Oct. 10, 1967 A. J. CORNELISSEN 3,345,790

MODULAR CONSTRUCTION SYSTEM

Original Filed Nov. 7, 1960 6 Sheets-Sheet 1

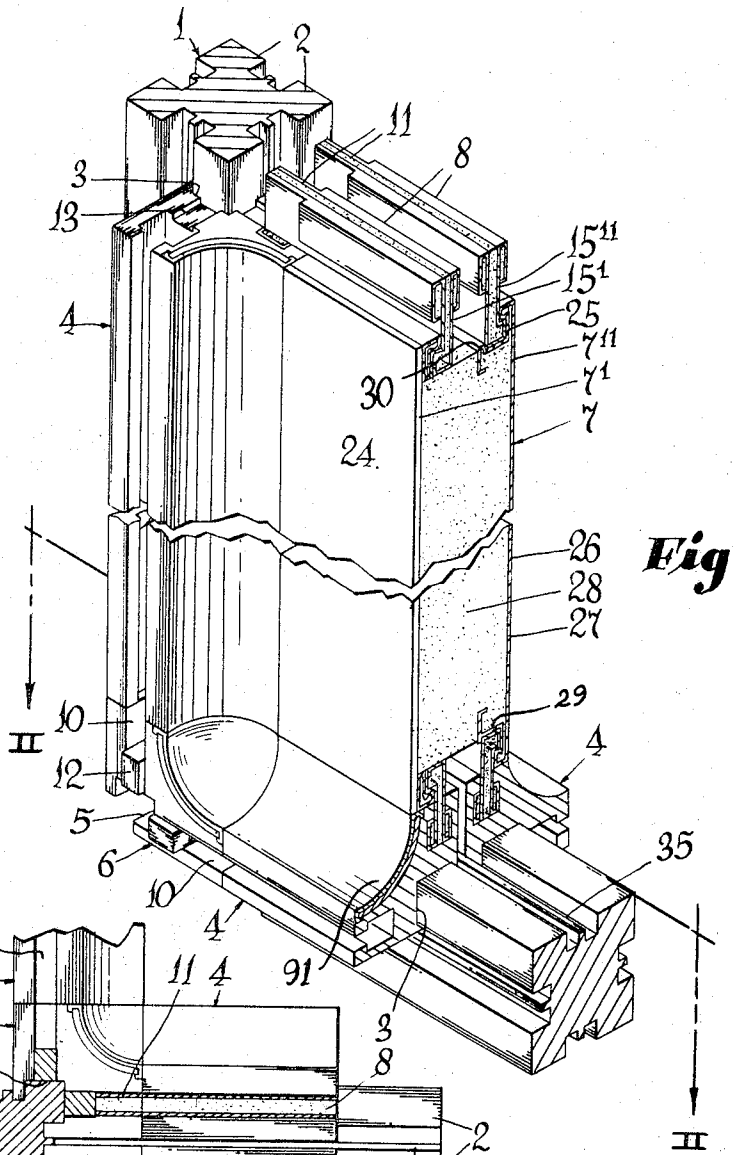


Fig. 1

Fig. 2

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Oct. 10, 1967 A. J. CORNELISSEN 3,345,790

MODULAR CONSTRUCTION SYSTEM

Original Filed Nov. 7, 1960 6 Sheets-Sheet 2

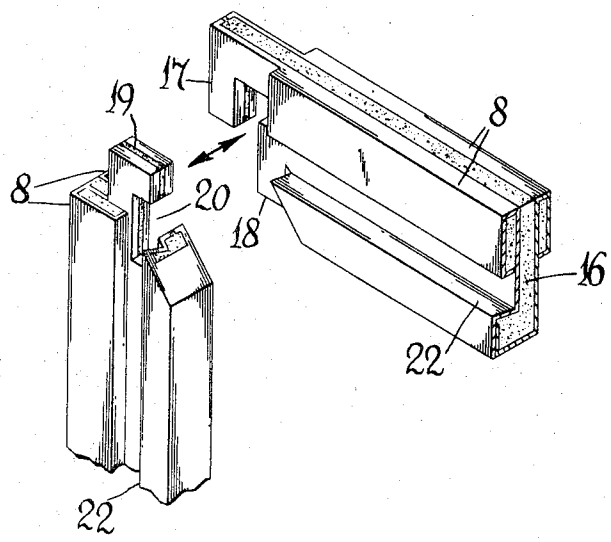


Fig. 3

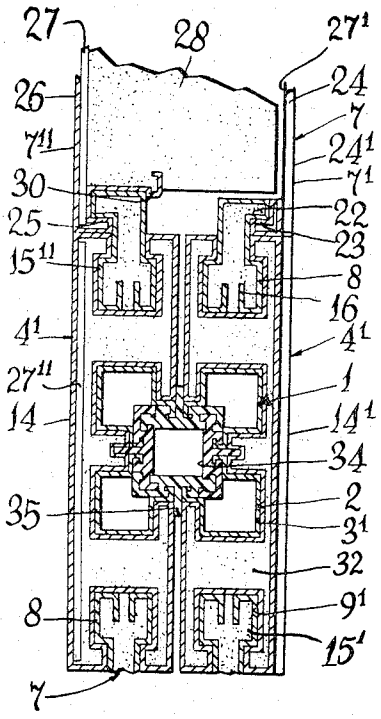


Fig. 5

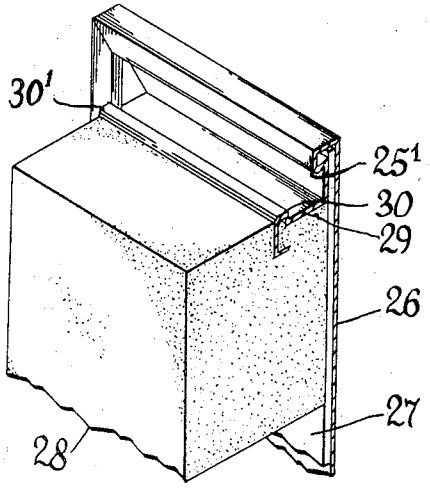


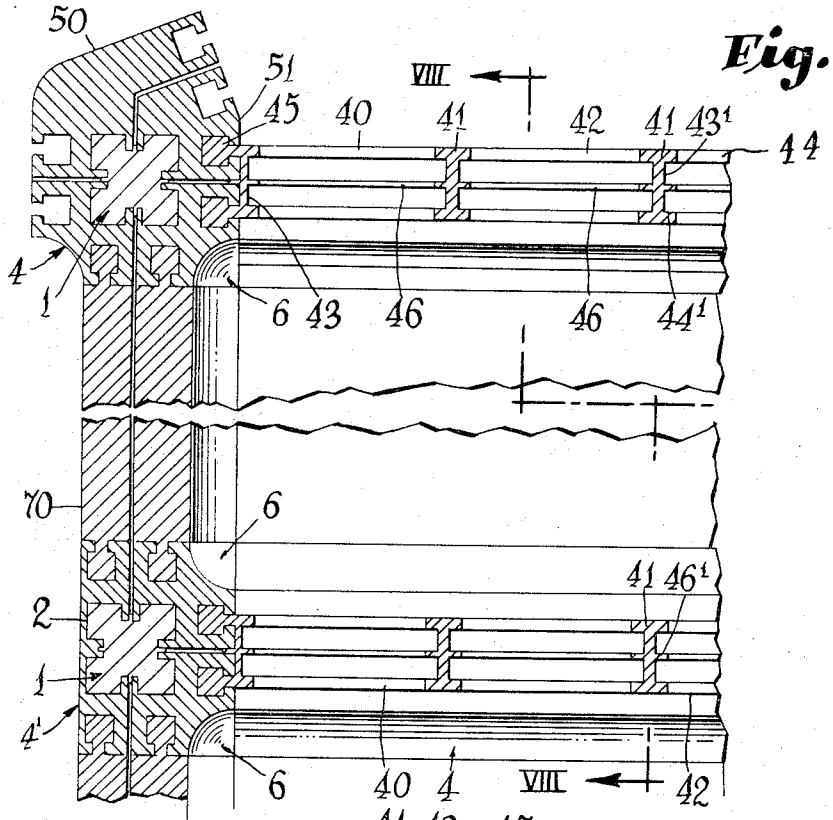
Fig. 4

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MODULAR CONSTRUCTION SYSTEM

Original Filed Nov. 7, 1960 6 Sheets-Sheet 3

Fig. 7



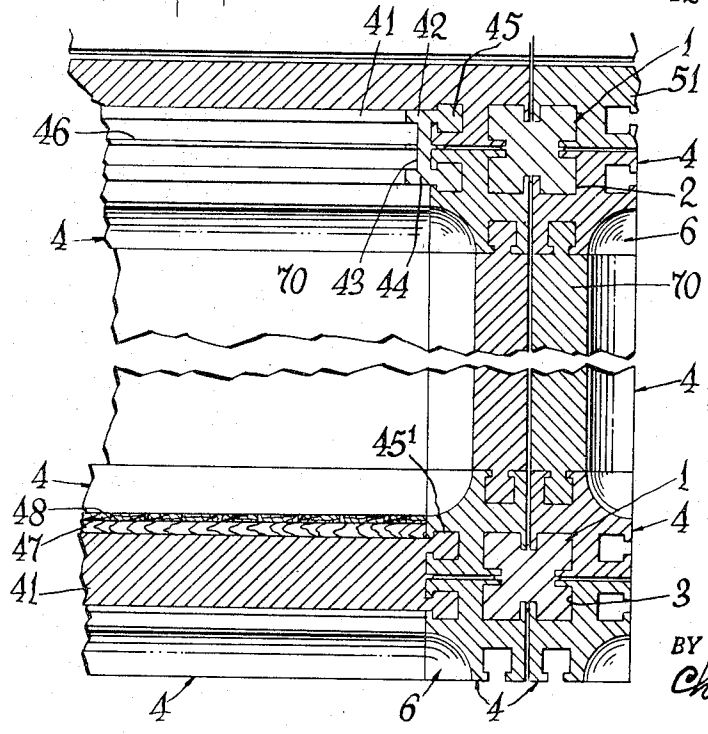


Fig. 8

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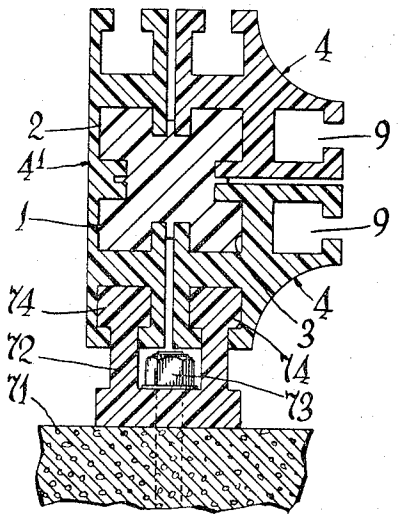


Fig. 9

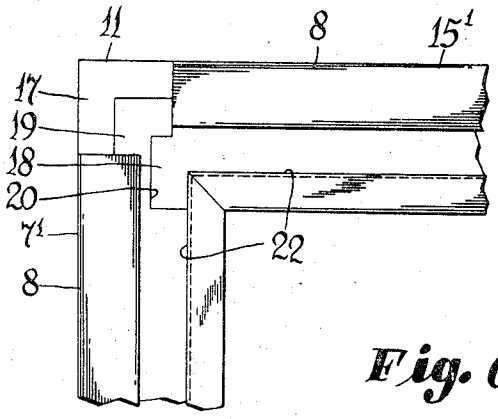


Fig. 6

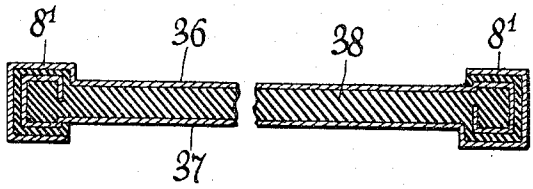


Fig. 10.

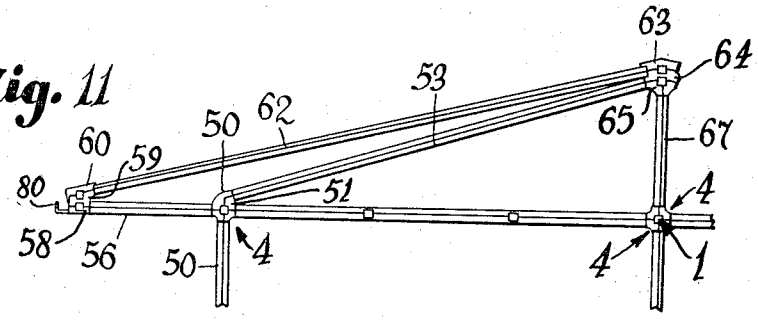
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Oct. 10, 1967 A. J. CORNELISSEN 3,345,790

MODULAR CONSTRUCTION SYSTEM

Original Filed Nov. 7, 1960 6 Sheets-Sheet 5

Fig. 11



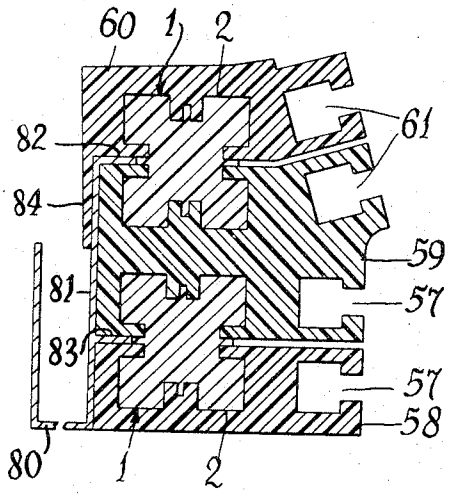


Fig. 13

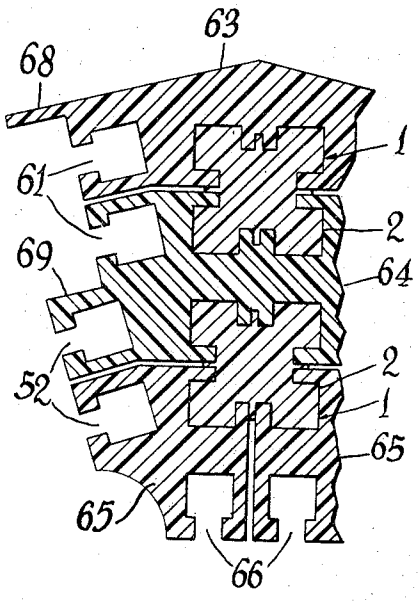


Fig. 14

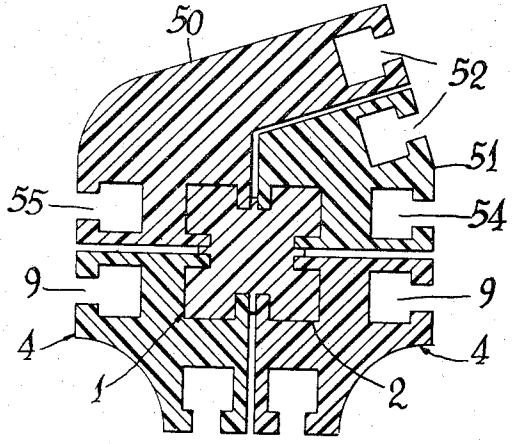


Fig. 12

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Oct. 10, 1967 A. J. CORNELISSEN 3,345,790

MODULAR CONSTRUCTION SYSTEM

Original Filed Nov. 7, 1960 6 Sheets-Sheet 6

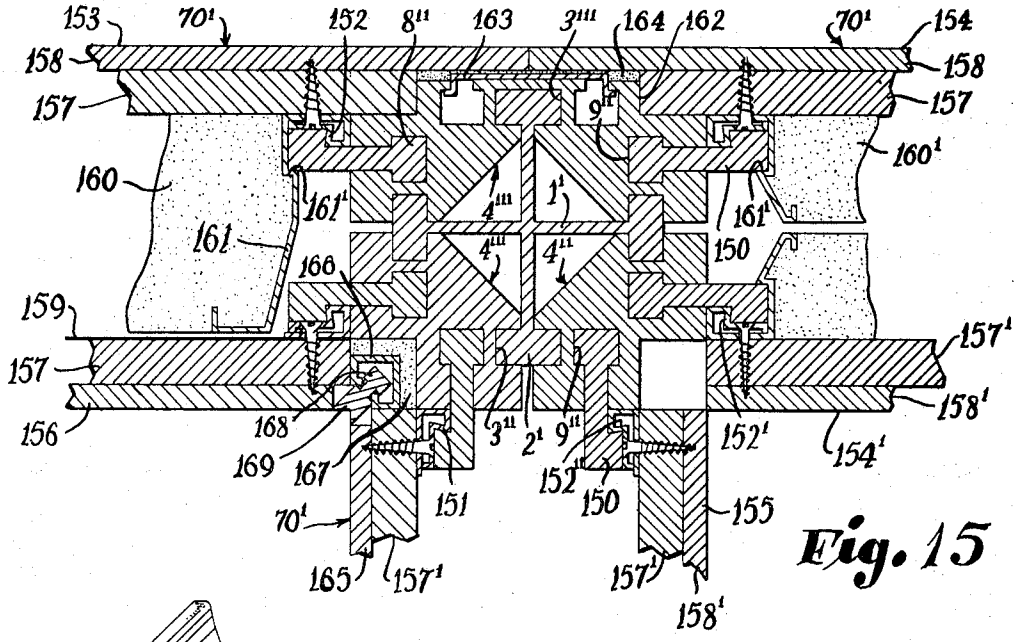


Fig. 15

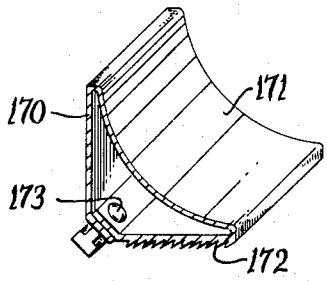


Fig. 16

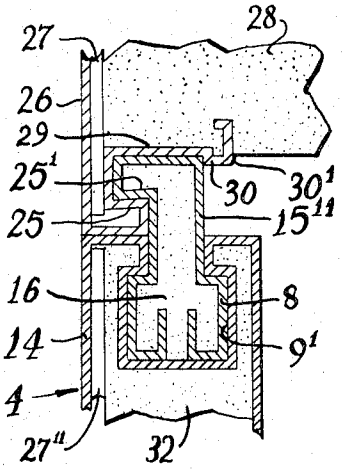


Fig. 17

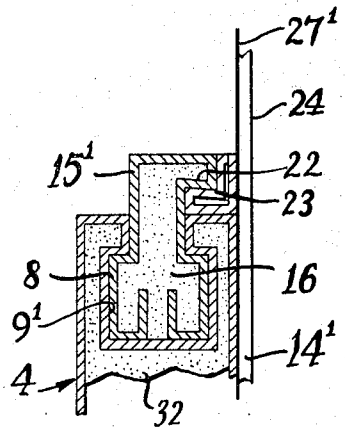


Fig. 18

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United States Patent Office 3,345,790 Patented Oct. 10, 1967

3,345,790

MODULAR CONSTRUCTION SYSTEM

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Original application Nov. 7, 1960, Ser. No. 67,530, now Patent No. 3,251,169, dated May 17, 1966. Divided and this application June 8, 1965, Ser. No. 462,372

10 Claims. (Cl. 52—476)

This application is a division of my pending application Ser. No. 67,530, filed Nov. 7, 1960, for Modular Construction System, now Patent No. 3,251,169, dated May 17, 1966.

This invention relates generally to the construction art, and more specifically to a new and useful system of modular building construction, utilizing preformed parts which are assembled on the site to comprise a complete structure.

Prefabricated, modular constructions are well known, and are coming into increasingly wide spread use. However, structures of this type heretofore have possessed certain disadvantages. For example, many of them are extremely utilitarian and functional in appearance, and therefore are unacceptable for fine residential and like purposes where decor and finish are particularly important. Also, many systems heretofore proposed present troublesome assembly and maintenance problems, or have other limitations which curtail their use. At the same time, it is becoming increasingly imperative that ways and means be found to reduce or at least hold down the cost of housing, and the reduction in labor, made possible by preformed, ready-to-assemble housing, has become increasingly important in this respect.

The primary object of my invention is to provide a modular construction which will satisfy all normal aesthetic requirements, so that it can be used where appearance is of great importance as well as for strictly utilitarian purposes.

Another object of my invention is to provide a construction which is relatively economical to manufacture and which is easy to assemble on the site, whereby the overall cost is relatively low.

In addition, it is an object of my invention to provide a modular construction which, while readily assembled without special tools or separate fastenings, is extremely strong and durable when assembled.

Still another object of my invention is to provide a modular construction utilizing for the most part a very few basic components, thereby effecting an economy.

Still another object of my invention is to provide a construction wherein the decor can be changed as desired, to provide a variety of wall colors, textures and patterns, both at the time of construction, and thereafter.

In one aspect thereof, a building structure constructed in accordance with my invention is broadly characterized by the provision of a panel, which can be a floor, ceiling, wall and/or roof panel, a load bearing member, and a linking member interposed between the load bearing member and the panel, the linking member being keyed to the load bearing member and to the panel in interlocking relation therewith and comprising, with the load bearing member, a basic component used throughout my system.

In another aspect thereof, a building structure of my invention is characterized by the provision of a pair of angularly related panels, a load bearing member, and a linking member connecting the panel to the load bearing member, the linking member comprising in this instance an edging member interposed between both panels and the load bearing member, the two panels being keyed to

the same linking member, and the linking member being keyed to the load bearing member.

In another aspect thereof, a building structure constructed in accordance with my invention is characterized by the provision of a panel, a load bearing member along each edge of said panel, a linking member interposed between each of said load bearing members and the adjacent edge of said panel, a show member at each corner of said panel, and interlocking keys and keyways interconnecting said load bearing members and said shoes, said linking members and said load bearing members, and said panel and said linking members, thereby to maintain all of said members and said panels in assembled relation.

In still another aspect thereof, a building structure constructed in accordance with my invention is characterized by the provision of a panel comprising a pair of separable panel sections, a load bearing member, and linking means interconnecting said panel and said load bearing member, with each of said panel sections comprising a frame portion keyed to said linking means, and a body portion releasably secured to said frame portion, whereby said body portions can be removed from said frame portions, and replaced by other body portions if desired.

In yet another aspect thereof, a building structure constructed in accordance with my invention is characterized by the provision of load bearing members outlining a prescribed floor-ceiling area, a shoe member at each corner of said area, linking members interposed between said load bearing members and said area, interlocking keys and keyways connecting said load bearing members to said shoe members and to said linking members, edging girder members interposed between said linking members and said area, span girder members extending between opposed linking members across said area, and means securing said girder members to said linking members comprising cooperating tongues and tongue receiving grooves, said girder members providing support for flooring and ceiling materials.

The foregoing and other objects, advantages and characterizing features of my invention will become clearly apparent from the ensuing detailed description of certain presently contemplated embodiments thereof, considered in conjunction with the accompanying drawings wherein like reference numerals denote like parts throughout the various views and wherein:

FIG. 1 is a fragmentary perspective view, partly in section, of an assembled panel, corner shoe, edging members and load bearing spider members of my invention;

FIG. 2 is a sectional view taken about on line II—II of FIG. 1;

FIG. 3 is an exploded, fragmentary, perspective view of adjacent frame sections of one of the panel sections, indicating how they are slipfitted into assembled relation;

FIG. 4 is a fragmentary, perspective view of one panel section body portion;

FIG. 5 is a fragmentary, sectional view of flush assembled panels, spider member, and linking members, wherein the linking members comprise bridging members;

FIG. 6 is a fragmentary side elevational view of an assembled panel section frame portion;

FIG. 7 is a view, partly in section and partly in elevation of an assembled wall and floor-ceiling receiving section;

FIG. 8 is a fragmentary sectional view thereof, taken about on line VIII—VIII of FIG. 7;

FIG. 9 is a vertical sectional view illustrating a connection to a foundation rail member;

FIG. 10 is a sectional view, broken away for ease of illustration, of a modified panel construction;

FIG. 11 is a schematic view of a roof construction of my invention;

FIG. 12 is a sectional view of the parts comprising the juncture of the roof and an exterior wall;

FIG. 13 is a sectional view of the parts comprising the eave and gutter juncture;

FIG. 14 is a sectional view of the parts comprising the ridge juncture;

FIG. 15 is a view, similar to that of FIG. 5 but showing a modified construction;

FIG. 16 is a fragmentary perspective view of an edging member for use with the modification of FIG. 15; and

FIGS. 17 and 18 are enlarged, fragmentary sectional views of the interlocking connection between the frame and body portions of the outer and inner panel sections, respectively, in the modification of FIG. 5.

There is shown in FIG. 1 a portion of a corner, utilizing the construction of my invention. The illustrated corner comprises horizontal and vertical load bearing spider members, generally designated 1. Each of the spider members 1 has a laterally enlarged tongue 2 extending from each of the four corners thereof, and along the full length thereof. The tongues 2 are slidably received in correspondingly shaped tongue-receiving grooves 3 in adjacent edging members, generally designated 4. Spider members 1 substantially meet at the corner, with their tongues 2 also being slidably received in the correspondingly shaped tongue-receiving grooves 5 of corner shoe members, generally designated 6.

Having thus defined a corner, the edging and shoe members 4, 6 receive a panel, generally designated 7, comprising a wall in FIG. 1. Panel 7 comprises paired panel sections 7', 7'', each having a frame portion 15', 15'' and a body portion 24, 26, respectively, and is provided along each of its four edges with paired, laterally enlarged tongues 8 which are slidably received in correspondingly shaped tongue-receiving grooves 9 of the edging members 4, the tongues being formed on the frame portions 15', 15''.

To avoid confusion, FIG. 1 has been limited in its showing. However, it will be apparent that a spider member 1 is to be provided along each edge of each panel 7. Interposed between the panel 7 and each spider member 1 is a pair of edging members 4. The pair of edging members 4 provide the edge between wall panel 7 and the ceiling, floor and adjacent wall panels on opposite sides of the wall, and in the illustrated form the edging members 4 provide rounded edges along each side of the wall. Each spider member 1 is adapted to engage a total of four edging members 4, thereby to provide a common support at the juncture between four adjacent rooms (see FIGS. 2 and 8). However, spider members 1 with only three, two or even one tongue 2 can be provided, if desired.

The spider members 1 interlock with corner shoes 6, at each corner of panel 7, and it will be appreciated that there is a pair of corner shoes 6 engaging each member 1, and abutting the paired members 4, at each corner of each panel 7, thereby to define the corners of adjacent rooms (see FIG. 2). Corner members 6 provide rounded corners, although members 4 and 6 also can provide edges and corners of any desired configuration.

To complete the assembly, the corner shoes are provided with cut out portions or slots 10 in each of the three corners thereof, for receiving the corners 11 of frame portions 15', 15'' of panel 7. The tongues 8 along the edges of panel 7 are interrupted, and terminates short of the corners 11, so that the panels can be slip-fitted into assembled relation with edging members 4 and corner shoes 6.

To further position and secure these parts in assembled relation, and to provide an insulating baffle across the juncture between edging members 4 and corner members 6, the latter are provided with keys in the form of projecting embossments 12. Keys 12 are equal in width

to the distance between the tongue receiving grooves 5 of shoes 6 and the panel corner receiving slots 10 thereof, and extend into corresponding keyways 13 on the edging members 4. Alternately, keys 12 could project from members 4 into corresponding keyways in members 6, or separate keys, fitting into keyways in both members, could be provided.

Thus, spider members 1, corner shoes 6, panel 7, and edging members 4 connecting panel 7 to the spider members 1, all formed to predetermined dimensions, comprise a combination which is basic in my system and extensively used throughout.

Where it is desired to connect panels which are 180° apart, or flush, and not right angularly related as in the case of FIGS. 1 and 2, a modified form of linking or connecting member is used between spider 1 and panel 7, as illustrated in FIG. 5. Here, the spider member is again indicated at 1, and is interposed between a pair of aligned panels 7. The linking members are indicated at 4', and comprise bridging members presenting flat wall surfaces 14, 14'. Bridging members 4' have tongue receiving grooves 9' positioned to receive the tongues 8 of panels 7, along with tongue receiving grooves 3' for receiving the tongues 2 of member 1.

It will be appreciated that the basic combination remains the same. The only change is that, with a vertical wall comprising two or more flush or aligned panels 7, the bridging members 4' serve to interconnect the panels 7 and the spider members 1 while providing a substantially uninterrupted wall surface.

Panels 7 can take a variety of forms. I believe that the form illustrated in FIGS. 1–6 is to be preferred. In this construction, each panel comprises a pair of separable sections 7' and 7''. Section 7'' is particularly suitable for exterior walls, as well as for interior walls, for reasons to become apparent, while section 7' is particularly suitable for interior walls.

Panel sections 7', 7'' each comprise a frame portion 15', 15'', respectively, and a body portion 24, 26, respectively. The frame portions 15', 15'' each consist of four sections, preferably identical except as to length, and comprising, for example, paired sheet metal fabrications filled with an appropriate filler material 16. At one end, each frame section is provided with a pair of spaced tongues 17, 18 extending at right angles thereto and adapted to receive therebetween a right angle tongue 19 projecting from the opposite end of each frame section (FIGS. 3 and 6). In assembling the frames 15', 15'' the tongue 19 of one frame section is slip-fitted laterally between the tongues 17, 18 of the adjacent section, as indicated by the arrow in FIG. 3. The tongue 18 is received in a cut out or recessed portion 20 adjacent the tongue 19, and the assembled frame sections present the appearance shown in FIG. 6.

The frame portion 15' of inner panel section 7' is provided with an undercut shoulder 22 outlining the inner periphery thereof. Shoulder 22 receives an undercut shoulder 23 outlining the body portion 24 of the inner panel section 7' in snap-fit relation therewith (FIGS. 5 and 18).

The frame portion 15'' of the outer panel section 7'' has a corresponding undercut shoulder 25, which receives an undercut shoulder 25' outlining the outer panel section body portion 26 in snap-fit relation (FIGS. 5 and 17). A backing member 27, of suitable material such as wood, preferably is applied to the inner side of body portions 26, and a block of insulating and reinforcing foam material 28 is carried thereby and extends inwardly therefrom to the inner wall surface of the inner panel body portion 24. A foil or other moisture barrier 27' can be applied to the inner wall surface of body 24 (FIGS. 5 and 18).

It will be observed that frame portions 15', 15'' are identical, except that they face in opposite directions. This simplifies manufacture, storage and assembly.

A backing 27'', which can be the same as backing 27,

can be provided for the outer wall 14 of bridging member 4'.

To prevent unauthorized removal of the outer panel body 26, particularly when it is used as an exterior wall, I provide a releasable lock in the form of an inturned flange 29 terminating in a lateral locking shoulder 30 (FIG. 4) which engages behind the outer frame portion 15', as clearly indicated in FIGS. 1, 5 and 17. The undercut shoulders 23 and 25' have rounded, cam edges, to facilitate snap-fitting them into place, and shoulder 30 has a cam surface 30' for a similar purpose. However, shoulder 30 is abrupt at the engaging edge and extends completely around the panel body 26 in engagement with frame portion 15'', whereby the panel body 26 cannot be separated from its frame 15'' except from behind the frame. In other words, it is necessary to gain access to the abutting surfaces of frame 15'' and shoulder 30, in order to pry them apart, before the body portion 26 can be released. This can be accomplished only from the interior of the panel, after removal of the inner panel section 7'.

The use of separate frame sections which can be interlocked at the site offers many advantages. Separate pieces are much easier to handle, during both shipment and construction, than one large piece. Also, damage is less likely to occur, and a saving in cost will be realized. Once the frame is assemblied, and inserted into the shoe slots 10, the sections are held in assembled relation by the shoe members 6.

The use of body portions 24, 26, separate from the frame portions 15', 15'', has the advantage that they can be removed, separately, and replaced with body portions having different wall surfaces. In this way, the decor can be varied, by replacing the body portions with ones having a surface of the desired color, texture and/or pattern. In this connection, the body portion 24 can comprise a panel 24' of wood, or any other desired material, and the same is true of the body portion 26.

Panel 7 offers the further advantage that the filler material 16, in addition to providing an insulating and reinforcing filler preventing metal to metal contact through the panel, also permits the tongues 8 to resiliently yield and thereby tightly engage the walls of the tongue receiving grooves 9, 9'. The same is true of the panel corners 11.

FIG. 10 illustrates an alternate panel construction, comprising a pair of combined body and frame members 36, 37 formed at their opposite ends to provide laterally enlarged tongues 8', the panel being filled with resiliently yieldable material such as rubber, foamed plastic, synthetic sponge or the like, indicated at 38. With such a construction, the panel will yield in tension or shear, in the event that manufacturing tolerances or temperature induced dimensional changes require a slight variation in the spacing between the laterally enlarged tongues 8' at opposite sides of the panel. Tongues 8' also are resiliently compressible.

Instead of a composite panel of separable sections, a pair of spaced panels separated by an insulating air space can be used, as shown at 70 in FIGS. 7 and 8.

For convenience in illustration, the edging members 4 have been shown in FIG. 1 as substantially solid members. However, they too can comprise sheet metal fabrications containing insulating foam material such as indicated at 32 in connection with the bridging members 4' (FIG. 5). Inasmuch as such alternate construction of members 4 is obvious from the illustrated construction of members 4', further illustration is unnecessary.

Similarly, the spider members 1 are shown as solid members in FIG. 1, but preferably they will have the construction illustrated in FIG. 5. In such construction, each spider member comprises a hollow core 34 which could be extruded but preferably comprises interlocking parts forming a rectangle. The core parts interlock with a tongue and groove connection, and can be formed of a synthetic plastic or any other suitable material. The tongues 2 comprise sheet metal fabrications which are interlocked with the core, it being appreciated that the core sections can be either molded or slip-fitted about the flanged ends of the tongues 2. The core sections also are provided with projections 35 which extend outwardly between the tongues 2 and assist in providing a tight construction when the members 4, 4' are slip-fitted on the tongues 2.

For construction of floors and ceilings, the same basic components comprising spider members 1, edging members 4 and corner shoe members 6 are used. Panel 7, including the snap-in body portions, can be used as the floor or ceiling, where desired. However, FIGS. 7 and 8 show an alternate construction including the use of girder members 40, span members 41 and spacing members 42. Girder members 40 differ from spacing members 42 only in that they form a corner, whereas members 42 space apart adjacent span members 41. Each member 40, 42 comprises a vertical web portion 43 terminating in flanges 44 to provide a generally I shape in cross section. Flanges 44 terminate along one side of members 40, 42 in laterally enlarged tongues 45, which are slidably received in the tongue receiving grooves 9 of edging members 4. Web portions 43 also are provided generally centrally thereof with a flange 46, which enters the space between adjacent edging members 4 to position and strengthen the assembly.

Span members 41 can be of similar cross sectional configuration having a web 43' terminating in flanges 44'. Flanges 44' terminate at their opposite ends in laterally enlarged tongues 45' which slidably engage the tongue receiving grooves 9 of edging members 4, between members 40 and 42. The span member webs 43' also have strengthening flanges 46' (FIG. 7), which extend into the space between edging members 4 (FIG. 8). With this arrangement the top surfaces 44, 44' provide shoulders for receiving sub flooring 47 (FIG. 8) which can in turn receive any desired flooring 48. On the underside, any type of ceiling desired can be attached.

The roof depicted in FIGS. 11–14 also has the spider members 1 at the heart thereof. FIG. 12 shows the juncture between the roof and the outer wall 50 of the building, comprising a spider member 1 receiving on its under surface a pair of edging members 4, which latter receive the outer wall 50 in the manner described for example in FIG. 1. Panel 7 can be the outer wall 50. Member 1 also supports a pair of linking members 50, 51, each having a tongue receiving groove for engaging the member 1. The members 50, 51 also have tongue receiving grooves 52 for receiving tongues along the edge of a sub-roof member 53, and the member 51 also has a tongue receiving groove 54, which, together with the groove 9 of member 4, is adapted to receive girder and span members as previously described. Member 50 also has a tongue receiving groove 55, which together with the tongue receiving groove 9 of member 4 is adapted to receive tongues (like tongues 8) on an eave panel 56 which also has tongues engaging the tongue receiving grooves 57 in a pair of eave end members 58, 59 (FIG. 13) which are supported by a spider member 1. A second spider member 1 interconnects the eave end member 59 with a third eave end member 60, and the members 59, 60 have grooves 61 for receiving the tongues of an outer roof panel 62.

At the ridge, a pair of spider members 1 interconnect a ridge member 63 (FIG. 14) with an intermediate member 64, and connect an inner ridge member 65 with the member 64. The members 64, 65 have tongue receiving grooves 52 for receiving the inner roof member 53, and tongue receiving grooves 66 for receiving an upright panel 67, which can be panel 7. The members 63 and 64 have tongue receiving grooves 61 for receiving tongues on the roof panels 62 and also are recessed to provide, in the case

of member 63, an overlapping portion 68, and a supporting shoulder 69 on the member 64.

A gutter is provided, in the form of a channel 80. The gutter back wall 81 terminates in a flange 82 which, with an intermediate flange 83, embraces eave end member 59. Flanges 82 and 83 support the gutter, which is locked in place by member 60 with the overhanging lip 84.

It will be appreciated that the various roof juncture members 50, 51, 58, 59, 60, 63, 64 and 65 are elongated, and can receive girder or panel members, as previously described with reference to edging members 4, and would extend to appropriate corner members corresponding to shoe members 6.

FIG. 9 illustrates a supporting attachment to the foundation 71. A supporting rail 72, outlining the foundation area, is fastened to foundation 71, as by bolts 73. The supporting rails 72 have laterally enlarged tongues 74 which are slidably received in the tongue receiving grooves 9, 9' of members 4, 4' which are connected to panels 7, spider member 1, and members 40–42 in the manner previously described.

Certain modified constructions, in which the spider and edging members are reoriented, are shown in FIG. 15, which is a composite schematic. More specifically, it will be observed that the spider member 1' has its tongues 2' extending in the direction of the wall panels 70', or at right angles thereto, instead of diagonally as in FIG. 1. The edging members 4'' have tongue receiving grooves 3'' engaging the tongues 2', and a bridging member 4''' has tongue receiving grooves 3'''. The members 4'', 4''' also have tongue receiving grooves 9''' for receiving laterally enlarged tongues 8'' on the frame portions 150 of the various panels 70'.

The frame portions 150 can be identical with the frame portions 15', 15'' of the panels 7, and in each instance they provide an undercut shoulder 151 for receiving the undercut shoulders 152 carried by the various body panels 153, 154, 154', 155 and 156. Body portions 153, 154 are similar, each having a double panel 157, 158. They differ primarily in that body portion 153 carries a block 160 of insulating material which extends nearly to body panel 156, and which is enclosed and supported by an extension 161 from the shoulder 152. Extension 161 is formed to provide a locking shoulder 161', corresponding to the shoulder 30 previously described. Panels 157 extend into corners 162 provided on the bridging member 4''', and panels 158 abut each other. The juncture between the panels 158 can be sealed as by a plate 163 snap-fitted into place on the bridging member 4''', the space between the panels 158, bridging member 4''' and the cover member 163 being filled with appropriate insulation 164.

Body portion 154' differs from body portion 154 in that panels 157' and 158' are not as wide as panels 157, 158. Body portions 154 and 154' both have an undercut shouldered part 152' snap-fitting over the frame shoulders 151 and formed to provide a shoulder 161' engaging behind the frame 150. Parts 152' are extended beyond shoulders 161' and surround and support blocks 160' of insulating material.

Body portions 155, 156, being for inside walls, can carry insulating material 160', if desired, or a foil or other vapor barrier 159. Each of them carry undercut shouldered parts 152'' which, like the parts 152, 152', can be secured to the panel as by screws or the like.

Thus, FIG. 15 illustrates several body panel arrangements, with the panel 153 being detachable only from the interior, and with the panels 154, 154' being permanently installed.

Body panels 154', 155 abut to form the corner edges. However, in the case of panels 156 the outermost panel parts 165 do not abut, and instead a corner insert is provided comprising a clip 166 backed by resiliently compressible material 167 and formed to receive, with a snap fit, the head 168 of a corner insert 169.

In this arrangement, the body panels 156 can be snapped out and interchanged, as desired, to change the decor, and the corner inserts 169 can be correspondingly changed.

FIG. 16 shows a horizontal, floor edge member 160 presenting a rounded face 171. Member 170 is formed on its under surface with rearwardly directed teeth 172 for engaging wall to wall carpeting and pulling the same taut as the member 170 is snapped into place along the floor. The member 170 can carry studs 173 adapted to snap fit in a clip, such as the clip 166 but carried along the horizontal floor corner or edge and received in an edging member 4'' corresponding to that shown, but extending horizontally.

Here again, the arrangement of spider members, edging and bridging members, panels, and the like follows the arrangement previously described, in that the various parts are slip-fitted into assembled relation, with the panels being separable sections have detachable body portions.

Thus, the various parts either slip-fit or snap-fit into assembled relation. If desired, a suitable adhesive can be applied to the abutting surfaces. The hollow core 34 of the spider members can carry wiring and other conduits, and the edging and corner shoe members 4, 6 can be similarly utilized. In addition, the members 4, 6 can have cove plates 90 (FIG. 2), 91 (FIG. 1), respectively, releasably snap-fitted thereto, for interchangeability as described with reference to the panel body portions 24, 26. In such case, wiring and the like can be carried between the member and the detachable cove plate. It will of course be appreciated that all of the various parts are preformed, and dimentioned to the desired modular unit.

The tongues 2, 2', 8, 8', 8'' and 74, and the tongue receiving grooves 3, 3', 3'', 3''', 9, 9', and 9'' comprise interlocking keys and keyways. Like keys 12 and keyways 13 (FIG. 1), their relative position can be reversed, or separate keys can be provided if desired.

The foregoing detailed description has been given by way of illustration, without thought of limitation. Having fully described my invention, what I claim as new is:

1. In a building structure, a panel comprising a pair of frame portions in spaced substantially parallel planes extending about the periphery of said panel and adapted for connection to adjacent structural members, respective body portions carried by each of said frame portions, one of said body portions providing one side face of said panel, the other of said body portions providing an opposite side face of said panel, means releasably securing said one of said body portions to one of said frame portions and means releasably securing said other of said body portions to the other of said frame portions whereby each of said body portions can be removed from and replaced in its respective frame portion, at least one of said body portions being removable from its frame portion independently of the other body portion, wherein the means releasably securing said one body portion to its frame portion is within said panel and accessible to release said one body portion from its frame portions only after releasing said other of said body portions from its frame portion.

2. A structure as set forth in claim 1, wherein each of said frame and body portions have cooperating shoulders undercut to maintain said portions in snap-fitted relation.

3. In a building structure as set forth in claim 1, a load-bearing spider member, a pair of said panels positioned generally on opposite sides of said spider member and lying generally in the same plane, and means connecting said panels to said spider member in spaced relation thereto comprising a pair of bridging members on opposite sides of said spider member, each of said bridging members extending between both of said panels, first means interlocking said spider member with both of said bridging members, and second means interlocking each of said panels with both of said bridging members.

4. In a building structure, a wall panel comprising a frame portion, a body portion, and means mounting

said body portion in said frame portion, said frame portion comprising sections having interlocking portions engageable upon relative movement between said sections in a direction substantially normal to the plane of said panel, wherein said interlocking portions comprise tongue and groove portions on each of said sections in the plane of said panel, together with means holding said interlocking portions in assembled relation.

5. In a building structure as set forth in claim **4**, an edging member extending along each edge of said panel for a major portion of the length thereof, a corner shoe member at each corner of said panel, said corner shoe members engaging the adjacent edging members and maintaining the same in spaced apart relation around said panel, and separate spider members extending along each of said edging members and therebeyond to said corner shoe members, means connecting each of said spider members to the adjacent edging member and to the corner shoe members at opposite ends thereof, and means connecting said edging members to said panel, said corner shoe members having slots receiving adjacent frame sections at said panel corners for holding said sections in assembled relation.

6. In a building structure, a panel comprising a frame portion having sections extending along the opposite edges of said panel, each of said frame sections having at one end a pair of spaced tongues projecting therefrom and having portions extending at substantially right angles thereto and at the opposite end another tongue projecting therefrom and having a portion extending at substantially a right angle thereto, said pair of tongues of each frame section receiving therebetween said other tongue of an adjacent frame section in laterally slip-fitted assembled relation, and means for holding said frame sections in assembled relation.

7. In a building structure, a panel comprising a body portion and a frame portion around said body portion, cooperating first shoulders on said body portion and one side of said frame portion for assembling said body and frame portions, and means providing a second shoulder on said body portion engageable behind said frame portion on the opposite side thereof whereby said body portion can be released from said frame portion only from said opposite side thereof.

8. In a building structure, a panel comprising a pair of separable panel sections each having a frame portion and a body portion releasably secured within said frame portion, a load bearing spider member, and means connecting said panel to said spider member comprising a pair of edging members, first means connecting both of said edging members to said spider member, and second means connecting said frame portion of one of said panel sections to one of said edging members and connecting said frame portion of the other of said panel sections to the other of said edging members, together with releasable lock means securing one of said body portions to one of said frame portions, said lock means being within said panel and accessible to release said one body portion only from the same side of said one frame portion as the other of said frame portions.

9. In a building structure as set forth in claim **8**, one of said body portions providing one side face of said panel, the other of said body portions providing an opposite side face of said panel, said edging members having faces forming with said respective side faces a smooth transition surface on opposite sides of said panel.

10. In a building structure, a panel comprising a pair of frame portions in spaced substantially parallel planes extending about the periphery of said panel and adapted for connection to adjacent structural members, respective body portions carried by each of said frame portions, one of said body portions providing one side face of said panel, the other of said body portions providing an opposite side face of said panel, means releasably securing said one of said body portions to one of said frame portions and means releasably securing said other of said body portions to the other of said frame portions whereby each of said body portions can be removed from and replaced in its respective frame portion upon relative movement therebetween in a direction generally normal to the plane of said panel, at least one of said body portions being removable from its frame portion independently of the other body portion, wherein each of said frame and body portions have cooperating shoulders generally outlining said portions and undercut to receive said portions in snap-fitted engagement upon such relative movement.

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