Aug. 8, 1967 J. R. BROOKS 3,334,462

PANEL SUPPORTING ARRANGEMENT

Filed Feb. 6, 1964 2 Sheets-Sheet 1

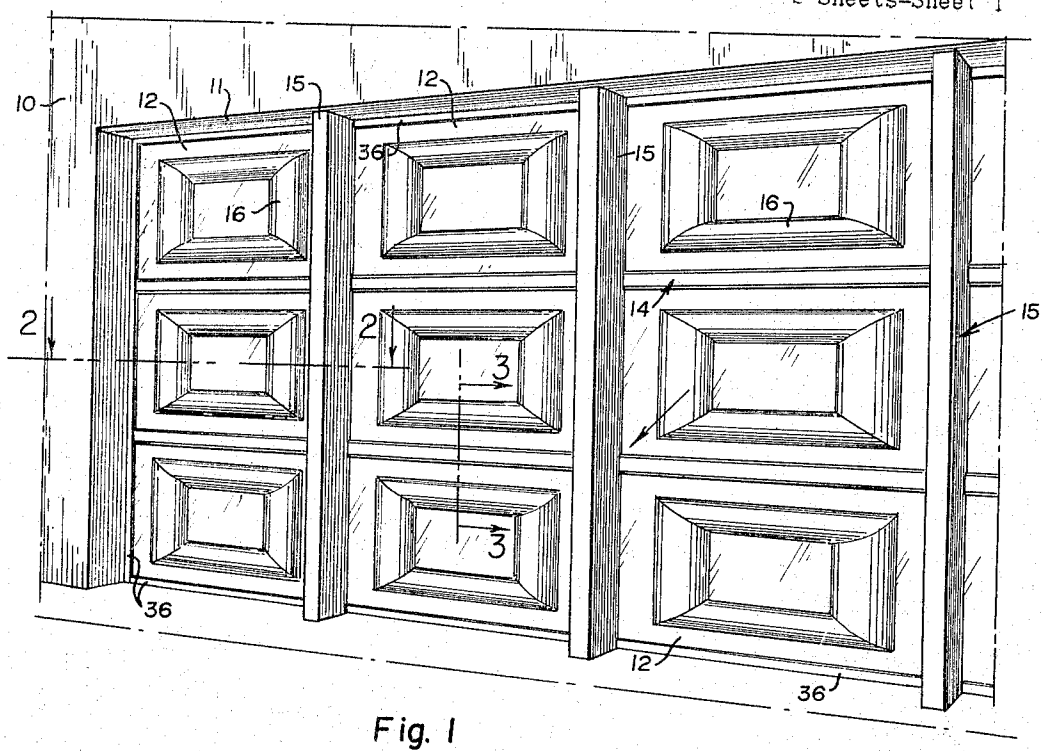


Fig. 1

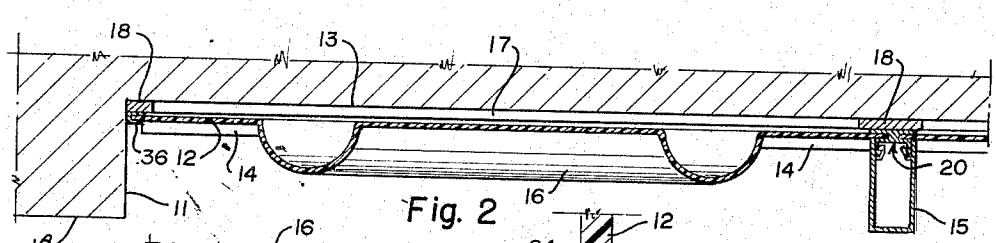


Fig. 2

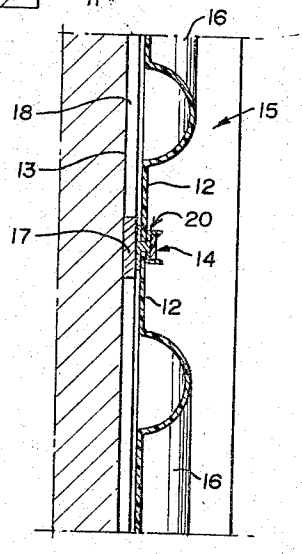


Fig. 3

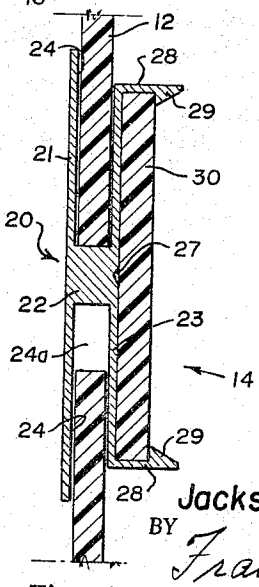


Fig. 4

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Aug. 8, 1967 J. R. BROOKS 3,334,462

PANEL SUPPORTING ARRANGEMENT

Filed Feb. 6, 1964 2 Sheets-Sheet 2

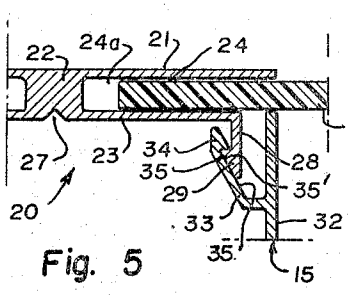


Fig. 5

Fig. 6

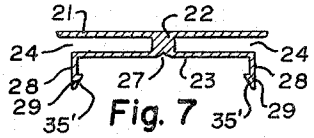


Fig. 7



Fig. 9

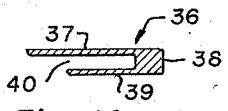


Fig. 10

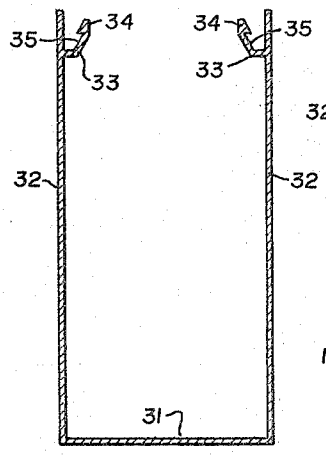


Fig. 8

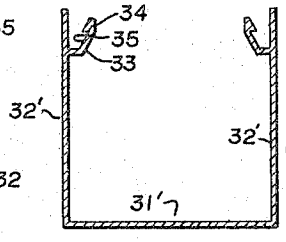


Fig. 11

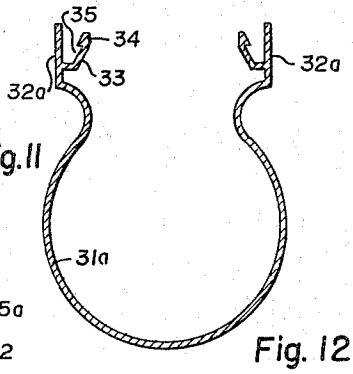


Fig. 12

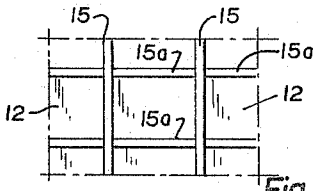


Fig. 13

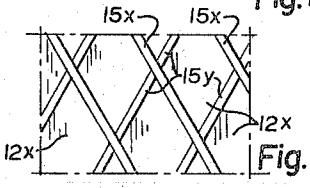


Fig. 14

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United States Patent Office 3,334,462 Patented Aug. 8, 1967

3,334,462

PANEL SUPPORTING ARRANGEMENT

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Filed Feb. 6, 1964, Ser. No. 342,906
6 Claims. (Cl. 52—460)

This invention relates to decorative wall panels and more particularly to the structural members for holding panel sheets in place, a primary object of the invention being to provide a novel and improved system of structural components for supporting panel sheets and for effectively covering the abutting edges of adjacent panels with mullions and like decorative strips.

The architectural treatment of wall paneling is extensive and varied with installations ranging from systems which merely abut the edges of flat panels, with substantially flush joints to merge the individual panels into a flat wall, to more elaborate systems where individual panels are separated by vertical and horizontal dividers such as strips and mullions, which will usually cover the edges of adjacent panels and may actually support the panel members. The present invention is concerned with the latter type of decorative panel where the individual panel sheets are separated by horizontal dividers and vertical mullions.

In the past much paneling included relief of intricate carvings and sculpturing of various patterns and designs; however, with the present day labor problems such paneling and carving is entirely too expensive for the average user and a trend has been to use flat sheet type paneling such as plywood and hardboard or even glass to cover a wall or the like. Where decoration is desired, such paneling may include pictures.

An innocation has been brought about by the better availability of large sheets of synthetic resin materials such as acrylates, and these materials have been suggested as suitable for decorative paneling purposes. One intriguing feature of such resin sheets lies in the fact that they are thermoplastic, and they may be easily vacuum drawn to form relief in three dimentional patterns of practically any shape desired. This provides a high-quality, artistic treatment of panels and at surprising low cost where groups of identical panels are desired on a given wall.

Despite such advantages and the further advantage that the resin panels may effectively respond to lighting effects since they may be either transparent, translucent, or opaque, a serious deficiency in the properties of practically every thermoplastic resin material exists. This lies in the fact that such materials are not always dimensionally stable. Not only is there a high degree of shrinkage and expansion because of effects of temperature, but also considerable shrinkage or expansion of resin sheets can occur with variations in the humidity of the air. Even the effects of sunlight and of aging can cause changes in the proportions of a panel. All of such changes of dimension prevent these panels from being set in conventional manner.

The present invention was conceived and developed with the above factors in view and also to provide a system of supporting sheet paneling of any sort. Also the invention was developed to meet a need for the effective application of decorative mullions and like structural members to be used in finishing off a sheet panel installation.

It follows that another object of the invention is to provide a novel and improved system of supporting and holding panel sheets which includes an improved and simplified anchoring means adapted to receive and to

hold the edges of any type of sheet paneling including paneling which changes considerably dimensionally, such as synthetic resins.

Another object of the invention is to provide a novel and improved system of decorative paneling where a simplified holding and anchoring means will retain the individual panel sheets in place and will also receive decorative mullions and like members by the simple expedient of snapping-on the member strips and thereby to provide a finished appearance to the paneling arrangement.

Another object of the invention is to provide a novel and improved system for holding panels, wherein the structural components are formed in a simplified manner by the use of extruded aluminum.

Another object of the invention is to provide a novel and improved system of supporting panels which is versatile in application and provides components which may be easily interchanged, varied or modified in a number of various ways.

Other objects of the invention are to provide a new and improved system for supporting decorative paneling which is a low-cost, easily-installed, neat-appearing, rugged and durable arrangement.

With the foregoing and other objects in view, all of which more fully hereafter appear, my invention comprises certain constructions, combinations and arrangements of parts as hereinafter described, defined in the appended claims and illustrated in preferred embodiment in the accompanying drawing in which:

FIGURE 1 is a perspective view of a group of panels mounted upon a wall within horizontal divider strips and mullions, such being illustrative of one type of construction using snap-on mullions which are formed according to the invention.

FIGURE 2 is a sectional plan view of a portion of the paneling illustrated at FIG. 1, as taken from the indicated line 2—2 at FIG. 1, but on an enlarged scale.

FIGURE 3 is a sectional elevational view of a portion of the panel wall illustrated at FIG. 1, as taken from the indicated line 3—3 at FIG. 1, but on an enlarged scale.

FIGURE 4 is a fragment of the showing at FIG. 3, but on a further enlarged scale.

FIGURE 5 is a fragment of the showing at FIG. 2, but on a further enlarged scale.

FIGURE 6 is an isometric fragmentary sectional view showing a corner of a panel and portions of the several frame members which support and hold the panel, all as viewed from the indicated arrow 6 at FIG. 1, but on an enlarged scale.

FIGURE 7 is a transverse sectional view of an improved panel holding anchor strip.

FIGURE 8 is a transverse sectional view of the improved snap-on mullion which is adapted to be affixed to an anchor strip formed in the manner illustrated at FIG. 7.

FIGURE 9 is a transverse, sectional view of a decorative filler strip which is adapted to be carried in an anchor strip such as that illustrated at FIG. 7.

FIGURE 10 is a transverse, sectional view of one type of edging adapted to hold the edge sections of a panel in place where the anchor strip illustrated at FIG. 7 is not to be used.

FIGURE 11 is a transverse, sectional view of a modified form of snap-on mullion.

FIGURE 12 is a transverse, sectional view of another modified form of a snap-on type of mullion.

FIGURE 13 is a small scale view of a fragment of a panel system illustrative of the use of members such as that illustrated at FIGS. 8 and 11 to serve as mullions and also horizontal sills.

FIGURE 14 is a small scale view of a fragment of a diamond-shaped panel system illustrative of the use of members such as that illustrated at FIGS. 8 and 11 to serve as inclined dividers between the diamond-shaped panels.

Referring more particularly to the drawing, the framing and holding members constituting the invention are adapted to secure various types of panels formed of sheet material and these members are especially adapted for panel sheets of thermoplastic resin, of the type which may be easily vacuum drawn to produce a three dimensional relief on the face of the panel. The arrangement of panels shown at FIG. 1 illustrates a simple type of relief in the individual panels as will be hereinafter described. This arrangement of panels is one of many different types of arrangement possible but the framing and holding members constituting the invention can be used in other arrangements.

For a decorative paneling arrangement of the general type shown at FIG. 1, a wall section **10** may be formed with a recess **11** with decorative panels **12** being mounted as against the inset wall surface **13** of the recess. These panels **12** are arranged in any suitable array such as in rows and columns as illustrated, and the individual panels are separated by horizontal dividers **14** and vertical mullions **15** which constitute the holding and framing members.

Each panel **12** is formed as a flat sheet which may be a thermoplastic resin sheet drawn to provide a three dimensional decorative relief such as the simple pattern **16** illustrated, or a more complex pattern if desired.

The improved holding and framing members which include horizontal dividers and the improved snap-on mullions include flat, H-shaped anchor strips and edging strips as will be hereinafter described. To hold these strips in place, the inset wall **13** may be prepared by securing a network of horizontal and vertical furring strips **17** and **18** respectively against the inset wall at spacings which correspond to the panel edges to properly position the anchor strips. However, this preparation may be varied considerably. If the inset wall **13** is sufficiently flat, the furring strips may be eliminated. On the other hand if the recess is a window-like opening to be closed by the panels, the furring strips will have to be replaced with heavier structural members which are capable of fully supporting the panels and holding members.

The primary components of the panel framework to receive and hold edges of the panels **12** and to support other decorative members consist of anchor strips **20**. These strips are elongated members which are uniform in cross section, and are thus best described with reference to their cross section form. In form, the general appearance is like a flattened H. One side of this H-shaped strip constitutes a flat, comparatively wide base **21** which lies against a furring strip when in place. The cross link of the H shape is a comparatively short, thick neck, **22** which upstands from the center of the flat base. The other side of the H is formed as a flat, top **23** which is likewise centered upon the neck and which lies in spaced parallelism with the base. It follows that the spaces between the base and top constitute pockets **24** at each side of the neck which are adapted to receive the edges of a panel **12**.

These pockets **24** are comparatively narrow and deep when viewed in section as at FIGS. 4, 5, and 7. Accordingly, the pockets will easily hold panel sections with a substantial degree of clearance or looseness, as indicated at **24***a* at FIGS. 4 and 5, to thereby permit considerable shrinkage or expansion of the panels within the pockets **24**. This feature is essential where synthetic resin sheets are used because of the high degree of shrinkage and expansion of the sheet with changes of temperature and humidity.

Each anchor strip is adapted to be mounted with the base **21** lying against either a horizontal or a vertical

furring strip, and it may be secured thereto by nails **25** extending through suitable holes **26**, drilled in the neck portion of the strip, as in the manner clearly illustrated at FIG. 6. To facilitate proper centering of the nail holes, a shallow nail guide **27** may be formed at the center of the top **23**.

To complete this strip and to permit it to hold other components, each edge of the top **23** is turned upwardly, as away from the base **21**, to form a flange **28**, upstanding from the surface of the arms **23**. Each flange **28** lies in spaced parallelism with the other, and its top edge is formed as an inwardly directed hook **29**, so that the hook at one flange is in spaced opposition with the hook of the other flange, and these hooks may effectively secure decorative members between them, as will now be described.

The horizontal dividers **14** are formed primarily of anchor strips **20** which are partially covered by a decorative slat **30**. This slat **30** may be formed to any shape and a simple rectangular cross section, as illustrated at FIG. 9 is one preferred type. The width of this slat **30** is such that it may lie against the top **23** of the anchor strip with its edges being snugly embraced by the flanges **28** and held in position by the hooks **29**, as in the manner clearly illustrated at FIG. 4.

The decorative snap-on mullions **15** are formed as elongated members, uniform in cross section and, thus, may be described with reference to their cross sectional form. Each mullion is a thin-walled, U-shaped member which may be rectangular as illustrated at FIGS. 8 and 11 or it may be otherwise formed as illustrated at FIG. 12. Referring to the FIG. 8 construction, the crotch of the U-shaped section forms the front face **31** of the mullion with legs of the U forming the side members **32**. These side members are flat and lie in mutual spaced parallelism.

This mullion is adapted to be fitted over an anchor strip **20** as in the manner clearly illustrated at FIGS. 5 and 6. It is so proportioned as to permit the opening at the edges of each side **32** to loosely overlie the flanges **28** of the anchor strip **20**. For connection to the flanges, a detent **33** extends from the inner surface of each side **32** at a point near the side edge, and this detent extends inwardly from the side **32** and towards the side edge to terminate as a hook **34** which faces the inner wall of its side **32** substantially in spaced parallelism therewith. The spacing of the hooks **34** on the detents **33** is such as to permit them to engage with the hooks **29** on the anchor strip flanges **28**. This engagement is in an overlapping manner with the slope **35** of the detent adjacent to the hook **34** being the same as the slope **35'** on the head of the hook **29** to assure a tight interengagement of the surfaces when the hooks are interlocked as in the manner illustrated best at FIG. 5.

Since the detents are proportioned so that the hooks **34** will tightly engage the hooks **29** on the anchor strip flanges when a mullion is affixed to an anchor strip, it is necessary for the sides **32** of the mullion to be sprung inwardly so that the respective hooks will bypass each other to locking position. The springing of the sides to effect locking will not require a severe elastic distortion of the mullion, and the required pressure at any point will not be great. However, the locking action of the hooks is such that the entire length of the mullion sides must be flexed to loosen it and the total force required to do this is tremendous. Once set, these mullions will fit so tightly that they cannot be removed without special equipment. It is to be noted that the edge of each mullion side **32** lies at the edge of the pocket **24** when the mullion is locked into place on the anchor strip. Thus, it will abut against the face of a panel installed into the pocket **24** of the anchor strip, and when the mullion is mounted on an anchor strip **20** having panel edges therein, a finished unit is produced having only this one edge-contacting-seam being visible.

The anchor strip **20** and the mullions are preferably formed of extruded aluminum or like metal so that the several members will be precisely uniform in cross section and will fit perfectly regardless of the arrangement in which the components are placed together. This also permits the formation of a high quality system at an amazingly low cost.

The assembly of a panel group such as that illustrated at FIG. 1 must necessarily commence at one corner of the panel system and proceed therefrom in an orderly fashion, as will be described. However, as in a panel group as illustrated at FIG. 1, the edging of the wall recess **11** will not necessarily require the anchor strips **20**, and conventional types of edging may be used to start the paneling system. A representative type of an edge strip **26** is shown at FIG. 10, which is preferably also formed of extruded aluminum to a pattern similar to that of the other members. This edging strip **36** may be in the general form of a U having a back surface **27** adapted to lie against a wall furring strip, a comparatively heavy crotch portion **38**, and a top surface **39** of a simple, flat pattern as illustrated or of a decorative shape if desired. The edge of a panel will fit into the pocket **40** between the back and top surfaces of the unit and to properly allow for expansion and contraction of the panels, This pocket **40** is comparatively deep.

In the panel assembly, it is desirable to complete columns of panels, first by commencing at a corner of the wall recess **11**, for example the lower lefthand corner at FIG. 1. Edging strips **36** are first set about the opening. The first panel **12** is then set in the lower lefthand corner. An anchor strip forming a horizontal divider **14** is then mounted on the furring strip **17** at the top of this panel to hold the top edge of the panel, with care being taken to provide adequate pocket clearance **24***a* therein. The panel thereabove is placed in this anchor strip **20** and a second anchor strip forming a horizontal divider is then secured in place above the second panel. The third and top panel is next slid into position in the pocket **24** of the anchor strip and the pocket **40** of the edge strip **36** at the top of the opening **11**. Next, the decorative filler strips **30** are slid into position to complete the first column of panels and horizontal dividers. It is to be noted that with each setting, a suitable pocket clearance **24***a* is maintained for each panel.

The next step is to set a vertical anchor strip **20** for subsequent connection of a mullion thereto. It is to be noted that the width of the base **21** of each anchor strip is greater than the width of the top **23** and is such that when a mullion is affixed to the anchor strip, the edges of the base **21** are aligned with the surfaces of the sides **32** of the mullion. This proportioning permits a vertical anchor strip base edge **21** to abut against square-cut ends of the horizontal dividers at each side thereof to assure a tight fit of the ends of the horizontal dividers, or other members, against the sides of the mullion. This eliminates the need of making careful measurements and cuts at the end of each horizontal divider. A further advantage to this mode of construction lies in the fact that, at the same time, the sides of the mullion must be pressed inwardly and together when being set. This permits all other components to be finally installed and positioned before the mullions are set in place.

After setting the vertical anchor strip against the horizontal dividers, the second column of panels and horizontal dividers is installed as hereinbefore described. Another vertical anchor strip is then set in position and the operation repeated until all panel columns are installed. Some problems of fitting may occur at the final panel column section following the procedure outlined. Each installation will differ in detail, and the fitting problems can be best resolved at the time of actual installation. The final step is the snapping of the mullions in place.

It is to be understood that the above installation is

illustrative only, and other systems for setting panels can be used with the improved components. Such will include panels of full height, eliminating the horizontal dividers completely and using vertical anchor strips to set the mullions in place. As a variation thereof, horizontal panels of considerable length may be used with the mullion members constituting sills.

In the structure as illustrated at FIG. 13, the mullion members are fastened to the anchor strips, both in a vertical manner as at **15** and in a horizontal manner as at **15***a*. The construction at FIG. 14 is a further variation in that the anchor strips and mullion members **15***x* and **15***y* are used to show that the arrangements can form diamond-shaped panels.

I have now described my invention in considerable detail and it is obvious that others can build and devise alternate and equivalent constructions which are within the spirit and scope of my invention. Hence, I desire that my protection be limited, not by the constructions illustrated and described, but only by the proper scope of the appended claims.

I claim:

1. The combination of an anchor strip, to be secured to back-up structure, for adjacent panel sections of a panelling system with a decorative cover member comprising an elongated distorted H-shaped member of uniform cross section throughout having one of its sides planar and constituting a base element adapted to cooperate with a surface of a back-up structure, said base element including means therein through which an attaching means may extend for securing said base element to a back-up structure; a neck element coextensive with said base element extending centrally thereof and lying in a plane perpendicular to the plane of the base element; a top element coextensive with said base element, centered with respect to, and supported by said neck element so as to lie in spaced parallel relation to said base element; whereby the spaces formed between the base element and the top element form pockets adapted to receive panel edges; a flange coextensive with each longitudinal edge of said top element, extending substantially perpendicularly to said top element and in a direction away from said base element; the unattached end of each of said flanges being provided with an inwardly directed hook; a decorative member having a pair of side members collapsible toward each other and normally spaced apart a distance greater than the distance between said flanges; and hook engaging means carried by the inner surface of said side members forming a snug fit with said hooks when said side members are distended and disengageable from said hooks when said side members are collapsed toward each other.

2. The organization defined in claim **1**, wherein said decorative member is rectangular in shape.

3. The organization defined in claim **1**, wherein said decorative member includes a central portion to which said side members are flexibly attached.

4. The organization defined in claim **1**, wherein said hook engaging means comprises a detent provided with a hook.

5. The organization defined in claim **1**, wherein said decorative member includes a central portion to which said side members are flexibly attached and said hook engaging means comprises a detent provided with a hook.

6. An anchor strip, to be secured to a back-up structure, for adjacent panel sections of a panelling system comprising an elongated distorted H-shaped member of uniform cross section throughout having one of its sides planar and constituting a base element adapted to cooperate with a surface of a back-up structure, a neck element coextensive with said base element extending centrally thereof and lying in a plane perpendicular to the plane of the base element, a top element coextensive with said base element, centered with respect to, and supported by said neck element so as to lie in spaced

parallel relation to said base element; whereby the spaces formed between the base element and the top element form pockets adapted to receive panel edges; a flange coextensive with each longitudinal edge of said top element, extending substantially perpendicularly to said top element and in a direction away from said base element; the unattached end of each of said flanges being provided with an inwardly directed hook; said top element having a longitudinal groove located at the center thereof, which lies directly over the neck to facilitate the drilling of holes and the driving of nails through the top, neck and base elements for fitting the said anchor strip to a back-up surface or the like.

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