April 15, 1952 G. M. SHUMAKER 2,592,610

PREFABRICATED FOLDING BUILDING

Filed June 24, 1947 2 SHEETS—SHEET 1

Fig. 1

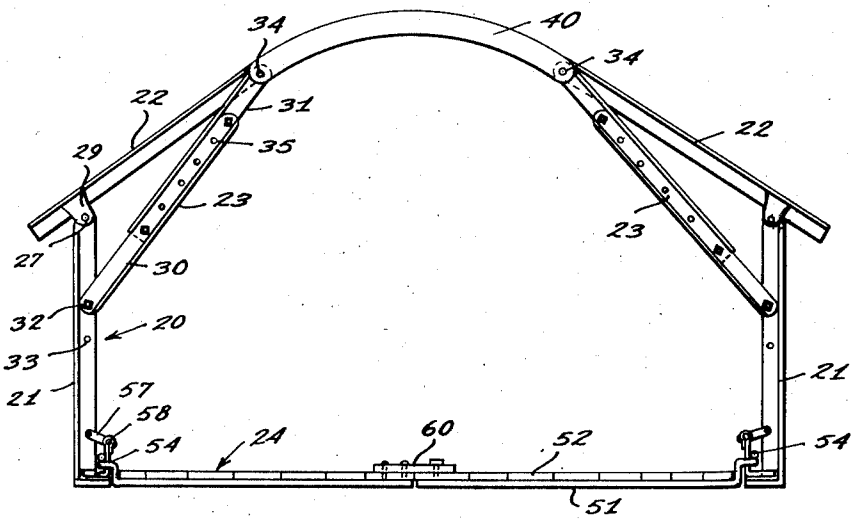


Fig. 2

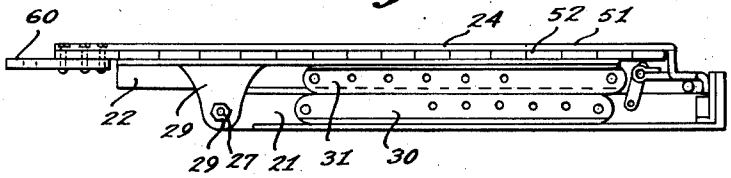


Fig. 3

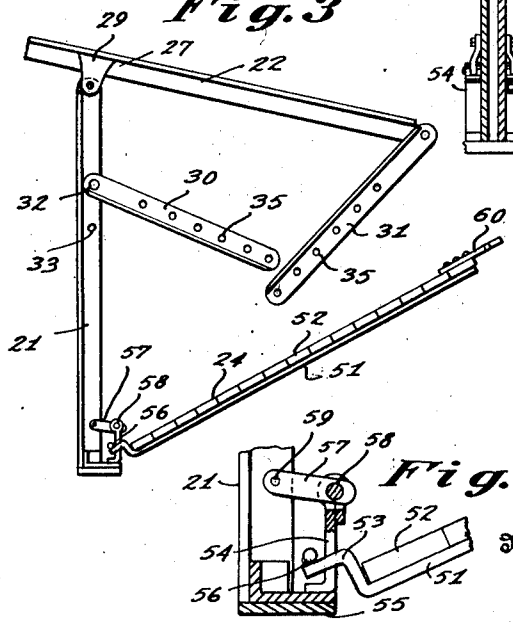
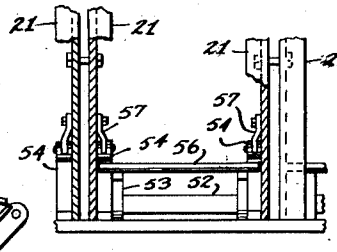


Fig. 4

Fig. 5



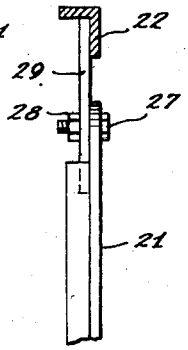


Fig. 6

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April 15, 1952 G. M. SHUMAKER 2,592,610

PREFABRICATED FOLDING BUILDING

Filed June 24, 1947 2 SHEETS—SHEET 2

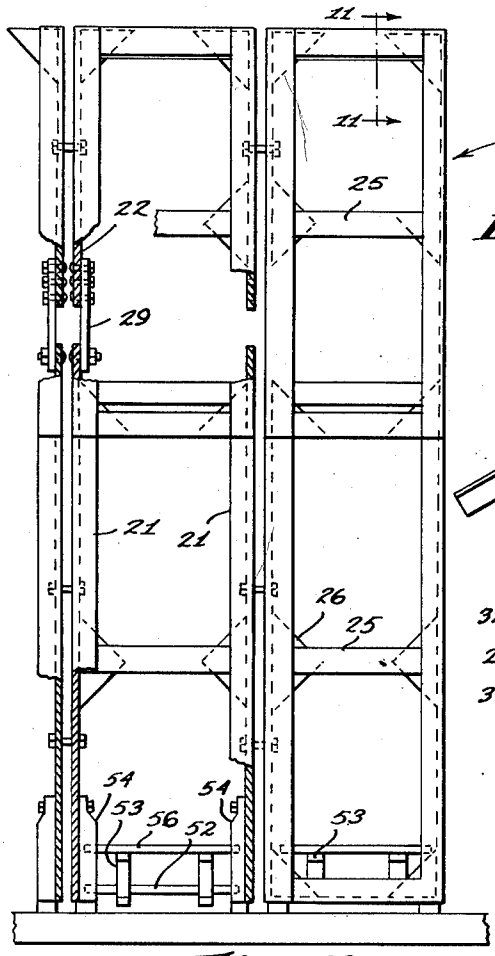


Fig. 10

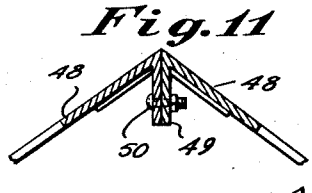


Fig. 11

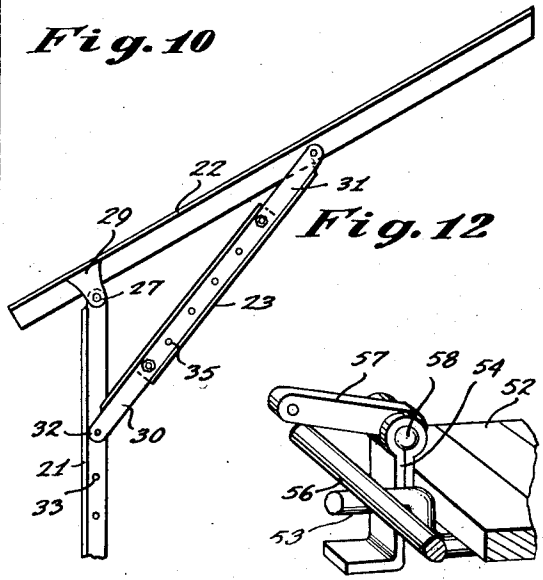


Fig. 12

Fig. 7



Fig. 13



Fig. 14

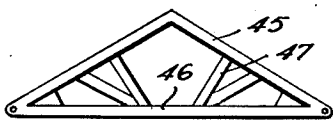


Fig. 15

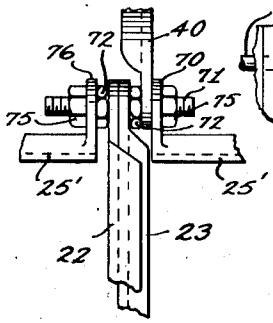


Fig. 8

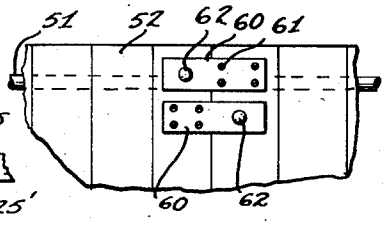


Fig. 9

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PREFABRICATED FOLDING BUILDING

Grover M. Shumaker, Euclid, Ohio

Application June 24, 1947, Serial No. 756,586

4 Claims. (Cl. 189—2)

1

This invention relates to a prefabricated folding building, and more particularly to such a building construction which may be manufactured at a factory and assembled in situ.

A primary object of the invention is the provision of an improved folding building characterized by means whereby a variety of building designs may be readily adapted to facing unit constructions.

An additional object of the invention is the provision of such a structure characterized by means facilitating assembly and erection at a desired site.

A further object of the invention is the provision of such a device comprised of a plurality of units which may be folded into a relatively compact position for shipping or the like.

Still another object of the invention is the provision of such a construction, including a plurality of sections, which may be readily connected and assembled in a variety of shapes as may be desired.

A still further object of the invention is the provision of such a construction which may be erected on unsettled or unfilled surfaces, and provided with a floor construction which may settle in accordance with the traffic over the floor without disrupting the alignment of the side walls.

Still other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter and shown in the accompanying drawings, wherein there is disclosed a preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is an end elevational view of a pair of assembled units forming a building construction.

Figure 2 is an end elevational view of one of the units of Figure 1 shown in folded position.

Figure 3 is an end elevational view of one of the units in the course of erection.

Figure 4 is a fragmentary sectional view on an enlarged scale disclosing the connection of a floor unit to one of the supporting posts.

Figure 5 is a fragmentary detail view showing in side elevation and with parts broken away to show internal construction, the lower portion of a section, and its relation to an adjoining section.

Figure 6 is a fragmentary detail view showing the connection of a rafter to a supporting post.

Figure 7 is a fragmentary perspective view disclosing the hinge construction of Figure 4.

Figure 8 is a fragmentary elevational view of the connection of adjacent rafter sections.

2

Figure 9 is a fragmentary view disclosing the connection of associated floor sections.

Figure 10 is a side elevational view, partially in section, of a modified form of the invention showing the connections of a plurality of units into the assembly of a building.

Figure 11 is a fragmentary sectional view showing means of connecting top sections of the device in the form shown in Figure 10.

Figure 12 is a fragmentary side elevational view showing the association and adjustment of rafters with the supporting posts and roof trusses of the device.

Figures 13, 14 and 15 are elevational views disclosing modified forms of center roof sections.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring now to the drawings in detail, the prefabricated building is comprised of a plurality of individual units, each generally indicated at 20, and comprising a pair of upright supporting posts 21, having hingedly secured thereto rafters 22, the latter being supported by brace members 23, and floor sections 24 also hingedly secured to the uprights 21.

Referring first to the uprights 21, it will be seen that each unit, as best shown in Figure 10, wherein the parts correspond to the form shown in Figure 1 except as hereinafter noted, comprises a pair of spaced upright posts in parallel alignment, connected by suitable transverse brace members 25, reinforcement plates 26 also being provided, to form sections of a predetermined desired width. Each upright is provided at its upper extremity with an aperture, through which is adapted to be passed a bolt 27 and a nut 28, engaging in suitable aligned apertures in rafter sections 22, which are also comprised of angle irons, each rafter being provided with an offset tongue 29 apertured to receive the bolt 27. It will be readily seen that the angle of rafters 22 relative to the uprights 21 may be varied as desired in accordance with the configuration of the roof of the device.

Referring now to the braces 23 for rafters 22, it will be seen that each is comprised of two separate sections 30 and 31, the section 30 being connected, as by a bolt 32, in a suitable selected one of a plurality of apertures 33 in its associated upright 21. The opposite section 31 is pivotally connected, as by a pivot 34, to the extremity of rafter 22, and each section is provided with a plurality of spaced aligned bolt holes 35, the arrangement being such that the angle of each rafter 22 may be suitably varied by appropriate positioning of the bolt 32, and the sec-

tions 30 and 31 connected by suitably selected bolt holes in accordance with the angle of rafters 22.

In the assembly of the device, adjacent sections are positioned, as shown in Figure 1, and unless the roof section is an integral continuation of the rafters as in Figures 10 and 11, roof truss means, such as indicated at 40, may be connected between the pivot points 34 at the extremities of the rafters. In Figure 1, a simple arcuate roof truss is shown, but various alternative types of roof truss may be utilized, as disclosed in Figures 13, 14 and 15. Figure 13 discloses an arcuate roof truss 41, provided with a transverse beam 42 and angled reinforcing members 43. Figure 14 discloses a simple angle truss 44, while Figure 15 shows an angle truss 45 having a horizontal beam 46 and reinforcing members 47 associated therewith.

A further modification is disclosed in Figure 11, wherein roof sections 48 are disclosed provided with downwardly depending flanges 49, adapted to be secured in abutting relation, as by means of a bolt and nut 50.

Referring now to the floor sections in detail, it will be seen that they are comprised of transversely extending rods 51, adapted to be spaced in parallel alignment and covered with floor boards 52. The inner extremities of the rods are provided with offset portions 53 adapted to go inside of standards 54 which standards are rigidly secured, as by welding, to the base sections 55 of the post assemblies 21. Longitudinally extending rods 56 positioned between the standards 54 and the posts 21, are welded to the offset portions 53, which are adapted to be held in related assembly, as by means of pivotally connected connecting members 57, secured to longitudinally extending pivots 58 at the upper extremities of upright portions 54, and to pivots 59 carried by the post sections 21. The arrangement is such that the assembly may be folded into the position shown in Figure 2, and unfolded from this position, in either case to assume the positions shown in Figures 3 and 4, and subsequent to arrangement in such positions, linear movement of the floor will be permitted upon the upright members 54, in order to accommodate variations in the supporting surface of the device, whereby the floor may raise or lower in accordance with settling of the ground, without disrupting the alignment of the side walls.

Figure 9 discloses a method of connecting the floor sections, each floor section being provided with a plate 60, suitably secured, as by screws 61, to the outermost floor board 52, a bolt hole being provided for the accommodation of a bolt 62, which is adapted to secure each tongue to the outermost board of the opposite floor section.

Figure 8 discloses a means of connecting rafters and braces during assembly until cross-braces 25 are positioned, and takes the form of flanges 70 on special brace members 25', apertured to accommodate a bolt 71. The bolt also passes through suitable apertures in the upper extremities of the members 22 and 23, being secured in position by relatively thin nuts 72 on opposite sides thereof, the rafter being secured exteriorly of one of the nuts 72, and the assemblies secured in related assembly, as by means of additional nuts 75, positioned exteriorly of the flanges 70.

Now, from the foregoing, it will be seen that there is herein provided an improved collapsible building, characterized by a plurality of sections, which may be readily folded and subsequently moved to assembled position, and connected in related assembly to form a building of any desired size or general configuration, in accordance with the particular units involved. It will also be seen that the relative angle of inclination of the roof may be varied as desired, and that the floor may be suitably fitted to accommodate any desired size of building, the floor being relatively flexible with relation to the ground level, in such manner that it may rise or fall with the settling of the ground without disaligning the side walls of the building. It will further be seen that there is herein provided a device accomplishing all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

1. In a prefabricated building unit, a pair of uprights forming a pair of laterally spaced side walls, said uprights having horizontal bases at their lower ends, an individual floor section associated with each side wall and extending laterally inwardly from said side walls, means separably securing the laterally inward ends of the floor sections together, connecting means pivoting the laterally outward ends of said floor sections to said uprights to swing relative thereto on horizontal axes extending longitudinally of the side walls, said connecting means comprising bars extending transversely beneath the floor sections having offset outer ends positioned over the bases of the uprights, rods secured to said offset ends and extending along the bases, standards rising from said bases inwardly of said uprights between which said bars are positioned, and links extending between said standards and said uprights and overlying said rods confining said rods in the space between the uprights and standards.

2. In a prefabricated building unit, a pair of laterally spaced side walls each comprising an upright having a base on the lower end thereof, a floor extending transversely betwen said side walls consisting of a pair of individual floor sections each having an outward end, standards on the upright bases inwardly of said uprights, means separably connecting the inward ends of said floor sections together, means pivotally connecting the outward end of the floor sections to said sidewalls comprising transversely extending bars beneath each of the floor sections having offset outward ends positioned between adjacent standards, rods extending along said sidewalls and secured to said offset ends, and links extending between the standards and the uprights and overlying said rods confining said rods in the space between the uprights and standards, said links being pivoted at opposite ends to said uprights and said standards.

3. In a prefabricated building unit, a sidewall comprising a base, an upright fixed to rise from said base, a rafter pivoted on the upper end of said upright, lengthwise adjustable brace means extending diagonally between and separably pivoted to said upright and said rafter, a standard rising from said base inwardly of said upright, a link separably pivoted at one end to the upper

end of said standard and at the opposite end to said upright, a rod extending longitudinally of the sidewall and positioned between said link and said base and confined between said standard and said upright, a floor section extending away from said sidewall, a bar extending transversely beneath the floor section, the end of said bar adjacent to said upright having an offset terminal secured to said rod whereby said floor section can swing freely on an axis paralled to said base, standard, upright, said rafter, side wall, and floor section being foldable into superimposed relation.

4. In a prefabricated building unit, a side wall comprising a pair of spaced uprights, a horizontal base connected to and extending between the lower ends of said uprights, a pair of spaced standards rising from said base inwardly of said uprights, links separably connected to and extending between the uprights and the standards and spaced upwardly from said base, a floor section having a laterally outward edge positioned along said base, at least one bar extending across said floor section having an offset end projecting beyond the laterally outward edge of the floor section, said offset end being positioned between the pair of standards, a rod secured to the offset end and extending along said base, said rod being positioned between said base and said links and loosely confined between said base and said links whereby said floor section is loosely connected to said sidewall for limited vertical movement relative thereto and for free pivoting movement relative thereto on an axis extending substantially parallel to said base.

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