

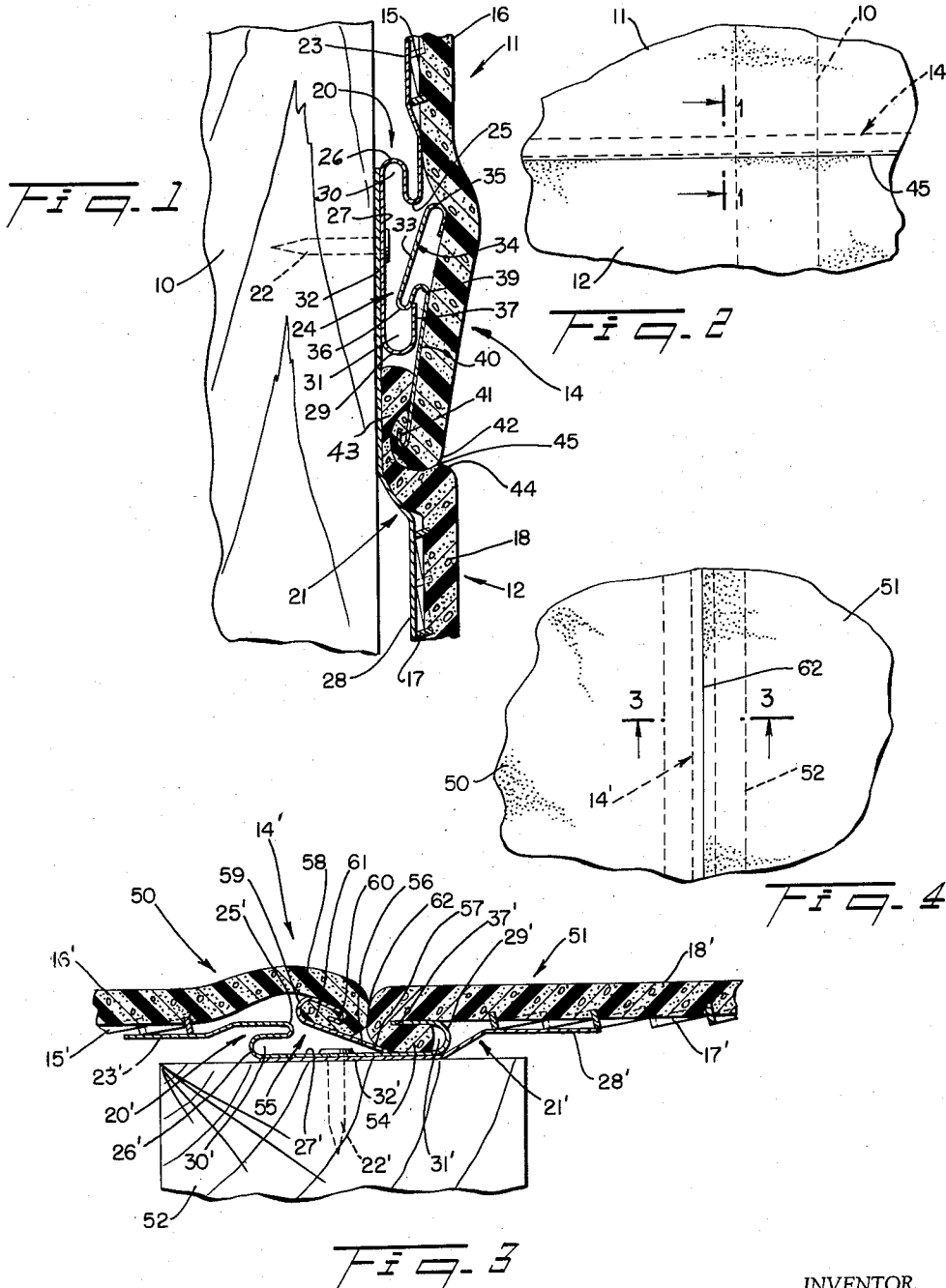
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PANEL ATTACHING DEVICE

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PANEL ATTACHING DEVICE

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This invention relates to a device for attaching the edge of a layer of flexible covering material to a support such as a wall.

The invention has among its objects the provision of a novel device for attaching the edge of a layer of flexible material to a support such as a wall.

Another object of the invention resides in the provision of a device of the character indicated which is simple, economical, easily installed, and conveniently formed of sheet metal.

Yet another object of the invention resides in the provision of a device for attaching the confronting edges of adjacent panels of flexible covering material to a support to form a seam or joint.

Still another object is the provision of a device for forming a joint between the edges of adjacent panels of flexible material such that the joint between panels is minimized in appearance.

A still further object of the invention, in one illustrative embodiment thereof, resides in the provision of the device of the character indicated for forming a butt seam between the confronting edges of adjacent panels.

A further object of the invention, in a second illustrative embodiment thereof, lies in the provision of a device of the character indicated for forming a lap seam between the confronting edges of adjacent panels.

The above and further objects and novel features of the invention will more fully appear from the following description when the same is read in connection with the accompanying drawings. It is to be expressly understood, however, that the drawings are for the purpose of illustration only and are not intended as a definition of the limits of the invention.

In the drawings, wherein like reference characters refer to like parts throughout the several views,

Fig. 1 is a view in vertical section through a horizontal seam or joint between wall covering panels made of flexible material, the joint being formed by a first illustrative embodiment of panel attaching means made in accordance with the invention, the section being taken along the line 1—1 of Fig. 2;

Fig. 2 is a fragmentary view in elevation of a wall having wall covering panels joined at a horizontal seam by the panel attaching device of Fig. 1;

Fig. 3 is a view in horizontal section through a vertical seam or joint between adjacent panels of flexible covering material, the joint being formed by a second illustrative panel attaching device made in accordance with the invention, the section being taken along the line of 3—3 of Fig. 4; and

Fig. 4 is a fragmentary view in elevation of a wall having a vertical joint formed by the panel attaching device shown in Fig. 3.

The two illustrative embodiments of panel attaching device are shown employed for the attaching of covering panels to the exposed face of a building wall or a partition. The wall has a plurality of laterally spaced elongated frame members, such as studs, to the inner faces of

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which the wall covering is attached. In the structures shown, the wall covering is composed of a plurality of adjoining sections, the adjacent sections in Figs. 1 and 2 meeting at a horizontal joint or seam, adjacent sections in Figs. 3 and 4 meeting at a vertical seam. The sections of the wall covering include outer or exposed finishing layers which are flexible and, in the described embodiments, at least somewhat extensible. The panel attaching device of the present invention provides a means whereby the edges of adjacent panels may be quickly and simply fastened to the wall covering supporting means and/or to each other to provide a seam which is minimized in appearance and completely conceals the fastening means for the edges of the panels.

In Fig. 2 there is shown a portion of a wall having a vertical wall supporting stud 10 to which an upper wall covering section 11 and a lower wall covering section 12 are attached. Sections 11 and 12 are joined at a horizontal seam or joint generally designated 14. In the illustrative embodiment the wall covering sections are in the form of composite adhered structures having a reinforcing backing layer to which an outer layer of flexible resilient cellular material is attached. Section 11 has a reinforcing layer 15, shown as being made of expanded metal, and a layer or panel of cellular material 16 adhered to layer 15. Section 12 has a reinforcing layer 17 of expanded metal and a layer or panel of cellular material 18 adhered thereto. The expanded metal of layers 15 and 17 may be made, for example, of steel. Layers 16 and 18 may advantageously be made of foamed polyurethane resin.

The panel attaching device of Figs. 1 and 2 provides a means for both securing the adjacent edges of reinforcing layers 15 and 17 together and to the supporting structure of the wall, and for securing the confronting edges of outer, wall covering panels 16 and 18 together to retain them tightly in contact so to form a seam having a neat appearance. It is to be understood that in accordance with the broader aspects of the invention the fastening means can be employed to secure together only the flexible outer panels of the wall covering, and also that such panels need not have a reinforcing backing layer. It is further understood that, in accordance with the invention, the panel attaching device may be made so as to attach the edge of only one panel, as at a door or window frame, to the support for the wall covering.

The panel attaching device shown in Fig. 1 has a first elongated fastener member, generally designated 20, which extends across a plurality of spaced vertical wall frame members, and is secured to the inner faces of such frame members of the wall as by being nailed thereto. Member 20 has a flat base portion 27 having a reentrant, outwardly extending channel formation 30 having a closed end 26 on the upper edge thereof and a reentrant channel formation 31 having a closed end 29 projecting outwardly from the lower edge thereof. Channel formations 30 and 31 are open in downward and upward directions, respectively. In the embodiment shown, the first fastener member 20 is integrally connected to the lower edge of reinforcing layer 15 by a first strip-like portion 23 secured, as by welding or soldering, to the inner face of layer 15 at the lower edge thereof. Portion 23 is extended into a reversely bent zone 25 which is integrally connected to the outer edge portion of the channel formation 30. As a result of such construction, the same fastening means such as a nail, of which one is shown at 22, which attaches the first fastener means 20 to stud 10 also serves to attach the lower edge of reinforcing layer 15 to such stud.

Preferably, as shown, a second strip-like means, generally designated 21, is also attached to the upper edge of reinforcing layer 17, so that such upper edge of layer 17

also is attached to the studs 10 by the same fastening means, such as nails of which one is shown at 22. Strip-like member 21 has a lower edge portion 28 attached as by welding or soldering to the inner surface of the upper edge of layer 17. Upwardly beyond portion 28, member 21 is bent toward the frame members of the wall and is extended upwardly into an extended flat portion 32. The upper edge of portion 32 lies between the base 27 of the first fastener member 20 and the studs 10, and is pierced by the fastening nails.

The panel attaching device includes a second fastener member generally designated 24 which is adapted to cooperate with member 20 to retain the lower and upper edges of panels 16 and 18 at the seam or joint 14 snugly in the general plane of the general extents of such panels. Member 24, which is conveniently made of sheet metal, is elongated and has a length generally the same as that of the first fastener member 20. Member 24 has an upper portion 34 having a flat body 33, there being a first, upwardly projecting latch-like formation 35 extending outwardly from body 33 at the upper edge of body 33, and a second, downwardly projecting latch-like formation 36 extending outwardly from body 33 at the lower edge of such body. The distance between the upper and lower outer surfaces of latch-like portions 35 and 36 somewhat exceeds the distance between the inner surface of bend 25 and the edge of the free end 37 of channel formation 31 of member 20. Portion 34 is designed to be received and retained within the pocket formed by the base 27 and the two channel formations 30 and 31 of the first fastener member in a manner to be described.

The second fastener member 24 has a downwardly extending flat portion 40 which is joined to the upper outer edge of latch-like formation 36 by a reversely curved portion 39. Portion 40 extends downwardly well below the lower edge of the first fastener member 20, terminating in an inwardly curled edge 41. The lower edge portion of upper panel 16 extends downwardly to overlies portion 34 of the second fastener member 24 and extension 40 thereof, the bottom portion of the lower edge of panel 16 being secured to the second fastener member by being caught under the incurled lower edge 41 of such member.

The panel attaching device of Figs. 1 and 2 may be assembled as follows. The second fastener member 24 is attached to the lower edge of the upper panel 16, in the manner shown in Fig. 2, so that when the second fastener member 24 is positioned relative to the first fastener member 20 as shown in that figure the portion of panel 16 between its lower edge secured at 41 to member 24 and reinforcing layer 15 therefor are maintained under a moderate vertical tension.

The parts are first positioned as shown in Fig. 2, that is, with the upper edge 43 of panel 18 positioned inwardly beneath the lower edge of panel 16, with the second fastener member turned somewhat clockwise about its longitudinal axis, and with latch-like formation 36 of the second fastener member projecting somewhat inwardly beneath the upper free edge of lower channel formation 31. Pressure is then applied to the exposed face of panel 16 (at the right in Fig. 1) further to press the second fastener member 24 downwardly. This further stretches panel 16, and thrusts body 34 of member 24 further downwardly to allow latch-like formation 35 thereon to move below the lower inner surface of reverse bend 25 of the first fastener member 20. Thereupon fastener member 24 may be thrust fully inwardly into the pocket on fastener member 20, at the same time turning somewhat counter-clockwise so that body 33 overlies and lies generally parallel to base 27 of fastener 27.

Upon the release of the inward pressure upon the lower edge of panel 16, the resilience of the stretched portion of such panel, which may be aided by an inwardly and upwardly directed pressure upon the exposed surface of panel 16 outwardly of fastener member 24, urges mem-

ber 24 upwardly into stable, fully engaged position in the pocket in the first fastener member 20. In such position, latch-like formation 35 is positioned within channel formation 30. Fastener member 24 is prevented from further turning about its longitudinal axis by engagement between edge 43 of panel 18 and the inner surface of portion 40 of fastener member 24, and by engagement between latch-like member 35 and the inner surfaces of channel formation 30.

In its finally assembled position, the panel attaching device holds the lower edge portion of panel 16 in the plane of the general extent of panels 16 and 18. The portions of such panels at 42 and 44, respectively, are held tightly into engagement with each other, thereby minimizing the appearance of seam 45 therebetween.

The panel attaching device employed in the structure of Figs. 3 and 4 generally resembles that of Figs. 1 and 2 in its parts and functions. Parts of the attaching device shown in Fig. 3 which are the same as those of Fig. 1 are designated by the same reference characters with an added prime. In general, the device of Fig. 3 differs from that of Fig. 1 in that the left hand edge portion of panel 18' is secured by the second channel formation 31' of the first fastener member 24' and an edge 57 of the second fastener member 55', that the right hand edge of the left panel 16' is secured to the second fastener member at a channel formation on the latter adjacent the main extent of panel 16', and that the parts are so proportioned that the resulting seam 62 formed between the abutting edges of panels 16' and 18' is a butt rather than a lap seam. In general, it will suffice to discuss only such points of difference in the panel attaching device of Fig. 3.

The vertical seam 14' (Fig. 4) is formed between panels 50 and 51 secured to a wall frame including spaced parallel vertical studs, of which one is shown at 52. A first fastener member 20' in this instance overlies and is secured to each of the studs as by vertically spaced nails, one of which is shown at 22'.

The second fastener member 55 has a flat strip-like body portion 56, the left edge of which is bent outwardly and then laterally to produce a channel formation 59. The right hand edge of panel 16' is secured to member 55 by being inwardly curled at 61 over the curled free edge 60 of channel formation 59. The width of body 56 of fastener member 55 at least slightly exceeds the distance between the inner surface of reverse bend 25' of member 20' and the free edge 37' of channel formation 31' of such member.

The panel attaching device of Fig. 3 is assembled as follows. The parts are positioned as in Fig. 3, fastener 55 being attached to the edge of panel 16' so that in such position of the parts the portion of panel 16' between fastener member 55 and reinforcing layer 15' therefor is in tension in a direction along the main extent of panel 16'. With member 55' turned somewhat about its longitudinal axis into the position shown, such fastener is thrust to the right to slide edge 57 thereof between incurled portion 54 of panel 18' and the base 27' of fastener member 20'. When fastener member 55 has been thrust to the right a sufficient distance, latch-like formation 59 thereon will clear the inner surface of reverse bend 25', allowing fastener member 55 to drop into the pocket formed by base 27' and channel formation 30' of fastener member 20'. Thereupon the tension in the edge of panel 16', which may be aided by a thrust to the left exerted upon the panel 16' at a location outwardly of fastener member 55, will move such member to the left to engage latch-like formation 59 thereon under the inner edge of channel formation 30', and to engage the reverse bend 25' to some extent between the inner surface of panel 16' and the outer surface of the latch-like formation 59 on member 55. The edge portion of panel 16' then lies flat and in the general plane of panels 16' and 18'.

The panel-attaching device of the invention is quickly and easily attached to the panel supporting structure.

As apparent from the above, it retains the edge of a panel, or the confronting edges of adjacent panels, snug and flat, and minimizes the appearance of the seam or joint at the edge of a panel or between adjacent panels. There is no external evidence of the panel-attaching device after such device has been fully assembled to hold the edge or edges of the panels in place. The device can be disassembled if necessary by subjecting the second fastener member thereof to forces and movements which are generally the reverse of those employed to assemble it. One way in which this can be done is by progressively inserting a screwdriver-like tool, starting from an edge of the wall, between the outer, first fastener member and the inner, second fastener member, to snap the inner member out of the outer member.

Although only a limited number of embodiments of the invention have been illustrated in the accompanying drawings and described in the foregoing specification, it is to be expressly understood that various changes, such as in the relative dimensions of the parts, materials used, and the like, as well as the suggested manner of use of the device of the invention, may be made therein without departing from the spirit and scope of the invention as will now be apparent to those skilled in the art.

What is claimed is:

1. A device for attaching an edge of a flexible panel to a panel-supporting member, comprising an elongated first fastener member adapted to be fixedly secured to the outer face of the supporting member adjacent to, generally beneath, and parallel to said edge of the panel, said first member having a first elongated reentrant channel formation projecting outwardly from the body thereof, the channel being open in a first direction, away from the main extent of the panel, an elongated second fastener member having a first elongated latch formation, said second fastener member being adapted to be attached to the panel adjacent said edge thereof with the first latch formation projecting inwardly from the panel, in a second direction, generally opposite from said first direction, and generally in position to be introduced into the first channel formation, the edge of the panel lying flat and in the plane of the general extent of the panel when the two fastener members are operatively engaged, and means for retaining the first latch formation from turning about its axis after the two fastener members have been fully, operatively engaged.

2. A panel-attaching device as defined in claim 1, wherein the panel has a relatively stiff substantially inextensible reinforcing backing layer attached thereto over its broad extent, and the first fastener member is rigidly attached to the edge of the reinforcing layer at the said edge of the panel.

3. A panel-attaching device as defined in claim 1, wherein the first fastener member has a strip-like base adapted to be secured to the supporting member and projecting laterally from the first channel formation in said first direction, the second fastener member has a strip-like body adapted to overlie the base of the first fastener member, and the first latch formation is disposed adjacent the edge of the body of the second fastener means nearer the main extent of the panel.

4. A panel-attaching device as defined in claim 3, wherein the means for retaining the first latch formation from turning about its axis comprises said base of the first fastener member and an additional means overlying the body of the second fastener member remote from the first latch formation thereon.

5. A panel-attaching device as defined in claim 3, wherein the first fastener member has a second channel formation laterally spaced from the first channel formation and open in said second direction, and the second fastener member has a width such that the edge of the body thereof remote from the first latch formation lies within the second channel formation on the first fastener

member when the fastener members are fully, operatively engaged.

6. A panel-attaching device as defined in claim 5, wherein the second fastener member has a second elongated latch formation parallel to the first such formation and disposed adjacent the edge of the body of the second fastener member remote from the first latch formation, said second latch formation being adapted to be introduced edgewise into and to lie within the second channel formation on the first fastener member.

7. A panel-attaching device as defined in claim 6, wherein the body of the second fastener member has a width exceeding the distance between the outer free edges of the first and second opposing channel formations on the first fastener member, whereby the second fastener member may be introduced within the first fastener member by being turned somewhat about its longitudinal axis and the second latch formation may be then slid into the second channel formation, following which the second fastener member may be turned so that the body thereof closely overlies the base of the first fastener member.

8. A panel-attaching device as defined in claim 7, wherein the panel at said edge extends beyond and covers the first fastener member, and comprising means on the second fastener member underlying the edge portion of the panel and secured thereto.

9. A panel-attaching device as defined in claim 5 wherein the said edge of the panel terminates and is fastened to the second fastener member adjacent the first latch formation thereon, said panel overlying the first channel formation on the first fastener member when the fastener members are mounted in fully operative relationship.

10. A device for attaching the confronting edges of two adjacent flexible panels at a joint therebetween to a panel-supporting member, comprising an elongated first fastener member having a base adapted to be fixedly secured to the outer face of the supporting member adjacent to, generally beneath, and parallel to the confronting edges of said panels, said first member having two opposed elongated reentrant channel formations projecting outwardly from the base thereof, the channel formations being open toward each other, an elongated second fastener member having a strip-like body with a first outwardly laterally projecting latch formation, said second fastener member being adapted to be attached to a first panel with the first latch formation projecting inwardly from the first panel, generally toward the broad extent of the first panel, and generally in position to be introduced into the channel formation which is closer to the broad extent of the first panel, the edge of the first panel lying flat and in the plane of the general extent of the first panel when the two fastener members are operatively engaged, means including the base of the first fastener member for retaining the first latch formation from turning about its axis after the two fastener members have been fully, operatively engaged, and means fixedly to secure the confronting edge of the second panel to the panel-supporting member in position to be contacted by the edge of the first panel held by the attaching device.

11. A panel-attaching device as defined in claim 10, wherein each panel has a relatively stiff substantially inextensible reinforcing backing layer attached thereto over its broad extent, and the first fastener member is rigidly attached to the reinforcing layer at the said edge of the first panel.

12. A panel-attaching device as defined in claim 11, comprising a strip-like panel edge securing means attached to the edge of the second panel at the joint and adapted to underlie the first fastener member and to be secured thereto and to the panel-supporting member.

13. A panel-attaching device as defined in claim 10, wherein the second fastener member has a width such

that the edge of the body thereof remote from the first latch formation lies within the second channel formation on the first fastener member when the fastener members are fully, operatively engaged.

14. A panel-attaching device as defined in claim 13, wherein the second fastener member has a second latch formation parallel to the first such formation and disposed adjacent the edge of the body of the second fastener member remote from the first latch formation, said second latch formation being adapted to be introduced edgewise into and to lie within the second channel formation on the first fastener member.

15. A panel-attaching device as defined in claim 14, wherein the body of the second fastener member has a width exceeding the distance between the outer free edges of the first and second opposing channel formations on the first fastener member, whereby the second fastener member may be introduced within the first fastener member by being turned somewhat about its longitudinal axis and the second latch formation may be then slid into the second channel formation, following which the second fastener member may be turned so that the body thereof closely overlies the base of the first fastener member.

16. A panel-attaching device as defined in claim 10, wherein the first panel at said edge extends beyond and

covers the first channel formation on the first fastener member.

17. A panel-attaching device as defined in claim 10, wherein the first panel at the joint extends beyond and covers the first fastener member, and comprising means on the second fastener member underlying the edge portion of the first panel and secured thereto.

18. A panel-attaching device as defined in claim 17, wherein the edge of the second panel at the joint underlies the edge of the first panel.

19. A panel-attaching device as defined in claim 10, wherein the edge of the second panel at the joint is attached to the first fastener member.

20. A panel-attaching device as defined in claim 19, wherein the said edge of the second panel is folded inwardly into the second channel formation on the first fastener member.

21. A panel-attaching device as defined in claim 20, wherein the second fastener member has a generally flat edge adapted to be positioned within the second channel formation on the first fastener member between the infolded edge of the second panel and the base of the first fastener member.

No references cited.