

May 7, 1963

W. DICKINSON

3,088,558

PREFABRICATED BUILDING ASSEMBLY

Filed Nov. 17, 1958

6 Sheets-Sheet 1

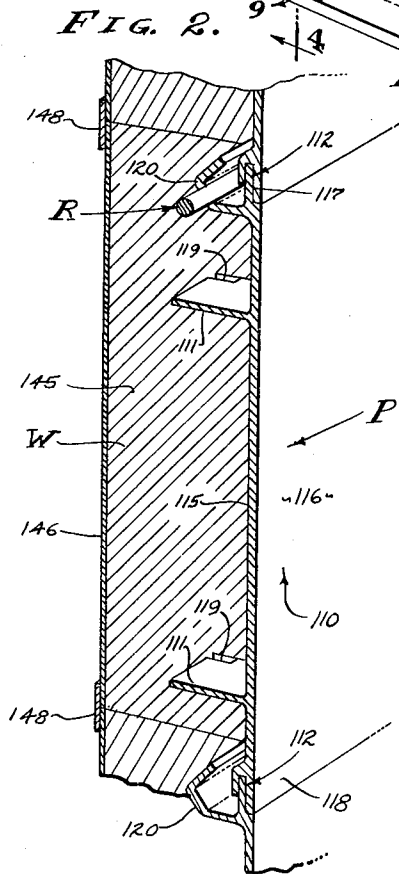
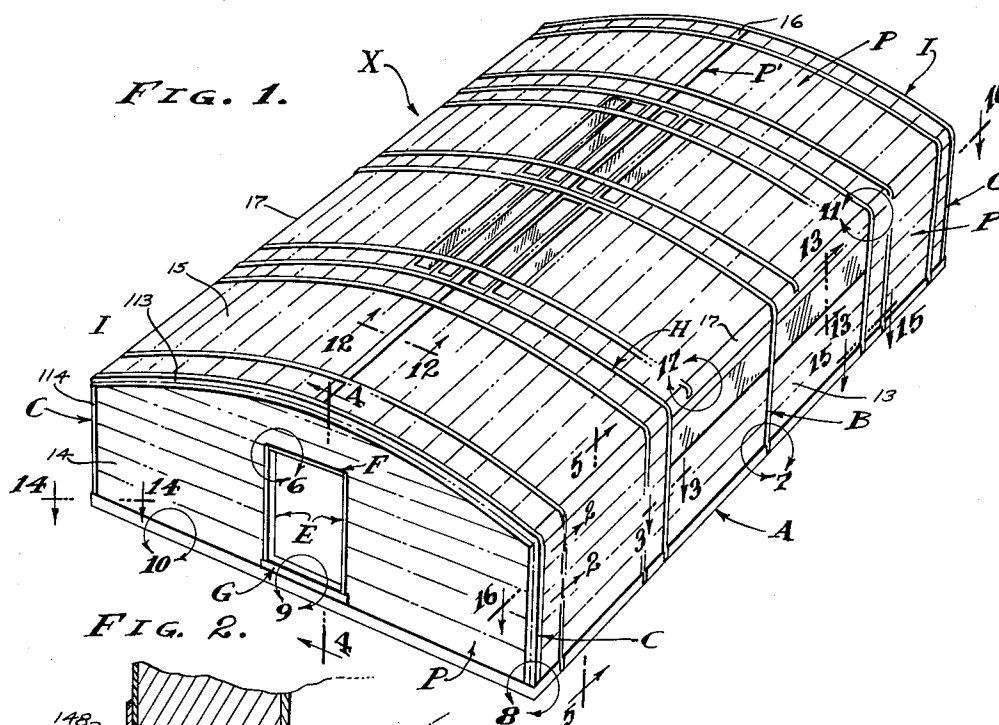
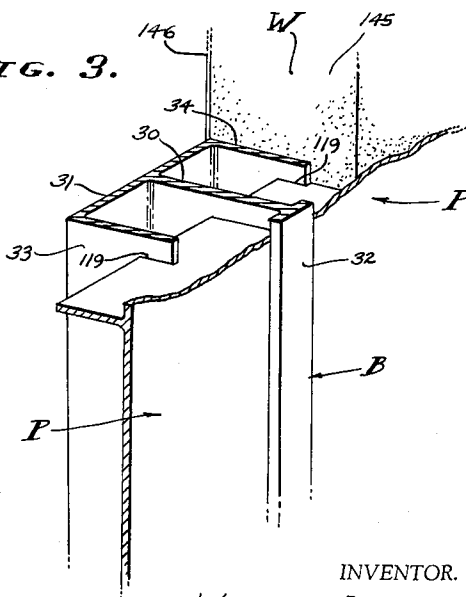


FIG. 3.



May 7, 1963

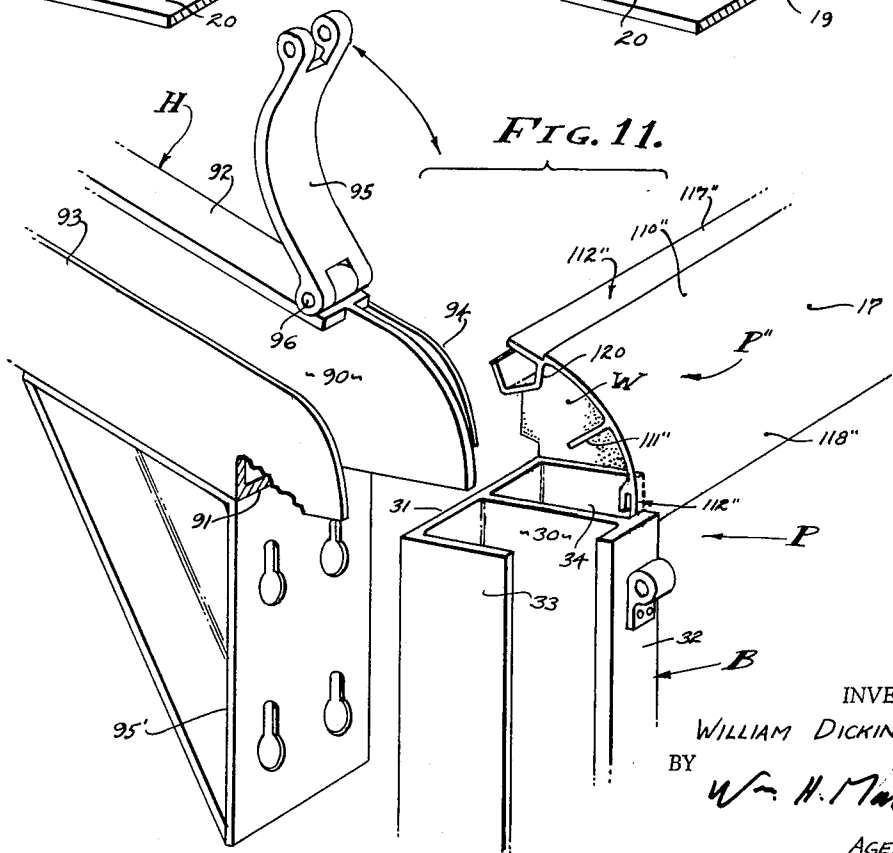
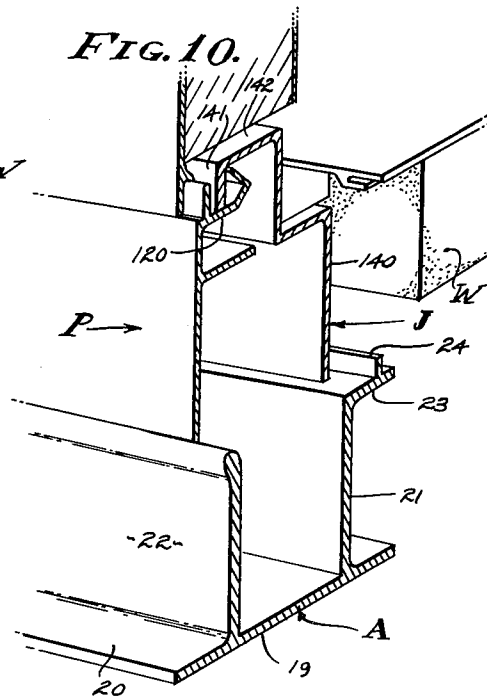
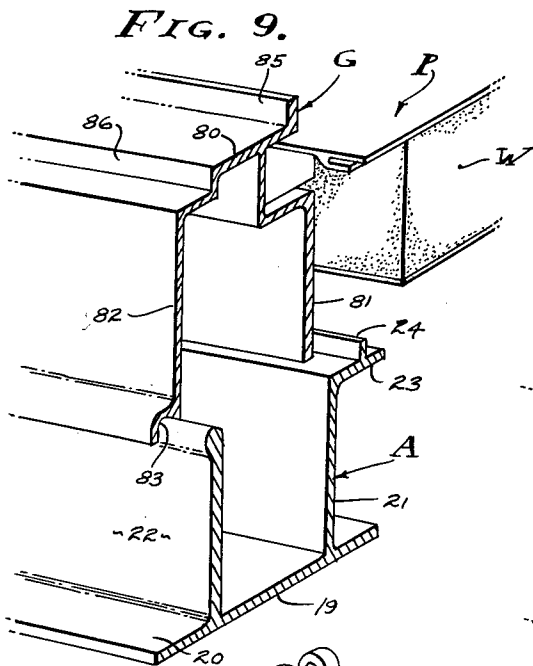
W. DICKINSON

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6 Sheets-Sheet 4



INVENTOR.

WILLIAM DICKINSON

BY

W. H. Maxwell

AGENT

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W. DICKINSON

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PREFABRICATED BUILDING ASSEMBLY

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6 Sheets-Sheet 5

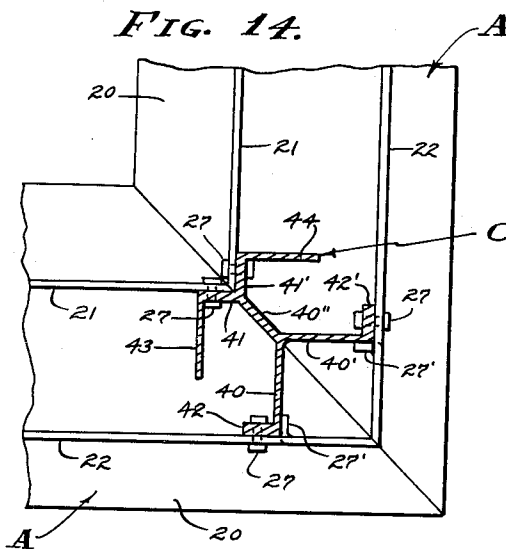
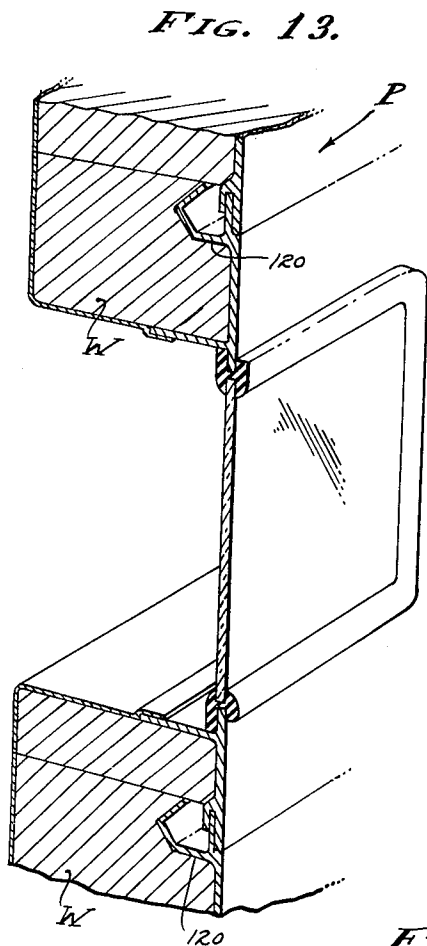
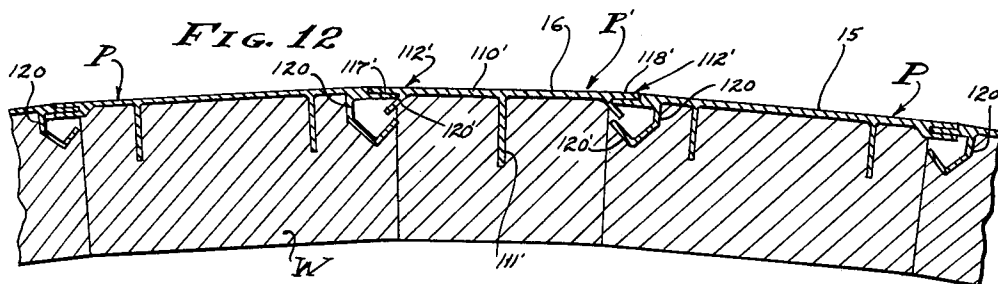
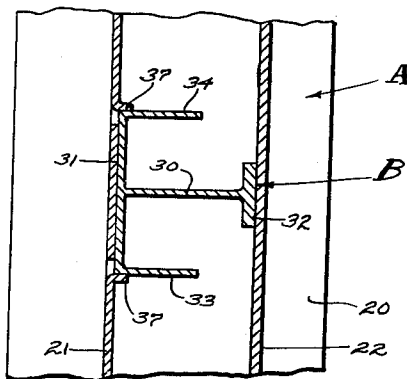


FIG. 15.



INVENTOR.
WILLIAM DICKINSON
BY
W. H. Maxwell
AGENT

May 7, 1963

W. DICKINSON

3,088,558

PREFABRICATED BUILDING ASSEMBLY

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6 Sheets-Sheet 6

FIG. 16.

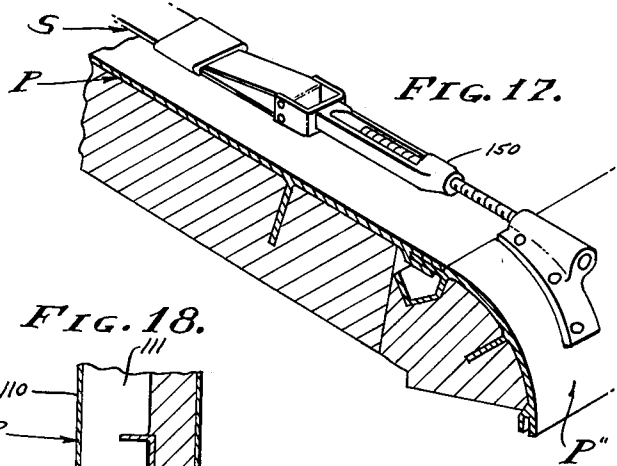
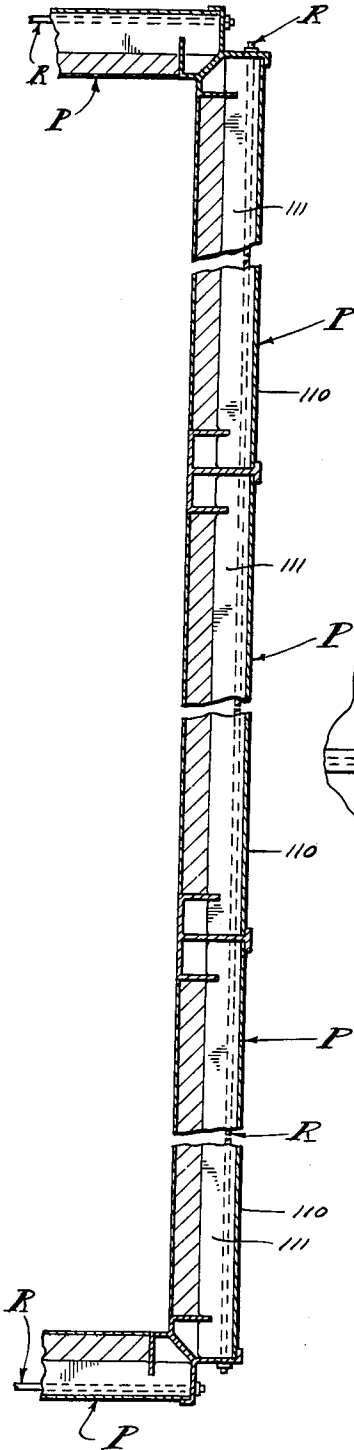


FIG. 18.

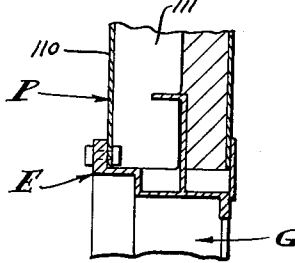


FIG. 19.

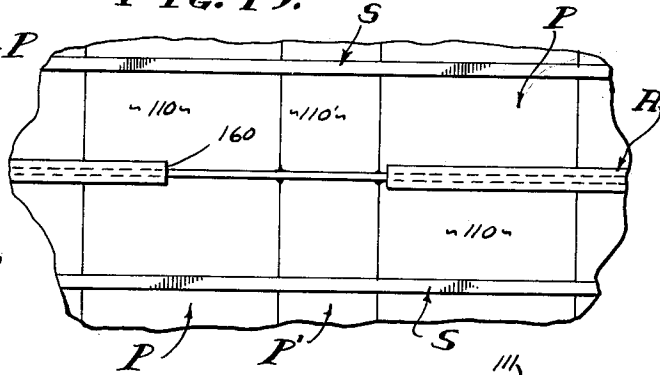
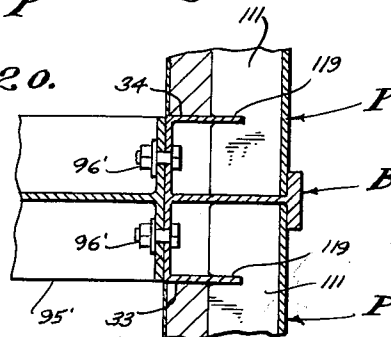


FIG. 20.



INVENTOR.

WILLIAM DICKINSON

BY

Wm. H. Maxwell

AGENT

1

3,088,558

PREFABRICATED BUILDING ASSEMBLY

William Dickinson, Los Angeles, Calif., assignor to Harvey Aluminum (Incorporated), Torrance, Calif., a corporation of California

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10 Claims. (Cl. 189—2)

This invention relates to a prefabricated building assembly and is particularly concerned with a modular hutment for general use and which is insulated for employment under extreme heat conditions, it being a general object of this invention to provide a building structure that is easily manufactured, that is readily stored without deterioration, that is easily erected, and that is suitable for general use as well as use in excessively hot or cold regions which require insulation.

"Quonset" type hutments are widely employed and are constructed of a light steel frame with galvanized corrugated steel cladding. This type of hutment is subject to rapid corrosion and deterioration, especially while in storage, and preservation techniques and coatings are not entirely satisfactory. Further, the labor factor involved in maintenance of these hutments in storage and in use is quite high. Also, this type of hutment is not acceptable to an extent in order to warrant production quantities sufficient to establish sufficient inventories thereof for the reducing of production lead time to meet emergency demands, and therefore, the consumer must bear the burden of maintaining inventory in stock.

Generally, "Quonset" type hutments are unacceptable for general use in industry because of their unorthodox configuration and because local authorities, and codes, do not class such hutments as permanent structures, but only as temporary structures. It is, therefore, difficult if not impossible to obtain permits to erect such a structure, except for a temporary purpose. Also, because of the arcuate cross-sectional configuration of a "Quonset" hutment, valuable interior space is sacrificed, a large quantity of hardware and special accessories are required for erection, and dismantling results in damage to the structure in general and with resultant loss of components to the end that re-erection is made costly.

The present invention involves concepts which make the structure acceptable for general use in industry by providing an orthodox configuration and with the result that local authorities will class it as a permanent structure. Because of the vertical side walls that are provided there is no encroachment upon the area of the hutment so that interior space is not sacrificed. By the employment of noncorrosive materials and by the unique joinder of the components involved there is little or no loss of components so that disassembly and re-erection is made feasible.

An object of this invention is to provide a prefabricated building assembly that is as free as possible from expensive hardware and accessories, the structure itself being complete upon assembly thereof, including its own foundation.

Another object of this invention is to provide a prefabricated building assembly that involves a minimum number of different components and which is, therefore, easily assembled and disassembled with a minimum of effort and expense.

It is an object of this invention to provide a prefabricated building assembly that involves light weight components resulting in reduced shipping weight and ease of handling.

It is another object of this invention to provide a prefabricated building assembly that is modular in design to the end that there is interchangeability between the like components thereof, and also wherein said compo-

2

nents can be assembled to expand said building to any modular size desired.

Also, it is an object to provide a prefabricated building assembly of the character referred to that is virtually maintenance-free both during storage of the components prior to erection and also after assembly and erection. Light weight non-corrosive materials are employed which are easily handled and which do not require special treatment for preservation and resulting in a long lived structure.

It is also an object of this invention to provide a building structure of the type above referred to that is adapted to receive service elements, such as, for example, electrical conduits and plumbing, etc. For this purpose, conduit space is provided to pass the required service tubes or conduits.

It is an object to provide a footing in a structure of the character referred to that is adapted to be anchored directly to a foundation and which is in the nature of a sill that both carries the upstanding walls and horizontal floor joists of the assembled structure.

It is an object to provide a corner post in a structure of the character referred to that is supported by angularly related footings and which couples adjoining angularly related side panels of the assembled building.

It is an object to provide a post in a structure of the character referred to that is supported by the footing and which couples adjoining and abutting side panels of the assembled building.

It is an object of this invention to provide a floor joist in a structure of the character referred to that is supported by and locked with the footing of the structure, and which carries the floor panels of the type that particular circumstances require.

It is an object to provide a door and frame structure therefor in a structure of the character referred to that is supported by the footing of the structure and which involves jambs and a header and a sill, all of which are adapted to accommodate a door for sealing engagement therewith.

It is an object to provide a side panel in a structure of the character referred to that is adapted to cooperate with the footing and with adjacent like panels to form a side wall, and which cooperatively engages with the posts, jambs and headers, etc., above referred to.

It is also an object of this invention to provide a structure of the character thus far referred to, that involves the particular components thus far referred to, which is adapted to receive and support suitable bodies of insulation, to the end that heat transfer from the interior of the structure, or vice versa, is minimized.

The various objects and features of my invention will be fully understood from the following detailed description of a typical preferred form and application of my invention, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a perspective view of a typical building assembly erected in accordance with the present invention. FIGS. 2 and 3 are enlarged perspective sectional views taken as indicated by the lines 2—2 and 3—3 on FIG. 1. FIGS. 4 and 5 are enlarged sectional views taken as indicated by lines 4—4 and 5—5 on FIG. 1. FIGS. 6, 7, 8, 9, 10 and 11 are enlarged perspective sectional views taken at the points encircled by the arrows 6, 7, 8, 9, 10 and 11, respectively, on FIG. 1. FIG. 12 is an enlarged detailed sectional view taken as indicated by line 12—12 on FIG. 1. FIG. 13 is an enlarged perspective sectional view taken as indicated by the line 13—13 on FIG. 1. FIGS. 14, 15 and 16 are enlarged sectional views taken as indicated by lines 14—14, 15—15 and 16—16 on FIG. 1. FIG. 17 is an enlarged perspective view taken at the point encircled by the arrow 17 on FIG. 1. FIG. 18 is an en-

larged detailed sectional view taken as indicated by the line 18—18 on FIG. 4. FIG. 19 is a plan view taken at the center top of the building, and FIG. 20 is a plan sectional view showing the parts of FIG. 11 as they appear when joined together.

The present invention involves the concept of employment of extruded metallic sections that can be manufactured at minimum cost and in a minimum length of time. Further, the material selected for constructing the building of the present invention is not only an abundant material but is also light in weight and resistant to deterioration. Aluminum is employed, which is abundant and easily extruded and which does not corrode or deteriorate under normal conditions. Also, such extrusions are elongate and are readily stacked, or packaged and stored in a minimum of space, said extrusions being formed and cut or machined, as required, into the modular components, all as later described.

As clearly shown throughout the drawings, this invention involves the erection of a building X to be used generally for any desired purpose, a typical dwelling-type structure being illustrated for purpose of example. The building X is rectangular in plan configuration and is shown supported by a suitable foundation Y (FIGS. 4 and 5) that is formed of or in the ground Z upon which the building X is erected. If desired, the building X can be supported directly upon the ground Z providing said ground is suitably level, or the building X can be supported upon a foundation Y. The foundation Y that I have shown is a typical foundation involving a footing or footing walls 10 terminating in a flat horizontally disposed face or faces 12 adapted to support the building X.

The building X (FIG. 1) is rectangular having, generally, side walls 13, end walls 14 and a top or roof 15. The said building X is prefabricated, and in accordance with the invention is adapted to be assembled and disassembled, being made up of modular elements that are erected as manufactured and require no manufacturing skills at the site of erection. The components involved are relatively few in number, there being, generally, a footing component A, a side post component B, a corner post component C, a floor support component D, a door post component E, a door header component F, a threshold component G, and intermediate beam component H, an end beam component I, a sill component J, panel or plank components P, P' and P'', and stress rods R and stress straps S of modular lengths as required. The panels P are standard side, floor or roof panels, the panels P' are crown panels for the peak 16 of the building X, and the panels P'' are corner panels for the eaves 17 of the building X (see FIGS. 1 and 5).

The components above referred to are elongate elements of uniform cross-sectional configuration and are adapted to be formed as by the process of extrusion. In practice, aluminum is employed to form said components, the alloy thereof being selected to suit conditions as circumstances require. Further, said components rely primarily upon their cross-sectional characteristics for serving their particular function in the finished building X, and are manufactured in modular lengths that are straightened and ready for assembly. In the case of the beams H and I the components are bent or curved to the desired form when a curved roof is desired. It will be readily apparent that certain key components are manufactured to serve particular functions in the finished building X.

The footing component A (FIGS. 4 and 5) is an elongate element of uniform cross-section and is a straight element provided to engage the supporting ground or foundation, as the case may be, and to carry the other components of the building X. It is to be understood that the footing component A is engageable with any flat supporting surface, as, for example, ice in the antarctic. Component A involves, generally, a base 20, a pair of spaced walls 21 and 22, a rail 23 and a key 24. The

base 20 is a flat horizontal plate-like part with a bottom face 19 engageable with the ground or with the face 12 of a foundation Y. The walls 21 and 22 are parallel spaced walls of substantial height that project vertically from the base 20. The rail 23 projects horizontally from the upper edge portion of the inner wall 21 and is a flat plate-like part forming a supporting shelf with an upwardly disposed face. The key 24 is of limited vertical extent and projects from the said face intermediate the wall 21 and the innermost edge of the rail 23 said key being in the nature of a slender rib. The parts of the component A, as specified, are straight parallel parts that are coextensively formed integrally with each other, and in practice the corners of the building simply involve the mitering of the component A which is, therefore, cut to modular lengths with suitably formed, or cut, angular ends that are adapted to abut. As shown in FIG. 14, the abutting ends of the modular components A can be coupled by the corner post components C, later described, and screw fasteners 27, or the like, may be employed as indicated. Further, butt straps may be employed to join the components A end to end, as required. Further, tabs or projections 27' may be provided to extend from the walls 22 of the components A in order to position the component C, as shown, and the component C acts to position the angularly related components A.

The side post component B (FIG. 3) is an elongate element of uniform cross-section and is a straight element provided to project vertically from the footing component A and between adjacent ends of the panels P, later described. The component B acts as a coupling to join the opposed ends of the panels P and involves, generally, a web 30, a pair of spaced walls 31 and 32, and keys 33 and 34 to engage with the panels P to be joined. The web 30 is a flat vertically disposed plate-like part that extends transversely of the footing A, and the walls 31 and 32 are flat parallel walls, the wall 31 being joined to the inner vertical edge of the web 30 and the wall 32 being joined to the outer vertical edge of the web 30. Both the walls 31 and 32 are of substantial width and the web 30 joins the walls intermediate their edges, to the end that each wall has a portion projecting laterally of each, or both, sides of the web 30. The outer wall 32 is a simple flat wall whereas the inner wall 31 carries the keys 33 and 34. The keys 33 and 34 are of limited lateral extent and project outwardly toward the outer wall 31 from the opposite marginal portions of the wall 32. That is, each marginal portion of the wall 32 has a slender rib-shaped key projecting therefrom at a right angle thereto and parallel with the web 30. The parts of the component B, as specified, are straight parallel parts that are coextensively formed integrally with each other, and are cut to the modular lengths necessary for the erection of the building X. In practice the lower terminal end 34 of the component B is normal to the vertical axis thereof while the upper terminal end 35 is cut or mitered to abut the beam component H, later described (see FIG. 11). Tabs 37, or the like, are deflected from the wall 21 in order to properly locate the keys 33 and 34 (see FIG. 15).

The corner post component C (FIG. 8) is an elongate element of uniform cross-section and is a straight element provided to project vertically from the footing component A at the corners of the building X and where said components A are angularly related, for example, at a 90° angle. The component C projects vertically between adjacent angularly related ends of the panels P and forms the corners 16 of the building X. The component C (FIG. 8) is essentially the same as component B and acts as a coupling to join the angularly related ends of the panels P, involving, generally, angularly related webs 40 and 40', pairs of spaced walls 41 and 42 and spaced walls 41' and 42', and keys 43 and 44 to engage with the panels P to be joined. The webs 40 and 40' are

5

flat vertically disposed plate-like parts that extend transversely of the footing component A which they overlie and when the components A are normally related so are the webs 40 and 40', said walls being connected together at the inner portions thereof. The walls 41 and 42 are flat parallel walls, the walls 41 being joined to the inner vertical edge of the web 40 and the walls 42 being joined to the outer vertical edge of the web 40. In a like manner, the walls 41' and 42' are flat parallel walls, the wall 41' being joined to the inner vertical edge of the web 40' and the wall 42' being joined to the outer vertical edge of the web 40'. The walls 41 and 42 extend laterally of the web 40 to overlie the end portions of the panels P composing the side of the building X, while the walls 41' and 42' extend laterally of the web 40' to overlie the end portion of the panels P comprising the end of the building X. The outer walls 42 and 42' are simple flat walls whereas the inner walls 41 and 41' carry the keys 43 and 44, respectively. The keys 43 and 44 are of limited lateral extent and project outwardly toward the outer walls 42 and 42' from the marginal portions of the walls 41 and 41'. That is, each wall 41 and 41' has a slender rib-shaped key 43 and 44, respectively, projecting therefrom at a right angle thereto and parallel with the web 30 or 30'. In carrying out the invention, the two angularly related sections of the components C are nested together as shown, with a diagonal web 40'' joining the inner edges of the two web 40 and 40' and extending inwardly to join the edges of the walls 41 and 41'. The parts of the component C, as specified, are straight parallel parts that are coextensively formed integrally with each other and are cut to the modular lengths necessary for the erection of the building X. In practice the lower terminal end 45 of the component C is normal to the vertical axis thereof while the upper terminal end 35 is cut or mitered to abut the beam component I, the same as beam H, later described. Screw fasteners 27, or the like, are shown employed to secure the walls 41 and 42, and 41' and 42' to the walls 21 and 22 of the footing component A, if desired (see FIGS. 8 and 14).

The floor support component D (FIG. 7) is an elongate element of uniform cross-section and is a straight element provided to extend horizontally between and in supporting engagement with opposite footing components A at opposite sides of the building X, and to carry the flooring panels P, as later described. The component D is a beam or joist element that spans between opposite sides of the building X where its end portions have supporting engagement with the rails 23 of the component A. The component D can vary in cross-sectional configuration and has a flat top, or cap 50 to support the flooring and has a flat bottom 51 at least at the end portions thereof for engagement with the upper face of the rail 23. Further, the component D has keys 53 and 54 that project vertically from the cap 50 from the opposite marginal portion thereof. That is, each marginal portion of the wall 52 has a slender rib-shaped key of limited vertical extent projecting therefrom at a right angle thereto. The ends of the component D are coupled to the footing component A by means of the key 24, above described, that is engaged in a slot or recess formed in the bottom of the component D. That is, each end portion of the component D is provided with a downwardly opening recess 55 to receive the key 24 and so that the components A and D are locked against lateral separation.

The door post component E (FIG. 6), is an elongate element of uniform cross-section and is a straight element provided to project vertically from the footing component A and adjacent the ends of certain panels P in order to establish openings in the building structure, either door or window openings. The component E couples itself to the ends of the panels P and involves, generally, a web 60, a pair of spaced walls 61 and 62, and a key 63 to engage with the panel P to be joined to the component E.

6

The parts 60 to 63 are equivalent to the parts 30 to 33 above described in detail in connection with the component B, the component E, however, being single sided. That is, it simply couples to the ends of the panels P, as shown.

In carrying out the invention, the web 60 of the component now under consideration is formed with one or more steps that present outwardly faced door stops 65 and 66 to be used in a conventional manner. Further, the wall 61 does not carry the key 63, but in place thereof an intermediate wall 64 carries the key, thus providing for clearance behind the wall 61 to facilitate installation of door hardware, etc. The parts of the component E, as specified, are straight parallel parts that are coextensively formed integrally with each other and are cut to the modular lengths necessary for the erection of the building X. In practice, the lower terminal end of the component E is normal to the vertical axis thereof while the upper terminal end is also normal and adapted to receive the ends of the header component F, later described. However, the web 60 and wall 64 are cut away at the upper portion of the component E in order to form an opening to receive the end of the header component later described. The lower end portion of the component E extends downward between the walls 21 and 22 of component A, and screw fasteners 68 or the like, may be employed to secure the component E to the component A, as shown in FIG. 18.

The door header component F (FIGS. 4 and 6) is an elongate element of uniform cross-section and is a straight element provided to extend horizontally between the upper ends of the door post component E and adjacent the sides of the panels P in order to establish the vertical limits of openings in the building structure, either doors or windows. In the case of windows, the component F can be used as a sill as well as a header and involves, generally, a web 70 and a pair of spaced walls 71 and 72. The web 70 is a flat plate-like part that extends transversely of the component F, and the walls 71 and 72 are flat parallel walls, the wall 71 being joined to the inner edges of the web 70 and the wall 72 being joined to the outer edge of the web 70. The walls 71 and 72 project laterally of the web 70, the wall 72 having a lip adapted to cooperate with the edges of the panels P as later described. In carrying out the invention, the web 70 of the component F is formed with one or more steps conforming to the configuration of the component E above described, in order to present outwardly faced door stops 75 and 76, as indicated. The end portions of the component F are cut or fashioned to be secured to the post component E. In practice, the web 70 and walls 71 and 72 enter between the walls 61 and 62. The said components E and F may be secured together as by screw fasteners 78, or the like.

The threshold component G (FIGS. 4 and 9) is an elongate element of uniform cross-section and is a straight element provided to extend horizontally between spaced component E and overlying the footing component A. Since the flooring P rests upon joist components D it is necessary to raise the level of the threshold in order to align with the said floor level. Therefore, the component G is provided with upstanding vertically disposed walls 81 and 82 that support a web 80. The lower edge of the wall 81 is supported by the upper face of the rail 23 while the lower edge of the wall 82 is positioned by a channel 83 formed therein to receive the upper edge of the wall 22. In carrying out the invention, the web 80 of the component G is formed with one or more steps conforming to the configuration of the components E and F above described, in order to present outwardly faced door stops 85 and 86, as indicated. The end portions of the component G are cut or fashioned to fit between the post components E, as shown in FIG. 18.

The intermediate beam component H (FIG. 11) is an elongate element of uniform cross-section and is preferably, a curved element provided to extend transversely

7

of the building X between opposite side walls thereof and between adjacent ends of the roof panels P. The component H acts as a coupling to join the opposed ends of the roof panels P and involves, generally, a web 90, a pair of spaced walls 91 and 92, and keys 93 and 94, all as above specified in detail in connection with the component B. That is, the parts 90 to 94 are identical to the parts 30 to 34, the component H being a curved or arcuate truss, as indicated in FIG. 1, rather than a straight part. In carrying out the invention, the ends of the component H are cut or mitered to abut with the upper ends of the post components B and coupling straps 95 and 95' are employed to join them, employing screw fasteners, or shouldered pins 96 and 96', or the like. The straps 95 are tension elements applied to the exterior of the posts and beams, while the straps 95' are in the nature of knees applied under compression to the interior of the posts and beams (FIGS. 11 and 20).

The end beam component I (FIG. 4) is an elongate element of uniform cross-section and is preferably a curved element provided to extend transversely of the building X at the end walls thereof where said walls are angularly related as at a 90° angle and between said angularly related walls. The component I acts as a coupling to join the angularly related panels P and involves, generally, angularly related webs 100 and 100', pairs of space walls 101 and 102 and spaced walls 101' and 102', and keys 103 and 104, all as above specified in detail in connection with the component C. That is, the parts 100 to 104 are identical to the parts 40 to 44, the component I being a curved or arcuate truss, as indicated in FIG. 1, rather than a straight part. In carrying out the invention, the ends of the component I are cut or mitered to abut with the upper ends of the corner post components C and coupling straps corresponding to the straps 95 and 95' may be employed to join them, employing suitable screw fasteners or the like. The straps 95 are tension elements applied to the exterior of the posts and beams, while the straps 95' are in the nature of knees applied under compression to the interior of the posts and beams, as above described.

The sill component J (FIG. 10) is an elongate element of uniform cross-section and is a straight element provided to extend horizontally across the ends of the building X to overlie the footing A and to support the end planks P of flooring. The flooring planks P rest upon joist components D, as above described, but at the end walls of the building the component J, now under consideration, acts to close the space between the footing A and flooring planks P and to support the edge of the plank P that is adjacent to the end wall of the building X. The component J involves an inner wall 140, a hanger 141 and a web 142 extending between the wall 140 and hanger 141. The wall 140 is a vertically disposed wall with its lower edge engaged with and supported by the rail 23 of the footing A. The hanger 141 is also a vertically disposed wall of limited extent forming a downwardly projecting hook. The hook-shaped hanger is engageable in a channel 120, later described, in order to support the outer portion of the sill J. The web 142 is stepped to receive and support the edge portion of a plank P that is resting upon the support component D. The end portions of the support J are cut to fit between the side walls of the building X, as indicated.

The structural components A through J thus far described comprise the framework of the building X, however, said components are not erected as such but are erected along with the plank or panel components P, P' and P''. That is, the panel components are fitted together with the above-mentioned components as the building X is erected, all of said components cooperatively tying together into one complete structure.

The panel components P (FIG. 2), P' (FIG. 12) and P'' (FIG. 5) are alike and each is an elongate element

8

of uniform cross-section and each is a straight element provided to extend between the post and beam components to establish the walls and roof and flooring of the building X. As above pointed out, the panels are coupled to the post and beam components and involve, generally, an outer skin 110, ribs 111 and a seal 112. The panels P, P' and P'' are adapted to extend longitudinally of the building X and are horizontally disposed. The skin 110 is a flat sheet-like part with inner and outer faces 115 and 116 and with parallel edge portions 117 and 118. The ends 114 (see FIG. 1) of an ordinary plank or panel P are normal to the longitudinal axis of the panel, while the ends 113 of certain panels P, as indicated, are angular and/or curved to fit with the beam component I. The ribs 111 extend longitudinally of the plank, there being one or more ribs 111 to act as stiffening parts and to act as anchors for coupling the components P, P' and P'' to the post and beam components. Further, the ribs 111 act as anchors for supporting a lining of insulating material W, as later described.

The ribs 111 are flat parts that project normally from the inner face 115 of the skin 110 and they are coextensive with the skin. Notches or recesses 119 are provided at the end portions of the ribs 111 to register with the keys 33, 34, 43, 44, 63, 93, 94, 103 and 104 as the case may be. That is, the said keys are situated alike so that the recesses 119, that are slot-shaped, engage with the post, beam and joist components to lock the panels in place relative to the posts and beams and joists.

The seal 112 is provided at the edge portions 117 and 118, the panels P, P' and P'' being tongue and groove elements. As shown, the upper edge portion 117 is in the form of a tongue while the lower edge portion 118 is formed with a groove to receive the tongue of the next adjacent lower panel. The tongue portion is offset from the outer face 116 so that the joint between two adjacent panels is flush. Further, the seal 112 involves a channel 120 that overlies the tongue and groove connection at the inner face 115 said channel being carried at the upper portion of the skin 110 and opening upwardly to receive a mastic compound or the like, if so desired. Also, the channels 120 establish longitudinal passages to provide for drainage, to pass tension rods R and to accommodate service conduits and the like.

The panels P' are crown panels for the peak 16 of the building X and involve an outer skin 110', a rib 111' and seals 112'. The panel P' is essentially the same as the panel P except that the opposite edge portions 117' and 118' thereof are both tongues to be received by the uppermost grooved edge portions of adjacent roof panels P at each side of the building X. In the case illustrated there is only one rib 111', and there is a depending positioning and drip flange 120' and for establishing a channel to receive a mastic compound or the like, if so desired.

The panels P'' are corner panels for the eaves 17 of the building X and involve an outer skin 110'', a rib 111'' and seals 112''. The panels P'' are essentially the same as the panels P except that they are curved or arcuate in cross-sectional configuration in order to establish an unbroken transition between the roof and side walls of the building X. The panel P'' is a tongue and groove element with a single rib 111'', the tongue at the upper edge portion 117'' being received in the groove in the next adjacent roof panel P, and the groove at the lower edge portion 118'' receiving the tongue of the next adjacent side panel P.

The insulating material W is used to prevent heat transfer through the walls, roof and flooring of the building X and is preferably applied to the panels P, P' and P'' in the form of a core 145 between the outer skin 110 and an inner skin 146. The outer skin 110 is substantially heavy while the inner skin 146 is substantially light in weight or thickness. In carrying out the invention I prefer to use a foamed plastic material to form the core 145, that is, a material composed of a multiplicity of non-

interconnected cells and which has reasonable mechanical strength. Said core 145 is secured to the skin 110 and anchor ribs 111, by pouring it into place or by means of an adhesive, and the inner skin 146 is likewise secured to the core 145 so that a laminar construction is established. The side and edges of the core 145 and inner skin 146 abut with each other. Said abutting edges of the inner skin can be taped, as indicated at 148 in FIG. 2 of the drawings.

The components above described, with the exception of the insulation W and in some instances the flooring planks P, are preferably formed by means of extruding aluminum, or the like, into metallic sections that are cut to appropriate modular lengths and the ends thereof fashioned so that they all fit together in a predetermined manner to form the building X. In order to erect the building X the footing components A can be anchored to the ground or to a foundation Y, as indicated, with spikes 133 or the like. The vertically disposed side post components C and door post components E are then positioned within the walls 21 and 22 of the component A and secured as by the fasteners 27. In carrying out the invention any suitable arrangement of guide pins or tabs deflected from the walls of the components are used for positioning the parts relative to each other.

With the vertical members or components projecting upwardly and properly positioned, the panels P are dropped into position one after another, said panels being guided into place by the inner and outer walls of the vertical components. Further, the notches or recesses 119 engage with the keys of the vertical components to the end that said components act to couple the ends of adjacent panels P.

As the building X is erected the door header components F (or sills as the case may be), and the threshold components G are placed in position. Also, the tie rods, or stress rods R, are inserted through the channels 120 and through suitable openings in the vertical components, and nuts 130, or the like, are tightened onto the rods R so that the panels P and vertical components can be pulled together into tight engagement.

With the side walls and ends erected, as thus far described, the panels P' are placed at the eaves 17 and the intermediate beam components H and end beam components I are engaged with their mating vertical components B and C. However, the panels P at the end walls with the angular ends are, first placed in position in the end beam components I, by sliding the panels arcuately into engagement with the beams after which the beam I and attached panels P are put into place as a unit. The roof panels P are now placed into position at the peak 16, where the top walls and keys of the beam are interrupted at 160 (see FIG. 19), and they are dropped into position one after another, said panels being guided into place by the inner and outer walls of the beam components. Lastly, the peak of the building X is established by the insertion of the panels P' which are secured in working position by means of the straps S, as follows.

In addition to the tie rods R, the stress straps S are engaged over the exterior of the panels P, P' and P'' to extend from the footing A at one side of the building X (FIG. 7) to the footing A at the other side of the building X. Thus the straps S extend up one side of the building, across the roof panels P and down the other side of the building. It is to be understood that the straps S can be anchored at the eaves 17 of the building X as illustrated in FIG. 17 of the drawings. There are suitable anchors 150 in the form of turnbuckles or the like that are employed to tension the straps S, pulling the elements of the building X into tight engagement.

The flooring planks P within the building X are assembled by setting the floor support components D and sill components J in place upon the footing components A and by then arranging the flooring planks P over said joist components and sills. The sill components J are

assembled by dropping the hangers 141 thereof into the upwardly opening channels 120 of the lowermost panels P at the end wall of the building X. The inner wall 140 then rests upon the rail 23 of the footing A. The flooring planks P are coupled together by means of the keys provided on the joist components D and can be secured in place by screw fasteners of the self tapping type, or the like. It is to be understood that, alternately a flooring of wood panels or of poured concrete may be employed.

As the building X is erected by assembling the components thereof, the blocks, or layers, or strips of insulation W can be laid in place and secured in any suitable manner as by glueing. However, as above described, the insulation W can be initially adhered to the inner side of the panels P, P' and P'' and so that the building X is complete with insulation upon assembly of the components thereof. The last step in erecting the building X is to stress the rods R and straps S to the end that the building has strength and is ready for use.

In view of the foregoing it will be apparent that I have provided a modular hutment suitable for general use and which is insulated to withstand extreme weather conditions and to provide a building adapted to use as a freezer or for cold storage. The components thereof are easily manufactured and are readily stored with or without the insulation W, and the erection of the building is carried out with few and easily followed instructions to the personnel involved. Further, the posts and components are interchangeable and completely salvageable, so that the building X can be dismantled, and erected, all as circumstances require.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any variations or modifications that may appear to those skilled in the art and fall within the scope of the following claims:

Having described my invention, I claim:

1. A prefabricated building assembled of modular components and including, post components comprising a vertically disposed transverse web and inner and outer parallel walls projecting laterally from both sides of the web and a key projecting from each edge portion of the inner wall, and panels guided between the walls of the post components and with an outer skin positioned by the outer wall of the post and having upper and lower tongue and grooved marginal portions for engagement with each other and with inwardly extending ribs for guiding engagement with the keys at the inner walls of the post components, and with recesses at the end portions of the ribs receiving said keys of the post components.

2. A prefabricated building assembled of modular components and including, post components comprising a vertically disposed transverse web and inner and outer parallel walls projecting laterally from both sides of the web and a key projecting from each edge portion of the inner wall, and panels guided between the walls of the post components and with an outer skin positioned by the outer wall of the post and having upper and lower tongue and grooved marginal portions for engagement with each other and with inwardly extending ribs for guiding engagement with the keys at the inner walls of the post components, and with recesses at the end portions of the ribs receiving said keys of the post components, and horizontally disposed tie rods anchored to posts at the ends of the wall and under tension to pull the post and panel components into tight fitting engagement.

3. A prefabricated building assembled of modular components and including, post components comprising a vertically disposed transverse web and inner and outer parallel walls projecting laterally from both sides of the web and a key projecting from each edge portion of the inner wall, and panels guided between the walls of the

post components and with an outer skin positioned by the outer wall of the post and having upper and lower tongue and grooved marginal portions for engagement with each other and with a channel overlying said tongue and grooved connection and with inwardly extending ribs for guiding engagement with the keys at the inner walls of the post components, and with recesses at the end portions of the ribs receiving said keys of the post components, and horizontally disposed tie rods extending through said channel anchored to posts at the ends of the wall and under tension to pull the post and panel components into tight fitting engagement.

4. A prefabricated building assembled of modular components and including, post components comprising a vertically disposed transverse web and inner and outer parallel walls projecting laterally from both sides of the web and a key projecting from each edge portion of the inner wall, and panels guided between the walls of the post components and with an outer skin positioned by the outer wall of the post and having upper and lower tongue and grooved marginal portions for engagement with each other and with a channel overlying said tongue and grooved connection and with inwardly extending ribs for guiding engagement with the keys at the inner walls of the post components, and with recesses at the end portions of the ribs receiving said keys of the post components and service conduits and the like carried in said channel.

5. A prefabricated building assembled of modular components and including, post components and overhead beam components each comprising a transverse web and inner and outer parallel walls projecting laterally from one side of the web, a plurality of panels guided between the walls of said components and with tongue and grooved marginal portions for engagement with each other, and a strap disposed over the exterior of the panels and anchored to the post components at opposite ends of the beam and under tension to pull the panels and said components into tight fitting engagement.

6. A prefabricated building assembled of modular components and including, post components and overhead beam components each comprising a transverse web and inner and outer parallel walls projecting laterally from one side of the web and a key projecting outwardly from the inner wall, a plurality of panels guided between the walls of said components and with an outer skin having tongue and grooved marginal portions for engagement with each other and with inwardly extending ribs for stiffening and for guiding engagement with the key of the post component, and a strap disposed over the exterior of the panels and anchored to the post components at opposite ends of the beam and under tension to pull the panels and said components into tight fitting engagement.

7. A prefabricated building assembled of modular components and including, post components and overhead beam components each comprising a transverse web and inner and outer parallel walls projecting laterally from one side of the web, a plurality of panels guided between the walls of said components and with tongue and grooved marginal portions for engagement with each other, said panels at the eaves of the building being arcuate in cross-section, and a strap disposed over the exterior of the panels and anchored to the post components at opposite

ends of the beam and under tension to pull the panels and said components into tight fitting engagement.

8. A prefabricated building assembled of modular components and including, post components and overhead beam components each comprising a transverse web and inner and outer parallel walls projecting laterally from one side of the web and a key projecting outwardly from the inner wall, a plurality of panels guided between the walls of said components and with an outer skin having tongue and grooved marginal portions for engagement with each other and with inwardly extending ribs for stiffening and for guiding engagement with the key of the post component, said panels at the eaves of the building being arcuate in cross-section, and a strap disposed over the exterior of the panels and anchored to the post components at opposite ends of the beam and under tension to pull the panels and said components into tight fitting engagement.

9. A prefabricated building assembled of modular components and including, a footing for support, post components and overhead beam components each comprising a transverse web and inner and outer parallel walls projecting laterally from one side of the web and a key projecting outwardly from the inner wall, and a plurality of panels guided between the walls of said components and with an outer skin having tongue and grooved marginal portions for engagement with each other and with inwardly extending ribs for stiffening and for guiding engagement with the key of the post component, and a strap disposed over the exterior of the panels and anchored to the footing at opposite sides of the building and under tension to pull the panels and said components into tight fitting engagement.

10. A prefabricated building assembled of modular components and including, a footing for support, post components and overhead beam component each comprising a transverse web and inner and outer parallel walls projecting laterally from one side of the web and a key projecting outwardly from the inner wall, and a plurality of panels guided between the walls of said components and with an outer skin having tongue and grooved marginal portions for engagement with each other and with inwardly extending ribs for stiffening and for guiding engagement with the key of the post component, said panels at the eaves of the building being arcuate in cross relation, and a strap disposed over the exterior of the panels and anchored to the footing at opposite sides of the building and under tension to pull the panels and said components into tight fitting engagement.

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