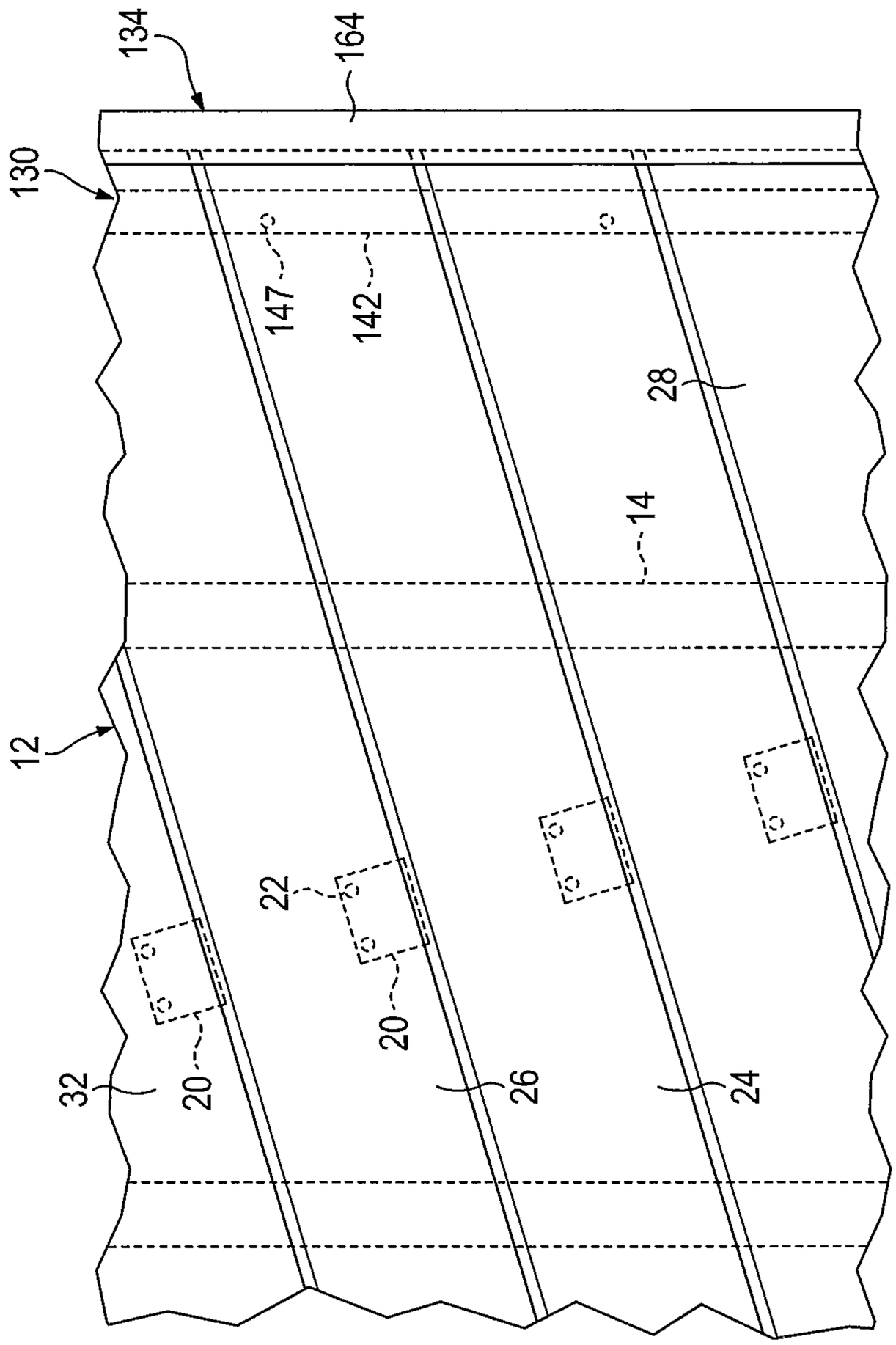

FIG. 8

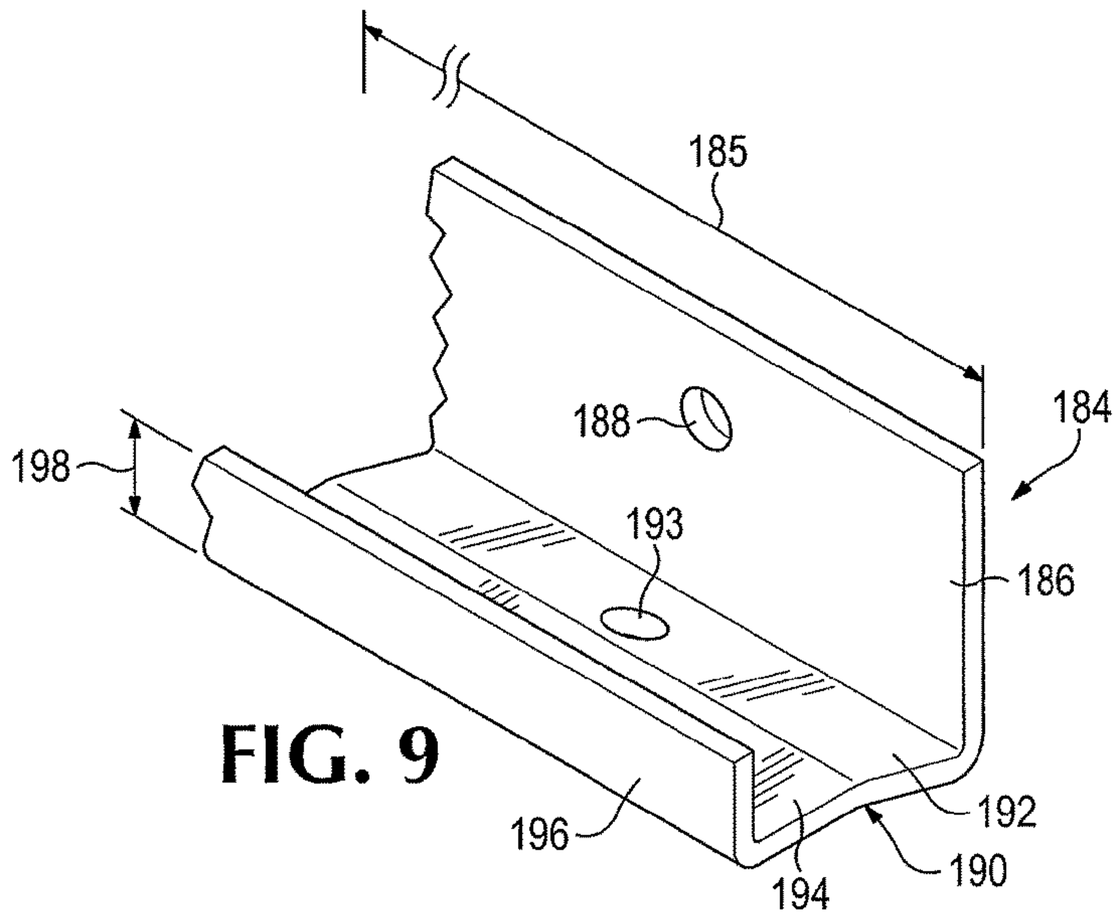
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FIG. 9

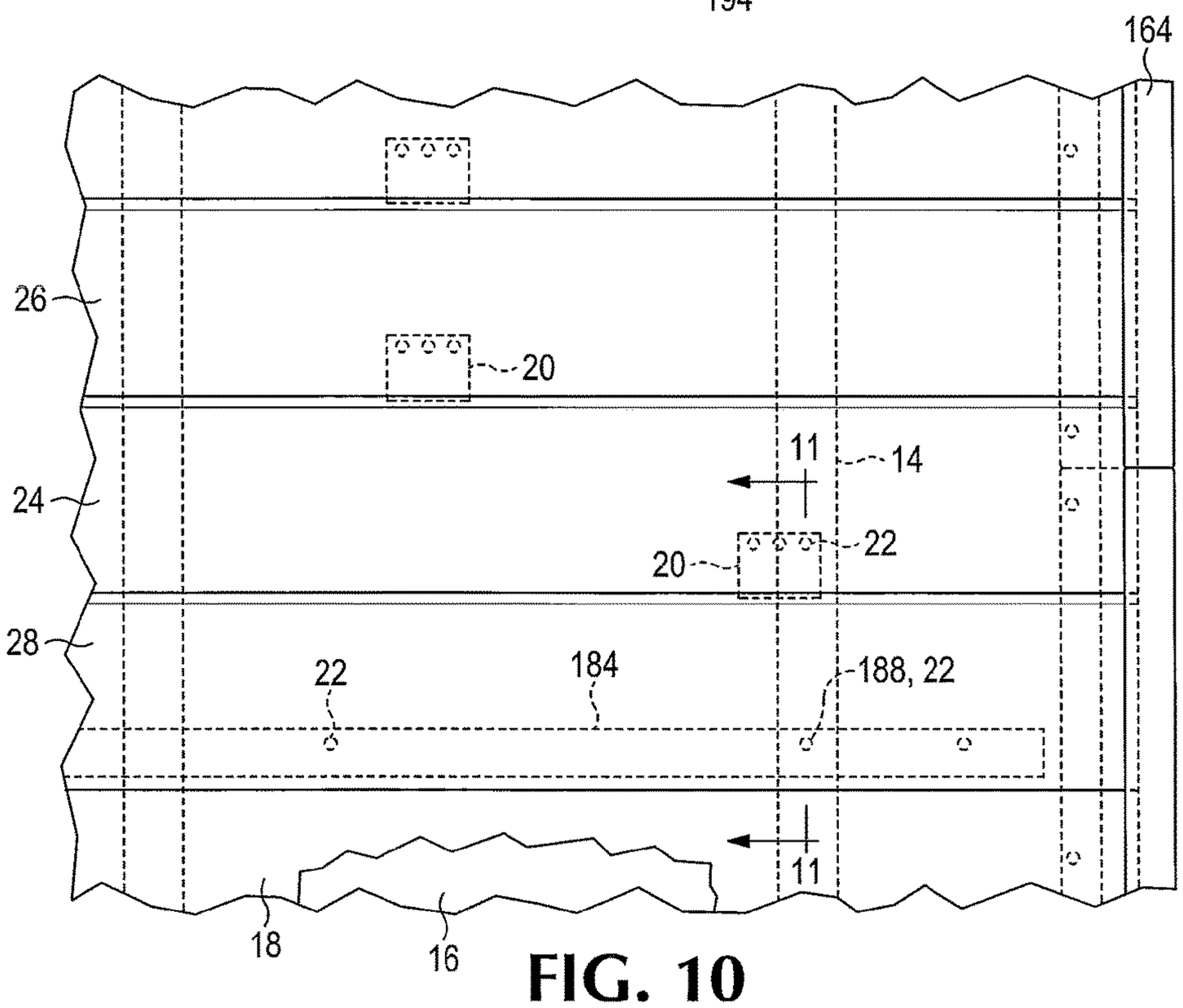
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FIG. 10

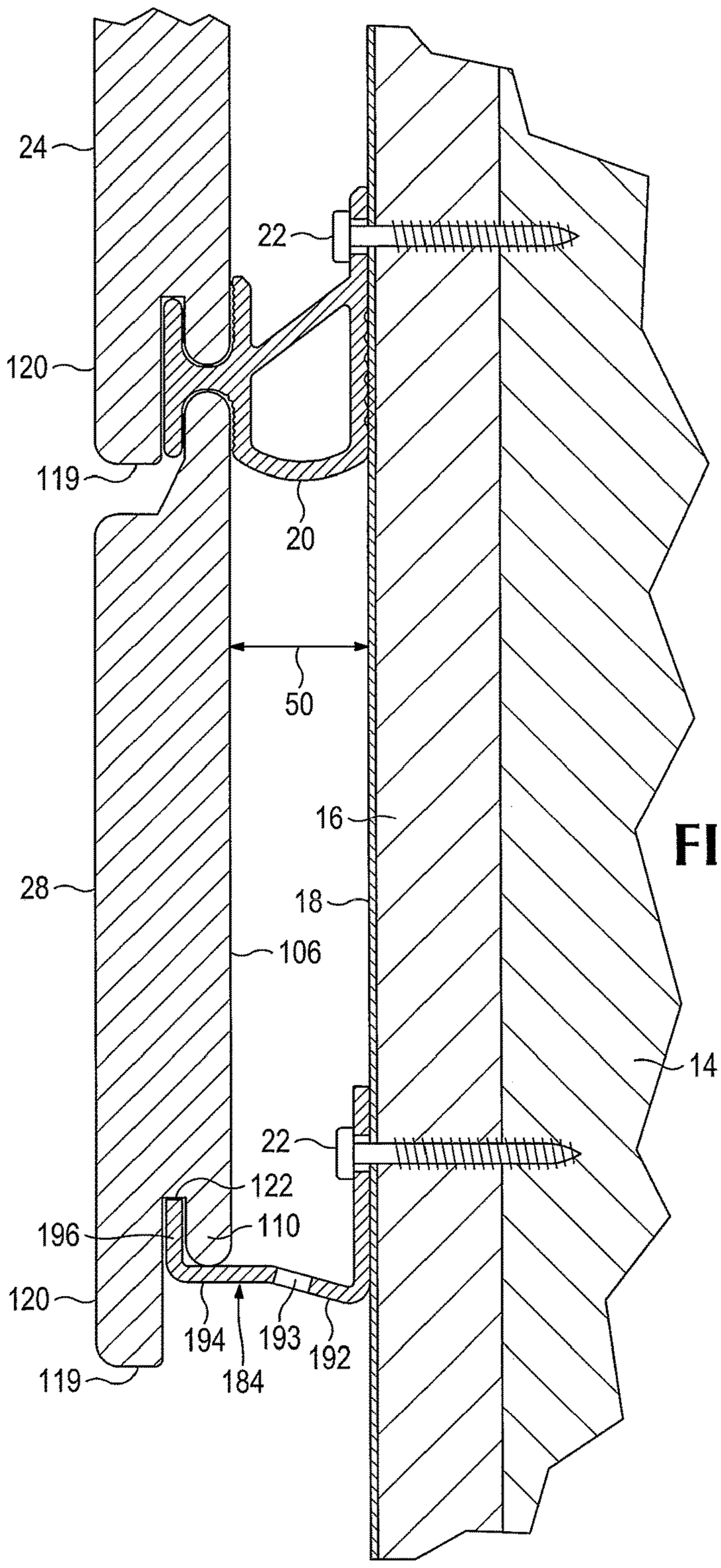
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FIG. 11

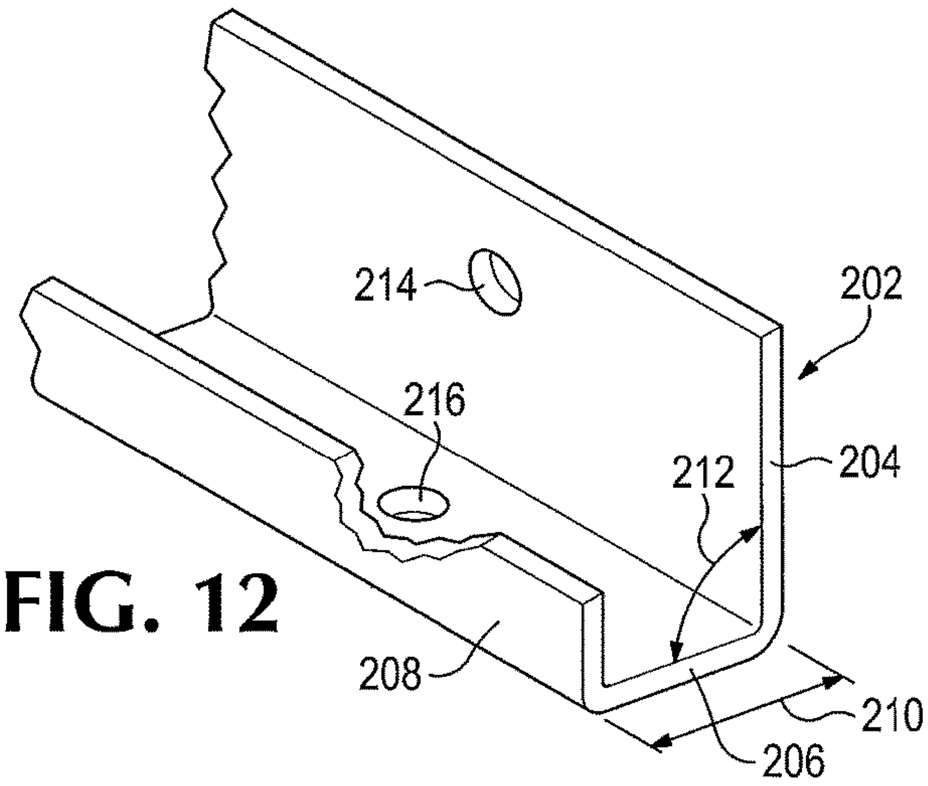
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FIG. 12

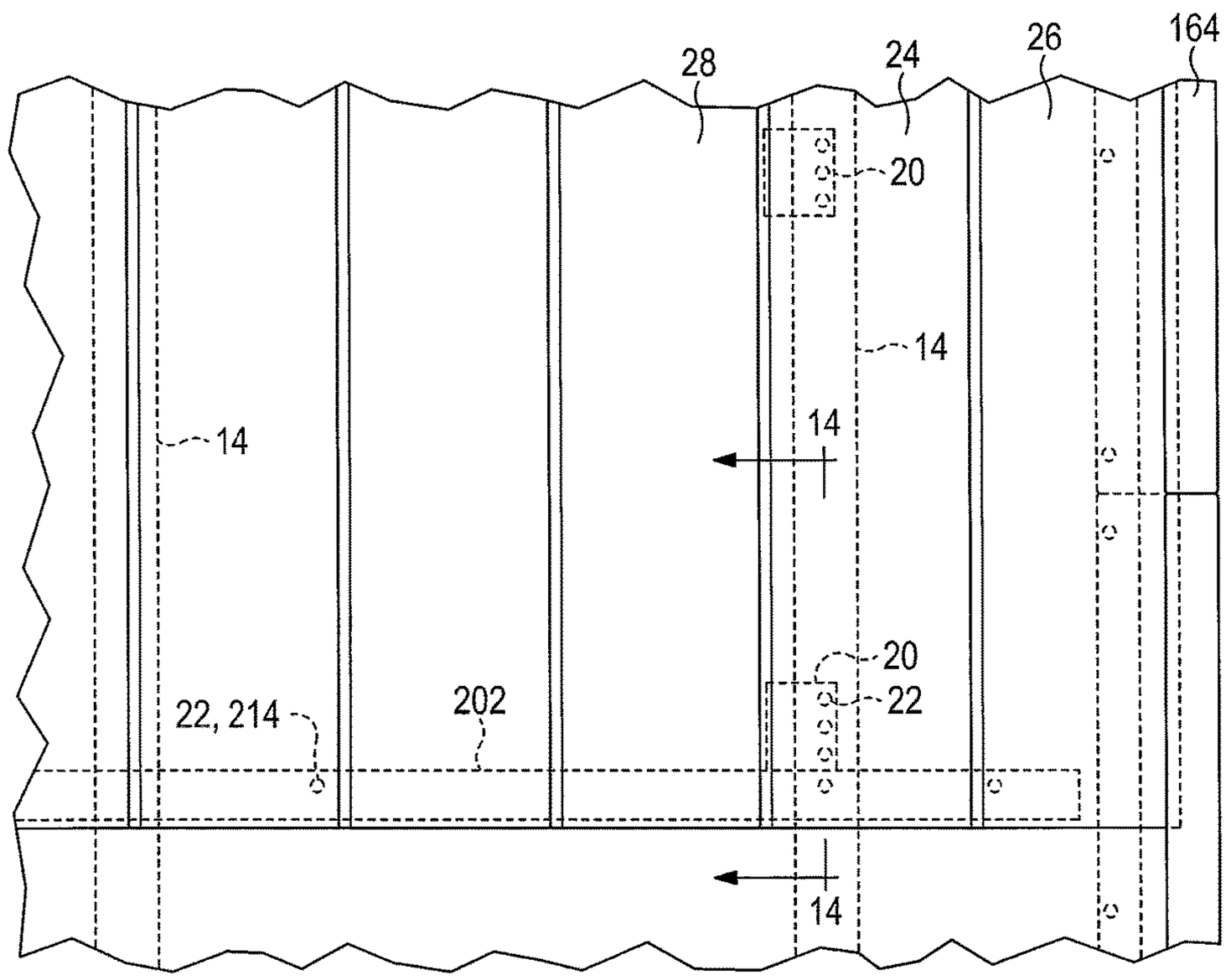
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FIG. 13

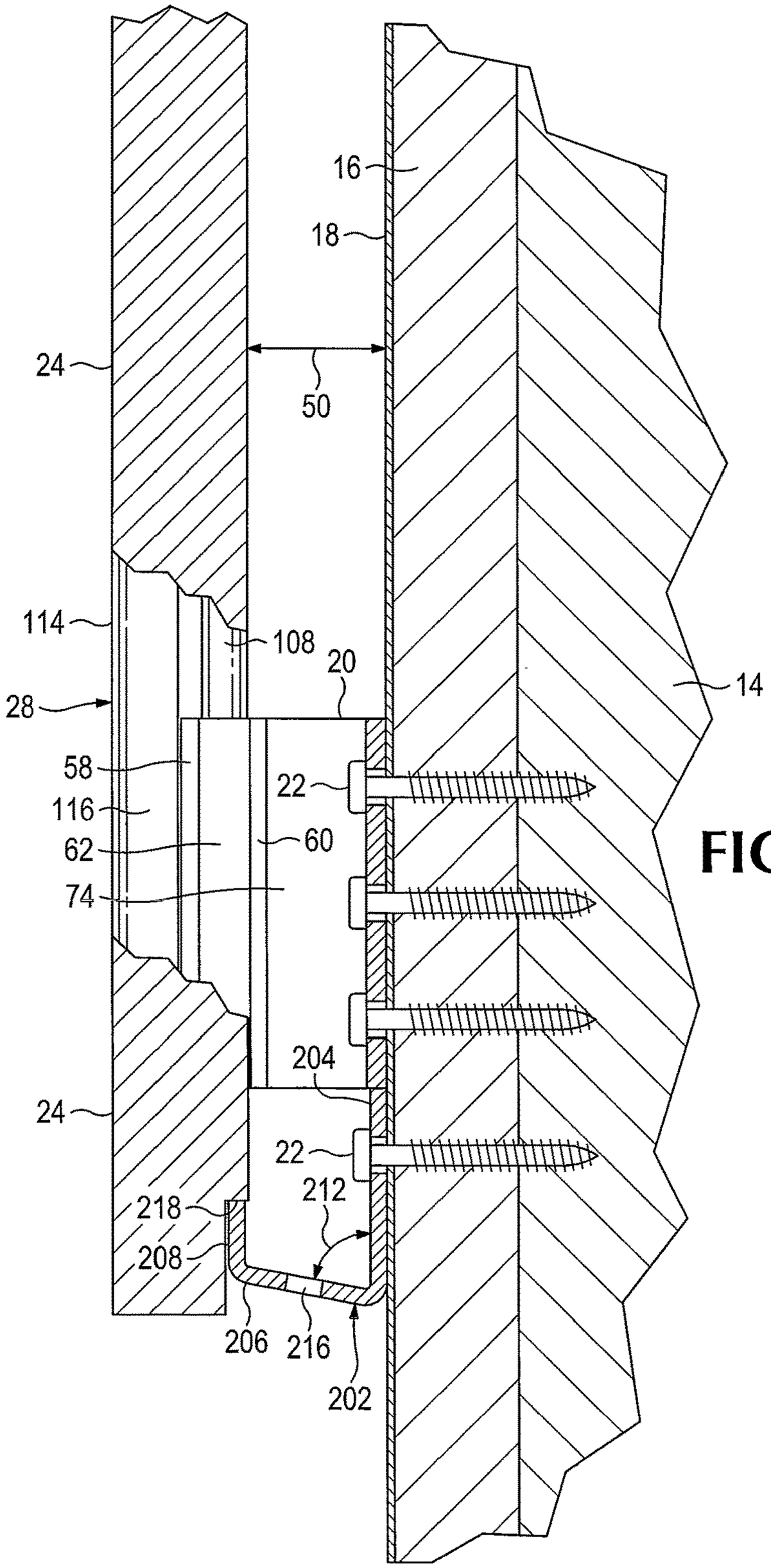
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FIG. 14

RAIN SCREEN SIDING SYSTEM

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of the filing date of U.S. Provisional Patent Application Ser. No. 61/497,244, filed Jun. 15, 2011.

BACKGROUND OF THE INVENTION

The present invention relates to rain screen siding systems including siding boards that may be of wood and devices for supporting the siding boards spaced apart from but parallel with plywood or other sheathing of a building wall structure.

Wooden siding, even when painted, is porous enough to absorb moisture from humid air, rain, or other precipitation, and to be dried by long exposure to dry hot air and direct sunlight, during different weather conditions or times of the year.

Particularly in wet climates, siding boards fastened closely to a wall structure such as plywood sheathing covered with a waterproof or water-resistant weather barrier membrane may be continuously damp on and adjacent their inner faces, even while the outer surfaces of the siding boards may become dry enough in hot, dry, weather to begin to shrink and cause the boards to cup. Over time, this may result in siding boards beginning to crack or rot or harbor ants or other insect pests.

In well-known rain screen siding arrangements furring strips are fastened on the outside of weather barrier membranes over plywood sheathing or other structural members on the outside of a building wall framework. Siding boards are fastened to the furring strips and are thus spaced outwardly apart from the weather barrier membranes, so that air can circulate between the siding boards and the weather barrier membrane, to help the inner faces of siding boards to shed moisture and thus avoid deterioration for a longer time. An air space between the siding boards and the underlayment membranes provides some thermal insulation in both hot and cold weather conditions. Siding boards, however, must be nailed or screwed directly to the furring strips.

Clips for supporting siding boards in a rain screen arrangement are known as shown in Hikai U.S. Pat. No. 6,598,362. The clips disclosed by Hikai are designed to support parallel siding boards that have overlapping edge portions, with the siding boards spaced apart from an underlying building wall surface such as an underlayment weather barrier membrane on a plywood sheathing, but with the edges of adjacent siding boards closely adjacent to one another, thus forming a substantially tight layer of siding boards albeit separated from the supporting building wall framework and its sheathing and underlayment membrane by an air space.

Guffey U.S. Pat. No. D617,011 discloses a design for a rain screen system in which a supporting clip extends around an upper edge of a lower siding board and into a groove in a lower edge of an upper siding board, supporting the adjacent upper and lower siding boards with a space defined between their edges. Guffey fails, however, to explain how the clips are to be attached to a building wall structure.

Hotta U.S. Patent Application Publication Document No. US 2002/0046536 A1 discloses another siding support member to support siding boards with overlapping, tightly adjacent edges, but with an air space between the assembled siding boards and an exterior surface of a supporting building wall framework and its underlayments.

What is needed, then, is a system for supporting a rain screen siding arrangement that is not limited to the previously known horizontal orientation of each siding board, and that provides a ventilated air space between siding boards and a supporting wall framework, sheathing, and underlayment membranes.

SUMMARY OF THE INVENTION

The present application discloses a rain screen siding system for mounting siding boards to a structure so that the siding boards are spaced apart from the exterior surface of a wall that may include sheathing boards covered by a weather barrier membrane. Clips may be fastened to the sheathing boards or supporting framework by screws, and siding boards that form a part of the system include tongues that fit into channels facing openly upward and downward from each clip, so that the siding boards are supported at their top and bottom margins by the clips with the siding boards spaced apart from each other far enough to permit ventilation between the siding boards, and the siding boards are spaced apart from the wall structure to which the clips are attached to create **[**an**]** *a continuous* air space providing thermal insulation as well as a path for drainage.

A bottom support member is provided to facilitate mounting siding boards oriented diagonally or vertically.

A corner supporting structure is provided to support the ends of siding boards where they meet each other at an exterior corner of a building, maintaining spacing between the siding boards and the interior structure of the building and protecting the ends of the siding boards against exposure to the elements. The corner support structure includes a corner cap that mates with a base portion of the corner support structure by engagement of barbs in one part with grooves defined in the mating part.

The foregoing and other features and advantages of the invention will be more readily understood upon consideration of the following detailed description of the invention taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL DRAWINGS

FIG. **1** is an elevational view of a portion of a wall of a building, to which a rain screen siding structure that is an embodiment of the present invention has been attached.

FIG. **2** is a sectional view of a portion of the wall structure of a building, taken along line **2-2** of FIG. **1**, at an enlarged scale, showing siding boards attached to a framework of a building wall.

FIG. **3** is an isometric view of a mounting clip of the sort shown in FIGS. **1** and **2**.

FIG. **4** is an end elevational view of the clip shown in FIG. **3**, at an enlarged scale.

FIG. **5** is a sectional view of a portion of a wall structure including an exterior corner and a rain screen siding structure according to the disclosure herein attached to the building wall at that corner, taken along line **5-5** of FIG. **1**.

FIG. **6** is an isometric view of the two-part corner attachment assembly for securing siding boards shown in FIGS. **1** and **5**, at an enlarged scale.

FIG. **7** is an end view of the two parts of the corner attachment assembly for securing siding boards shown in FIG. **1**, at an enlarged scale.

FIG. **8** is a view similar to that of FIG. **1**, but showing a rain screen siding system with siding boards inclined at an oblique angle.

FIG. **9** is a foreshortened isometric view of an elongate support member for use in connection with the rain screen siding system shown in FIGS. **1-4**.

FIG. **10** is a view similar to that of FIG. **1**, showing a rain screen siding structure including the support member shown in FIG. **9**.

FIG. **11** is a sectional view, taken along line **11-11** of FIG. **10**, showing a portion of a wall of a building including the rain screen siding structure shown in FIG. **10**.

FIG. **12** is a foreshortened and partially cutaway isometric view of an elongate support member for use with a rain screen siding structure according to the disclosures herein.

FIG. **13** is an elevational view of a portion of a wall of a building to which rainscreen siding has been attached with the lengths of siding bards oriented vertically.

FIG. **14** is a partially cutaway sectional view taken along line **14-14** of FIG. **13**.

DETAILED DESCRIPTION OF THE DISCLOSED EMBODIMENTS

Referring next to the drawings which form a part of the disclosure herein, a rain screen siding arrangement **12** is shown as installed on a conventional frame building wall structure including structural frame members such as studs **14** supporting a layer **16** of sheathing material such as plywood sheets covered by a weather-barrier membrane **18** of a material such as roofing felt or a synthetic vapor barrier membrane attached to the sheathing layer **16** in a conventional manner. A plurality of siding-supporting clips **20** are fastened to the sheathing layer **16**, by conventional fasteners such as screws **22**, that may also be fastened through the sheathing layer **16** to a supporting stud **14** or other structural support member. Siding boards **24**, **26**, **28**, **30**, and **32** are supported and attached to the building wall structure by the clips **20**.

In one embodiment, the clips **20** may be fashioned as an aluminum extrusion cut to desired lengths, and the screws **22** may be of stainless steel, in order to have ample strength yet resist rusting and electrolytic corrosion reactions with the aluminum material of a clip **20**. For example, the clips **20** may be of extruded marine grade T6 aluminum alloy, and the screws **22** may be one inch long number **12** square drive, pan head wood screws. Longer screws may be used where a stud **14** or other structural member is located behind the sheathing layer **16** at the point of attachment of the clip **20**.

At the right-hand side of FIG. **1**, an exterior corner of the building has a corner extending vertically and the rain screen siding system **12** includes an attachment assembly for securing the ends of the siding boards to the wall structure along the vertically-extending corner where a wall parallel with the surface of the drawing meets a wall extending rearwardly back from the surface of the drawing.

Referring now to FIGS. **2-4**, the clips **20** support the siding boards **24**, **26**, **28**, etc., spaced apart outwardly away from the weather barrier layer **18** of the wall structure, by a standoff distance **50** of, for example, 0.75 inch, that establishes **[**an**]** *a continuous* air space **52** between the siding boards **24**, **26**, **28**, etc., and the wall structure. A *generally planar* mounting base **54** rests against the weather barrier **18**, supported by the *generally flat* sheathing **16**, and may have a height **56** of about 1.5 inches in one embodiment. A pair of channel walls, an outer channel wall *member* **58** and an inner channel wall *member* **60** define an upwardly open channel **62** in the clip **20**. *As shown in FIGS. 2, 3 and 4, the inner channel wall member 60 may extend to a slightly greater height than does the outer channel wall member 64.* A depending lower outer channel wall *member* **64** and a lower inner channel wall *member* **66** define a downwardly open or lower channel **68** aligned with but facing oppositely from the upwardly open channel **62**. Outward faces of the outer channel **[**walls**]** *wall members* **58** and **64** are coplanar and *cooperatively* define *an outer face in* a plane **70** parallel with the inner face **72** of the mounting base **54**.

A standoff support structure includes an upper support member **74** that extends diagonally, obliquely, downward from the outer face of the mounting base **54** toward a central member **76** that has a thickness **77** and extends generally horizontally and separates the bottoms of the channels **62** and **68** from each other *while interconnecting the inner channel wall with the outer channel wall of each channel 62 and 68. The inner channel wall 60 thus extends upward above and beyond the upper support member 74, and the two members cooperatively define a space above the upper support member 74*. A generally horizontal curved support member **78**, convex on what is normally a lower or bottom surface **86**, interconnects a lower margin of the mounting base **54** with a lower margin of the inner channel wall **66** of the downwardly open channel **68**. The two support members **74** and **78** thus establish a rigid trapezoidal structural interconnection between the mounting base **54** and the structures defining the upper and lower channels **62** and **68**, so as to prevent them from twisting relative to the plane of the wall structure to which the mounting base **54** is attached.

As shown in FIG. **3**, the clip **20** may have a length **80**, of about 2 inches as measured parallel with the longitudinal dimensions of the siding boards **24**, **26**, etc., in one embodiment of the clip **20**. At least one hole for receiving a fastener, such as a screw hole **82**, and preferably at least a pair of screw holes **82** may be defined to extend through the mounting base **54** to receive a screw **22**. In one version there may be three screw holes **82**.

The screw holes **82** may be located, for example, located at least 0.25 inch inboard from each end of a clip **20**, as with a center-to-center distance between two adjacent screw holes **82** of about 0.6825 inch, for example, although the distance is not critical, so long as there is ample material outboard of each screw hole **82** to satisfy requirements for strength of the clip **20**.

A shallow groove **84** may be defined in the upper portion of the mounting base **54**, extending between the screw holes **82** to promote drainage of moisture, particularly should the clips **20** be mounted in a non-horizontal orientation.

An inner or back side of the mounting base **54** may define several parallel grooves **88** separated by ridges **90**, with the grooves **88** having a depth **92** of about 0.020 inch, for example, to promote drainage of liquids that may run or be condensed behind the clip **20** when it is mounted on a building structure. The grooves **88** may be spaced apart from one another by a distance of 0.116 inch, for example.

Similarly, smaller grooves **96** and ridges **98** may be defined in and extend along each of the inner channel walls **60** and **66**, facing inwardly toward the interior of the channels **62** and **68**, with a groove depth **100** of 0.010 inch, for example, to promote drainage of liquid drained into or

condensed within the channels **62** and **68**. Such drainage grooves **88** and **96** are desirable because the rain screen support arrangement of the siding boards **24**, **26**, **28**, etc., results in open passageways or channels **102** between adjacent ones of the siding boards **24**, **26**, **28**, etc.

As shown in FIGS. **1** and **2**, each siding board **24**, etc., has an inner face **106** that may be substantially planar, terminating along its upper margin in an upper tongue **108** extending *longitudinally along the siding board 24, etc., and* upwardly into the downwardly open lower channel **68** of the clip **20** immediately above the siding board **24**, etc. Similarly, the inner face **106** may extend downwardly as a lower tongue **110** *extending longitudinally along the siding board 24, etc*. Each of the tongues **108** and **110** may have a width, or thickness **112** of, for example, 0.25 inch, slightly less than the interior width of each of the channels **62** and **68** whose interior width may be, for example, 0.281 inch, so that the tongues **108** and **110** fit comfortably, but not tightly, within the respective one of the channels **62** and **68**, with some space available to accommodate some swelling or some misalignment between the clip **20** and the orientation of the siding board **24**, **26**, etc.

From the upper tongue **108** the siding board may be gradually increased in thickness toward its front or outer face **114**, with a definite shoulder **116** extending rearwardly away from the outer face **114** toward the base of the upper tongue **108** to define an outer gap or channel **118** between adjacent siding boards, leading to the passageway **102**, so that there is an unobstructed path between adjacent siding boards **24**, **26**, etc., through which a generous flow of air is possible to ventilate the air space **52** between the siding boards **24**, **26**, etc., and the weather barrier membrane **18**. At the same time, the passageway **102** is only as wide as the thickness, for example about 0.125 inch, of the central member **76** between the channels **62** and **68**, so the siding is not excessively open to wind or precipitation.

Along the bottom margin **119** of each siding board a skirt portion **120** overlaps the outer channel walls **58** and **64**, extending along the outer planar surface **70** of the clip **20**. A groove **122** is defined in the lower margin of each siding board **24**, **26**, etc., to receive the outer channel wall **58** of the upwardly open channel **62** of the respective clip **20**, so that the skirt or overhang portion **120** can overlap the outer surface **70** of the outer channel walls, concealing the clips **20** supporting siding boards **24**, **26**, etc.

While the outer face **114** of the siding boards **24**, **26** is shown herein as being flat, it will be understood that the siding boards might be manufactured to include various beads, channels, grooves, ribs, or other shapes that might be manufactured by use of appropriate cutters, as shown for example in broken line at **124**.

Siding boards might be of various sizes, but may easily be manufactured to correspond with nominal 1×4, 1×6, or 1×8 inch lumber sizes. For example, the siding board **24** in a 1×6 inch size might have a width **126** of 5.375 inches between the extremities of the upper tongue **108** and the skirt **120**, as shown in FIG. **2**, and a thickness **128** of about 0.719 to 0.75 inch, for example.

Placement of clips **20** on the face of a building wall framework and sheathing is not critical, although it may be advantageous to have at least one of the screws **22** located so as to penetrate the sheathing **16** and also engage a stud **14** located behind the sheathing. In a normal horizontal orientation of the siding boards **24**, **26**, etc., only one of the screws **22** will be able to be driven into the narrow face of a stud **14**, as shown in FIG. **1**. While the clips **20** need not be located opposite one another on opposite top and bottom margins of a particular siding board as are the clips **20** on siding board **24** as shown in FIG. **1**, it is important where the butt ends of a pair of siding boards such as the siding boards **30** and **32** meet each other to have a pair of clips **20** engage the ends of both the top and bottom margins of the abutting siding boards **30** and **32** to keep their ends aligned with each other, not only for the sake of appearance but also to avoid exposure of the end grain of either of the siding boards **30** and **32** to weather conditions that might accelerate checking and other deterioration of the wood. Spacing of clips **20** along a siding board may be, for example, 24 inches center to center.

Referring next to FIGS. **5**, **6**, and **7**, where a structure has an exterior corner as at **130** in FIG. **1** a corner post **132** may have a layer **16** of sheathing extending past the corner post **132** by a distance equal to the thickness of another layer of sheathing **16** on the adjacent side of the corner post **132** at right angles to the first sheet of sheathing **16**, with a weather barrier membrane **18** extending around the corner outside the sheathing **16**. As shown in plan view in FIG. **5**, the corner assembly includes a mounting member having a base portion **138** attached to the exterior of the exterior angle defined by intersecting sheathing boards attached to a corner post structure of the building framework. A corner cap **164** is attached to the base portion as will be described in greater detail presently and covers and secures the ends of the several siding boards that extend to the corner of the building wall structure depicted, so as to retain the end of each siding board and also to protect it against exposure to sun, wind, and precipitation. While the end grain of siding boards may be sealed by primer or sealant, the cap alone is sufficient to provide a significant amount of protection against weathering, checking, and splitting of the siding boards at their cut-off ends.

In particular, to support and maintain the proper location of a rain screen structure **12** a corner attachment assembly **134** may be used to secure and maintain the location of siding boards **24**, **26**, and **32** on a first side of the corner **130** with respect to siding boards including a siding board **136** extending to the corner **130** from the adjacent side.

The corner attachment assembly **134** includes a base portion **138** incorporating an angle section **140** including a pair of planar legs **142** and **144** fitted against the corner portion **130** and secured by screws **146** that may be of the same sort as the screws **22** used to attach the clips **20**, fitted in holes **147** in the legs **142** and **144**. The screws **146** may extend through the sheathing boards **16** and **18** and into the corner post **132** as shown in FIG. **5** to securely attach the base portion **138** to the corner **130**. A spacer structure includes a diagonally oriented member **148** extending away from the angle section **140** at an angle of **135** degrees with respect to each of the legs **142** and **144**. A pair of siding support flanges **150** and **152** extend from the diagonal member **148** parallel with the legs **142** and **144**, respectively, of the angle portion **140**, so as to support an inner face **106** of each of the siding boards **26**, etc., and **136** at the standoff distance **50** established by the clips **20** securing the siding boards to the building structure as described above. It will be understood that instead of the diagonal member **148** a separate member might extend outwardly away from the angle section **140** to each of the siding support flanges **152**. Extending diagonally outward from the corner **130** beyond the line of intersection of the siding support flanges **150** and **152** is a cap retainer portion **154**. As shown best in FIGS. **6** and **7**, the cap retainer portion **154** is configured as a "Y" with a pair of parallel arms **156** and **158**. The interior surface

of each arm **156** and **158** includes a group of parallel ridges defining parallel grooves **160** facing toward each other.

The base portion **138**, as the clip **20**, may be formed as an extrusion of aluminum or other suitably strong and durable material.

A corner cap **164** includes a pair of side members **166** and **168** that intersect and are joined with each other along a corner edge **170** that, when the cap **164** is in place, extends parallel with the building structure corner **130** to which the base portion **138** is attached. A pair of corner cap engagement legs **172**, **174** both have several outwardly facing ridges **176** extending along their length parallel with a length **135** of the corner attachment assembly **134**. The engagement legs **172** and **174** are appropriately spaced apart from one another and both the legs **172** and **174**, and the arms **156** and **158** may be sufficiently resilient to allow the corner cap **164** to be pushed into engagement with the cap retainer portion **154** so that the ridges **176** can engage themselves in the grooves **160** to keep the corner cap **164** fastened to the cap retainer portion **154** of the base portion **138** after the siding boards have been installed.

Each of the siding support flange members **150** and **152** may define one or more shallow grooves **153** extending along its length and thus extending generally vertically along a building corner **130** where the rain screen siding system has been installed, as a channel for drainage of rain or condensation along the siding support flanges **150** and **152**. The grooves **153** may have a depth **155** of 0.020 inch, for example.

The locations of the grooves **160** and ridges **176** permit the corner cap **164** to be engaged with the cap retainer portion **154** between the arms **156** and **158** to a depth great enough to permit the side members **166** and **168** to rest against the outer face **114** of each of the siding boards **26** and **136**, etc., to keep the siding boards snugly in place supported by the siding support flanges **150** and **152**. Each of the side members **166** and **168** will overlap an end portion **178** of a siding board **24**, **136**, etc., by an ample distance, such as 0.25-0.4 inch, when the end of a siding board is properly located adjacent the inner end of the cap retainer portion **154** as shown in FIG. **5**. With the cap **164** in place, the end grain of each of the siding boards **26**, **136**, etc., is shielded from exposure to the sun and precipitation, which should prolong the duration of the siding board before the end grain begins to check and split. While such protection is advantageous, siding board life could be further extended by application of an appropriate sealant or primer paint to the exposed end grain wood surface.

While foregoing discussion has dealt with provision of a rain screen siding system as if the siding boards are mounted and supported in a conventional horizontal orientation of the length of each siding board, the clips **20** and corner attachment assemblies **134** permit siding boards also to be installed in a non-horizontal, obliquely sloped orientation as shown in FIG. **8**, or even in a vertical orientation as shown in FIGS. **13** and **14** and described below. Support for each siding board **24**, **26**, etc., is provided by use of the clips **20** and the corner attachment assembly **134** so that an ample air space **52** is provided by the standoff distance **50** and ventilation is enhanced by the passageways **102** and the gaps **118** between opposed upper and lower margins of adjacent siding boards, as may be seen most clearly in FIG. **2**. The ability to attach and support siding boards using the clips **20** disclosed herein may be particularly important in vertical orientation of the siding boards, since horizontal furring strips would obstruct drainage and ventilation, requiring some other structure such as furring strips to support the horizontal furring strips.

Screens may be installed at the top and bottom of each panel of siding boards to exclude birds and small animals without preventing air flow.

Referring to FIGS. **9**, **10**, and **11**, a starter rail, or bottom support member **184**, shown foreshortened in FIG. **9**, may be used to support the lowest siding board **28** where siding boards **24**, **26**, etc., are mounted in a horizontal orientation, as shown in FIGS. **1** and **10**. The starter rail **184** may be provided in desired lengths, such as 8 feet in length **185**, and may be manufactured, for example, of sheet metal, such as sheet aluminum having a thickness of, for example, 0.09 inch, bent along parallel lines to a shape such as that illustrated in FIGS. **9** and **11**. The shape includes a mounting base portion **186**, to lie along the surface of a building wall, and which defines a plurality of mounting screw holes **188** spaced apart along the length of the starter rail **184**. A generally horizontal standoff portion **190** extends outward from the mounting base portion **186**, with an inner portion **192** optionally being oriented at a smaller angle, such as 75 degrees, to the mounting base portion **186**, to define a moisture collection trough adjacent the vertical mounting base portion **186**. Drain holes **193** may be spaced apart along the standoff portion **190**, preferably in the inner portion **192**. An outer part **194** may be oriented horizontally, at right angles to the generally vertical mounting base portion **186**. A generally vertical supporting member or lip portion **196** extends upwardly from the outer part **194**, parallel with the generally vertical mounting base portion **186**, and with a height **198**, of, for example, 0.45 inch, to correspond with the depth of a groove **122** defined by the lower margin of a siding board **24**, between the lower tongue **110** and the skirt **120**. This permits the lower tongue **110** to rest on the generally horizontal outer part **194** of the rail **184**, as shown in FIG. **11** while the lip **196** prevents the lower margin of the siding board **24** from moving away from or closer to the sheathing layer **16** and weather barrier underlayment **18** of a wall. It will be understood that instead of being made of bent sheet aluminum, the support rail **184** may instead be of another metal or a composite material, or may be of extruded aluminum.

The rail **184** may be mounted on a wall to which the rain screen siding described herein is to be attached, being leveled and secured by screws **22** to provide a convenient, straight, and level bottom edge so as to mount the rain screen siding more easily than can be accomplished by mounting individual mounting clips **20** separately. With the lowest siding board **28** placed onto the rail **184**, mounting clips **20** can be installed at appropriately spaced-apart locations along the length of the siding board **28** to retain the upper margin of the siding board **28**. Subsequent siding boards **24**, **26**, etc., can then be mounted in the fashion described above and illustrated in FIGS. **1** and **2**.

Where it is desired to install a rain screen wall of the type described herein with the siding boards **24**, **26**, etc., with their lengths oriented vertically, as shown in FIGS. **13** and **14**, a bottom support rail member **202** as shown in FIG. **12** may be used.

Similar to the support rail **184**, the bottom support member, or starter rail, **202** has a generally vertical mounting base portion **204**, a generally horizontal standoff portion **206**, and a generally vertical supporting member or lip **208** spaced horizontally apart from the mounting base portion **204** by a standoff distance **210**. The standoff portion **206** may be oriented at an angle **212** somewhat less than 90 degrees to

the mounting base portion **204**, in order to act as a collection trough for moisture. Mounting screw holes **214** may be provided in the mounting base portion **204** and drain holes **216** may be provided at spaced-apart locations along the length of the support rail **202** in the standoff portion **206**.

In attaching a rain screen siding system to a building wall according to the present disclosure, a bottom support member **202** may be attached to the sheathing **16** over the weather barrier underlayment **18**, as shown in FIG. **14**, with mounting clips **20** arranged above the bottom support member **202** as shown in FIG. **14** to receive, locate, and secure a margin of a siding board extending vertically above the starter rail **202**. One of the attachment clips **20** may be placed immediately above the mounting base portion **204** of the bottom support member **202**, as shown in FIG. **14**. The bottom end of each siding board **24**, **26**, **28**, etc., may be shaped, as by a router, etc., to provide a rabbet **218** to receive the vertical support portion or lip **208**. The support portion or vertical lip **208** then supports the vertical siding boards **24**, **26**, etc., while the mounting clips **20** keep the siding boards **24**, **26**, etc. located at the correct standoff distance **50** from the sheathing layer **16**, preventing the bottom ends of the siding boards from moving apart from the sheathing layer **16** and being able to fall down outboard of the vertical support lip **208**. Once a vertical siding board **28** has been placed additional mounting clips **20** are mounted against it, and a subsequent vertically-oriented siding board **24** may be installed sequentially, as will be understood. In addition to vertical installation of siding boards **28**, **24**, **26**, etc., steep diagonal installation may be accomplished similarly, using a bottom support member **202**, with individual siding boards **24**, **26**, etc., oriented more nearly vertical than the diagonal orientation illustrated in FIG. **8**.

The terms and expressions which have been employed in the foregoing specification are used therein as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding equivalents of the features shown and described or portions thereof, it being recognized that the scope of the invention is defined and limited only by the claims which follow.

What is claimed is:

1. A rain screen siding system, comprising:

(a) a plurality of mounting clips of unitary construction;

(b) a plurality of siding boards supported on the mounting clips, wherein each siding board has a width and includes:

(i) an inner face;

(ii) an outer face;

(iii) a first tongue extending along the siding board adjacent a first margin of the board;

(iv) a parallel, oppositely directed second tongue extending along the siding board adjacent a second margin of the board, the first and second tongues respectively defining opposite longitudinally extending margins of the inner face; *and*

(v) a skirt portion including a marginal portion of the outer face located along the second margin of the siding board and spaced outwardly apart from and extending beyond a margin of the second tongue;

(c) and wherein each of the mounting clips includes:

(i) a planar mounting base having an outer face;

(ii) a standoff structure attached to the mounting base and extending outwardly therefrom;

(iii) a first pair of inner and outer channel wall members defining a first, upwardly-open, channel;

(iv) a second pair of inner and outer channel wall members defining a second, oppositely directed, downwardly-open channel; and

(v) the standoff structure including an upper support member extending downward obliquely from the outer face of the mounting base and a lower support member extending generally horizontally from a lower margin of the mounting base to the inner channel wall of the second, downwardly-open channel, said standoff support structure interconnecting the channel wall members with the mounting base, and said inner channel wall members being parallel with and spaced apart from the mounting base**[**:**]**; and wherein

d) a first tongue of a first one of the plurality of siding boards is engaged in the second, downwardly-open channel, and a second tongue of a second one of the plurality of siding boards is engaged in the first, upwardly-open, channel, with the skirt portion of the second one of the plurality of siding boards extending alongside and being spaced outwardly apart from the first tongue of the siding board engaged in the second, downwardly-open, channel, and the tongues of the first and second ones of the plurality of siding boards thus engaged in the mounting clip being spaced apart from one another and defining an open passageway between the adjacent first and second ones of the plurality of siding boards, through which an unobstructed flow of air is possible to ventilate an air space adjacent said inner face of each of said plurality of siding boards.

2. The rain screen siding system of claim **1** including an elongate rail including a support member engaging a groove defined in the second margin of one of the plurality of siding boards between said second tongue and said skirt portion thereof.

3. The rain screen siding system of claim **1** wherein said siding boards are installed in a non-horizontal orientation, the system including an elongate rail including a support member engaging a lower end of each of said plurality of siding boards.

4. The rain screen siding system of claim **1** wherein the outer channel wall members of said first and second channels of at least one of said plurality of mounting clips define a substantially planar outer face of said **[**siding attachment**]** *mounting* clip.

5. The rain screen siding system of claim **1** wherein all of said inner and outer channel wall members of at least one of said plurality of mounting clips are parallel with said planar mounting base thereof.

6. The rain screen siding system of claim **1** wherein said outer channel **[**walls**]** *wall members* of at least one of said plurality of mounting clips are coplanar.

7. The rain screen siding system of claim **1** wherein a plurality of drainage grooves are defined in **[**a rear side**]** *an inner face* of said planar mounting base of at least one of said plurality of mounting clips.

8. The rain screen siding system of claim **1** wherein an interior surface of at least one of said outer and inner channel wall members of each of said first and second channels of at least one of said plurality of mounting clips defines a plurality of drainage grooves.

9. The rain screen siding system of claim **1** wherein said upper support member of at least one of said plurality of **[**attachment**]** *mounting* clips extends to a central member located between the first, upwardly-open channel and the second, downwardly-open channel.

10. A rain screen siding system, comprising:

(a) a plurality of mounting clips of unitary construction;

(b) a plurality of siding boards supported on the mounting clips, wherein each siding board has a width and includes:

(i) an inner face;

(ii) an outer face;

(iii) a first tongue extending along the siding board adjacent a first margin of the board;

(iv) a parallel, oppositely directed second tongue extending along the siding board adjacent a second margin of the board, the first and second tongues respectively defining opposite longitudinally extending margins of the inner face of the siding board; and

(v) a skirt portion including a marginal portion of the outer face located along the second margin of the siding board and spaced outwardly apart from and extending beyond a margin of the second tongue;

(c) and wherein each of the mounting clips includes:

(i) a mounting base having a planar inner face that is adapted to be mounted directly on a flat vertical surface of a building wall structure;

(ii) a standoff structure attached to the mounting base and extending outwardly therefrom;

(iii) a first pair of inner and outer channel wall members defining a first, upwardly-open, channel spaced outwardly apart from the inner face of the mounting base;

(iv) a second pair of inner and outer channel wall members defining a second, oppositely directed, downwardly-open channel spaced outwardly apart from the inner face of the mounting base and aligned with the first, upwardly-open channel;

(v) a central member located between the first channel and the second channel and interconnecting the respective inner and outer channel wall members of the first channel and interconnecting the respective inner and outer channel wall members of the second channel; and wherein

(vi) the standoff structure includes a support member extending outwardly from the mounting base to one of the central member or the respective inner channel wall member of at least one of the first, upwardly-open channel and the second, downwardly-open, channel, said support member interconnecting said one of the central member or the respective inner channel wall member of the at least one of the first channel and the second channel with the mounting base, and said one of the central member or the respective inner channel wall member of the at least one of the first channel and the second channel being spaced apart from the inner face of the mounting base; and wherein

(d) the first tongue of a first one of the plurality of siding boards is engaged in the second, downwardly-open, channel, and the first margin thereof is thereby spaced outwardly apart from the mounting base, and wherein the second tongue of a second one of the plurality of siding boards is engaged in the first, upwardly-open, channel, and the second margin of the second one of the plurality of siding boards is thereby spaced outwardly apart from the mounting base with the skirt portion of the second one of the plurality of siding boards extending alongside and being spaced outwardly apart from the first tongue of the one of the siding boards that is engaged in the second, downwardly-open, channel, the first and second ones of the plurality of siding boards thus being spaced outwardly apart from the inner face of the mounting base so as to create a continuous air space adjacent the inner faces of the plurality of siding boards, and wherein the respective first and second tongues of the first and second ones of the plurality of siding boards engaged in the channels of the mounting clip are thus spaced apart from the building wall structure by equal distances and spaced apart from one another and define an open passageway between the first and second ones of the plurality of siding boards, through which an unobstructed flow of air is possible to ventilate the continuous air space adjacent the inner faces of the plurality of siding boards.

11. The rain screen siding system of claim 10 including an elongate rail including a support member engaging a groove defined between said second tongue and said skirt portion of the second margin of one of the plurality of siding boards.

12. The rain screen siding system of claim 10 wherein said siding boards are installed in a non-horizontal orientation, the rain screen siding system including an elongated rail including a support member engaging a lower end of each of said plurality of siding boards.

13. The rain screen siding system of claim 10 wherein the mounting base of each of said mounting clips is planar and all of said inner and outer channel wall members of the first and second channels of at least one of said plurality of mounting clips are parallel with said mounting base thereof.

14. The rain screen siding system of claim 10 wherein a plurality of drainage grooves are defined in an inner face of said mounting base of at least one of said plurality of mounting clips.

15. The rain screen siding system of claim 10 wherein an interior surface of at least one of said outer and inner channel wall members of at least one of said first and second channels of at least one of said plurality of mounting clips defines a drainage groove.

16. The rain screen siding system of claim 10 wherein the inner channel wall member of the first, upwardly-open channel extends upward above and beyond the support member of the standoff structure.

17. A rain screen siding system, comprising:

(a) a plurality of mounting clips of unitary construction;

(b) a plurality of siding boards supported on the mounting clips, wherein each siding board has a width and includes:

(i) an inner face;

(ii) an outer face;

(iii) a first tongue extending along the siding board adjacent a first margin of the board;

(iv) a parallel, oppositely directed second tongue extending along the siding board adjacent a second margin of the board, the first and second tongues respectively defining opposite longitudinally extending margins of the inner face of the siding board; and

(v) a skirt portion including a marginal portion of the outer face located along the second margin of the siding board and spaced outwardly apart from and extending beyond a margin of the second tongue;

(c) and wherein each of the mounting clips includes:

(i) a mounting base adapted to be mounted to a flat surface of a building wall structure and having a planar inner face;

(ii) a standoff structure attached to the mounting base and extending outwardly therefrom;

(iii) a first pair of inner and outer channel wall members defining a first, upwardly-open, channel spaced outwardly apart from the inner face of the mounting base;

(iv) a second pair of inner and outer channel wall members defining a second, oppositely directed, downwardly-open channel spaced outwardly apart from the inner face of the mounting base;

(v) a central member located between the first channel and the second channel and interconnecting the respective inner and outer channel wall members of the first channel and interconnecting the respective inner and outer channel wall members of the second channel; and wherein

(vi) the standoff structure includes a support member extending outwardly from the mounting base to one of the central member or the respective inner channel wall member of at least one of the first, upwardly-open channel and the second, downwardly-open, channel, said support member interconnecting said one of the central member or the respective inner channel wall member of the at least one of the first channel and the second channel with the mounting base, and said one of the central member or the respective inner channel wall member of the at least one of the first channel and the second channel being spaced apart from the inner face of the mounting base; and wherein

(d) the respective outer channel wall members of said first and second channels of at least one of said plurality of mounting clips cooperatively define a substantially planar outer face of said at least one of said mounting clips; and wherein

(e) the first tongue of a first one of the plurality of siding boards is engaged in the second, downwardly-open, channel, and the first margin thereof is thereby spaced outwardly apart from the mounting base, and wherein the second tongue of a second one of the plurality of siding boards is engaged in the first, upwardly-open, channel, and the second margin of the second one of the plurality of siding boards is thereby spaced outwardly apart from the mounting base with the skirt portion of the second one of the plurality of siding boards extending alongside and being spaced outwardly apart from the first tongue of the one of the siding boards that is engaged in the second, downwardly-open, channel, the first and second ones of the plurality of siding boards thus being spaced outwardly apart from the inner face of the mounting base so as to create a continuous air space adjacent the inner faces of the plurality of siding boards, and wherein the respective tongues of the first and second ones of the plurality of siding boards engaged in the mounting clip are thus spaced apart from one another and define an open passageway between the first and second ones of the plurality of siding boards, through which an unobstructed flow of air is possible to ventilate the continuous air space adjacent the inner faces of the plurality of siding boards.

18. A rain screen siding system, comprising:

(a) a plurality of mounting clips of unitary construction;

(b) a plurality of siding boards supported on the mounting clips, wherein each siding board has a width and includes:

(i) an inner face;

(ii) an outer face;

(iii) a first tongue extending along the siding board adjacent a first margin of the board;

(iv) a parallel, oppositely directed second tongue extending along the siding board adjacent a second margin of the board, the first and second tongues respectively defining opposite longitudinally extending margins of the inner face of the siding board; and

(v) a skirt portion including a marginal portion of the outer face located along the second margin of the siding board and spaced outwardly apart from and extending beyond a margin of the second tongue;

(c) and wherein each of the mounting clips includes:

(i) a mounting base adapted to be mounted to a flat surface of a building wall structure and having a planar inner face;

(ii) a standoff structure attached to the mounting base and extending outwardly therefrom;

(iii) a first pair of inner and outer channel wall members defining a first, upwardly-open, channel spaced outwardly apart from the inner face of the mounting base;

(iv) a second pair of inner and outer channel wall members defining a second, oppositely directed, downwardly-open channel spaced outwardly apart from the inner face of the mounting base;

(v) a central member located between the first channel and the second channel and interconnecting the respective inner and outer channel wall members of the first channel and interconnecting the respective inner and outer channel wall members of the second channel; and wherein

(vi) the standoff structure includes a support member extending outwardly from the mounting base to one of the central member or the respective inner channel wall member of at least one of the first, upwardly-open channel and the second, downwardly-open, channel, said support member interconnecting said one of the central member or the respective inner channel wall member of the at least one of the first channel and the second channel with the mounting base, and said one of the central member or the respective inner channel wall member of the at least one of the first channel and the second channel being spaced apart from the inner face of the mounting base; and wherein

(d) said outer channel wall members of the first and second channels of at least one of said plurality of mounting clips are coplanar; and wherein

(e) the first tongue of a first one of the plurality of siding boards is engaged in the second, downwardly-open, channel, and the first margin thereof is thereby spaced outwardly apart from the mounting base, and wherein the second tongue of a second one of the plurality of siding boards is engaged in the first, upwardly-open, channel, and the second margin of the second one of the plurality of siding boards is thereby spaced outwardly apart from the mounting base with the skirt portion of the second one of the plurality of siding boards extending alongside and being spaced outwardly apart from the first tongue of the one of the siding boards that is engaged in the second, downwardly-open, channel, the first and second ones of the plurality of siding boards thus being spaced outwardly apart from the inner face of the mounting base so as to create a continuous air space adjacent the inner faces of the plurality of siding boards, and wherein the respective tongues of the first and second ones of the plurality of siding boards engaged in the mounting clip are thus spaced apart from one another and define an open passageway between the first and second ones of the plurality of siding boards, through which an unobstructed flow of

air is possible to ventilate the continuous air space adjacent the inner faces of the plurality of siding boards.

19. A rain screen siding system, comprising:

(a) a plurality of mounting clips of unitary construction;

(b) a plurality of siding boards supported on the mounting clips, wherein each siding board has a width and includes:

(i) an inner face;

(ii) an outer face;

(iii) a first tongue extending along the siding board adjacent a first margin of the board;

(iv) a parallel, oppositely directed second tongue extending along the siding board adjacent a second margin of the board, the first and second tongues thus extending along respective opposite longitudinally extending margins of the inner face; and

(v) a skirt portion including a marginal portion of the outer face located along the second margin of the siding board, the skirt portion being spaced outwardly apart from and extending beyond a margin of the second tongue, and the second margin of the siding board defining a groove extending along and between the skirt portion and the second tongue;

(c) and wherein each of the mounting clips includes:

(i) a mounting base having an outer face and an opposite planar inner face adapted to be mounted directly on a flat vertical surface of a building wall structure;

(ii) a standoff structure attached to the mounting base and extending outwardly from the outer face of the mounting base;

(iii) an upwardly-directed member supported by the standoff structure;

(iv) a pair of inner and outer channel wall members supported by the standoff structure and defining a downwardly-open channel; and wherein

(v) the standoff structure includes a support member extending from the outer face of the mounting base to one of the upwardly-directed member or the inner channel wall member of the downwardly-open channel, said support member interconnecting the one of the upwardly-directed member or the inner channel wall member with the mounting base, and said upwardly-directed member and said outer channel wall member of the downwardly-open channel being spaced apart from the inner face of the mounting base by equal distances; and wherein

(d) the first tongue of a first one of the plurality of siding boards is engaged comfortably, with some space to accommodate some swelling, in the downwardly-open channel, and the upwardly-directed member of the mounting clip is located in the groove defined between the skirt and the second tongue of a second one of the plurality of siding boards, with the skirt portion of the second one of the plurality of siding boards extending alongside and being spaced outwardly apart from the first tongue of the first one of the plurality of siding boards that is engaged in the downwardly-open channel, the siding boards thus being spaced outwardly apart from the inner face of the mounting base so as to create a continuous air space adjacent the inner faces of the plurality of siding boards, and wherein the first and second tongues of the first and second ones of the plurality of siding boards are thus spaced apart from the inner face of the mounting base by equal distances and spaced apart from one another and define an open passageway between the first and second ones of the plurality of siding boards, through which an unobstructed flow of air is possible to ventilate the continuous air space adjacent the inner faces of the plurality of siding boards.

20. The rain screen siding system of claim 19 including an elongate rail including a support member engaging the groove defined in the second margin of one of the plurality of siding boards between said second tongue and said skirt portion thereof.

21. The rain screen siding system of claim 19 wherein said siding boards are installed in a non-horizontal orientation, the system including an elongate rail including a support member engaging a lower end of each of said plurality of siding boards.

22. The rain screen siding system of claim 19 wherein a plurality of drainage grooves are defined in an inner face of said mounting base of at least one of said plurality of mounting clips.

23. The rain screen siding system of claim 19 wherein each of the mounting clips further includes an inner channel wall located between the upwardly-directed member and the mounting base, supported by the standoff structure and extending upward above and beyond the support member of the standoff structure.

24. A rain screen siding system, comprising:

(a) a plurality of mounting clips of unitary construction;

(b) a plurality of siding boards supported on the mounting clips, wherein each siding board has a width and includes:

(i) an inner face;

(ii) an outer face;

(iii) a first tongue extending along the siding board adjacent a first margin of the board;

(iv) a parallel, oppositely directed second tongue extending along the siding board adjacent a second margin of the board, the first and second tongues respectively defining opposite longitudinally extending margins of the inner face; and

(v) a skirt portion including a marginal portion of the outer face located along the second margin of the siding board, the skirt portion being spaced outwardly apart from and extending beyond a margin of the second tongue, and the second margin of the siding board defining a groove extending along and between the skirt portion and the second tongue;

(c) and wherein each of the mounting clips includes:

(i) a mounting base having an outer face and an opposite planar inner face adapted to be mounted on a flat surface of a building wall structure;

(ii) a standoff structure attached to the mounting base and extending outwardly from the outer face of the mounting base;

(iii) an upwardly-directed member supported by the standoff structure;

(iv) a pair of inner and outer channel wall members supported by the standoff structure and defining a downwardly-open channel; and wherein

(v) the standoff structure includes a support member extending from the outer face of the mounting base to one of the upwardly-directed member or the inner channel wall member of the downwardly-open channel, said support member interconnecting the one of the upwardly-directed member or the inner channel wall member with the mounting base, and said upwardly-directed member and said inner channel

wall member of the downwardly-open channel being spaced apart from the mounting base; and wherein

(*d*) *the upwardly-directed member and the outer channel wall member of said downwardly-open channel of at least one of said plurality of mounting clips cooperatively define a planar outer face of said mounting clip; and wherein*

(*e*) *the first tongue of a first one of the plurality of siding boards is engaged in the downwardly-open channel, and the upwardly-directed member of the mounting clip is located in the groove defined between the skirt and the second tongue of a second one of the plurality of siding boards, with the skirt portion of the second one of the plurality of siding boards extending alongside and being spaced outwardly apart from the first tongue of the first one of the plurality of siding boards that is engaged in the downwardly-open channel, the siding boards thus being spaced outwardly apart from the inner face of the mounting base so as to create a continuous air space adjacent the inner faces of the plurality of siding boards, and wherein the first and second tongues of the first and second ones of the plurality of siding boards are thus spaced apart from one another and define an open passageway between the first and second ones of the plurality of siding boards, through which an unobstructed flow of air is possible to ventilate the continuous air space adjacent the inner faces of the plurality of siding boards.*

25. A rain screen siding system, comprising:

(*a*) *a plurality of mounting clips of unitary construction;*

(*b*) *a plurality of siding boards supported on the mounting clips, wherein each siding board has a width and includes:*

(*i*) *an inner face;*

(*ii*) *an outer face;*

(*iii*) *a first tongue extending along the siding board adjacent a first margin of the board;*

(*iv*) *a parallel, oppositely directed second tongue extending along the siding board adjacent a second margin of the board, the first and second tongues respectively defining opposite longitudinally extending margins of the inner face; and*

(*v*) *a skirt portion including a marginal portion of the outer face located along the second margin of the siding board, the skirt portion being spaced outwardly apart from and extending beyond a margin of the second tongue, and the second margin of the siding board defining a groove extending along and between the skirt portion and the second tongue;*

(*c*) *and wherein each of the mounting clips includes:*

(*i*) *a mounting base having an outer face and an opposite planar inner face adapted to be mounted on a flat surface of a building wall structure;*

(*ii*) *a standoff structure attached to the mounting base and extending outwardly from the outer face of the mounting base;*

(*iii*) *an upwardly-directed member supported by the standoff structure;*

(*iv*) *a pair of inner and outer channel wall members supported by the standoff structure and defining a downwardly-open channel; and wherein*

(*v*) *the standoff structure includes a support member extending from the outer face of the mounting base to one of the upwardly-directed member or the inner channel wall member of the downwardly-open channel, said support member interconnecting the one of the upwardly-directed member or the inner channel wall member with the mounting base, and said upwardly-directed member and said inner channel wall member of the downwardly-open channel being spaced apart from the mounting base; and wherein*

(*d*) *said upwardly-extending member and said outer channel wall member of said downwardly-open channel of at least one of said plurality of mounting clips are coplanar; and wherein*

(*e*) *the first tongue of a first one of the plurality of siding boards is engaged in the downwardly-open channel, and the upwardly-directed member of the mounting clip is located in the groove defined between the skirt and the second tongue of a second one of the plurality of siding boards, with the skirt portion of the second one of the plurality of siding boards extending alongside and being spaced outwardly apart from the first tongue of the first one of the plurality of siding boards that is engaged in the downwardly-open channel, the siding boards thus being spaced outwardly apart from the inner face of the mounting base so as to create a continuous air space adjacent the inner faces of the plurality of siding boards, and wherein the first and second tongues of the first and second ones of the plurality of siding boards are thus spaced apart from one another and define an open passageway between the first and second ones of the plurality of siding boards, through which an unobstructed flow of air is possible to ventilate the continuous air space adjacent the inner faces of the plurality of siding boards.*

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