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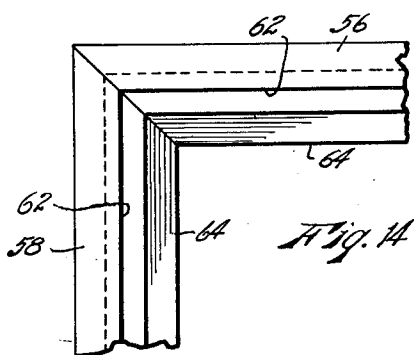
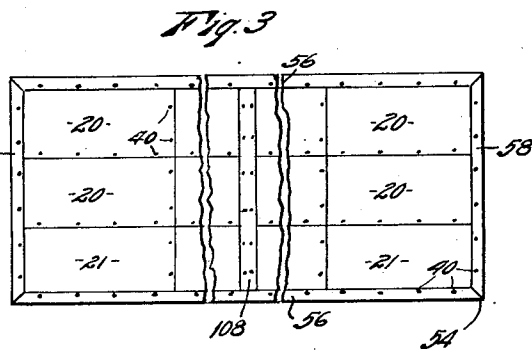
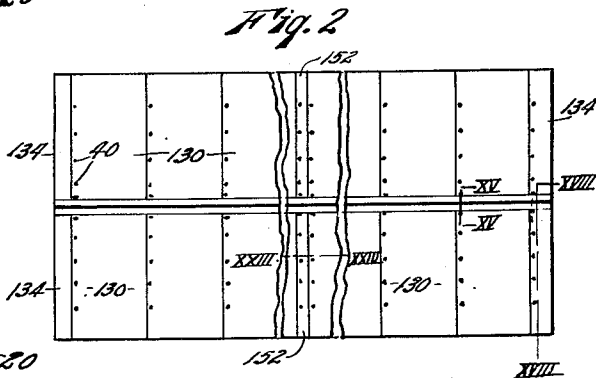
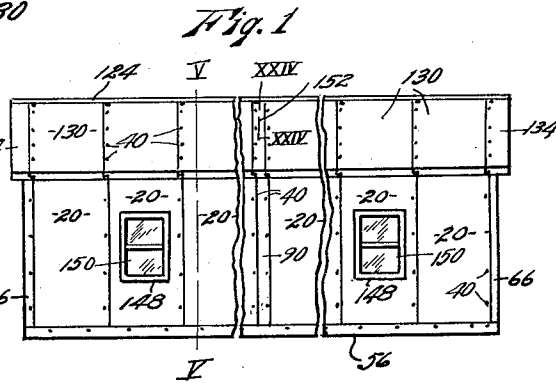
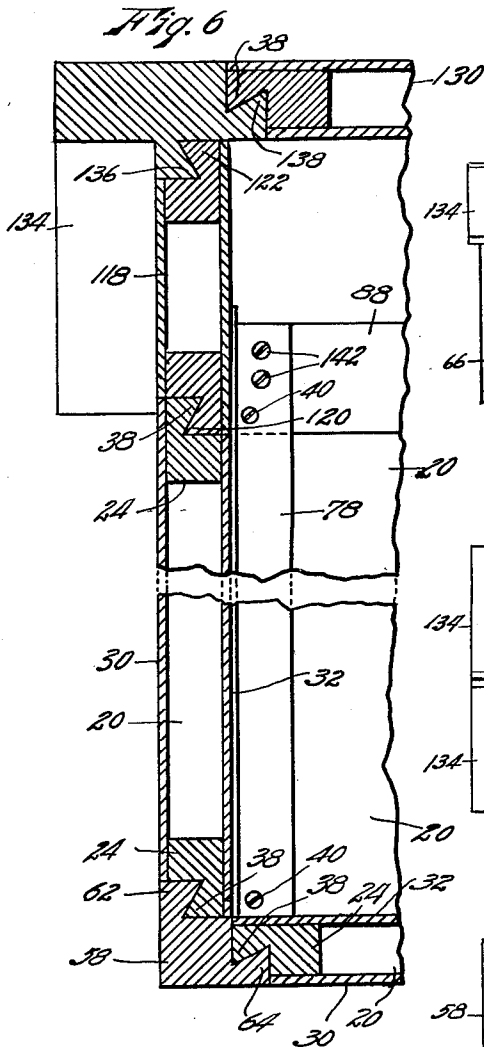
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2,453,326

PORTABLE BUILDING STRUCTURE

Filed April 23, 1945

6 Sheets-Sheet 1



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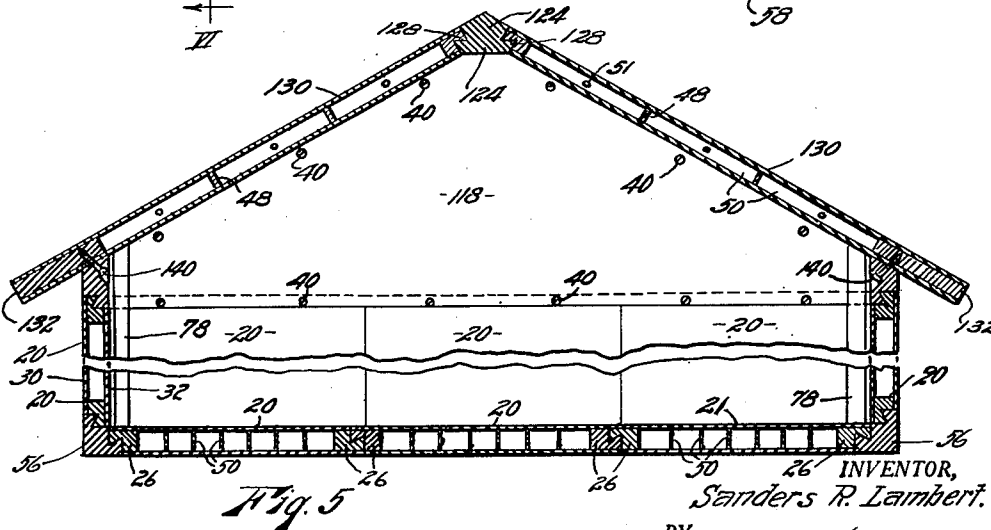
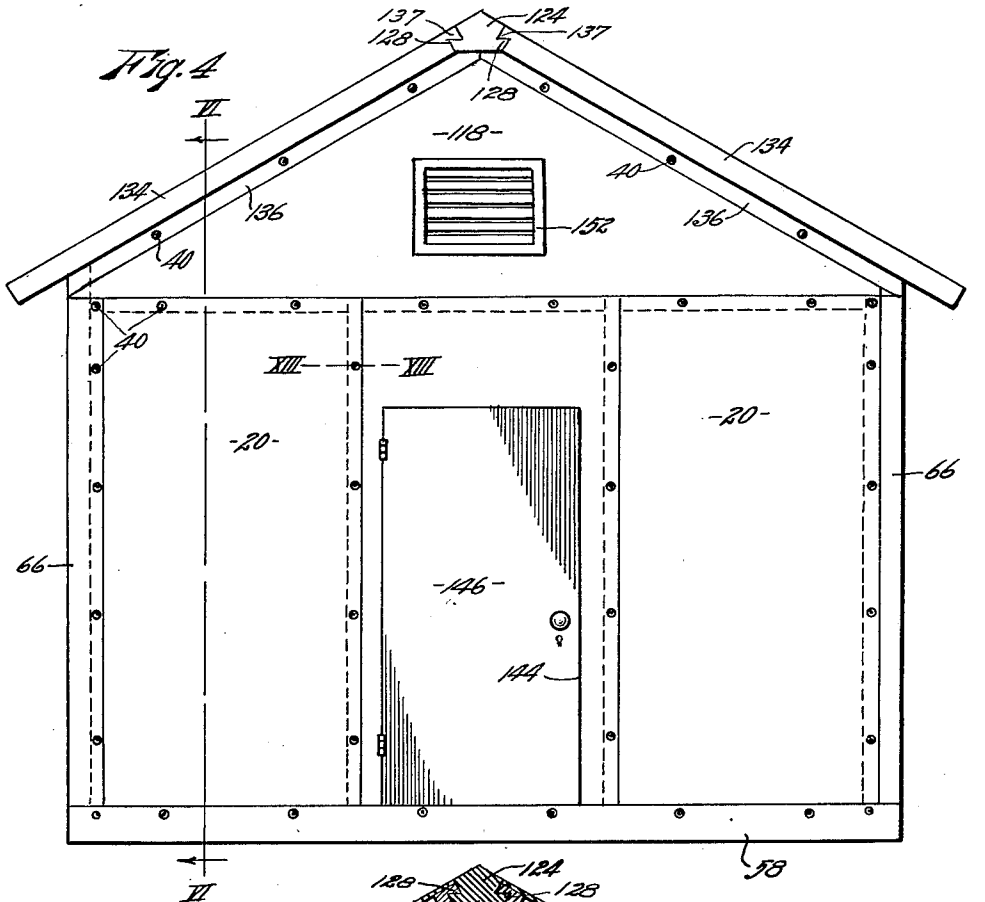
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PORTABLE BUILDING STRUCTURE

Filed April 23, 1945

6 Sheets-Sheet 2



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PORTABLE BUILDING STRUCTURE

Filed April 23, 1945

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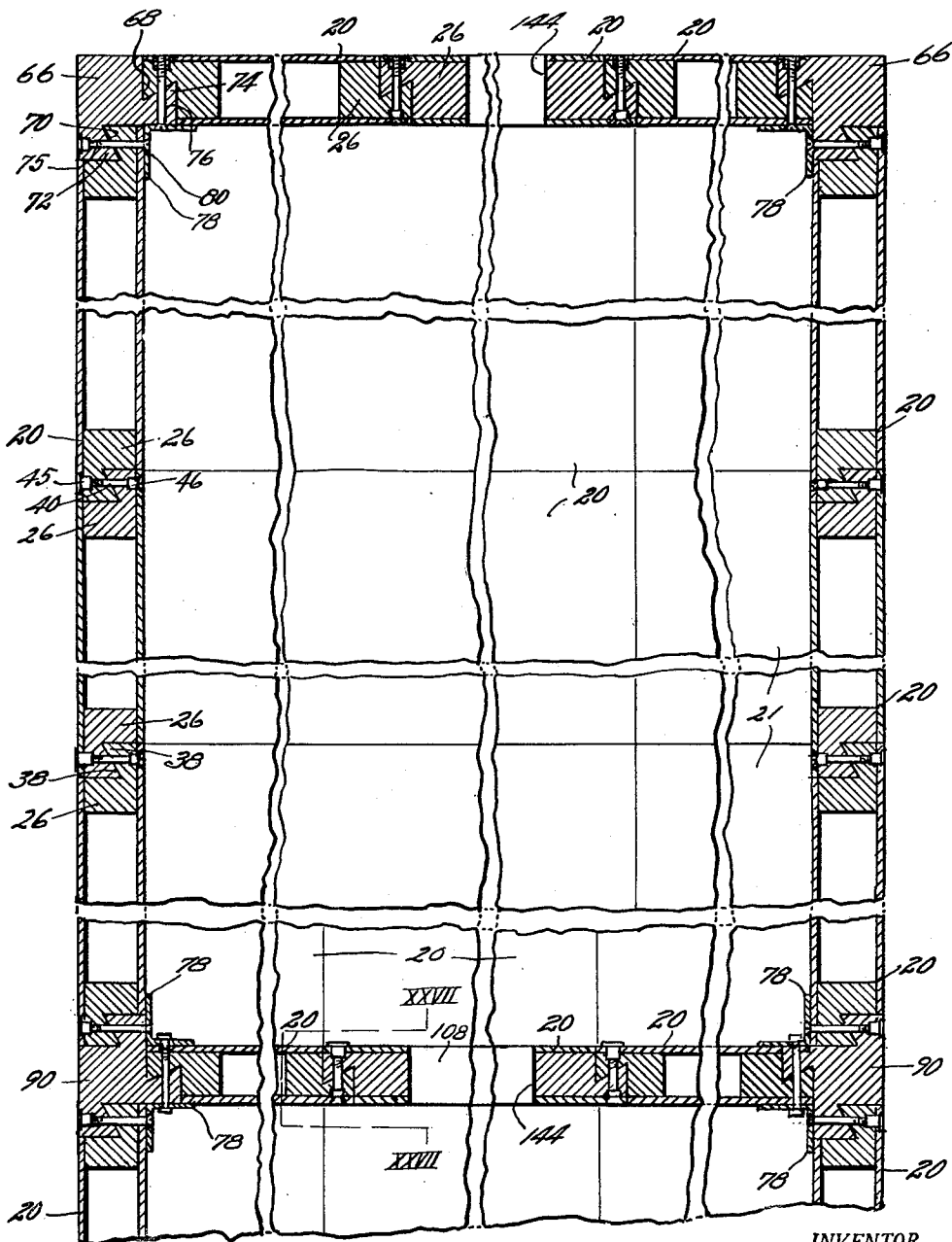


Fig. 7

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PORTABLE BUILDING STRUCTURE

Filed April 23, 1945

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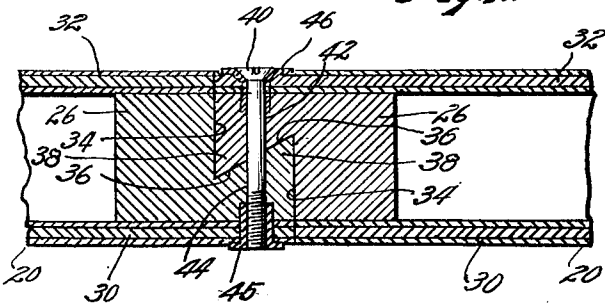
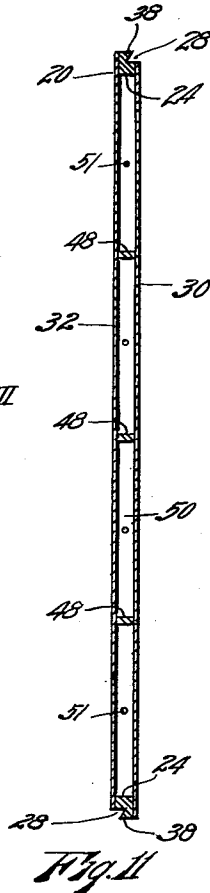
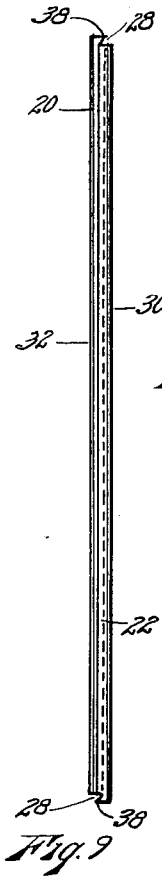
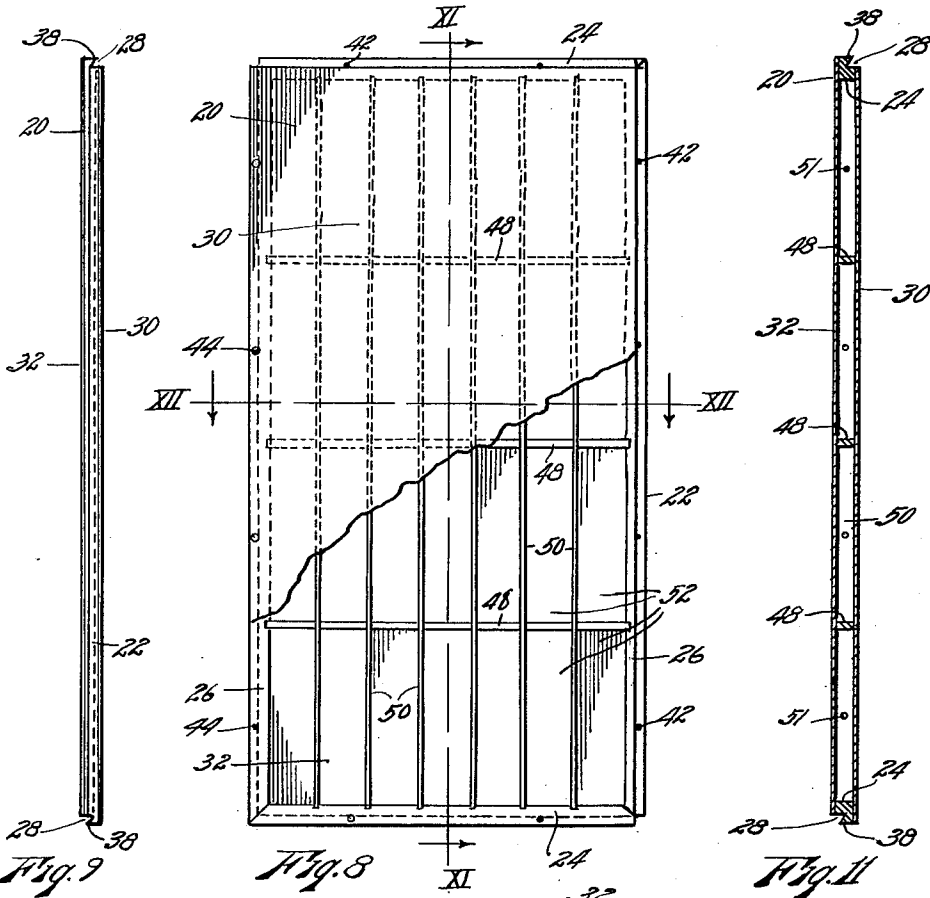


Fig. 13

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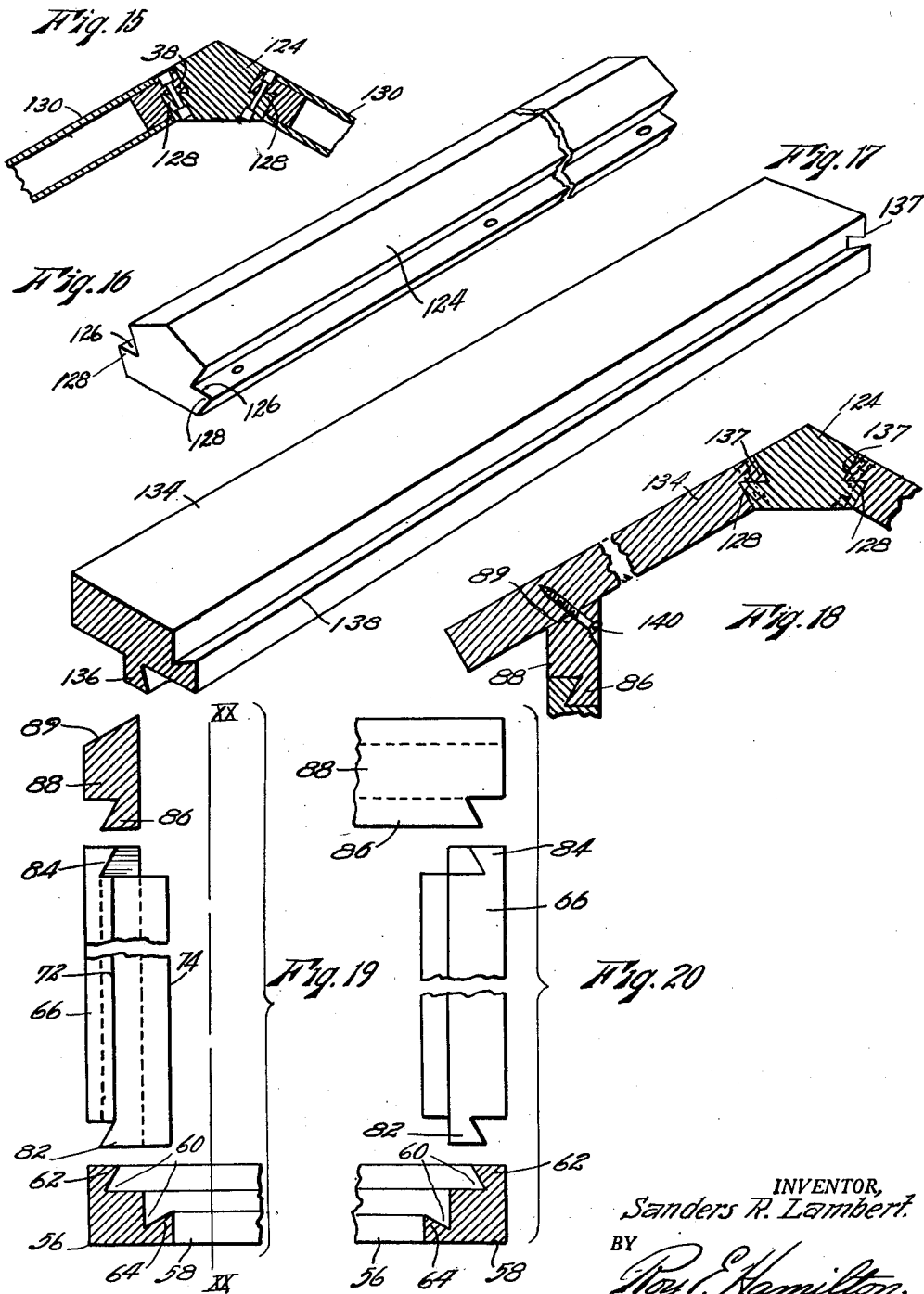
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PORTABLE BUILDING STRUCTURE

Filed April 23, 1945

6 Sheets—Sheet 5



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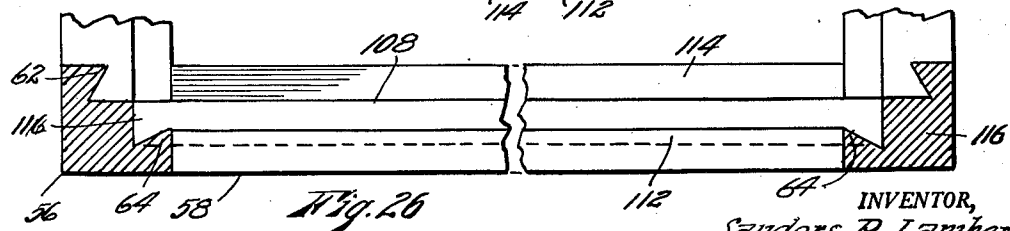
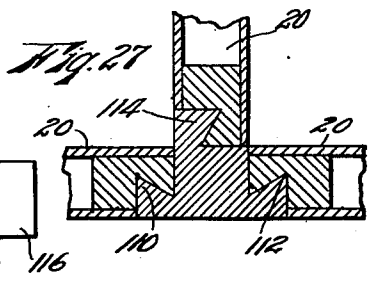
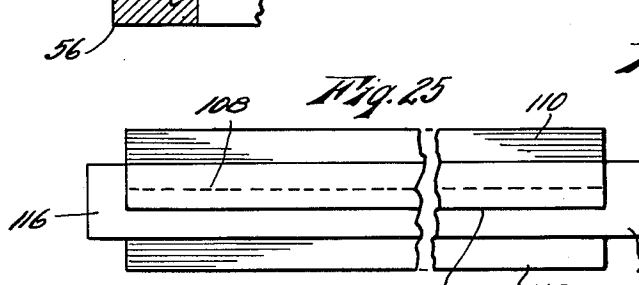
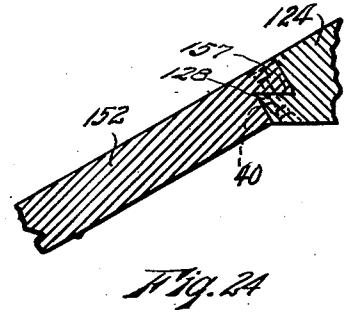
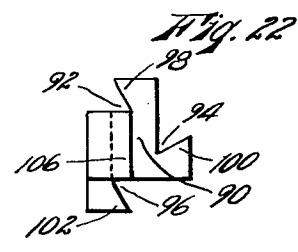
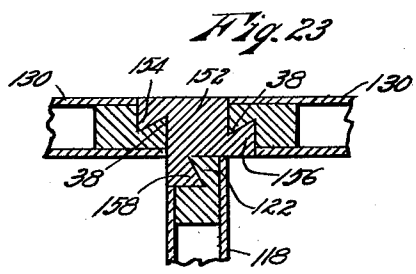
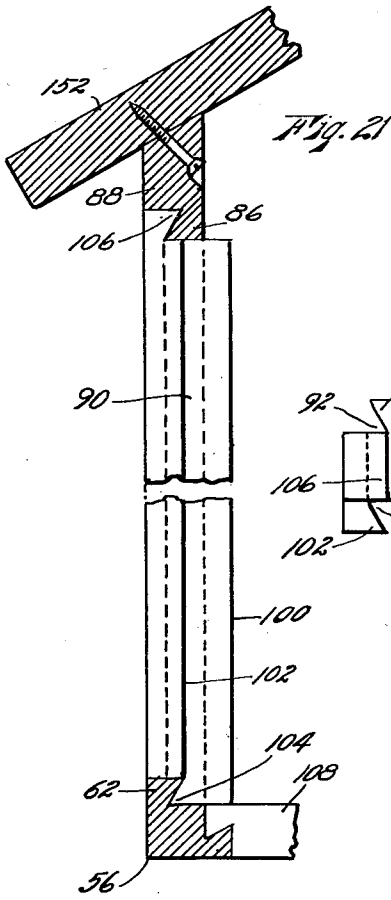
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PORTABLE BUILDING STRUCTURE

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6 Sheets-Sheet 6



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2,453,326

PORTABLE BUILDING STRUCTURE

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Application April 23, 1945, Serial No. 589,914

7 Claims. (Cl. 20—2)

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This invention relates to improvements in portable building structures and particularly to building structures made of similar prefabricated structural sections adapted for use in the various parts of the building.

The principal object of the present invention is the provision of strong, light-weight, structural units of rectangular form adapted to overlap with their respective faces in a common plane.

Another object of this invention is the provision of a prefabricated structural wall unit adapted to extend from the base member to the header rail and to interlock with the wall units next adjacent thereto.

A further object of this invention is the provision of a rectangular prefabricated wall unit having like spaced apart side panels offset diagonally with notched spacing bars disposed between the outer edges thereof whereby a series of said wall units may be interconnected in planar relation.

Another object is the provision of building structure having tongued corner and wall posts suitable for interconnection with said prefabricated structural sections and with the header rail and the base member.

A still further object is the provision of a structural wall unit provided with spaced apart panels with intersecting strips disposed therebetween to form air cavities.

Other objects are simplicity and economy of construction, ease and speed of erection and dismantling, and adaptability for enlargement or reduction.

With these objects in view, reference will now be had to the drawings, wherein:

Fig. 1 is a side elevation partly broken away and foreshortened of a portable building structure embodying this invention.

Fig. 2 is a plan view of the building shown in Fig. 1.

Fig. 3 is an inverted plan view of the building.

Fig. 4 is an enlarged end view of the building.

Fig. 5 is an enlarged, foreshortened sectional view of the building taken on line V—V of Fig. 1.

Fig. 6 is an enlarged, fragmentary, sectional view taken on line VI—VI of Fig. 4.

Fig. 7 is an enlarged, fragmentary, sectional view taken on line VII—VII of Fig. 1 partially

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broken away in a plurality of places, both transversely and longitudinally.

Fig. 8 is an enlarged plan view of one of the structural units partly broken away.

5 Fig. 9 is a longitudinal edge view of the structural unit shown in Fig. 8.

Fig. 10 is an upper edge view of the same.

Fig. 11 is a sectional view taken on line X—X of Fig. 8.

10 Fig. 12 is a cross sectional view taken on line XII—XII of Fig. 8.

Fig. 13 is an enlarged sectional view taken on line XIII—XIII of Fig. 4.

15 Fig. 14 is a fragmentary plan view of a corner of the base frame.

Fig. 15 is an enlarged sectional view taken on line XV—XV of Fig. 2.

Fig. 16 is a foreshortened perspective view of the side post.

20 Fig. 17 is a sectional perspective view of a portion of gable roof member.

Fig. 18 is an enlarged partly broken away sectional view taken on line XVIII—XVIII of Fig. 2.

25 Fig. 19 is a disassembled view of the header corner post and base member.

Fig. 20 is a sectional view taken on line XX—XX of Fig. 19.

30 Fig. 21 is an elevational view partly broken away of a side post shown in position in the building structure which is in sectional view.

Fig. 22 is an end view of the side post.

Fig. 23 is an enlarged sectional view taken on line XXIII—XXIII of Fig. 2.

35 Fig. 24 is a fragmentary, sectional view taken on line XXIV—XXIV of Fig. 1.

Fig. 25 is a foreshortened plan view of the cross floor joist.

40 Fig. 26 is an edge elevational view of the floor joist shown in position with the building structure.

Fig. 27 is a cross sectional view taken on line XXVII—XXVII of Fig. 7.

In the specification like reference characters refer to similar parts and the numeral 20 is a prefabricated structural or wall member preferably of rectangular form. This member comprises a rectangular frame 22 made of interconnected end bars 24 and side bars 26. One each of said bars 24 and 26 are notched longitudinally at 28 from the inside of said wall member while

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the other bar 24 and side bar 26 are notched at 28 along the outer corner on the outer face of said wall member, as clearly shown in Figs. 8 to 12 inclusive. An outside panel 30 and an inside panel 32 disposed in parallel relation are rigidly secured to frame 22 in diagonally offset relation as shown, to present like inner and outer wall surfaces. Notch 28 is formed to present a transverse wall 34 and a diagonal wall 36, so that an overhanging tongue 38 is presented.

By referring to Fig. 13 which shows a joint between adjacent structural wall members, it will be noted that when they are moved with their inner and outer faces respectively in common planes, tongues 38 will be interlocked. A suitable screw member 40 is adapted to extend through registering holes 42 and 44 formed respectively through the inner and outer tongues 38 respectively. The outside tongue 38 is provided with a sleeve nut 45 while inner tongues are provided with countersunk bushings 46 so that when the screw 40 is set from inside the building, it will tend to draw the tongues into interlocking relation as clearly shown. Panels 30 and 32 are preferably made of plywood as shown in detail in Fig. 13. This adds strength to the structure and also presents suitable facings for finishing.

Mounted in frame 22 are transverse strips 48 and longitudinal strips 50. These strips intersect similar to egg crating and meet the inner walls of panels 30 and 32 thereby forming cavities or air spaces 52. The strips 48 and 50 are provided with vent holes 51 whereby the excess pressure produced during the gluing operation can escape and continually be discharged through port hole 53 formed through end rail 24. After the pressure inside and outside the member has been equalized, the port hole 53 may be plugged to prevent the passage of moisture to the structure. These air spaces serve to insulate the structural member. The parts of this structural member may be securely joined together by any suitable means such as nailing, gluing, etc., so as to present a structure which is light, rigid and durable. It is anticipated that these structural units shall be of sufficient height to extend from the base member to the header, thus eliminating all intermediate horizontal joints in a one story building. Furthermore, this unit 20 is made of a width suitable for receiving the usual door or window apertures. It has been found that a unit 4 foot by 8 foot is suitable for most purposes.

This building is provided with a suitable base 54 comprising side members 56 and end members 58. Each of these side and end members is preferably square in cross-section and is provided at its inner top corner with a W-shaped notch 60, thus providing an upper and outer tongue 62 and an inside bottom tongue 64. The tongues 64 all extend inwardly and are adapted to receive the standard wall members 20 and the slightly modified wall member 21 as floor members with their lower surface in planar relation with the lower plane of base 54. These base parts being in a common plane may be easily positioned on any suitable planar surface to carry the required load. It will be noted that the structural member 21 has its side tongues and end tongues all positioned at the top surface of the member so as to properly engage tongue 64 to carry the load.

The upturned tongues 62 are adapted to receive the end tongues 38 of structural members 20 as hereinafter described.

Corner posts 66 made from a square timber are

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notched at adjacent corners at 68 and 70 to form an outside tongue 72 and an inside tongue 74. These tongues are so formed and spaced that they will receive the side tongues of interengaging members 20 with the outer walls thereof in planar relation with the outer adjacent surfaces of the corner post. This type of corner post makes it possible to turn a corner with the wall boards without reversing the tongues thereof. When so constructed, the corner posts are alike in construction and may be interchanged; furthermore, the tongues 72 are provided with holes 75 which register with holes 42 of side wall unit 20 and holes 76 which register with holes 44 formed through the adjacent end wall member 20. These holes 75 and 76 receive the nuts 45 and sleeves 46 respectively to receive the bolts 40 for securing the parts together.

Referring to Fig. 7, it will be noted that the inside corner angle is provided with an angled iron brace 78 having countersunk holes 60 to receive the heads of bolts 40. This angle iron not only strengthens the building but also provides a corner finish. This corner post 66 is offset at its lower extremity to form tongue 82 which is adapted to snugly fit into the upper angled notch formed in base 54 and to engage tongues 62 thereof. It will be noted that the upper extremity of corner post is also offset to present an angled tongue 84 which engages the tongue 86 of the header rail 88. This header rail 88 extends the full length of the building and the upper tongue 38 of the side wall member 20 interengages tongue 86 and is secured thereto by bolts 40 in the same manner as described relative to the side wall members, see Fig. 13.

The wall post 90, best shown in Figs. 7 and 21, serves to join together adjacent wall members and to serve as anchoring means for partition walls as shown. Post 90 is preferably made of square beams notched at three corners at 92, 94 and 96 to present tongues 98, 100 and 102. The lower end of 90 is transversely notched to form a depending tongue 104 suitable for engaging the tongue 62 of base rail 56 or 58. Also the upper end of 90 is transversely notched to present an upstanding tongue 106 to engage the depending tongue of 86 of the header rail 88.

A cross floor joist 108 detailed in Figs. 25, 26 and 27, having opposed lower tongues 110 and 112 and a top tongue 114 are adapted to receive the tongue of the respective structural members 20 and 21 as indicated in the drawings. End tongues 116 of joist 108 are adapted to engage the tongue 64 of bottom rails 56 and 58. It is apparent that when the wall post is used for the introduction of a partition that in order to maintain the proper relation of the sectional structural members 20, it is necessary to provide a corresponding band entirely around the building as indicated in the drawings, Figs. 1, 2 and 3.

Referring now to the roof structure, it will be noted that the gable member 118 is rectangular in shape and has a tongue 120 along its bottom edge to interengage with top tongue 38 of end wall member 20 and is secured thereto by means of bolts 40. The inclined edges are also provided with tongues 122 which interengage with roof members as hereinafter described. Like gable members are provided at each end of the building and are secured in parallel relation by means of a ridge pole 124 which is secured thereto by means of bolts 40, as shown in Fig. 18. Like gable members may also be used in the partitions, see Fig. 23.

Ridge pole 124 is symmetrical in cross section with notch at 126 to form tongues 128 to receive tongues 38 of roof members 130, as shown in Fig. 15. These parts are secured together in the usual manner by bolts 40, as shown.

The roof member 130 is similar to structural members 20 with the exception that the lower end is plain and is provided with a relatively wide frame member 132 to which the outside panel 30 and the inside panel 32 are secured. The space between panels 30 and 32 are divided by strips 48 and 50 to form air spaces 52 for insulation, etc.

The gable members each carry narrow roof gable members 134 which function to tie the roof panels to the gable. The roof members 134 are made of an elongated piece of material formed to present a depending tongue 136 adapted to interengage with tongue 122 of the gable member 118 and is also provided with a tongue member 138 to engage the roof section adjacent thereto. Members 134 also have end tongues 137 to engage tongues 128 of the ridge pole 124.

Abutting roof sections 130 are joined together in like manner as are the wall sections 20 and are secured by means of bolts 40 to permit easy and rapid building and dismantling of the structure. The lower extremity of roof members 130 are secured to the header rail 88 by means of screws 140 as it rests on the upper angled surface 89 of the header rail.

The roof sections 130 are joined at the partition to a connector bar 152 having a top side tongue 154, a bottom side tongue 156 and a depending tongue 158, as shown in Fig. 23. Tongues 154 and 156 join with the tongues 38 of adjacent roof members 130 and depending tongue 158 interconnects with the tongue 132 of the partition gable member 118. An end tongue 157 on bar 152 interlocks with the tongue 128 of ridge pole 124.

Referring to Figs. 5 and 6, it will be noted that the angle iron 78 extends upwardly to the roof member and is secured to the header rail 88 by means of screws 142. This angle iron or corner brace member, when so positioned, serves to anchor the roof to the side and end walls of the building.

Each of the building units above described are complete in themselves with bolt holes formed therein to properly register with the respective parts to which they are to be attached. As shown in the drawing, the wall sections are of sufficient size to receive door apertures 144 for the reception of door 146 and also window apertures 148 to receive windows 150. The gable members 118 are made of the same general construction as the wall members and are adapted to receive louvered air vents 152.

With the units described, it is quite apparent that buildings of any desired length, width or height might be constructed without any alterations but by simply interconnecting the wall sections as shown, or in tiers one above the other. When the building is made wider, it is quite evident that the dimensions of the gable member would need to be enlarged in order to obtain the proper pitch angle. The members 20 are shown as used in the vertical position. However, due to their proportionate width and length, may be used horizontally for wall construction. When the building is made wider, the roof members 130 will necessarily be longer to overlap the side walls.

In the construction of the building, the operator usually starts from one end of the building, sets the structural members to substantially complete the building as he progresses toward the

other end of the building. This method is found more convenient due to the particular interlocking of the various structural units. It is quite apparent that buildings of this character may be easily and quickly lengthened or shortened.

What I claim as new and desire to cover by Letters Patent is:

1. In a building structure of the character described; a base frame having tongues formed along the upper edges thereof; a header rail having tongues formed along the lower edge thereof; a corner post having an inside longitudinal tongue, an outside longitudinal tongue and a transverse tongue at each of its ends; and rectangular wall members having tongues along each of its sides and adapted to extend from said base to said header rail, whereby said corner post may be positioned with its transverse tongues engaging respectively, said base tongue and said header rail tongue and its longitudinal tongues respectively engaging tongues of wall members disposed at right angles to each other.

2. In a building structure of the character described; a base frame having tongues formed along the upper edges thereof; a header rail having tongues formed along the lower edge thereof; a corner post having an inside longitudinal tongue, an outside longitudinal tongue and a transverse tongue at each of its ends; rectangular wall members having tongues along each of its sides and adapted to extend from said base to said header rail, whereby said corner post may be positioned with its transverse tongues engaging respectively said base tongue and said header rail tongue and its longitudinal tongues respectively engaging tongues of wall members disposed at right angles to each other; and detachable securing means whereby said base, header rail, corner post and wall members are secured in interengaging relation.

3. In a building structure of the character described; a base frame having upstanding tongues extending thereabout; a header rail having a depending longitudinal tongue; a wall post adapted to extend from said base to said header rail and having longitudinal tongues at three of its corners and a transverse tongue at each of its ends; whereby said wall post may be positioned with its transverse tongues engaging respectively said base tongue and said header tongue; and its longitudinal tongues respectively engaging tongues of three wall members to form a side wall and a partition wall disposed at right angles to the side wall.

4. In a building structure of the character described; a base frame having upstanding tongues extending thereabout; a header rail having a depending longitudinal tongue; wall members adapted to extend from said base to said header rail and having tongues extending entirely therearound; a wall post having longitudinal tongues at three of its corners and a transverse tongue at each of its ends, whereby said wall post may be positioned with its transverse tongues engaging respectively said base tongue and said header tongue, and its longitudinal tongues respectively engaging tongues of three wall members to form a side wall and a partition wall disposed at right angles to the side wall; and securing means operable from within said building structure for securing all of said structural members in relative fixed relation.

5. In a building structure of the character described; a base frame having tongues formed along the upper edges thereof; a header rail having

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tongues formed along the lower edge thereof; a corner post having an inside longitudinal tongue, an outside longitudinal tongue and a transverse tongue at each of its ends; rectangular wall members having tongues along each of its sides and adapted to extend from said base to said header rail, whereby said corner post may be positioned with its transverse tongues engaging respectively said base tongue and said header rail tongue and its longitudinal tongues respectively engaging tongues of wall members disposed at right angles to each other; an angle member disposed to rest against the inner adjacent surfaces of said wall members; and securing means whereby said wall members, corner post and angle member are secured together.

6. In a building structure a base frame having upstanding tongues; header rails provided with depending tongues; corner posts having vertical longitudinal tongues disposed at a right angle and having transverse end tongues; rectangular wall panels having tongues along its edges; a longitudinally tongued ridge pole; roof members having tongues; whereby each of said members is interengaged by the tongues of adjacent members; and means for releasably securing all of said units into a unitary structure.

7. In a building structure having side and end walls, end gable members having upwardly extending tongues along their inclined edges, and a pair of header rails at each side of the build-

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ing; a ridge pole longitudinally grooved at its opposite edges to form side tongues and secured at its opposite ends to said gable members; roof panel members having tongues along their side edges to engage adjacent panels and a tongue along its upper edge to interengage the tongue of said ridge pole as its lower portion rests on said header rail; and securing means whereby said roof members and ridge pole are secured to said building structure and to each other.

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