



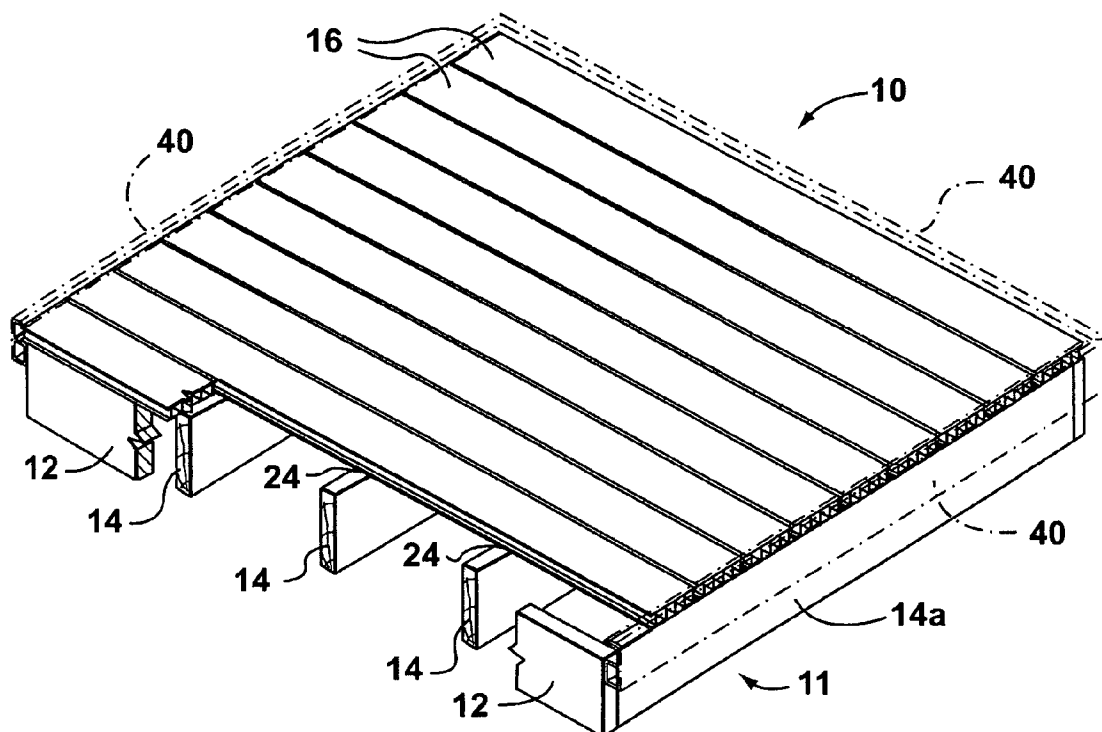
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(19) **United States**(12) **Patent Application Publication**
Simko et al.(10) **Pub. No.: US 2006/0242916 A1**(43) **Pub. Date: Nov. 2, 2006**(54) **EDGE BOARDS AND RELATED
ASSEMBLIES****Publication Classification**(51) **Int. Cl.***E04F 15/00* (2006.01)*E04F 11/16* (2006.01)(52) **U.S. Cl.** **52/177**(75) Inventors: **Peter J. Simko**, Barrie (CA); **Craig A.**
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Alexandria, VA 22314 (US)(73) Assignee: **CARNEY TIMBER COMPANY**, Barrie (CA)(21) Appl. No.: **11/118,352**(22) Filed: **May 2, 2005****ABSTRACT**

An assembly comprises a supporting substructure and at least one longitudinally extending board member supported on the substructure. An edge member is mounted proximate an end portion of the board member and has a lower portion configured for attachment to the substructure, and an upstanding wall portion extending from the lower portion. The upper wall portion defines an open channel and provides an opening into the open channel. The edge member is attached to the substructure and the end portion of the board member is received through the opening of the edge member into the open channel. The channel can accommodate longitudinal expansion and contraction of the board member. The board member may be made of a natural fiber thermoplastic material. The assembly may be configured as a deck assembly.



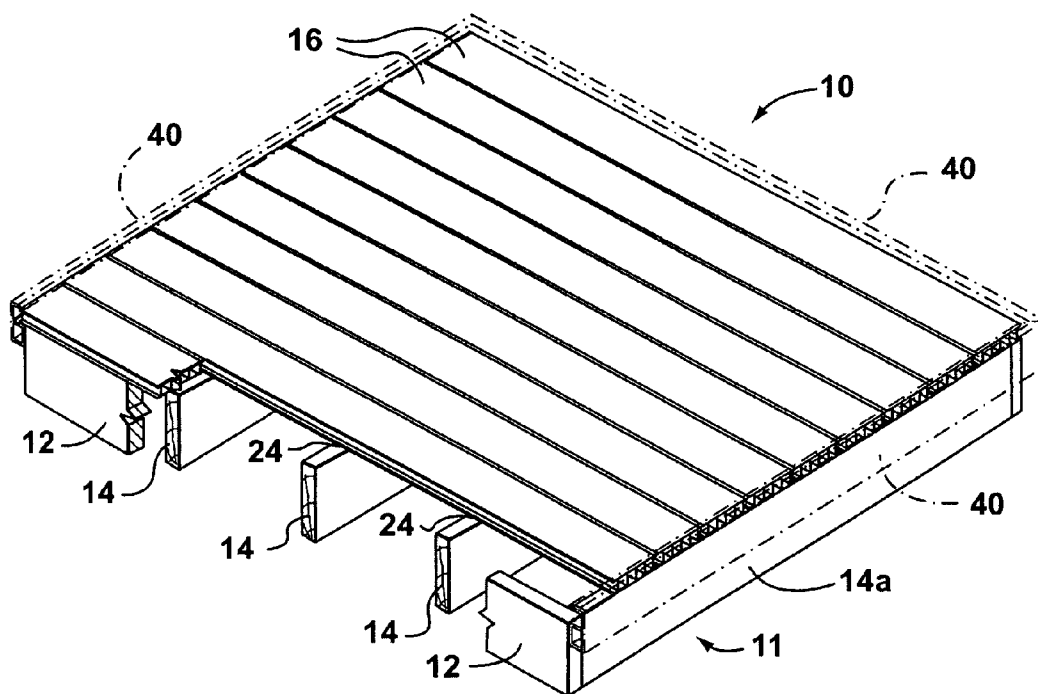


FIG. 1

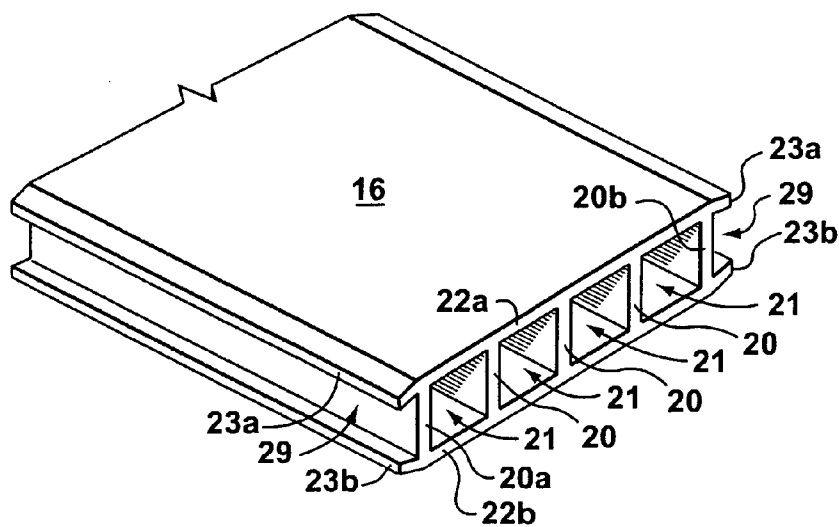


FIG. 2

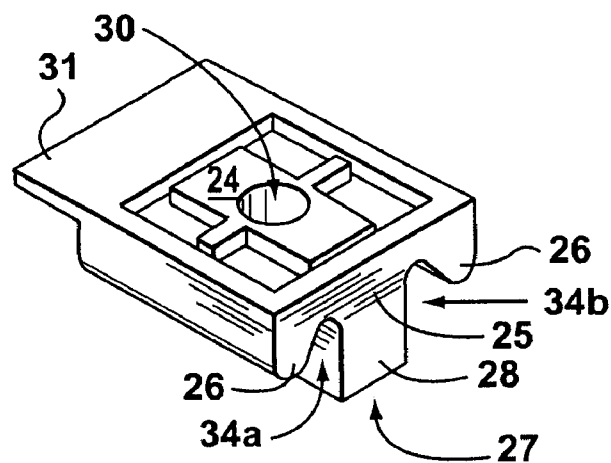


FIG. 3a

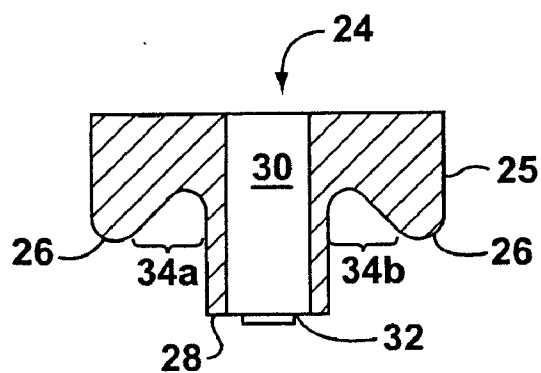


FIG. 3b

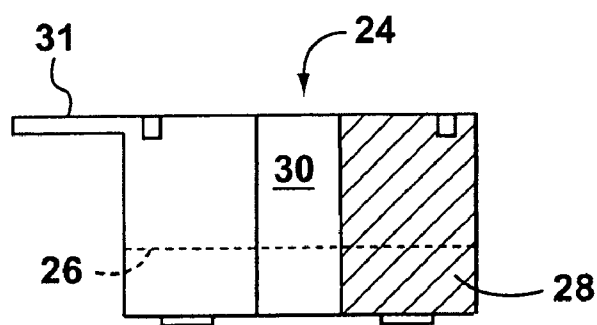


FIG. 3c

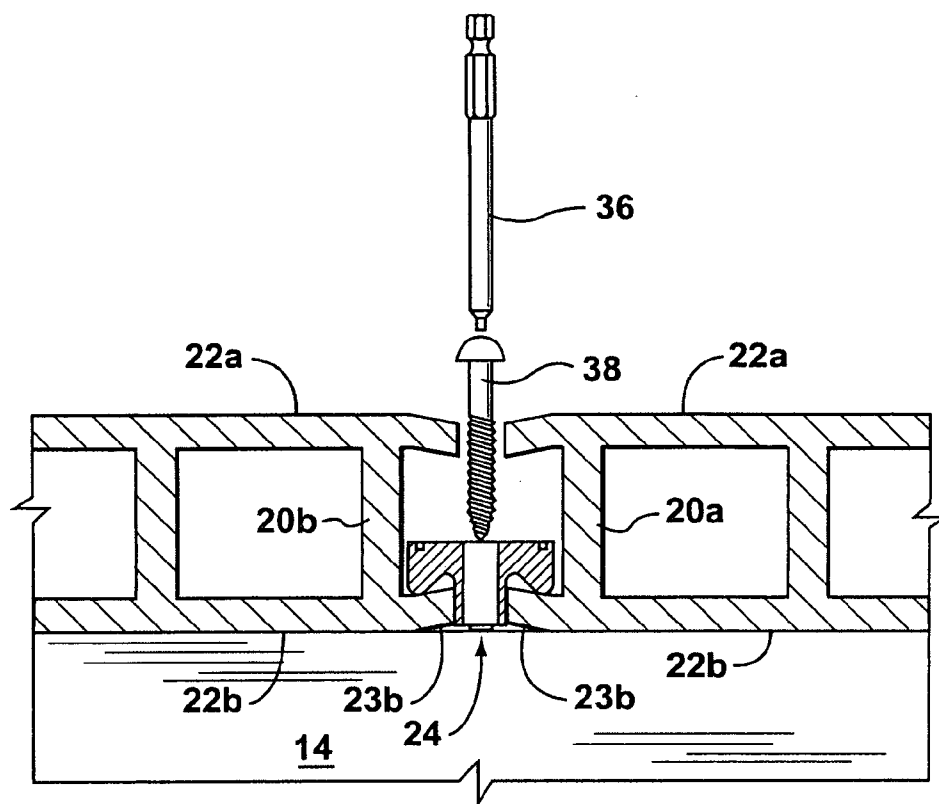


FIG. 4a

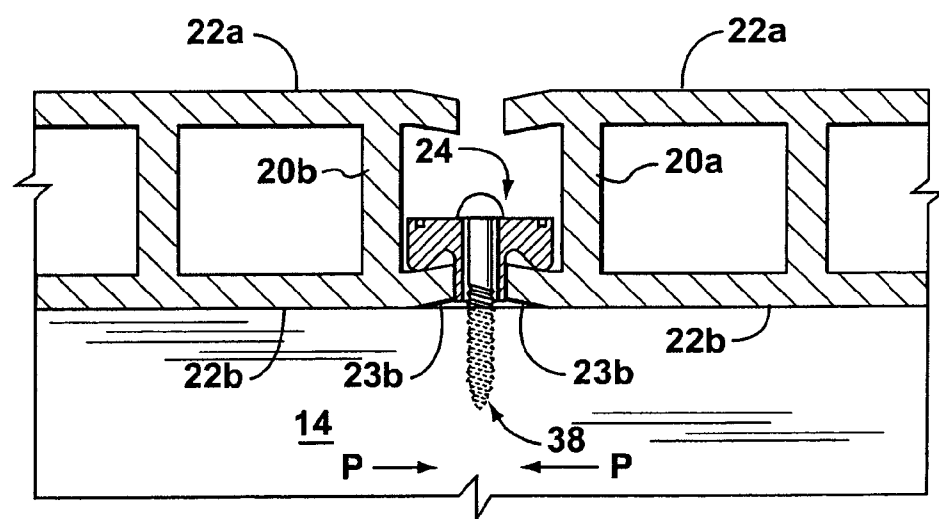
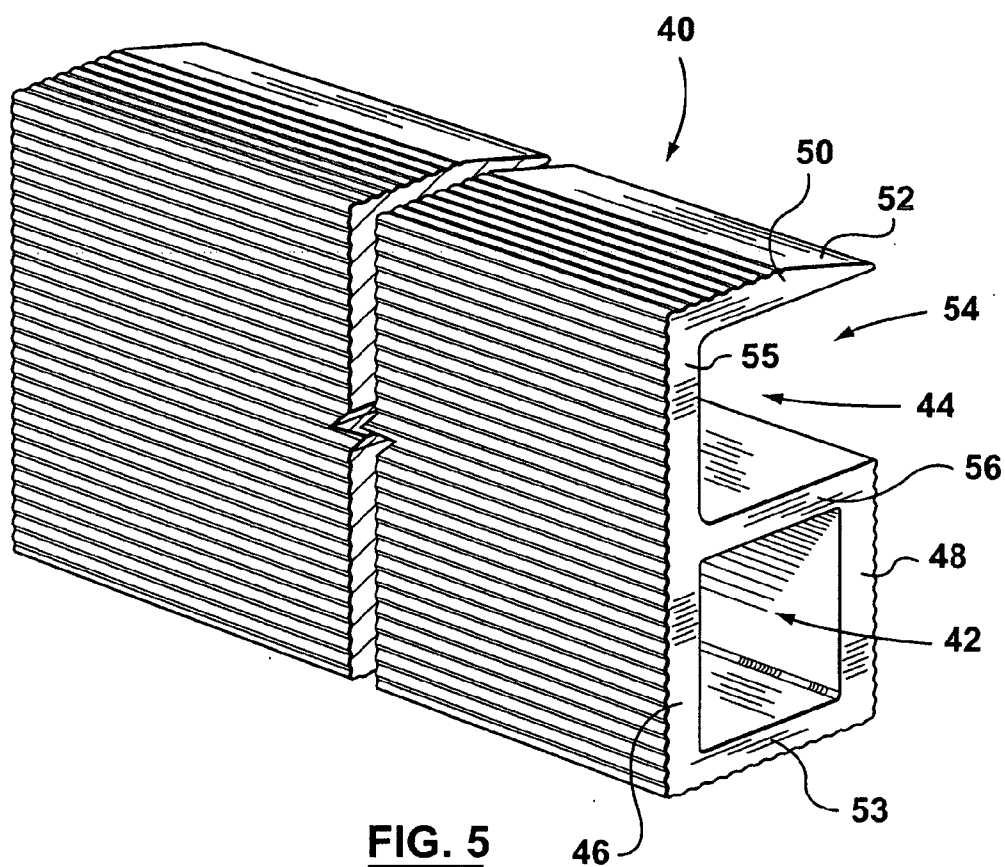


FIG. 4b



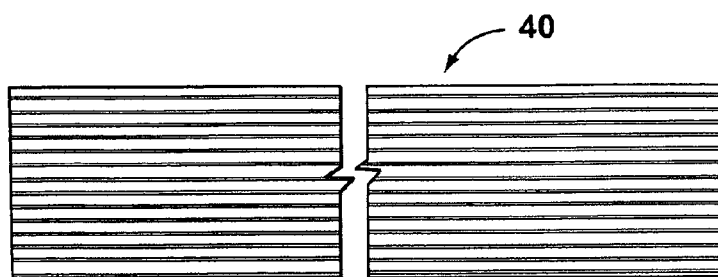


FIG. 7

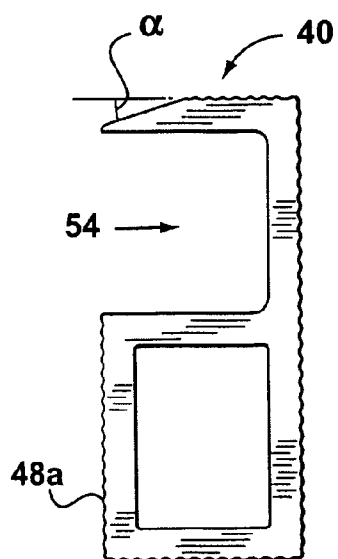


FIG. 6

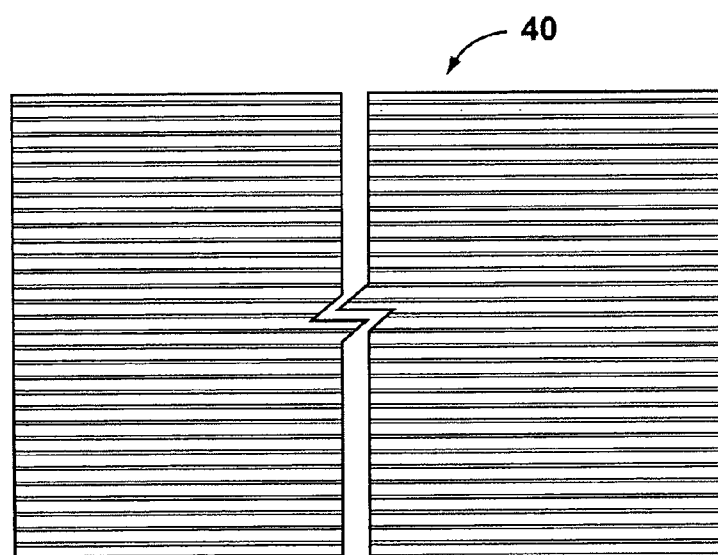


FIG. 8

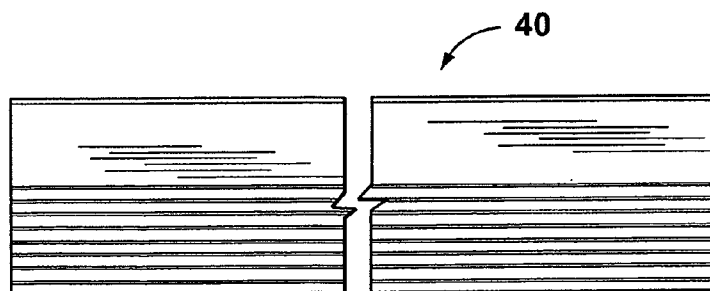


FIG. 9

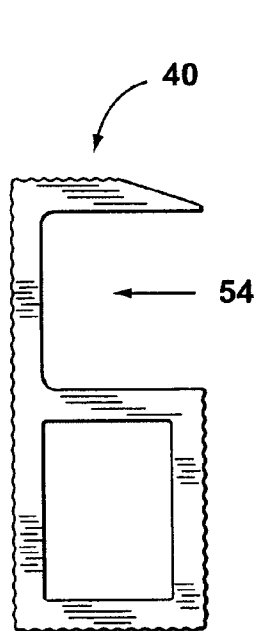


FIG. 10

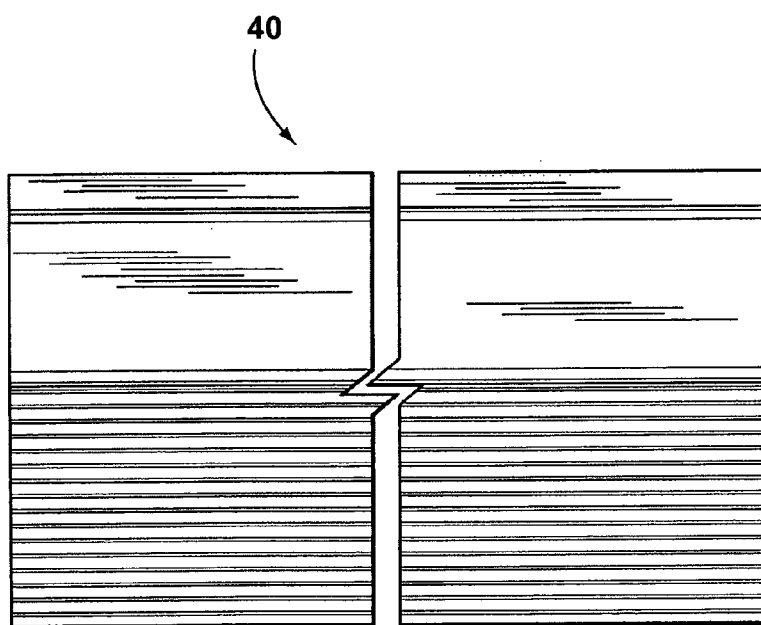


FIG. 11

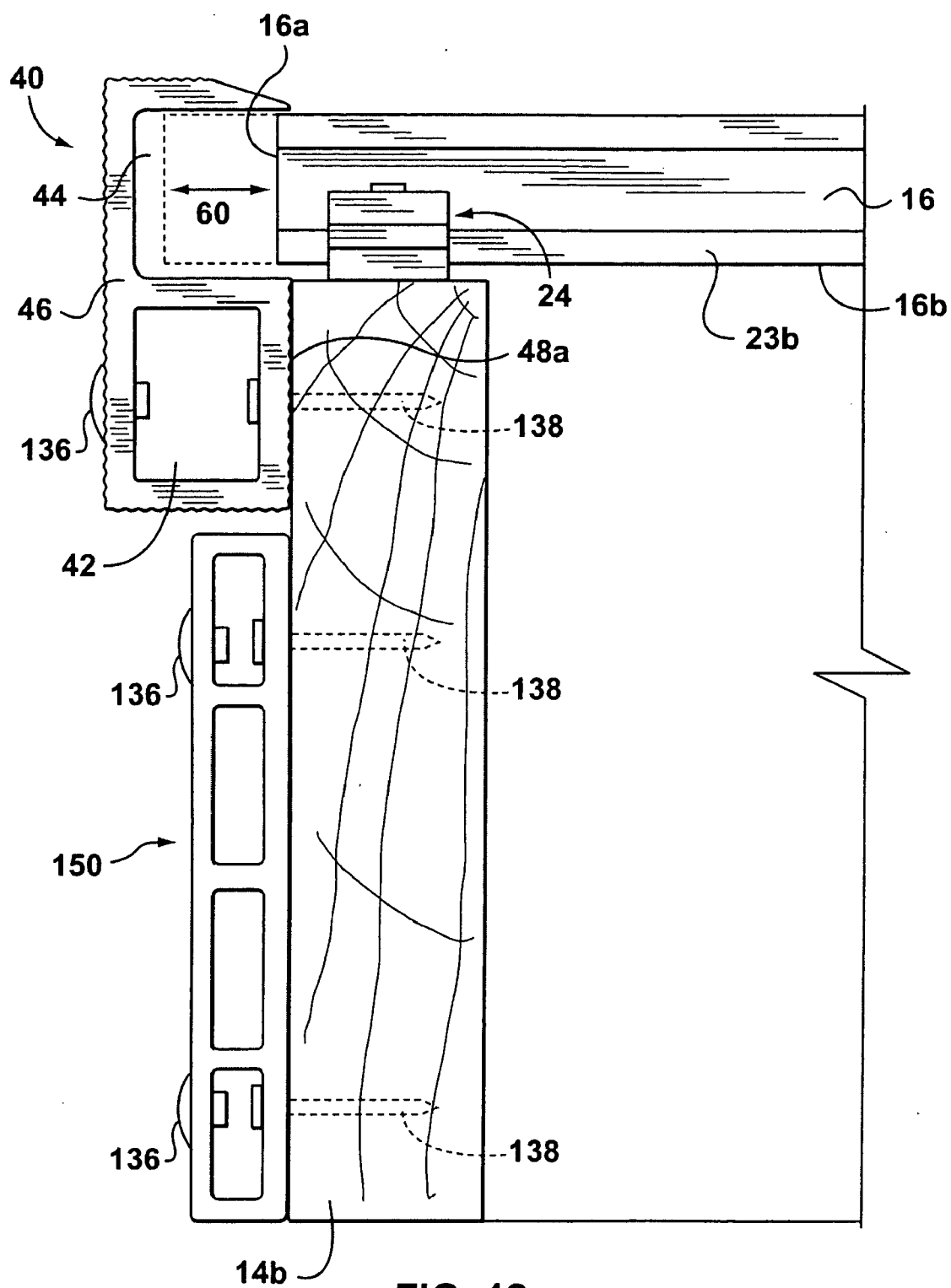


FIG. 12

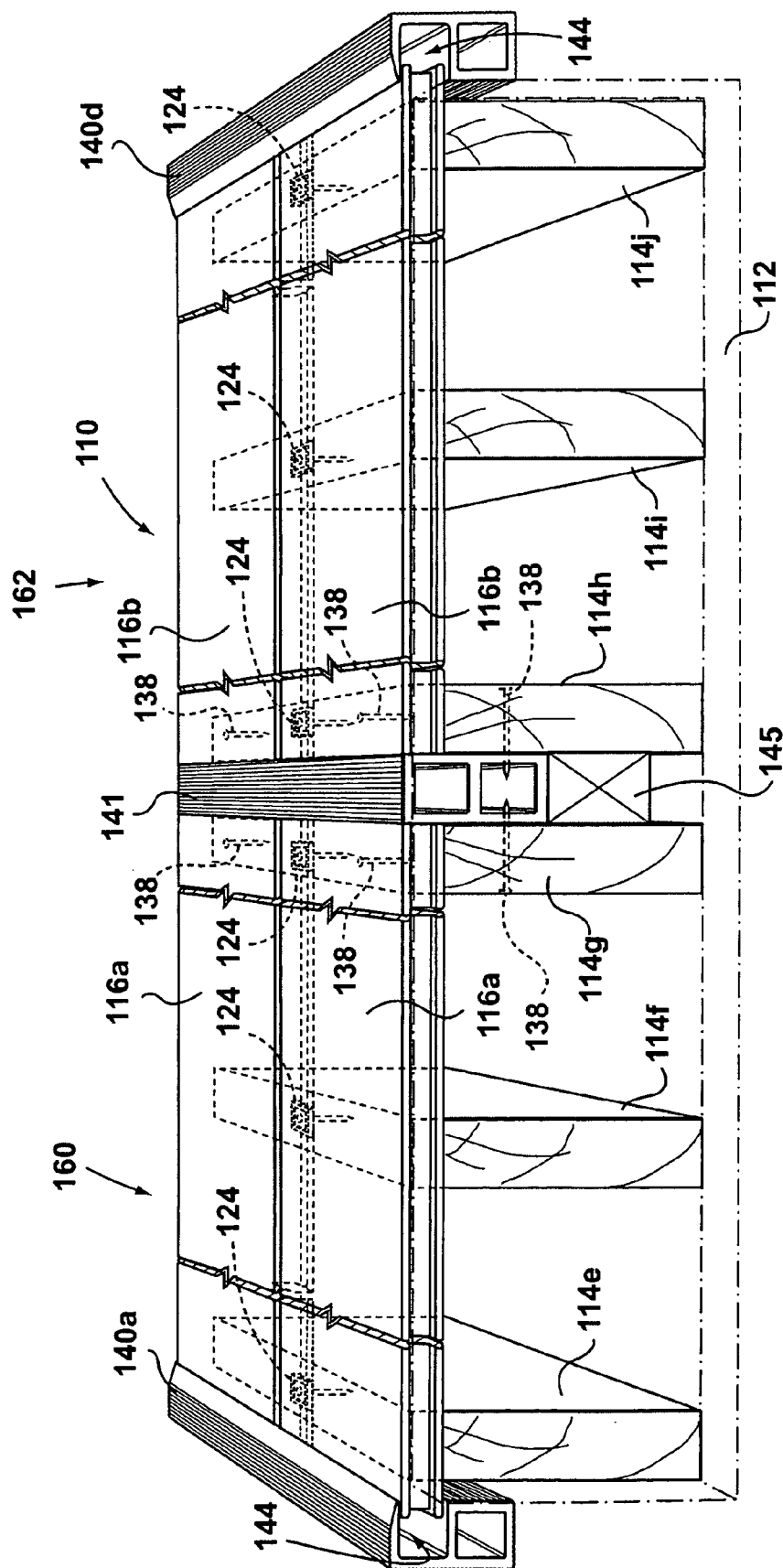


FIG. 13

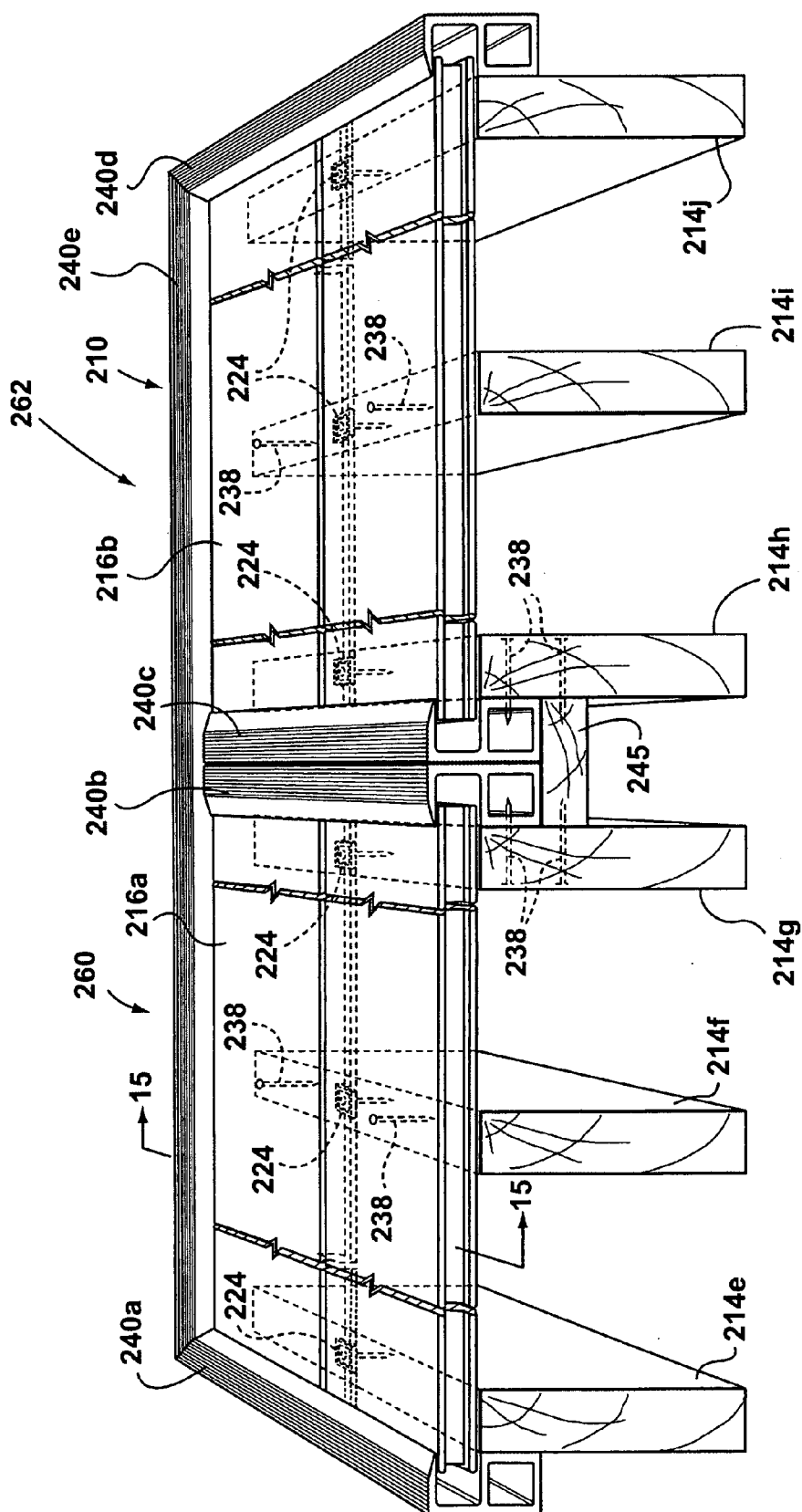


FIG. 14

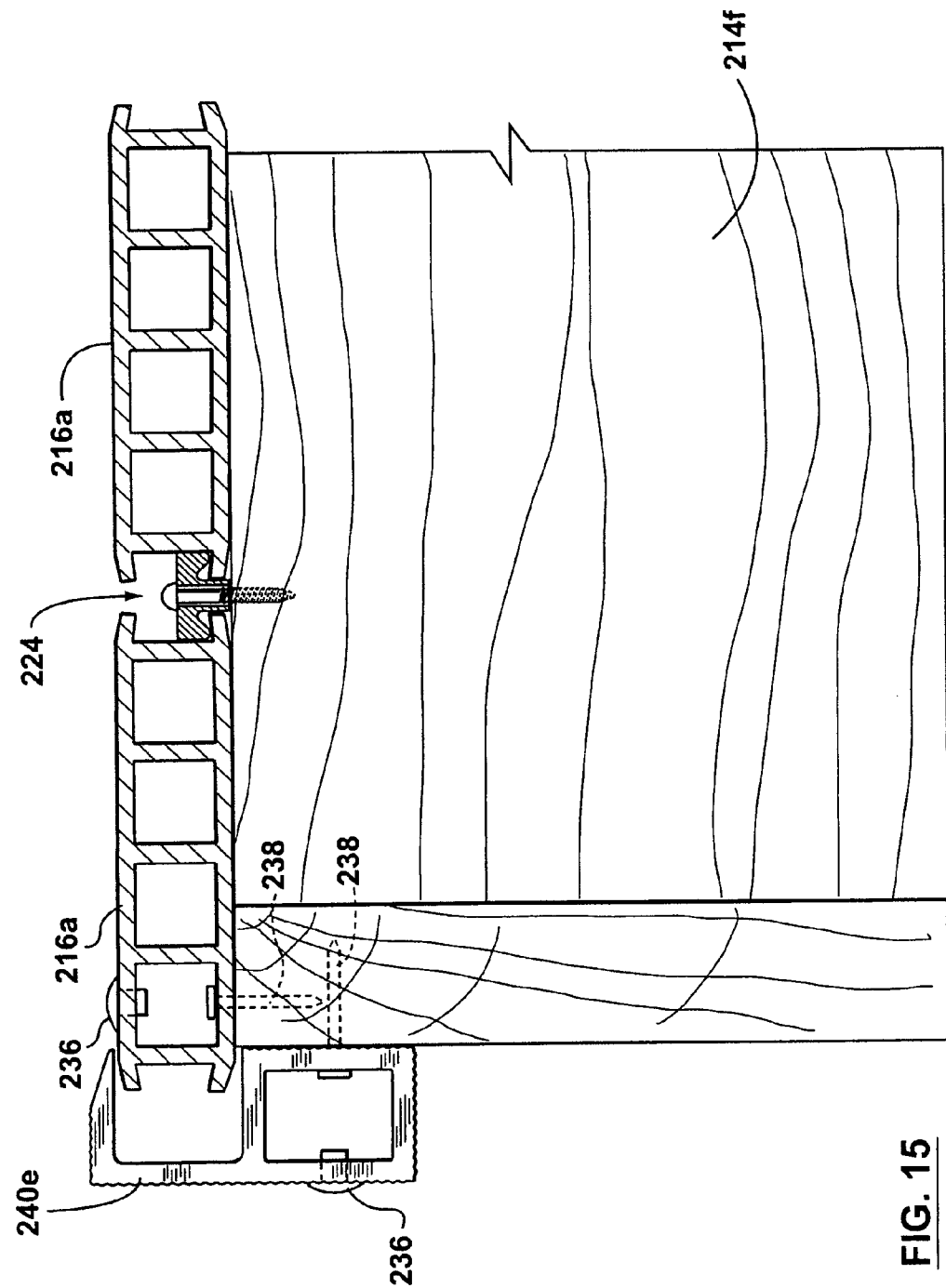


FIG. 15

EDGE BOARDS AND RELATED ASSEMBLIES

FIELD OF THE INVENTION

[0001] The present invention relates generally to edge boards used at the ends of board members employed in construction structures such as for example, decking, flooring and siding assemblies.

BACKGROUND OF THE INVENTION

[0002] Construction structures often involve the use of long board members, which are affixed in longitudinal, parallel alignment with each other. For example, decking or other types of flooring assemblies typically include horizontal floorboards/deck boards supported on a substructure. For decking assemblies, the deck boards and usually the supporting substructure are supported above ground level, often with the assistance of structural support posts.

[0003] Decking assemblies are often formed from a substructure formed with interconnected joists and headers. Several board members of lumber or other material are then typically transversely fixed across the joists of the subframe, in a generally parallel relationship, by way of nails driven through the top surface of the boards.

[0004] These decking assemblies, while being adequate for most general purposes, exhibit several shortcomings. These include compromised structural integrity, difficulty in assembly, and limited aesthetic appeal. The use of nails with wooden boards in conventional decking assemblies exhibits each of these problems.

[0005] Alternative ways of constructing decking assemblies which have been proposed, include the use of a nailing anchor to fix boards to a sub-structure from their bottom surface. Examples of such decking assemblies are disclosed in U.S. Pat. No. 4,620,403 to Field; U.S. Pat. No. 5,775,048 to Orchard; U.S. Pat. No. 4,965,980 to Leavens; and in Canadian Patent number 2,015,733 to Commins. While the use of a nailing anchor may address aesthetic concerns, such assemblies are typically time-consuming to assemble. Moreover, they do not address any of the more important structural concerns arising from the use of nails in a wooden structure.

[0006] Equally as significant, the use of nails or other fasteners driven into wood boards makes disassembly and repairs of decking assemblies difficult. Moreover, disassembled boards typically include nail markings and holes from previous assembly, and are not easily re-used.

[0007] To avoid some of the shortcomings of wooden boards, the use of polymer/plastic boards has been proposed. Polymer boards do not rot or decay like wooden boards. However, unlike wood, plastic and polymer boards quite susceptible to variations in temperatures, particularly with respect to changes in physical dimensions.

[0008] More recently deck boards made from composite materials, particularly those classified as reinforced fiber plastic composites (RFP composites), and natural fiber, thermoplastic composite (NFTPC) materials have been used. The latter class can use a mix of a thermoplastic resin and one or more natural fiber materials. The natural fibers that have been employed include but are not limited to natural wood fiber, wood flour, shell fiber, flax fibers, rice

hulks and other agricultural fibers. Various types of thermoplastic resins can also be employed in the composites including but not limited to polyethylene, polypropylene, polyvinyl chloride and engineering thermoplastics.

[0009] However, deck boards made from materials such as plastic or NFTPC materials, and which are usually exposed directly to changes in the outside environment, particularly changes in temperature, have shortcomings in deployment resulting from the thermal expansion and contraction of the deck board members. This is particularly the case, where deck boards of relatively large lengths are required. For example, a deck board made from a mixture of materials such as natural wood fibers and a binding thermoplastic resin such as polypropylene, has a coefficient of thermal expansion that may be in the range of about 1-5 m/m/degrees celsius $\times$ 10 minus 5. Thus, a deck board that is 7 meters (700 cm) long will, during a temperature change from 30 degrees celsius in summer to minus 20 degrees celsius in winter, may experience a change in length of in the range of about 0.35 to 1.75 cm in length.

[0010] Aside from thermal expansion, some materials can significantly expand in dimensions, particularly longitudinally, when certain other conditions are changed. For example, increased moisture in the environment can lead to increased moisture content in some materials. This in turn can lead to an increase in the dimensions of the board members.

[0011] Such dimensional instability may be a particular problem at the end of the boards at the end or side of a decking area. The result on a deck may be boards which protrude beyond the desired edge plane of the deck in summer and/or boards which provide gaps either at the ends, or between consecutive boards in winter.

[0012] Other types of non-plastic, and non-plastic composite boards, are also capable of significant expansion, particularly in the longitudinal direction.

[0013] Accordingly, an improved system that addresses some of the existing shortcomings of using plastic and members in known decking assemblies and other construction applications is desirable.

SUMMARY OF THE INVENTION

[0014] According to one aspect of the invention there is provided an edge member comprising an enclosed lower channel defined by lower channel wall portions; an upstanding wall portion extending from the lower channel wall portions, the upper wall portion defining an open channel and providing an opening into the open channel.

[0015] According to another aspect of the invention there is provided an assembly comprising a supporting substructure; at least one longitudinally extending board member supported on the substructure, the board member having an end portion; an edge member mounted proximate the end portion of the board member, the edge member comprising: a lower portion configured for attachment to the substructure; an upstanding wall portion extending from the lower portion, the upper wall portion defining an open channel and providing an opening into the open channel; the edge member being attached to the substructure and the end portion of the board member being received through the opening of the edge member into the open channel, wherein

the channel can accommodate longitudinal expansion and contraction of the board member such that the end portion remains substantially within the open channel of the edge member.

[0016] According to another aspect of the invention there is provided an assembly comprising: a supporting substructure; first and second longitudinally extending board members supported on the substructure, the first and second board members each having an end portion; first and second edge members mounted in back to back relation to each other, the first edge member also mounted proximate the end portion of the first board member, the second edge member also mounted proximate the end portion of the second board member, the first and second edge members each comprising: a lower portion configured for attachment to the substructure; an upstanding wall portion extending from the lower portion, the upper wall portion defining an open channel and providing an opening into the open channel; the first and second edge members being attached to the substructure, and the end portion of the first board being received through the opening of the edge member into the open channel, the end portion of the second board member being received through the opening of the second edge member into the open channel, wherein the channels can accommodate longitudinal expansion and contraction of the first and second board members such that the end portions remain substantially in the open channels of the edge members.

[0017] Other aspects and features of the present invention will become apparent to those of ordinary skill in the art upon review of the following description of specific embodiments of the invention in conjunction with the accompanying figures.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] In figures, which illustrate, by way of example only, embodiments of the present invention,

[0019] **FIG. 1** is a perspective view of a known decking assembly, with parts broken away showing a substructure;

[0020] **FIG. 2** is a perspective view of a first embodiment of a known board that may be used to form the decking assembly of **FIG. 1**;

[0021] **FIG. 3A** is a perspective view showing an example of a hold-down clip forming part of the decking assembly of **FIG. 1**, and exemplary of an embodiment of the present invention;

[0022] **FIG. 3B** is a transverse cross-sectional view of the hold-down clip of **FIG. 3A**;

[0023] **FIG. 3C** is a longitudinal cross-sectional view of the hold-down clip of **FIG. 3A**;

[0024] **FIG. 4A** is a perspective view of two boards of **FIG. 2** in side-by-side relation to each other, with a hold-down clip of **FIG. 3A** in place prior to being fixed to a joist;

[0025] **FIG. 4B** is a perspective view of two boards of **FIG. 2** in side-by-side relation to each other with a hold-down clip of **FIG. 3A** in place after being fixed to a joist;

[0026] **FIG. 5** is a perspective front view of an edge board member;

[0027] **FIG. 6** is a right side elevation view of the edge board member of **FIG. 5**, the left side elevation view being a mirror image;

[0028] **FIG. 7** is a bottom plan view of the edge board member of **FIG. 5**;

[0029] **FIG. 8** is a front elevation view of the edge board member of **FIG. 5**;

[0030] **FIG. 9** is a top plan view of the edge board member of **FIG. 5**;

[0031] **FIG. 10** is a left side elevation view of the edge board member of **FIG. 5**;

[0032] **FIG. 11** is a rear elevation view of the edge board member of **FIG. 5**;

[0033] **FIG. 12** is a side elevation view of the edge board member of **FIGS. 5-11** shown employed in part of a decking assembly;

[0034] **FIG. 13** is a perspective view of a decking assembly employing several of the edge board members of **FIGS. 5-11**;

[0035] **FIG. 14** is a perspective view similar to **FIG. 13**, of a similar decking assembly employing several of the edge board members of **FIGS. 5-11**; and

[0036] **FIG. 15** is a cross sectional view at 15-15 in **FIG. 14**.

DETAILED DESCRIPTION

[0037] **FIG. 1** illustrates a known decking assembly **10** that may for example be used as a residential patio deck, a boardwalk, a boat dock, stairs, a bench or a bridge. Other uses will be apparent to those of ordinary skill in the art.

[0038] Decking assembly **10** preferably includes a substructure **11** including headers **12** placed around a plurality of joists **14** spaced evenly apart at a preferred distance of approximately 16 inches on center, and in a parallel relationship to one another. Headers **12** and joists **14** may be made of any decking supporting material, including but not limited to untreated and treated solid wood and metals including steel and aluminum.

[0039] Transversely placed upon the joists **14** are a plurality of boards **16** spaced evenly apart in parallel relationship to one another and held down on the substructure **11** by way of hold down clips **24**. It will be appreciated that while deck assembly **10** is shown with only one board **16** spanning the end joists **14a**, **14b**, a plurality of boards could be employed in end-to-end longitudinally aligned relation to provide for a larger separation between the outermost joists **14a**, **14b**.

[0040] **FIG. 2** illustrates an example board **16**, used to form the decking assembly **10**, of **FIG. 1**. Board **16** may be instead formed of plastic/polymer, or from a composite such as NFTP. Such boards **16** may be formed by combining wood particles/fibers or from a natural agro-fiber such as rice hulks, with a suitable thermoplastic resin. Suitable plastics that can be employed include but are not limited to polyvinyl chloride (PVC), polyolefins (polyethylene, polypropylene) and engineered plastics such as ABS, acrylic and polycarbonate. The wood fibers and resin may first be mixed together and then heated in an appropriate device.

Alternatively the wood fiber and resin mixture can be pelletized and then stored for use in the future when they can be heated in an appropriate device. Possibly other additives such as pigments, lubricants, coupling agents and UV stabilizers, might also be incorporated. The heated mixture is typically extruded or pultruded through a suitably configured mold or die. Examples of suitable processes are disclosed in US patent publication no. 2005/0031724 A1 filed under Ser. No. 10/635,851 by Pabedinskas, the contents of which are hereby incorporated herein by reference. Boards can also be formed by known injection molding systems and methods.

[0041] A possible shaped board that can be formed by such a process, is board 16 shown in FIG. 2. Board 16 contains a multitude of generally vertical webs or ribs 20 extending lengthwise along each board 16 between two substantially flat side web portions 22a and 22b, and having a generally uniform cross-section throughout its length, as for example, detailed in U.S. Pat. No. 5,234,652, the contents of which are hereby incorporated herein by reference. Ribs 20 can be equally spaced apart and define rectangular shaped, longitudinally extending chambers 21, extending parallel to one another between flat side portions 22a and 22b along the length of board 16. Other board cross sectional configurations can be provided such as with cylindrical shaped longitudinally extending chambers. Additionally, a board with a solid material profile could be employed (i.e. a board in which the hollow chambers are not present, but having generally the same outer dimensions).

[0042] The dimensions of board 16 may be the same as conventional boards of lumber. Preferably, board 16 will be configured as nominal 2×3; 2×4; 2×6; 2×8; 2×10; or 2×12 boards, and have lengths which may vary depending on the size of the decking assembly or other application. Additionally, the preferable number of ribs 20 per board 16 is five. Of course, these specifications are merely examples of possible embodiments and many variations are possible.

[0043] Preferably boards 16 have coefficients of thermal expansion of greater than 1 m/m/degrees celsius×10 minus 5 and more preferably have coefficients of thermal expansion of greater than 5 m/m/degrees celsius×10 minus 5.

[0044] Also as shown in FIG. 2, extending from the sides of each board 16, proximate the edges of each side portions 22a and 22b and outer ribs 20a, 20b are angled lips 23a and 23b, respectively. As illustrated, the top flat surface 22a has downwardly angled lips 23a extending from either side, and the bottom flat surface 22b has upwardly angled lips 23b extending from either side. The lips 23a and 23b preferably extend upward and downward at an angle of about 10 degrees from the horizontal plane. Preferably, the angled lips 23a and 23b of the flat side portions 22a and 22b extend outward proximate an outermost rib 20 a distance of preferably approximately 0.8 cm. However, as a person skilled in art will appreciate, that such distance and angle may be increased or decreased. Advantageously, angled lips 23a and 23b extend from the left and right of top and bottom surfaces 22a and 22b, boards 16 and are symmetrical about vertical and horizontal planes through its center. Opposed angled lips 23a and 23b form generally dovetailed channels 29, as illustrated. As will become apparent, lips 23a and 23b need not extend outward linearly but could be curved or have another shape.

[0045] FIGS. 3A, 3B and 3C illustrate, in perspective and cross-sectional views, an exemplary hold-down clip 24. Hold-down clip 24 includes a top portion 25 with a longitudinally extending tab portion 31. Tab portion 31 can be used to hold the clip when installing the clip as described below. Extending down from top portion 25 of hold-down clip 24 are two downwardly extending outer tabs 26 defining a medial region 27 there between. Extending down further than the outer tabs 26, parallel to and equidistant to both outer tabs 26 in region 27 is a spacer tab 28. Thus, hold-down clip 24 is generally T-shaped in cross-section, as best illustrated in FIG. 3B. Spacer tab 28 and each outer tab 26 define a channel 34a and 34b in region 27 extending along the length of clip 24. Clip 24 is preferably made of a suitable plastic such as polypropylene and may be formed by conventional methods such as by injection or extrusion molding. Clip 24 could be formed of any other suitable material including a metal such as aluminum, steel or a metal alloy. However, it is preferred that the material from which the clip is made, does not, when the clip is attached to the lips 23a, 23b and to the underlying substructure such as joist 14, prevent the board lips 23a, 23b from some frictional sliding movement longitudinally. Such movement will be desirable when the board is subjected to thermal expansion and contraction due to changes in temperature, typically caused by changes in the ambient temperature. In a case where the board lips 23a, 23b can not slide longitudinally in the clip in relation to outer tabs 26 during temperature changes, sufficient to allow the change in length, then the clips can be subjected to significant loading which might cause them to be come disengaged from attachment to the substructure and/or fail.

[0046] Hold-down clip 24 optionally includes a pre-formed bore 30, extending from the center of top portion 25. Bore 30 is sufficiently large to allow a fastener, preferably such as a nail or screw to pass from the center of the top of clip 24 down through the center of the spacer tab 28. Two small solid disks 32 formed as a result of the injection molding process forming spacer tab 28, protrude from the bottom of spacer tab 28, and are located on either side of the hole on the bottom surface of the spacer tab 28.

[0047] A screwdriver bit 36 which has its operative end extending a distance preferably at least the distance from the top outer edge of the angled edge 23a of flat surface 22a of board 16 to the top inner edge of the angled edge 23b of flat surface 22b of board 16, and most preferably a distance greater than the thickness of board 16. Bit 36 has a shaft that is sufficiently thin to allow the adjustment of a screw positioned between two boards 16 while permitting a minimum separation distance between the boards 16. Thus, preferably, the diameter of screwdriver bit 36 will be less than the thickness of spacer tab 28. Screwdriver bit 36 may be a Robertson, Philips, or slotted fit, complementary to screws that may be used to fasten the boards to the substructure 11.

[0048] Other types of board attachment mechanisms could also be employed, particularly those which permit the longitudinal frictional sliding movement of the board.

[0049] The construction of a decking assembly as illustrated in FIG. 1 using example hold down clip 24 and boards 16 may be better appreciated with reference to FIGS. 4A and 4B. Specifically, FIGS. 4A and 4B illustrate cross-

sectional views of a hold-down clip **24** positioned between two boards **16**. Boards **16** are placed in a side-by-side relationship on substructure **11**, with two lips **23a** of adjacent boards facing each other. As illustrated in **FIG. 4A**, hold-down clip **24** is placed above one of joists **14** and between two boards **16** such that the angled lip **23b** of the bottom flat surface **22b** of one board **16** is fit within the first groove **34a** of hold-down clip **24**. The angled lip **23b** of the bottom flat surface **22b** of another board **16** is fit within the second groove **34b** of hold-down clip **24**. Hold-down clip **24** may be fastened to substructure **11** using a conventional fastener such as a nail, screw, staple or the like. Most preferably a screw, such as screw **38** are used.

[0050] Screw **38** is positioned in the top hole **30** of hold-down clip **24** and is turned by a screw driver, preferably fitted with screwdriver bit **36** so that screw **38** is engaged by the complementary bit **36** and driven through the hold-down clip **24** into the joist **14**, causing a downward force to be exerted on hold-down clip **24**. The downward force on hold-down clip **24** acting upon the angled edges **23b** of flat surfaces **22b** causes a camming force to be exerted on each board **16** in a generally horizontal direction, orthogonal to the downward force, and towards hold-down clip **24** as illustrated by arrow P in **FIG. 4B**. This, in turn, pulls two adjacent boards close together. Conveniently, the diameter of screwdriver bit **36** is narrower than an extending center spacing tab **28** and is sufficiently narrow to allow the screwdriver bit **36** to fit between adjacent boards as they are pulled together. Spacer tab **28** of the hold-down clip **24** conveniently limits the spacing between adjacent boards. Moreover, spacer tab **28** provides an upwardly directed supporting force, opposite to the downward force of screw **38**. Alternatively, spacer tab **28** could be eliminated thereby allowing a screw such as screw **38** to act as a spacer between adjacent boards **16**.

[0051] The combination of the cam force and the downward force causes a strong union between each board **16** and the sub-structure, as well as between each board **16** and each adjacent board **16**, resulting in an improved deck function. Moreover, hold down clips **24** spaced along the length of the boards may cause adjacent boards to be equally and evenly spaced and parallel, eliminating the need measure or mark the position of boards **16**, as they are being assembled. Preferably, several clips identical to hold-down clips **24** are spaced lengthwise to coincide with the joist spacing.

[0052] Advantageously, hold-down clips **24** need not be fixed from the top surface of boards **16**, nor through any surface of boards **16**. Each hold-down clip **24** is economical to produce, unobtrusive, and results in an aesthetically pleasing deck.

[0053] As boards **16** are symmetrical, downwardly extending lips **23a** will be adjacent to each other. So arranged, these facilitate water run-off from an assembled decking assembly **10**, and additionally prevent uneven board edges that may cause tripping or interfere with snow removal.

[0054] As should now be appreciated, if a decking assembly so assembled needs to be disassembled, fasteners may be removed from hold-down clips **24**. Boards **16** remain undamaged by any such disassembly. Moreover, as the boards are symmetrical, any board having a damaged or discolored face may easily be reversed, by loosening the

associated fasteners keeping the board in place, and turning the board upside down, and thus reversing the board. Similarly, severely damaged boards may be replaced, one by one, as required. This, in turn, may significantly extend the useful life of any such decking assembly.

[0055] The deck assembly **10** as shown in **FIG. 1** is shown with the ends of boards **16** substantially aligned with the plane of the outer face surfaces of end joists **14a**, **14b**. However, some circumstances, such as where a deck assembly is subject to significant changes in ambient temperature, the ends of the boards **16** will not remain in such alignment. This does not provide for an aesthetically pleasing result and may provide some functional drawbacks such as boards pushing out and dislodging a fascia or other board or trim member, or possibly having a board travelling out of position or sliding off a joist member. Additionally, as not all boards may expand or contract the same amount, non-uniform changes in length can result in undesirable effects such as for example uneven board ends.

[0056] Accordingly, with reference to **FIGS. 5-11**, an edge board member **40** is illustrated. Edge board **40** may be made from the same material as boards **16** and colored either the same color or a different color for contrast. Edge board **40** may be made in the same way as board **16** by an extrusion or pultrusion process. However, edge board can be formed from other materials and using other known manufacturing techniques, including being made from regular lumber, suitably cut to shape to provide an open channel **44** with a suitable opening **54**, as described below.

[0057] Board **40** as illustrated, is configured with longitudinally extending webs including a front, a rear, side wall portion **46** positioned opposite a front, front side wall portion **48**. Interconnecting web portions **53** and **56** provide an enclosed longitudinally extending channel **42**. Channel **42** does not have to be square or rectangular in cross section. Indeed, if made from lumber, a hollow channel **42** need not be present at all.

[0058] An open, longitudinally extending channel **44** is formed by an upstanding rear wall portion **55** that extends from wall portion **46** and transverse webs **56** and **50**. An opening into channel **44** is provided between the ends of webs **50** and **56**. The upper, outward facing surface of web portion **50** has an end portion **52** that is wedge shaped, tapering to a narrow tip. This provides a graduated threshold feature which reduces the tripping hazard when installed. Angle alpha may in some embodiments in the range of 15-20 degrees and most preferably about 17.5 degrees for a board that has an outer width of about 1.5 inches. Surface **52** could also in other embodiments be arcuate shaped with the surface being oriented concave downwards.

[0059] The use of edge board **40** is shown in **FIG. 12** as part of a deck assembly similar to assembly **10** in **FIG. 1**. Board **16** can be initially cut and/or placed when the deck is assembled with the end portion **16a** received through opening **54** and extending partly transversely into channel **44**. Board **16** can be held in position on joists including joist **14b**, as described above.

[0060] Edge board **40** is shown in **FIG. 12** mounted to joist **14b** with a screw or nail **138**; other attachment mechanisms could be used. Apertures may be drilled through outer side portion **46** and inner side portion **48** to permit a screw

138 to be affixed inside channel **42** into joist **14b**. Once screw **138** is affixed in place, an insert plug **136** can be inserted into the aperture through wall **46**. Plug **136** can be made of a suitable material such as a plastic material like high-density polyethylene (HDPE) or polypropylene.

[0061] Edge board **40** has its outer rear face **48a** mounted flush against the face of the joist **14b**. Thus, the end **16a** is positioned into channel. As shown in **FIG. 12**, the edge board can be configured so there is a longitudinally extending gap between the lower surface **16b** of board **16** and the upper inside surface of web **56** (**FIG. 5**). A gap can also be provided between the upper surface of the deck board end, and the inside upper surface of web **50**, which may be narrower than the gap at the lower surface of the deck board. These gaps allow for some dimensional increase in the depth of the deck board.

[0062] As shown in **FIG. 12**, the end **16a** of the board **16** can expand longitudinally from the position shown in solid lines, to the position shown in broken lines, such as when there is an increase in temperature of the board. It is preferred that the position shown in solid lines be the limit of the contraction of the board out of cavity **44**.

[0063] For appearance purposes, as shown in **FIG. 12**, a longitudinally extending skirting board **150** can also be secured to joist **14b** with screws **138** and covers **136**, in a manner similar to that described above. Skirting board **150** can be made from the same material as deck board **16** and edge board **40**, and formed in the same manner as board **16**.

[0064] In an example embodiment, joist **14** is a nominal 2x8 piece of regular lumber. Edge board **40** is configured with the same outer dimensions as a 2x4 inch piece of lumber, and skirting board **150** is configured with the same outer dimensions as a 1x6 piece of regular lumber.

[0065] With reference to **FIG. 13**, a decking assembly **110** is shown which employs a plurality of deck boards **116a**, **116b** (like boards **16**) in conjunction with edge boards **140a**, **140b** and **140c** (like edge boards **40**). A first deck span **160** is provided by boards **116a** (only two of which are shown, but can involve multiple boards as shown in **FIG. 1**). Likewise a second deck span **162** is shown provided by boards **116b**.

[0066] Boards **116a** are supported by and attached to joists **114e-g** including outer end joists **114e** and **114g**. A first edge board **140a** is mounted to joist **114e**. Boards **116a** have first end portions received in openings **154** of the edge board **140e**, as described above. Screws **138** pass through opposite end portions of boards **116a** pass into joist **114g** to pin these end portions to the joist **114g**. In this manner, any thermal expansion or contraction will be forced to occur at the first end portions, which are covered by edge board **140e**.

[0067] Boards **116b** are supported by joists **114h**, **114i** and **114j** in a similar manner. An edge board **140d** is shown mounted to joist **114h**. Boards **116b** have first end portions received in openings **144** of the edge board **140d**, also as described above. Screws **138** pass through opposite end portions of boards **116b** and pass into joist **114h** to pin these end portions to the joist **114h**. In this manner, any thermal expansion or contraction will be forced to occur at the first end portions of boards **116b**, which are covered by edge board **140d**. The boards **116a**, **116b** are secured to the other joists **114e**, **114f**, and **114i**, **114j**, respectively using clips **124** which can be like clips **24**.

[0068] Positioned between joists **114g** and **114h**, can be a transversely extending, additional breaker board member **141** which can be made from any suitable material such as for example regular lumber or be a NFTP channel member similar to the board member shown in **FIG. 2**, but without lips. The breaker board member **141** can be nailed or screwed to joists **114g**, **114h**, and its upper surface bridges the gap between the adjacent ends of deck boards **116a**, **116b**. Breaker board **141** can be supported by a support member **141**. The support member **141** can be a nominal 2x4 piece of lumber or other suitable member, and is affixed such as by screws or nails to joists **114g** and **114h**. In another embodiment, the breaker support member could be eliminated and the ends of boards **116a** and **116b** be abutted directly adjacent each other.

[0069] A ledger board or rim joist **112** (which may be another piece of lumber like joists **114**) is shown in shadow outline, and may be mounted to the ends of joists **114e-j** in a known manner.

[0070] One way of assembling deck assembly **110** is as follows. First the substructure is formed which includes joists **114e-j** are mounted in position, typically being attached to a header like board **112**, and may be supported by beams and structural support posts (not shown). Thereafter, the support member **241** affixed such as by screws or nails to joists **214g** and **214h**. Next, breaker board member **141** can be installed between joists **114g** and **114h**, supported by support member **141**. Next the deck boards **116a** and **116b** are mounted to the joists using screws like the screws **238** and clips **124**. The outer ends of deck boards **116a** and **116b** can then be appropriately cut off to make the ends even. The cutoff position on the boards will be selected depending upon the ambient temperature. If the ambient temperature is relatively warm, an overhang of 1-2 cm can be left beyond the outer edge surface plane of outer joists **114e** and **114j**.

[0071] By way of example only, for boards **116a**, **116b** that are up to a maximum of 20 feet long, the amount of intrusion into the channel **144** that should be provided for when cutting of the ends of the boards can be extracted or extrapolated from the following chart. For given ambient installation temperatures, and for XTENDEX deck boards manufactured by Carney Timber Company, made from rice hulks, a resin of High Density Polyethylene, combined with certain functional additives such as pigments, lubricants, coupling agents, UV stabilizers, the intrusion allowed in to the channel can be extracted/extrapolated as follows:

Ambient Temperature	Intrusion
35 degrees F.	0.25 inches
75 degrees F.	0.50 inches
110 degrees F.	0.75 inches

[0072] Thereafter, edge boards **140a** and **140d** are mounted to the joists **114e** and **114j** respectively, with the ends of boards **116a** and **116b** being received with sliding transverse movement of the edge boards **140a** into their open channels **144**. Screws like screws **138** can then be used to hold the edge boards **140a**, **140d** in position on the joists **114e** and **114j**, as described above.

[0073] With reference to **FIG. 14**, a deck assembly **210** is shown that employs a plurality of deck boards **216a**, **216b**

(like boards **116** as described above) in conjunction with edge boards **240a**, **240b**, **240c**, **240d** and **240e** (like edge boards **40**). The assembly **210** includes mounting clips **224** (like mounting clips **24**) securing boards **216a**, and **216b** to joists **214**. A first deck span **260** is provided by boards **216a** (only two of which are shown, but would typically involve multiple boards as shown in **FIG. 1**). Likewise a second deck span **262** is shown provided by boards **216b**.

[0074] Boards **216a** are supported by and mounted with clips **224** to joists including end joists **214e** and **214g**, as shown. A first edge board **240a** is shown mounted to joist **214e** and a second edge board **240b** is mounted to joist **214g**. Boards **216a** have their end portions received in channel openings of the edge boards **240a**, **240b**, in a manner like that described above.

[0075] Likewise, boards **216b** are supported by and mounted with clips **224** on joists including end joists **214h** and **214j** shown. A third edge board **240c** is shown mounted to joist **214h** and a fourth edge board **240d** is mounted to joist **214j**. Boards **216b** have their end portions received in channel openings of the respective edge boards, as described above.

[0076] A header board **112** (which may be another piece of lumber like joists **14e-h** and not shown in this Figure), and may be mounted to the ends of joists **214e-j** in a known manner.

[0077] Edge boards **240b** and **240c** are positioned in back to back relation as shown, and can be supported by a support member **241**. The support member **241** can be a nominal 2×4 piece of lumber or other suitable member, and is affixed such as by screws of nails to joists **214g** and **214h**. The back to back positioning of medial edge boards **240b** and **240c** provides for a smooth transition zone on the deck surface between the two spans **260** and **262**. Although there is a raised portion resulting from the upper web portions of edge boards **240b** and **240c**, the sloped surface portions reduce the potential tripping problems associated therewith. Likewise the sloped surface portions of edge boards **240a** and **240b** reduce the potential tripping problems at edges of the deck spans **260** and **262**.

[0078] As shown in **FIGS. 14 and 15**, an additional edge board member **240e** (like member **40**) can be provided in a longitudinal direction and can have the side portions of members **216a**, **216b** received into the open channels of member **240e**. Mitre joints can be provided where the edge boards meet at their ends. The side edge of board **216a** can also be pinned to the underlying ledger board or rim joist, as can edge board **240e**, by use of screws **238** sealed with caps **236**.

[0079] It will be appreciated that edge boards like boards **40** can be provided around all edges of a deck.

[0080] One way of assembling deck assembly **210** is as follows. First the substructure is formed which includes joists **214e-j** are mounted in position, typically being attached to a header like board **112**, and may be supported by beams and structural support posts (not shown). Next, support member **241** can be installed between joists **214g** and **214h**. Next the deck boards **216a** and **216b** can be inserted into the open channels of edge boards **240b**, **240c** respectively and are mounted to the supporting joists using screws like the screws **238** and clips **124**. Screws **238** are

used to pin the deckboards medially along their length so that the boards will expand/contract substantially the same amount in each of the channels of the edge boards that cover their ends. The opposite ends of deck boards **216a** and **216b** can then be appropriately cut off to make the ends even. The cutoff position and the insertion position of the opposite ends of the boards into the channels of edge board members **240b**, **240c**, can be selected dependent upon the ambient temperature and the length of the board, in a manner similar to that described above in relation to **FIG. 13**. The assembly can be configured so that any change in length of each board **216a**, **216b**, due to thermal changes or otherwise, will be forced outward from the position of attachment to joists **214**. Thus, if a joist **214** is chosen for attachment with screws **238** which is in the proximity of the middle of the span, then any expansion/contraction of the boards **216a**, **216b** will be equally divided between the two edge boards. In other words, the expansion/contraction of boards **216a**, will occur equally into and out of edge boards **240a** and **240b**. Likewise, the expansion/contraction of boards **216b**, will occur equally into and out of edge boards **240c** and **240d**.

[0081] Thereafter, edge boards **240a** and **240d** are mounted to the joists **214e** and **214j** respectively, with the ends of boards **216a** and **216b** being received with sliding transverse movement of the edge boards **240a** into their open channels. Screws like screws **238** can then be used to hold the edge boards **240a**, **240d** in position on the joists **214e** and **214j**, as described above.

[0082] Thereafter edge board **240e** can be secured to a header board with the sides of boards **216a**, **216b** being received in the channels.

[0083] The positioning of where the board is fixed relative to the underlying substructure, can be adjusted depending upon the particular application or situation.

[0084] Although edge boards **40** have been depicted for use with deck boards in a decking assembly, they could also be used in other applications, where there is concern for thermal expansion of boards. For example, boards susceptible to expansion and contraction might be employed on siding, and a structure could be employed to utilize edge boards. In such a case, the siding members would typically, but not necessarily, run horizontally, and the edge board members could be employed vertically at the ends of the run on a wall.

[0085] The above described embodiments, are intended to be illustrative only and in no way limiting. The described embodiments of carrying out the invention, are susceptible to modification of form, size, arrangement of parts, and details of operation. The invention, rather, is intended to encompass all such modification within its scope, as defined by the claims.

1. An edge member comprising:

- (a) an enclosed lower channel defined by lower channel wall portions;
- (b) an upstanding wall portion extending from said lower channel wall portions, said upper wall portion defining an open channel and providing an opening into said open channel.

2. An edge member as claimed in claim 1 wherein said upstanding wall portion comprises a vertically upstanding

wall portion and a transverse web portion integrally formed at an upper edge of said upstanding wall portion.

3. An edge member as claimed in claim 2 wherein said opening is defined between an upper web portion of said lower channel wall portions and said transverse web portion.

4. An edge member as claimed in claim 2 wherein said transverse web portion has at least an end portion that is configured with an outer surface that is angled to narrow towards said end of said transverse web portion, to provide a wedge shaped outer surface.

5. An assembly comprising:

- (a) a supporting substructure;
- (b) at least one longitudinally extending board member supported on said substructure, said board member having an end portion;
- (c) an edge member mounted proximate said end portion of said board member, said edge member comprising:
 - (i) a lower portion configured for attachment to said substructure;
 - (ii) an upstanding wall portion extending from said lower portion, said upper wall portion defining an open channel and providing an opening into said open channel;

said edge member being attached to said substructure and said end portion of said board member being received through said opening of said edge member into said open channel, wherein said channel can accommodate longitudinal expansion and contraction of said board member such that said end portion remains substantially within said open channel of said edge member.

6. An assembly as claimed in claim 5 where in said at least one longitudinally extending board member comprises a plurality of board members arranged in side by side relation and supported on said substructure, said board members each having end portions received in side by side relation in said open channel.

7. An assembly as claimed in claim 6 wherein said lower portion of said edge member comprises an enclosed lower channel defined by lower channel wall portions.

8. An assembly as claimed in claim 7 wherein said upstanding wall portion of said edge member comprises a vertically upstanding wall portion and a transverse web portion integrally formed at an upper edge of said upstanding wall portion and wherein said opening of said edge member is defined between said an upper web portion of said lower channel wall portions and said transverse web portion.

9. An assembly as claimed in claim 8 wherein said transverse web portion has at least an end portion that is configured with an outer surface that is angled towards said end of said transverse web portion, to provide a wedge shaped outer surface.

10. An assembly as claimed in claim 6 wherein said board members are made of a material having a thermal coefficient of expansion of greater than 1 m/m/degrees celsius×10 minus 5.

11. An assembly as claimed in claim 10 wherein said board members are made of a material having a thermal coefficient of expansion less than 5 m/m/degrees celsius×10 minus 5.

12. An assembly as claimed in claim 6 wherein said substructure comprises a plurality of spaced joist members oriented generally transversely to said board members.

13. An assembly as claimed in claim 12 wherein said board members are mounted to said joist members with at least one clip member, said clip members permitting longitudinal expansion and contraction of said board members.

14. An assembly as claimed in claim 13 wherein said board members have a side from which a first lip outwardly extends, said first lip having an upper ramp surface extending upwardly away from said side of said first board and wherein said clip comprises a top portion; a downwardly extending tab extending downwardly from said top portion, said downwardly extending tab pressing on said ramp surface of said first lip of said board member securing said first board member to said substructure.

15. An assembly as claimed in claim 13 wherein said board members comprise first and second board members, each of said board members having a side from which a first lip outwardly extends, said first lip having an upper ramp surface extending upwardly away from said side of said first board, said first board member and said second board member extending on said supporting substructure with said first lip of said first board member and said first lip of said second board member each extending adjacent to each other; said clip comprising

a top portion;

two downwardly extending tabs extending downwardly from said top portion defining a medial region between said downwardly extending tabs, said downwardly extending tabs pressing on said ramp surface of said first lip of said first board member and said ramp surface of said first lip of said second board member, thereby pulling said first and second board members inwardly toward said medial region to secure said first and second board members to said substructure.

16. An assembly as claimed in claim 12 wherein said clip is formed from one of plastic, steel and aluminum.

17. An assembly as claimed in claim 14 wherein said board members are made from a reinforced fiber plastic composite.

18. As an assembly as claimed in claim 17 wherein said board members are made from a natural fiber thermoplastic composite material.

19. An assembly as claimed in claim 15 wherein said clips are formed from one of plastic, steel and aluminum.

20. An assembly as claimed in claim 18 wherein said edge board members are made from a natural fiber thermoplastic composite material.

21. An assembly as claimed in claim 5 wherein said end portion of said board member is a first end portion and said board member has a second end portion at an opposite longitudinal end to said first end portion; said assembly further comprising as second edge member mounted proximate said second end portion of said board member, said second edge member comprising:

- (i) lower portion configured for attachment to said substructure;
- (ii) an upstanding wall portion extending from said lower portion, said upper wall portion defining an open channel and providing an opening into said open channel;

said second edge member being attached to said substructure and said second end portion of said board member being received through said opening of said second edge member into said second open channel, wherein said channels of said first and second edge members co-operate to accommodate longitudinal expansion and contraction of said board member such that said end portions remain substantially in said open channel of said edge member.

22. An assembly as claimed in claim 21 wherein said board member is permanently affixed in a longitudinal direction at a medial position to said substructure, such that said longitudinal expansion and contraction of said board member occurs in said open channels of both said first and second edge members.

23. An assembly as claimed in claim 21 wherein said board member is permanently affixed in a longitudinal direction at a medial position to said substructure, such that said longitudinal expansion and contraction of said board member occurs in said open channels of both said first and second edge members.

24. An assembly as claimed in claim 6 wherein said plurality of board members comprises a first set of board members and said assembly further comprising a second set of board members comprising a plurality of board members; said board members of said second set of board members each having first ends and second ends at an opposite longitudinal end to said first end portion;

said assembly further comprising a second edge member mounted proximate said second end portion of each said board member of said second set of board members, said second edge member comprising:

- (i) a lower portion configured for attachment to said substructure;
- (ii) an upstanding wall portion extending from said lower portion, said upper wall portion defining an open channel and providing an opening into said open channel;

said second edge member being attached to said substructure in an opposite direction to said second edge member, but in proximate relation thereto, and said first end portion of said board members of said second set being received through said opening of said second edge member into said open channel of said second edge member, wherein said channel of said second edge member co-operates to accommodate longitudinal expansion and contraction of said board member such that said end portions remain substantially in said open channel of said first and second edge members.

25. An assembly as claimed in claim 21 wherein said board member has a longitudinally extending side portion, and wherein said assembly further comprises a third edge member that comprises:

- (i) a lower portion configured for attachment to said substructure;
- (ii) an upstanding wall portion extending from said lower portion, said upper wall portion defining a third open channel and providing an opening into said third open channel;

said third edge member being attached to said substructure and said side edge portion of said board member

being received through said opening of said third edge member into said third open channel, wherein said channel of said third edge member accommodates transverse expansion and contraction of said edge member such that said side edge portion remains substantially in said open channel of said third edge member.

26. An assembly as claimed in claim 5 wherein said end portion of said board member is a first end portion and said board member has a second end portion at an opposite longitudinal end to said first end portion, said second end portion being fixedly secured at an attachment location to said substructure proximate said second end portion, to resist substantial longitudinal movement of said second end portion relative to said substructure.

27. An assembly as claimed in claim 26 wherein said board member is also mounted to said substructure with at least one clip member spaced between said attachment location and said first end portion, said clip members permitting longitudinal expansion and contraction of said board member.

28. An assembly comprising:

- (a) a supporting substructure;
- (b) first and second longitudinally extending board members supported on said substructure, said first and second board members each having an end portion;
- (d) first and second edge members mounted in back to back relation to each other, said first edge member also mounted proximate said end portion of said first board member, said second edge member also mounted proximate said end portion of said second board member, said first and second edge members each comprising:
 - (i) a lower portion configured for attachment to said substructure;
 - (ii) an upstanding wall portion extending from said lower portion, said upper wall portion defining an open channel and providing an opening into said open channel;

said first and second edge members being attached to said substructure, and said end portion of said first board being received through said opening of said edge member into said open channel, said end portion of said second board member being received through said opening of said second edge member into said open channel, wherein said channels can accommodate longitudinal expansion and contraction of said first and second board members such that said end portions remain substantially in said open channels of said edge members.

29. An assembly as claimed in claim 28 where comprises a first plurality of board members arranged in side by side relation and supported on said substructure, said board members each having end portions received in side by side relation in said open channel of said first board member, and further comprising a second plurality of board members arranged in side by side relation and supported on said substructure, said board members each having end portions received in side by side relation in said open channel of said second board member.

30. An assembly as claimed in claim 29 wherein said lower portion of each of said edge members comprises an enclosed lower channel defined by lower channel wall portions.

31. An assembly as claimed in claim 30 wherein said upstanding wall portion of each of said edge members comprises a vertically upstanding wall portion and a transverse web portion integrally formed at an upper edge of said upstanding wall portion and wherein said opening of said edge member is defined between said an upper web portion of said lower channel wall portions and said transverse web portion.

32. An assembly as claimed in claim 31 wherein said transverse web portion of each of said first and second edge members has at least an end portion that is configured with an outer surface that is angled towards said end of said transverse web portion, to provide a wedge shaped outer surface.

33. An assembly as claimed in claim 29 wherein said board members are made of a material having a thermal coefficient of expansion of greater than $1 \text{ m/m/degrees celsius} \times 10$ minus 5.

34. An assembly as claimed in claim 33 wherein said board members are made of a material having a thermal coefficient of expansion less than $5 \text{ m/m/degrees Celsius} \times 10$ minus 5.

35. An assembly as claimed in claim 29 wherein said substructure comprises a plurality of spaced joist members oriented generally transversely to said board members.

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