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FOREIGN PATENTS

1,165,670 10/1958 France 52/403

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[54] WALL PANEL CONSTRUCTION AND ASSEMBLY INCLUDING IMPROVED EDGE AND BOTTOM SEALING

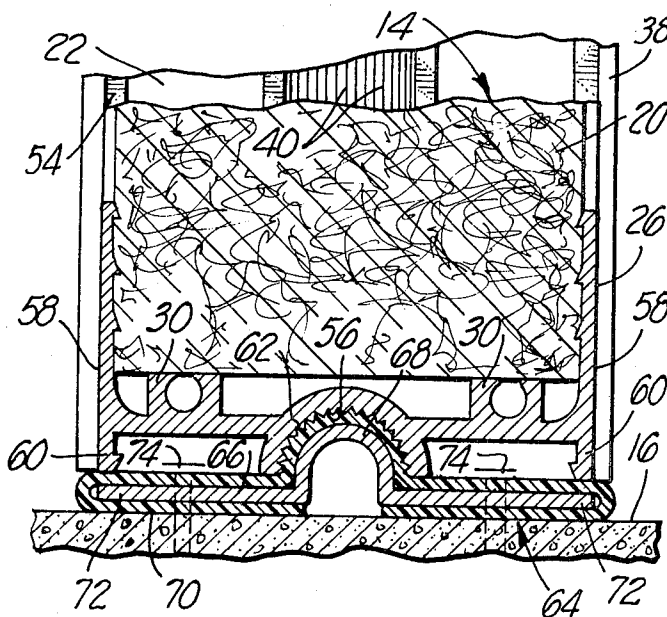
3 Claims, 4 Drawing Figs.

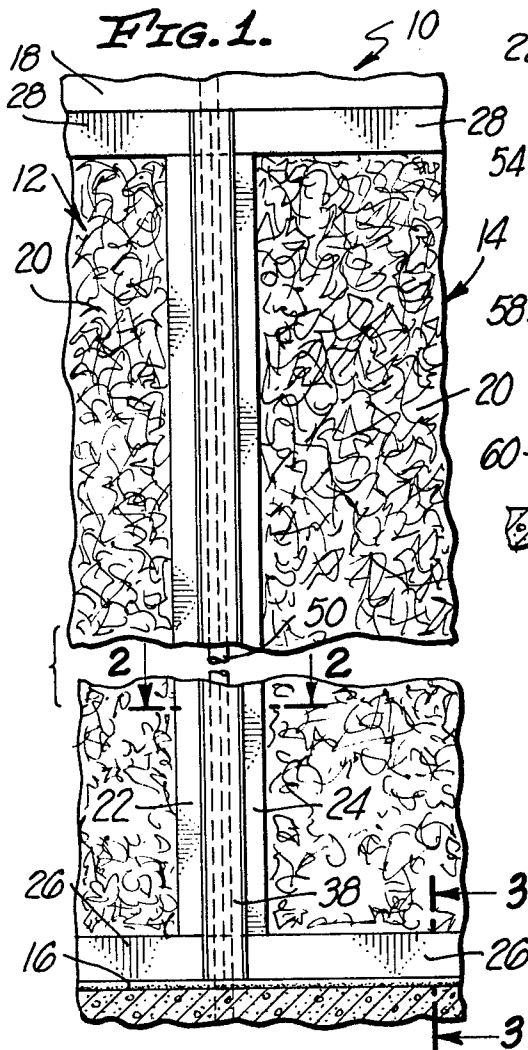
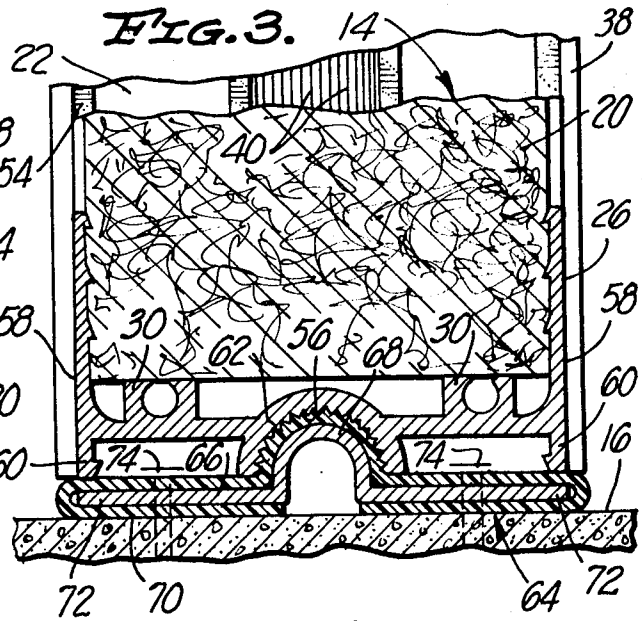
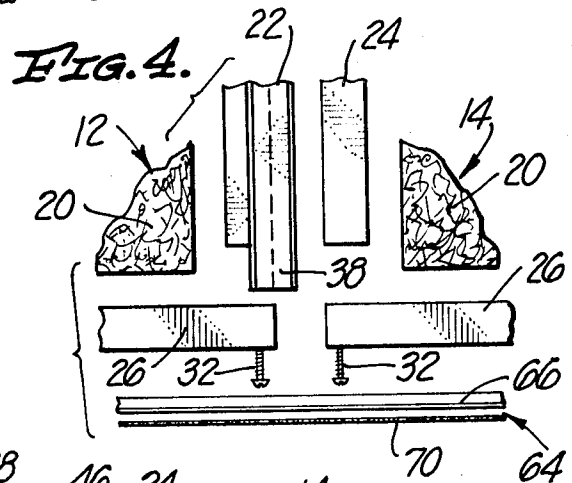
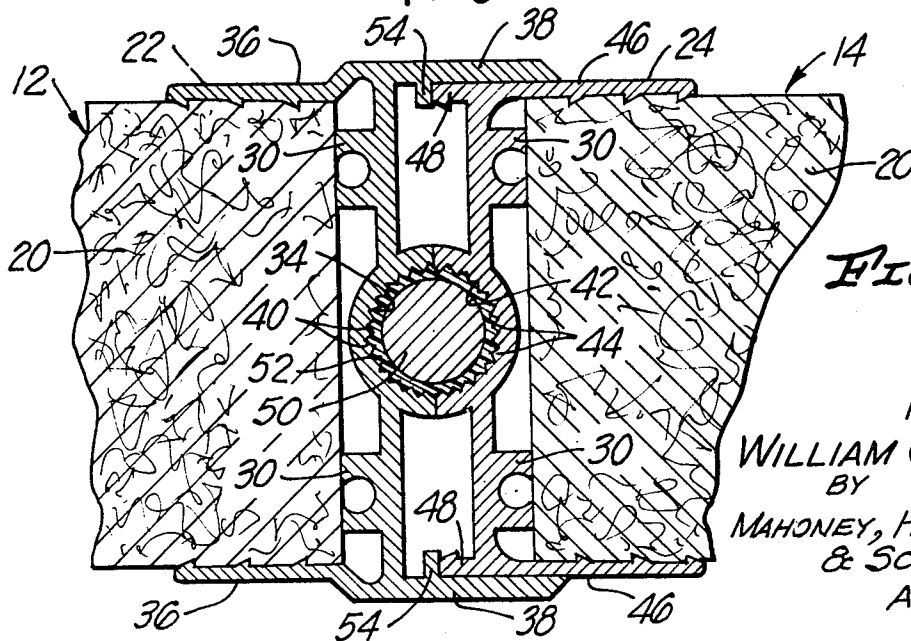
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[50] Field of Search. 52/586,
403, 241

[56] References Cited UNITED STATES PATENTS

1,743,492	1/1930	Sipe.....	52/586 X
2,862,254	12/1958	Meek	52/586 X
3,014,561	12/1961	Ratner et al.	52/581 X
3,191,724	6/1965	De Ridder	52/588 X
3,324,615	6/1967	Zinn	52/241
3,334,455	8/1967	Russell	52/586 X
3,359,022	12/1967	Russell	52/586 X
3,382,639	5/1968	Smita et al.	52/586 X

ABSTRACT: Upright wall panels have vertical side edges thereof aligned and continuously vertically extending side edge opening recesses, semicircular in horizontal cross section, aligned to form an assembled substantially circular recess between assembled side edges, each recess preferably having continuously vertically extending serrations formed therein and spaced horizontally therearound. The panel side edges horizontally telescope a circular cross section, vertical tie bar received within the assembled recesses, the tie bar having a resilient material sleeve the entire vertical extent of said panel side edges horizontally compressed over and inwardly between the recess serrations. At the same time, opposite face surface flanges at one of the panel side edges telescope and horizontally abut similar face surface flanges of the other panel side edge. Bottom edges of the assembled panels rest downwardly on a baseplate having an upwardly extending, semicircular projection received upwardly into downwardly opening, similar serration formed recesses at the panel bottom edges and a resilient material strip covering the baseplate is compressed over the baseplate projection over and between the serrations of the panel bottom edge recesses. Also, parts of the panel bottom edges at opposite face surfaces thereof downwardly compress the resilient material strip against the baseplate and the resilient material strip extends and is compressed beneath the under surface of the baseplate and a horizontal supporting surface.





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WALL PANEL CONSTRUCTION AND ASSEMBLY INCLUDING IMPROVED EDGE AND BOTTOM SEALING

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of and discloses and claims broad patentable concepts disclosed and claimed in my copending application, Ser. No. 661,854, filed Aug. 21, 1967, entitled, "Building Structure Having Improved Wall Panel Sealing," and now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to wall panel constructions and assemblies incorporating a unique compressed resilient material sealing between adjoining panel side edges and about a tie bar extending vertically between said panel side edges. More particularly, this invention relates to such novel panel side edge sealing which is automatically formed with maximum sealing characteristics between the adjacent side edges of the panel merely upon proper panel side edge assembly and does not require any special skills or superior craftsman ability. Still further, a unique bottom edge sealing of the panels may be incorporated into the same panel construction, again providing full and maximum sealing qualities by a compressed resilient material seal at the panel bottom edges accomplished merely through the proper panel assembly and without the necessity of special skills or craftsmanship.

In the fabrication and erection of building structures, it has become quite common in certain types of such building structures to form the finished structure walls from preassembled wall panels which merely require the proper positioning thereof at the building site, the outward facing surfaces of the panels forming the outer finished wall surface of the structure. In such prior structures, and in view of the outward exposure of the wall panels to all types of weather, it has usually been previously necessary to fabricate some form of partition for covering between adjacent panel edges in order to provide a weathertight joint therebetween. This has been particularly true in the types of structures wherein a structural tie bar has been located between adjacent panel edges, such as a metal tie bar or rod passing vertically between the panel edges and securing or tying the structure roof portion to the base or footer of the structure, such required partition or covering usually consisting of a boxlike enclosure for the tie bar between the panel edges and against which the panel edges may abut and seal.

Furthermore, with these prior structures, additional sealing problems are encountered between bottom edges of the assembled panels and the bases or footers upon which such panel bottom edges must rest and be supported. Again, this panel bottom edge sealing has previously required relatively complicated and involved panel base seals and covers resulting in additional expense. Even then, however, serious maintenance problems must be confronted from time to time in order to insure that weathertight seals at the panel base edges are retained.

With the prior panel constructions and assemblies, therefore, it is obvious that the provision of the necessary side and bottom edge seals requires the application of a considerable amount of skilled craftsmanship and labor. Also, all of this additional construction and labor required for the side and bottom edge sealing of the panels during the panel assembly requires an amount of preplanning and layout, the overall result being that of time consumption and additional construction expense. Thus, the prior wall panel constructions and assemblies have not been entirely satisfactory and there has been a longfelt want and need for a marked improvement in order to reduce overall construction expense, improve the wall panel side and bottom edge sealing and eliminate the necessity of skilled labor and time consumption during the wall panel erection and assembly.

OBJECTS AND SUMMARY OF THE INVENTION

It is, therefore, an object of my invention to provide a wall panel construction and assembly for building structures wherein the structure walls may be formed of side edge adjacent and aligned wall panels telescoping a structural tie bar extending vertically therebetween, yet the entire weatherproofing required between the adjacent panel side edges and the tie bar is automatically provided through the unique formation of the assembled and cooperating elements. According to the present invention, the adjacent side edges of the wall panels are provided with matching recesses therein extending the entire vertical extent of said wall panels, said recesses being semicircular in horizontal cross section and positioned intermediate side face surfaces of the wall panels so as to telescope a circular cross section, vertical tie bar therebetween during the panel adjacent assembly. Furthermore, a resilient material sleeve is provided on the vertical tie bar with all elements being precalculated so as to compress the resilient material sleeve of the tie bar within the panel side edge recesses and thereby provide a perfect weatherproof seal between the panel side edges merely as the result of the proper assembly thereof.

It is a further object of my invention to provide a wall panel construction and assembly for building structures of the foregoing general character wherein in order to insure maximum weatherproof sealing between the resilient material sleeve of the tie bar and the panel side edges within the recesses thereof, each of the panel side edges within said recesses may be provided with a series of spaced, vertically extending serrations therein. As a result, when the panel side edges are assembled and the tie bar is telescoped by the panel side edge recesses, the resilient material sleeve of the tie bar will be compressed over and between such serrations preventing any possibility of air or moisture passing horizontally through the final assembly. Also, inherent in the provision of the resilient material sleeve for the tie bar and the assembled compression thereof, particularly with the still further addition of the described serrations, is the assurance that slight misalignments between the panel side edges and the tie bar may be tolerated while still insuring a perfect weathertight seal therebetween.

It is also an object of my invention to provide a wall panel construction and assembly for building structures which may include the foregoing weathertight sealing characteristics as a result of the unique described interfitting elements thereof which may further incorporate uniquely cooperable face surface portions of the panel side edges including telescoping flange means which complete the weatherproofing seal between the panel side edges at the face surfaces thereof during the panel side edge assembly. At least one of the panel side edges may be provided with edge projecting flanges at the face surfaces thereof extending between the panel side edges and telescoping the face surfaces of the other of said panels, thereby closing the joint between the panel side edges and the enclosed tie bar sealed therein. In the preferred form, edge projecting flanges are provided at the face surfaces of each of the panel side edges, the flanges of one of the panel side edges telescoping the flanges of the other of the panel side edges, in any event, always providing abutment between the respective panel side edges in the face surface zones thereof and providing the aforesaid covering for the panel side edge sealed tie bar.

It is still a further object of my invention to provide a wall panel construction and assembly for building structures which may include all of the foregoing advantageous features and assemblies wherein an equally unique weatherproofing sealing means may be provided at the aligned panel bottom edges again accomplished virtually automatically upon proper panel erection and assembly as a result of particularly formed cooperating panel and supporting base strip or plate elements. During the panel erection and assembly, downwardly opening,

semicircular recesses at the panel bottom edges are telescoped downwardly over a matching upward projection extending continuously along a base strip or plate upon which the panel bottom edges are supported and a resilient material sealing strip overlying the base strip or plate is compressed between the base strip projection and the panel bottom edges within said bottom edge recesses, preferably over and between recess serrations similar to the panel side edges. At the same time, downwardly extending flanges at the panel face surfaces of the panel bottom edges compress other parts of the resilient material strip against extremities of the base strip, and said resilient material strip may likewise be doubled back beneath the base strip extremities and be compressed between the base strip and a horizontal supporting surface over which the base strip extends.

Other objects and advantages of my invention will be apparent from the following specification and the accompanying drawing which are for the purpose of illustration only.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary, side elevational view of two assembled wall panels supported on a horizontal supporting surface incorporating an embodiment of the unique panel side edge and bottom edge sealing according to the principles of the present invention;

FIG. 2 is an enlarged, fragmentary, horizontal sectional view looking in the direction of the arrows 2—2 in FIG. 1 and more clearly showing the unique panel side edge sealing of the present invention;

FIG. 3 is an enlarged, fragmentary, vertical sectional view looking in the direction of the arrows 3—3 in FIG. 1 and more clearly showing the unique panel bottom edge sealing of the present invention; and

FIG. 4 is a fragmentary, exploded view of the panel assembly of FIG. 1 and more clearly showing the various individual elements or parts thereof.

DESCRIPTION OF THE BEST EMBODIMENT CONTEMPLATED

Referring to the drawings, a typical building structure is generally indicated at 10 and incorporates upright, side edge aligned, first and second wall panels 12 and 14 supported on a usual concrete footer or horizontal supporting surface 16 and, in turn, supporting any usual form of roof 18. Each of the wall panels 12 and 14 is formed substantially identically including panel members 20 of any usual panel material, such as wood or composition materials, having the edges thereof compressively telescoped by unique forms of edge moldings to be hereinafter more particularly described and incorporating important principles of the present invention. As viewed in FIG. 1, the first and second wall panels 12 and 14 each include a right side edge molding 22, a left side edge molding 24, both of which extend vertically, and a bottom edge molding 26 and a top edge molding 28, both of which extend horizontally.

All of the left side edge, bottom edge and top edge moldings 24, 26 and 28, are preferably identical in cross section on each of the wall panels 12 and 14, with the right side edge moldings 22 thereof being identical in cross section but of different cross section than the other three edge moldings of each wall panel. Thus, the left side edge, bottom edge and top edge moldings 24, 26 and 28, may be cut to proper length for each wall panel from a single form of metal extrusion and the right side edge molding 22 for each wall panel from a different single form of metal extrusion providing typical mass production fabrication. Furthermore, all of the edge moldings include usual fastener receiving portions 30 so that the first and second wall panels 12 and 14 may be individually assembled in the manner illustrated in FIG. 4 and retained in such individual assembly by typical fasteners 32.

More particularly to the principles of the present invention and referring for the moment to FIGS. 1 and 2, the right side edge molding 22 of the first wall panel 12 has formed therein a

recess 34 extending totally vertically of said wall panel and formed semicircular in horizontal cross section. Furthermore, the recess 34 is positioned horizontally intermediate or preferably midway of face surfaces 36 of the first wall panel 12, that is, horizontally midway between vertically extending and edge projecting opposite flanges 38 formed at the panel face surfaces 36. Also, a series of horizontally spaced and continuously vertically extending serrations 40 are formed in the right side edge molding 22 of the first wall panel 12 within the recess 34, the serrations preferably being equally spaced throughout the surfaces of the recess.

The left side edge molding 24 of the second wall panel 14 is similarly formed with a vertically extending recess 42 which is semicircular in horizontal cross section extending the total vertical extent of the second wall panel and oppositely matching the recess 34 of the first wall panel with similar serrations 44 formed on the surface thereof. The recess 42 on the left side edge molding 24 of the second wall panel 14 is likewise similarly positioned intermediate and preferably midway between opposite face surfaces 46 and opposite vertically extending and edge projecting face surface flanges 48 of the left side edge molding. The flanges 48 of the left side edge molding 24 project edgewise a lesser distance and are spaced a lesser distance apart than the flanges 38 on the right side edge molding 22, the relative dimensioning of the respective flanges being such as to permit telescoping of the flanges 38 over the flanges 48 during the aligned assembly of the first and second wall panels 12 and 14 as will be hereinafter more clearly described.

A vertical tie bar or tie rod 50 is positioned in the building structure 10 extending between the horizontal supporting surface 16 and the roof 18, said tie bar being formed of metal and preferably being circular in horizontal cross section. Important to the principles of the present invention is the fact that the diameter of the tie bar 50 is spaced less than the common diameter of the matching recesses 34 and 42 on the right and left side edge moldings 22 and 24 of the first and second wall panels 12 and 14. Additionally, a resilient material sleeve 52 is positioned covering the tie bar 50 between the building structure horizontal supporting surface 16 and the roof 18 with the outer diameter of the sleeve when the sleeve is uncompressed being spaced larger than said recess common diameter.

Thus, when the first and second wall panels 12 and 14 are assembled in the building structure 10 in their upright positions as shown in FIGS. 1 and 2, the vertically extending right side edge molding 22 of the first wall panel is aligned with the left side edge molding 24 of the second wall panel and the wall panels are brought edgewise together telescoping the tie bar 50. As shown in FIG. 2, during such tie bar telescoping, the flanges 38 of the right side edge molding 22 outwardly telescope over and inwardly abut the flanges 48 of the left side edge molding 24, and such telescoping is continued until the extremities of the flanges 48 on the left side edge molding 24 edgewise abut inwardly extending locating flanges 54 on the flanges 38 of the right side edge molding 22. At the same time, the respective side edge molding recesses 34 and 42, being aligned and oppositely matching, are brought together one opening into the other forming a completed circular cross section recess totally surrounding and telescoping the tie bar 50 and its resilient material sleeve 52, the right and left side edge moldings 22 and 24 ultimately abutting immediately outwardly adjacent such recesses.

In view of the particular dimensioning of the recesses 34 and 42 formed in the right and left side edge moldings 22 and 24 of the first and second wall panels 12 and 14 relative to the particular dimensioning of the tie bar 50 and the resilient material sleeve 52 thereon, as the right and left side edge moldings approach edgewise abutment immediately outwardly adjacent the recesses, the resilient material sleeve of the tie bar is compressed between the right and left side edge moldings and the tie bar substantially throughout the recesses and around the tie bar over and between the recess serrations 40 and 44. In order to augment and assure that such proper

and determined compression of the tie bar resilient material sleeve 52 takes place during this panel assembly, it is preferred that the parts of the second wall panel 14 forming the edgewise extremities of the flanges 48 will be aligned with the edgewise extremities of the panel parts immediately outwardly adjacent the recess 42, and the facing surfaces of the locating flanges 54 on the right side edge molding 22 for abutment with the edgewise extremities of the flanges 48 on the left side edge molding 24 will be aligned with the parts of the left side edge molding immediately outwardly adjacent the recess 34 thereof, so that there is substantially simultaneous abutment between the right and left side edge moldings immediately outwardly adjacent the recesses at the same time that the edgewise extremities of the flanges 48 on the left side edge molding about the locating flanges 54 on the right side edge molding. As can be clearly seen in FIG. 2, the various surface abutments as described result in closed voids being formed between the right and left side edge moldings 22 and 24 in the final assembly from the abutting parts immediately outwardly adjacent the recesses 34 and 42 outwardly to the abutting parts at the panel face surfaces 36 and 46.

Further according to the preferred form of the present invention, and as was hereinbefore referred to, it is preferred to form the bottom edge moldings 26 of the first and second wall panels 12 and 14 from the same extrusion and of the same shape as the left side edge moldings 24 of such wall panels. As best seen in FIG. 3, therefore, the bottom edge moldings 26 of both of the first and second wall panels 12 and 14 are formed with a downwardly opening recess 56 semicircular, in this case, in vertical cross section and intermediate, preferably midway between, face surfaces 58 of the bottom edge molding. Furthermore, opposite, edgewise downwardly projecting flanges 60 are formed at the face surfaces 58 preferably having downward edge extremities outwardly horizontally aligned with bottom edge molding parts immediately outwardly adjacent the recess 56.

Both the recesses 56 and the flanges 60 of the bottom edge moldings 26 extend continuously horizontally along the first and second wall panels 12 and 14. Also, the bottom edge moldings 26 of these wall panels have a series of spaced serrations 62 formed within the recesses 56 extending horizontally lengthwise continuously thereof so that, as stated, the bottom edge moldings 26 may be formed from the same extrusions as the panel left side edge moldings 24. During the edgewise assembly of the first and second wall panels 12 and 14, however, the bottom edge moldings 26 thereof are assembled downwardly with a unique form of bottom plate or strip assembly generally indicated at 64.

As shown in FIG. 3, the bottom plate assembly 64 includes a continuously horizontally extending bottom plate 66 having an intermediate, preferably midway, vertically upwardly extending projection 68 likewise extending continuously horizontally throughout the bottom plate 66. The bottom plate projection 68 is semicircular in vertical cross section matching the downwardly opening recess 56 of the panel bottom edge moldings 26 and a resilient material strip or layer 70 overlies and covers the projection. The resilient material strip 70 also preferably extends outwardly from the bottom plate projection 68 over the bottom plate 66 to bottom plate extremities 72, downwardly around said extremities and continuously beneath the bottom plate and the horizontal supporting surface 16 upon which said bottom plate assembly 64 is mounted.

Thus, prior to the upright assembly of the first and second wall panels 12 and 14, it is determined the location of the structure wall of the building structure 10 which said wall panels are to form and the bottom plate 66 with its covering resilient material strip 70 is properly secured in place on the horizontal supporting surface 16 by usual fasteners 74. The then upright assembly of the first and second wall panels 12 and 14 results in the bottom edge moldings 26 thereof being endwise aligned and brought down onto the bottom plate assembly 64 so that the bottom edge molding recesses 56, now

horizontally aligned, downwardly telescope the bottom plate projection 68 compressing its covering resilient material strip 70 between said bottom plate projection and the bottom edge moldings over and between the serrations 62 of the bottom edge molding recesses 56. At the same time, the telescoping of the bottom plate projection 68 by the bottom edge molding recesses 56 brings the bottom edge molding flanges 60 downwardly onto the bottom plate extremities 72 compressing the resilient material strip 70 over said bottom plate extremities, all as a result of proper relative dimensioning between the various portions of the bottom edge moldings 26 and the bottom plate assembly 64.

According to the principles of the present invention, therefore, during the upright assembly of the first and second wall panels 12 and 14 in the building structure 10, the tie bar 50 is telescoped by the right and left side edge moldings 22 and 24 of the first and second wall panels and the covering resilient material sleeve 52 is compressed therebetween forming a complete airtight and watertight or weathertight seal therebetween, the inward abutment of the flanges 38 of the right side edge molding 22 with the flanges 48 of the left side edge molding 24 augmenting or increasing such weathertight seal. At the same time, during such upright assembly of the first and second wall panels 12 and 14, the bottom edge moldings 26 thereof downwardly telescope and rest upon the bottom plate assembly 64 compressing the resilient material strip 70 covering the bottom plate 66 between the bottom edge moldings and the bottom plate projection 68 within the bottom edge molding recesses 56, compressing the resilient material strip 70 between the bottom edge molding flanges 60 and the bottom plate extremities 72, and compressing the resilient material strip 70 between the bottom plate 66 and the horizontal supporting surface 16. This thereby further forms an airtight and watertight or weathertight seal between the bottom edge moldings 26 of the first and second wall panels 12 and 14 and the horizontal supporting surface 16 upon which said panels are positioned.

I claim:

1. In a wall panel assembly, the combination of: a first upright wall panel having a generally vertical side edge, said first panel edge having a continuously vertically extending recess formed therein between panel top and bottom edges and intermediate opposite panel face surfaces, said recess being semicircular in horizontal cross section opening outwardly of said first panel side edge; a second upright wall panel assembled aligned with said first panel and having a generally vertical side edge aligned with and horizontally adjacent said first panel side edge, said second panel side edge having a continuously vertically extending recess formed therein horizontally oppositely matching and opening into said first panel edge recess with said recesses of said assembled panels in horizontal cross section defining a substantially complete circle; a vertical tie bar substantially circular in horizontal cross section and positioned substantially one-half in each of said first and second panel side edge recesses and vertically continuously thereof, a resilient material sleeve on said tie bar completely covering said tie bar continuously of said panel side edge recesses and horizontally compressed substantially throughout said panel side edge recesses between said tie bar and said panel side edges; each of said first and second panel side edges being formed with continuously vertically extending and horizontally spaced serrations in said panel side edge recess extending continuously entirely vertically of said panel side edge; the relative cross-sectional sizes of said panel side edge recesses and said tie bar and the thickness of said tie bar resilient material sleeve being predetermined automatically creating said resilient material sleeve compression substantially throughout said panel side edge recesses upon said first and second panel assembly, said resilient material sleeve of said tie bar being horizontally compressed over and inwardly between said serrations of said panel side edge recesses upon said first and second panel assembly; and parts of said first and second panel side edges at

each of said opposite face surfaces of said panels abutting continuously entirely vertically along said panel side edges of said panel assembly, said abutting parts of said first and second panel side edges at each of said opposite face surfaces of said panels including flanges at said opposite face surfaces of said first panel side edge projecting toward and telescoping over said opposite face surfaces of said second panel side edge, said first panel side edge flanges having inward surfaces horizontally inwardly abutting said opposite face surfaces of said second panel side edge continuously entirely vertically along said panel side edges of said panel assembly.

2. A wall panel assembly as defined in claim 1 in which said first and second panel side edges abut immediately adjacent said panel side edge recesses continuously entirely vertically along said panel side edges of said panel assembly; and in which said first and second panel side edges are substantially free of abutment in zones extending oppositely outwardly from said abutments immediately adjacent said panel side edge recesses to locations spaced inwardly from each of said first panel side edge flanges and each of said opposite face surfaces of said second panel side edge.

3. A wall panel assembly as defined in claim 1 in which bottom edges of each of said first and second panels have substantially identical and horizontally aligned continuously horizontally extending recesses formed therein entirely between panel side edges and spaced inwardly from opposite panel face surfaces, said recesses being semicircular in vertical cross section

opening downwardly of said panel bottom edges; in which a base member is secured to a horizontal mounting surface underlying and extending horizontally along said panel bottom edges, said base member having an upward projection extending along said panel bottom edges semicircular in vertical cross section substantially matching and received in said panel bottom edge recesses, a resilient material strip entirely overlying an upper surface of said base member entirely along said base member compressed between said base member projection and said panel bottom edge recesses, said resilient strip also being compressed between said panel bottom edges and said base member at zones commencing at and extending inwardly from said panel opposite face surfaces and spaced outwardly panel bottom edge recesses; in which said resilient strip at said base member extends continuously downwardly around base member extremities adjacent said panel face surfaces and inwardly beneath said base member being compressed between said base member and said horizontal supporting surface; in which each of said first and second panel bottom edges is formed with continuously horizontally extending and vertically spaced serrations in said panel bottom edge recess extending continuously entirely horizontally of said panel bottom edge; and in which said resilient material strip over said base member is vertically compressed over and inwardly between said serrations of said panel bottom edge recesses upon said first and second panel assembly.

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