June 8, 1965 D. B. ANDERSON 3,187,389

PANEL BOARD CLIP

Filed Feb. 8, 1961 3 Sheets-Sheet 1

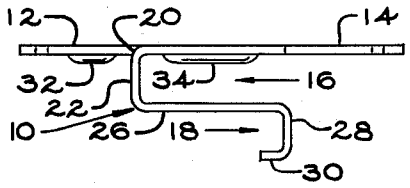


FIG. 1

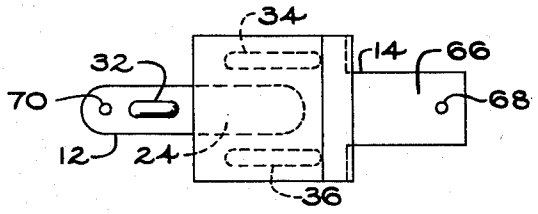


FIG. 2

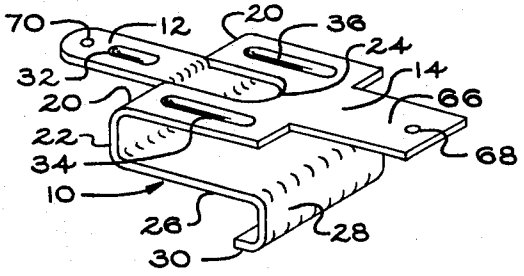


FIG. 3

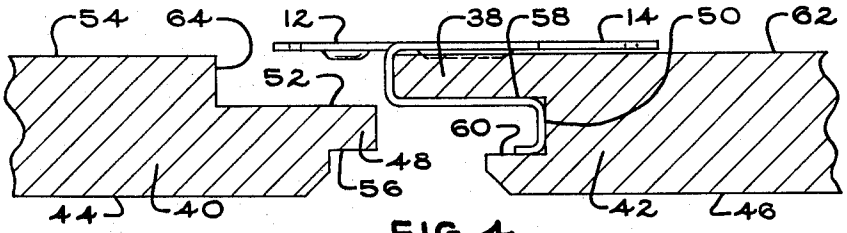


FIG. 4

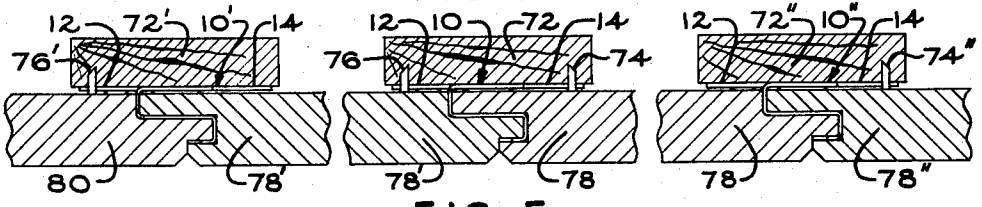


FIG. 5

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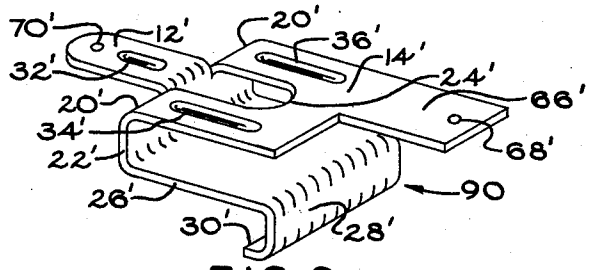


FIG. 6

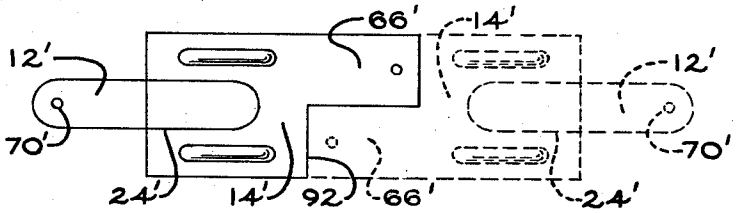


FIG. 7

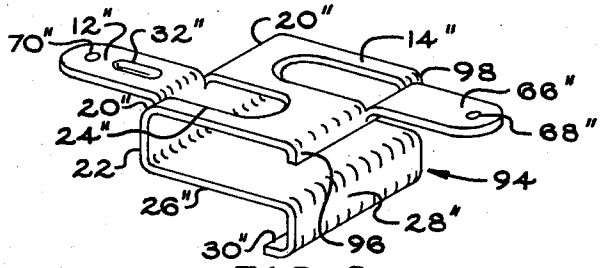


FIG. 8

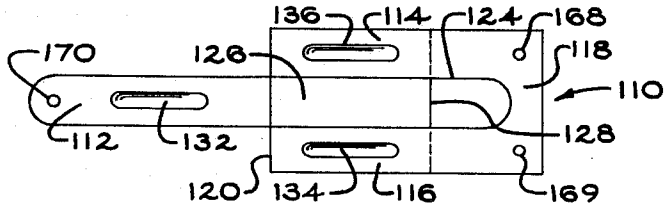


FIG. 9

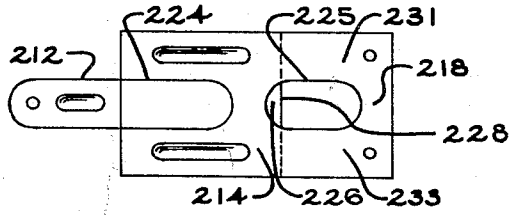


FIG. 10

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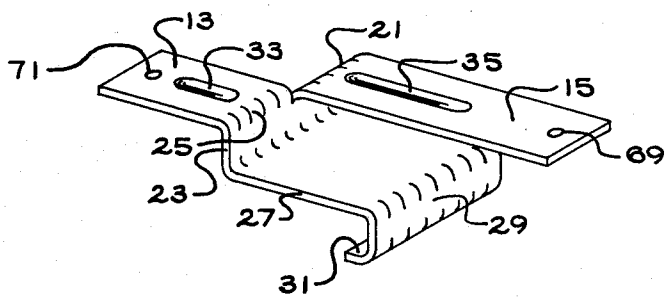


FIG. 11

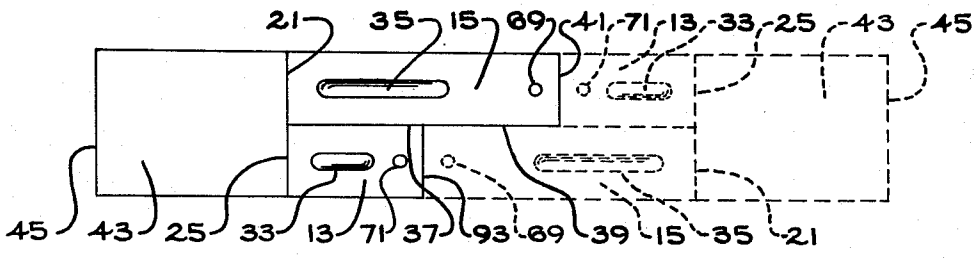


FIG. 12

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Patented June 8, 1965

3,187,389

PANEL BOARD CLIP

David B. Anderson, St. Paul, Minn., assignor to Wood Conversion Company, St. Paul, Minn., a corporation of Delaware

Filed Feb. 8, 1961, Ser. No. 87,831
1 Claim. (Cl. 20—92)

The present invention relates to a panel board clip for mounting panel boards such as ceiling tile and wall plank and the like to a supporting surface.

More specifically, the invention contemplates the use of such a clip with panel board which has been provided with cooperating tongue and groove edges on adjacent pieces.

Reference is made here to my earlier patent No. 2,831,222 which discloses a fastener for mounting tongue and groove panel boards to a supporting surface, of which patent, the present invention is an improvement.

Of recent years a particular type of edge treatment or panel board involving a tongue and groove arrangement has become increasingly popular because of certain inherent advantages. For this type of joint, however, the clip shown in the above-mentioned patent is not adequate and for this reason the type of joint for which the clip of the present invention is constructed has not realized its full potential.

The present invention serves to increase the utility of the joint with which it is used such that panel board having such a joint may be applied in either direction from the center of the supporting surface. This application of panel board from the center makes it easier for the novice to achieve equal boarders at the periphery of the surface, such as a ceiling, being covered. Also, by starting in the center of the ceiling any errors in alignment are permitted to accumulate only for one-half the width of the ceiling rather than for the full width. Furthermore, clip support of tile permits support of either a tongue or a grooved edge directly rather than through the adjacent panel. These and other advantages such as adjustment of the panel after it is in place which accrue from the use of clips have not hitherto been possible for the joint with which the present clip is used.

Various other and ancillary objects and advantages of the present invention will become apparent, to those skilled in the art from the following description and the accompanying drawings in which:

FIG. 1 is a side elevation of the fastener of this invention.

FIG. 2 is a plan view of the fastener.

FIG. 3 is a perspective view of the fastener of this invention facing generally toward the base thereof.

FIG. 4 is a cross-section through two pieces of tongue and groove panel board about to be joined and showing the fastener of this invention in a side elevation.

FIG. 5 shows a ceiling structure in which the fastener of this invention is utilized to apply the panel board outwardly in either direction from a center line.

FIG. 6 shows the clip of FIG. 3 in perspective with a modified longer leg.

FIG. 7 shows a bottom plan view of the clip of FIG. 6 and the manner in which two such clips may be cut from a strip of metal.

FIG. 8 shows a modification of the longer leg of the clip of FIG. 3.

FIG. 9 shows another modification of the clip of FIG. 3.

FIG. 10 shows still another modification of the longer leg of the clip of FIG. 3.

FIG. 11 shows a further modification of the base legs of the clip.

FIG. 12 shows the manner in which two clips of the type shown in FIG. 11 may be cut from a strip of metal.

The fastener of the present invention as shown in FIG. 1 and generally designated 10 is cut and shaped from a single, generally rectangular piece of sheet metal to provide oppositely directed co-planar legs 12 and 14. The remainder of the blank of sheet metal is shaped to provide two parallel, oppositely opening channels 16 and 18, for engagement within the tongue and groove joint of two adjacent and inter-fitting panel boards. The leg 14 is bent at 20 at right angles to an intermediate section 22 and the leg 12 is cut from the leg 14 to leave an opening 24. The leg 12 is bent 180° with respect to the leg 14 to project in the opposite direction from the line 20 to lie in substantially the same plane as the leg 14, see FIGS. 2 and 3. It will be noted that with respect to the line 20 the leg 14 is substantially longer than the leg 12.

Another portion 26 of the metal is bent at right angles to the intermediate portion 22 to overlie the leg 14 and extend parallel thereto and in the same direction with respect to the line 20. The portion 26 forms a channel 16 in cooperation with the opposite channel wall formed by leg 14 and the channel end-wall formed by intermediate portion 22.

The channel 18 is formed by a portion 28 bent at right angles to the channel wall 26. The terminal portion 30 of the metal is bent at right angles with respect to the portion 28 and extends generally in a direction toward the line 20. The channel forming members 26, 28, and 30 form the three sides of the channel 18.

The leg 12 is shown as having an up-set portion 32 which serves to strengthen it and which also serves to accommodate slight variations in the thickness and dimensions of the edge of the panel boards. Similar up-set portions 34 and 36 are shown on the leg 14. In this instance the up-set portions 34 and 36 oppose the wall 26 of channel 16 and serve, in conjunction with the natural resiliency of the metal at the line 20, to embrace the flange 38 shown in FIG. 4 despite possible slight variations therein.

When panel board of the type with which this fastener is adapted to cooperate is manufactured, the edge treatment including the tongue and groove is dimensioned by measuring from the face of the panel board. For example, as shown in FIG. 4 a panel board 40 and an opposite and complementary panel board 42 are shown. As shown in FIG. 4 the face of the board 40 is indicated by the numeral 44 and the face of the board 42 is indicated by the numeral 46. As shown, the panel 40 has a projecting tongue 48 and the panel 42 has a tongue receiving groove 50. The tongue 48 is defined by a portion of a relatively wide sidewall 52 facing toward the rear surface 54 of the panel and toward the base legs 12 and 14 of the fastener when in mounted position. Opposite to the sidewall 52 is the sidewall 56 which defines the other side of the tongue 48 and which is considerably narrower than the wide sidewall 52. The groove 50 is defined by sidewalls 58 and 60 which are spaced apart substantially the same distance or slightly more than the distance between sidewalls 52 and 56 respectively of the tongue 48. The rearward flange 38 is defined by the wall 58 and the rear surface 62 of the panel member 42. When the tongue 48 and groove 50 and their associated sidewall are cut into the originally substantially straight side edges of a panel, their disposition laterally of the edge is determined by tolerances which are measured from the faces 44 and 46 of the panel. Since the panel may vary slightly in over-all thickness between opposite faces, this variation appears entirely in the thickness of the member or flange 38 or the distance between the wall 58 and rear face 62. On the comple-

mentary panel any variation in thickness is accommodated in the area 64 between the sidewall 52 and the plane of the rear surface 54. The natural resiliency of the metal about the channel 16 which embraces the flange 38, especially at the line 20 and the up-set portions 34 and 38, serve to accommodate any slight variations which occur in production.

As shown in FIGS. 2 and 3 the leg 14 has its terminal portion 66 set back or reduced in width with respect to the remainder of the leg 14. This permits the use of either nails, which can be passed through the hole 68 in the leg 14, or staples which may straddle the terminal portion 66 of the leg. Leg 12 is provided with a hole 70 for the reception of a nail and is of such a width throughout its length as to permit fastening by means of a straddling staple.

In some tongue and groove treatments for panel board, such as that shown in my previous Patent No. 2,831,222, the panel may be mounted by means of nails, staples, or clips; however, when using nails or staples (not clips) the nail or staple fastening member must be very carefully positioned since it passes through the tongue of the joint which tongue is spaced from the supporting surface beneath, and can easily damage or destroy the tongue. For this reason, the type of tongue and groove arrangement shown in FIG. 4 has become increasingly more common, since the nail or staple can be made to pass through the flange 38 which is in effect one boundary of the groove 50 and rests against the supporting surface beneath the panel. When fastening such a panel by nails or staples passed through the flange 38, without using a clip, the rear surface 62 of the flange 38 rests against this supporting surface and is not apt to be damaged. By such nailing or stapling of the joint in FIG. 4, however, this type of panel board can be applied only by working in one direction. Thus, without the clip as shown in FIG. 4 nails or staples are passed through flange 38 into the support beneath but this permits working in only one direction—toward the left in FIG. 4.

By means of this invention, however, it is possible to work in both directions from a central line and this possibility is illustrated in FIG. 5. In FIG. 5 three furring strips 72, 72', and 72'' are shown. It is common practice to apply such furring strips, usually 1'' x 3'' in size to an old ceiling or to rafters or floor joists and then to apply the new ceiling tile to the furring strips. By the use of the clip of this invention it is possible to work outwardly from the furring strip 72, which is positioned in the center of the ceiling, toward the left and the right. A clip 10 is first centered on the furring strip 72 and fastened in the preferred manner by both legs, preferably by staples 74 and 76 though either staple 74 or 76 alone may be used. A tile such as tile 78 is then fitted with its grooved edge engaged with the clip 10. Of course, a plurality of clips disposed along the length of the furring strip 72 can be utilized, and frequently are, in order to give support at a number of locations. The tile 78 is then fixed by the clip 10 along its grooved edge. A like clip 10'' is then engaged over the opposite edge of the panel, which edge is provided with the tongue member and a staple such as staple 74'' is engaged about the leg 14 to support the clip and the opposite edge of the tile 78. In this instance no staple or nail is provided for the leg 12 since it is hidden behind the panel board when the clip and panel are affixed to the furring strip 72''. A second panel member 78'' is then engaged with clip 10'' by means of its grooved edge in the same manner as tile or panel 78 was engaged with clip 10 and the sequence of operation is continued onwardly toward the right.

When working toward the left from the center furring strip 72 a panel board such as 78' is engaged in the previously mounted clip 10 with the tongue edge of the panel board engaged in the clip. This supports the board 78' along one edge leaving the opposite edge free. A clip

such as the clip 10', identical in shape to the clips 10 and 10'', is then stapled by means of a staple such as 76' to the furring strip 72' with the staple 76' straddling the leg 12. In this instance no staple is placed about the leg 14 since this leg is hidden behind the panel 78'. This operation may then be repeated by inserting the edge of another tile 80 with its tongue edge engaged in the clip 10' and the sequence of operations again repeated.

FIG. 6 shows a modification of the clip shown in FIG. 3 and the numeral of similar or analogous parts are indicated by similar reference numerals with the addition of a prime character. FIG. 6 shows a clip 90 having a leg 12' struck from the leg 14' and bent 180° with respect thereto in the same manner as the legs 12 and 14 of FIG. 3. In this instance, however, the narrow portion 66' of the leg 14' is offset along one edge instead of being centrally located as the leg 66 in FIG. 3. The particular advantage of this arrangement is a saving of metal since the clip of FIG. 3, as are the other modifications, is made of a strip of metal which may be equal in width to the width of the clip. The portion on either side of the leg portion 65 in FIG. 3 is cut way and discarded. When the leg 66' shown in FIGS. 6 and 7 is offset to one side, however, the next clip may be fashioned from a piece of metal cut in complementary relationship from the strip. In FIG. 6 this possibility is illustrated by a showing of the leg portions only of the clip. The clip portion shown in solid lines includes a narrow leg 66' exactly like the mating leg 66' of the dotted clip next in line. The metal is cut along the line 92 in L-shaped fashion and no material is discarded. Since the portions 22', 26' 28' and 30 (not shown in FIG. 7) are bent from the straight portion of the metal extending to the left for the clip shown in solid lines in FIG. 7 and to the right for the clip shown in dotted lines in FIG. 7 this mating arrangement may be utilized. In each instance, of course, the legs 66' and 12' are of substantially the same width as the legs 66 and 12 respectively shown in FIG. 3 in order to permit straddling by a staple.

A further modification is shown in FIG. 8 which also conserves the use of metal. In this instance the reference numerals referring to parts which are the counterparts of the elements shown in FIG. 3 are indicated by the same reference numeral with a double prime. The leg 12'' is offset toward one side rather than being in the middle and the lip portion of the leg 14'' is slightly bent downwardly as shown at 96. This serves two functions. The lip portion 96 being very slightly closer to the channel member 26'' than the remainder of the leg 14'' serves to grip into the material of the back of the tile in order to make for tight engagement. In addition, the terminal portion 66'' of the leg 14'' may be cut from the leg 14'' and bent 180° with respect thereto in the same manner as the leg 12''. The metal is therefore bent along the line 98 downwardly for the lip 96 (as shown in FIG. 8) and upwardly and backwardly for the terminal portion 66''. If the lip portion 96 were not provided this severe bending of the portion 66'' could not be achieved. With respect to the saving of metal it may be observed that this modification is even more conservative of metal then the modification shown in FIG. 6. That is to say, that the total amount of material used is less since there is no need for a narrow extension to form the terminal portion 66'' it being struck from the leg 14''.

FIG. 9 shows a further modification of the legs in bottom plane view. In this figure parts similar in nature to the parts of FIG. 3 are numbered the same with the addition of 100 thereto. The clip shown in FIG. 9 is generally indicated by the reference character 110 and comprises a leg 112 of such width as to be straddled by a staple, bent at the line 120 with respect to the remainder of the material. This leg is cut from the remaining portion leaving a hole 124. This hole is bounded by a U-shaped member comprising three portions 114, 116, and 118. Through the opening 124 may be viewed a

portion of the underlying opposite member of the channel forming clip. That is to say, that member 126 is comparable to the member 26 shown in FIG. 3. The member 128 extends at right angles to the member 126. All that is visible in this figure, however, is the line at the juncture of the members 126 and 128 where the two elements join along a bend.

This arrangement provides a portion 118 which may be straddled by a staple to secure the clip to the underlaying surface. In addition, the staple may be arranged such that it straddles either the member 114 or the member 116 with one leg of the staple in the opening 124. Alternatively, the leg may be nailed through the openings 168 and 169.

In FIG. 10 a similar but slightly modified arrangement is shown wherein a much sorter leg 212 is struck from the portion 214 to form an opening 224. Another opening 225 is cut in the leg 214 and shows therebeneath the channel forming member 226 and the juncture of the member 226–228. This arrangement likewise provides for a staple to straddle the member 218 or the member 212, 231 or 233.

It should be noted that in each instance as, for example referring to FIG. 3, the channel forming member 26 extends from the member 22 more than half the distance of the length of the opening 24 from the element 22. With the exception of the modification shown in FIG. 9 the channel forming members comparable to the member 26 extend a greater distance from the member 22 than does the opening 24, and never, even in FIG. 9, is this member less than half the length of the opening. This results in a clip having a minimum of opening therethrough and a consequent increase in strength.

The modification shown in FIGS. 11 and 12 show a clip in which members 23, 27, 29 and 31 are identical to members 22, 26, 28 and 30 respectively of the clip shown in FIG. 3. As shown in FIG. 11 the leg 13 having nail hole 71 and up-set portion 33 therein is bent to the left (as shown) of intermediate portion 23 along line 25. Similarly, leg 15 having nail hole 69 and up-set portion 35 therein is bent to the right (as shown) of the intermediate portion 23 along line 21. The width of legs 13 and 15, as with legs 12′ and 66′ of the form shown in FIG. 8 is such as to accommodate a straddling staple. Legs 13 and 15 are in substantially the same plane. Two clips of the type shown in FIG. 11 may be formed without waste material from a strip of metal as shown in FIG. 12. When first cut along lines 93, 39, 41 and 45 from a strip of metal, the legs 13 and 15 lie beside each other. They are separated, however, by cutting along line 37 and bending with respect to the remainder 43 of the material along lines 21 and 25 as described above. The remaining portion 43 of the metal is suitably bent to form members 23, 27, 29, and 31. The dotted line indicates a second clip as it is cut from the same strip, but it faces in the opposite direction and legs 13 and 15 about legs 15 and 13 respectively of the first clip. When finally formed both clips are identical to that shown in FIG. 11. It is to be understood that the blank in FIG. 12 as with that shown in FIG. 7, is acutally a portion of a strip of material of indefinite length and of a width equal to the clip width. By virtue of the lateral off-set relationship of

legs 13 and 15 as with the lateral off-set of legs 12′ and 14′–66′ of the form shown in FIG. 6 and the similar lateral off-set of legs 12″ and 14″–66″ of the form shown in FIG. 8 it will be seen that there is a conservation of material.

From the foregoing it will be apparent that applicant has invented a new and useful means for supporting tongue and grooved panel boards from a supporting surface. It is to be understood that the invention and uses thereof are not to be considered as limited to the specific details set forth in the drawings and specification and that numerous changes and modifications are contemplated as falling within the scope of the invention as defined in the appended claim.

I claim:

The combination of two matched pieces of panel board arranged to provide a matched joint and a fastener for mounting said pieces of panel board comprising an integral piece of cut and shaped metal, said piece of sheet metal being originally flat and having a first portion cut and bent to form two substantially co-planar legs of unequal length integrally joined along a line to form a base, the longer of said legs of the base having an opening therein bounded in part by a portion of said line, the shorter of said legs being the metal severed from said longer leg to form the opening therein, a second portion of said metal being integrally connected at said line to the base and extending therefrom at right angles, a third portion of said metal extending at right angles to said second portion to overlie said longer leg and the opening therein to provide with said longer leg and said second portion a first channel means opening in the direction of said longer leg, a fourth portion of said metal extending from said third portion to provide with said third portion a second channel means, said second, third and fourth portions lying in the matched joint formed by said pieces of panel board, one of said pieces having a groove engaged with said fastener, said groove being defined by a relatively wide side wall toward the base of the fastener and a relatively narrower side wall opposite thereto, a projecting flange on said one piece defined on one side by a wall coextensive with the back surface of the piece and on the opposite side by said wide side wall, a tongue on the other of said pieces engaged with said fastener, said tongue being fully inserted in said groove, and the longer leg of said base extending well beyond the edge of said tongue to permit fastening to a support.

References Cited by the Examiner

UNITED STATES PATENTS

2,004,193	6/35	Cherry	20—8
2,237,212	4/41	Birdsong	50—313
2,309,420	1/43	Taylor	50—481
2,317,428	4/43	Anderson	20—92
2,328,977	9/43	Hasenburger	50—218
2,788,187	4/57	Cookson	248—300
2,831,222	4/58	Anderson	20—92

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