Aug. 6, 1940. A. S. GOLDBERG 2,210,076

GLIDER

Filed Jan. 17, 1938 2 Sheets-Sheet 1

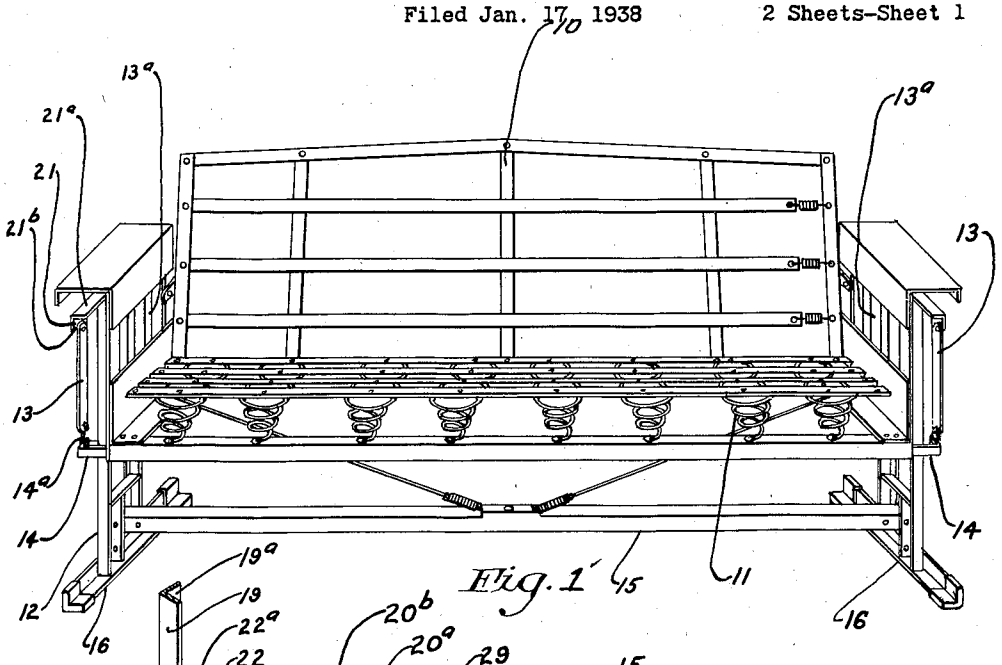

Fig. 1

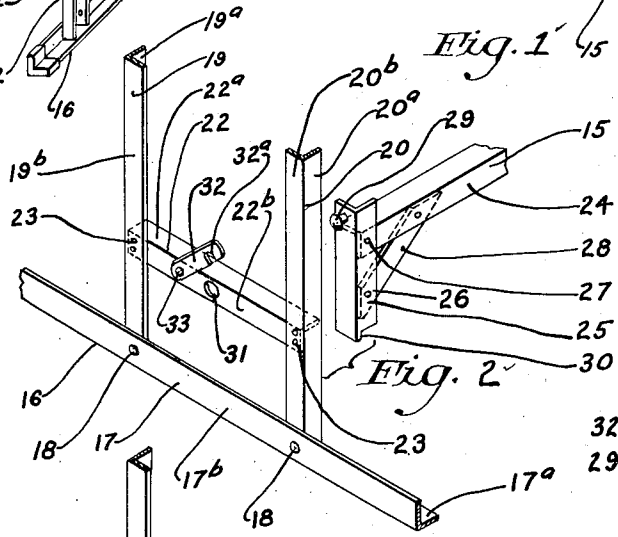

Fig. 2

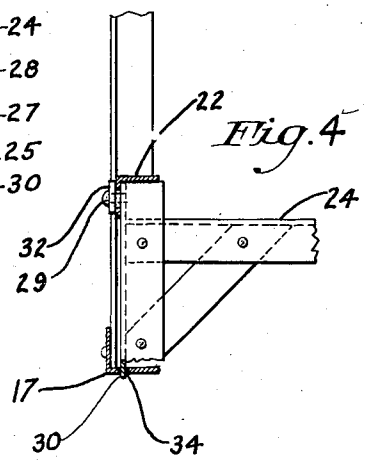

Fig. 4

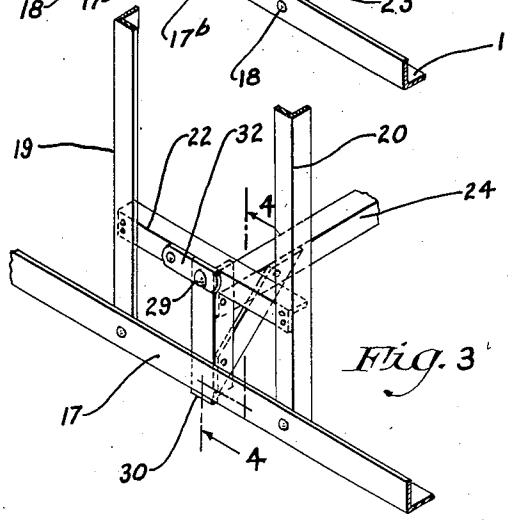

Fig. 3

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GLIDER

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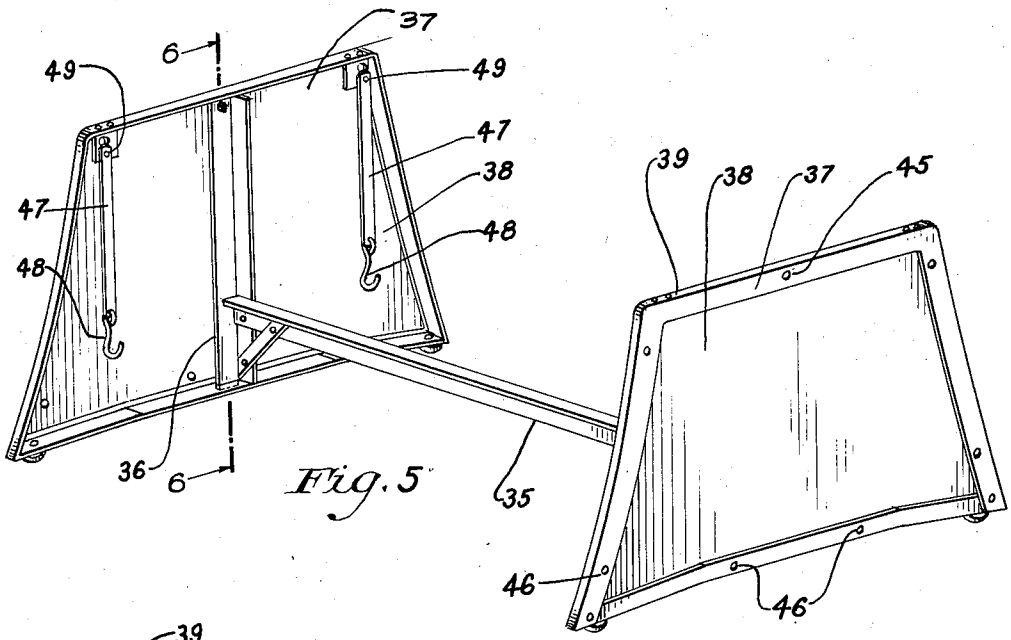

Fig. 5

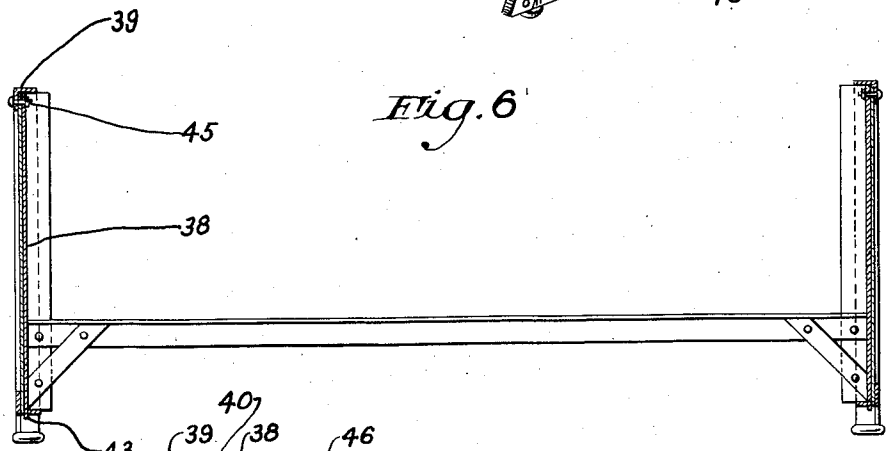

Fig. 6

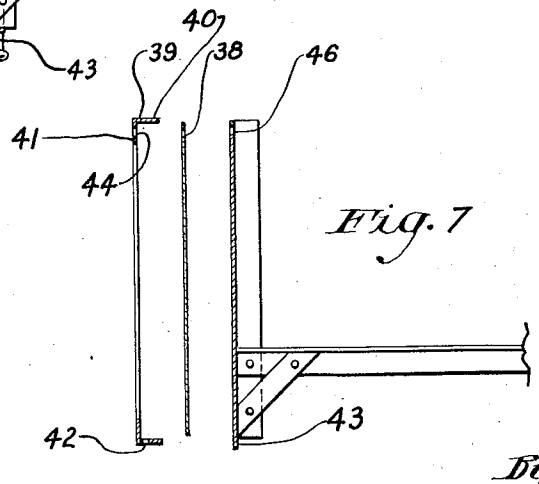

Fig. 7

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UNITED STATES PATENT OFFICE

2,210,076

GLIDER

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Application January 17, 1938, Serial No. 185,380

5 Claims. (Cl. 5—129)

This invention relates generally to gliders and more particularly to an improved type of glider frame assembly having provision for rigidly securing the members of the frame together in proper angular relation.

While the present invention is applicable generally to furniture of many types, it is particularly adapted to that class known as gliders wherein the frame is usually made up for erection in parts, which parts must be adapted for rigid non-permanent securement together.

Among the principal objects of the present invention is to provide a frame for gliders and the like which is adapted to be quickly and securely assembled, wherein the base and side members of the frame are rigidly secured together in the desired angular relation, wherein the frame can be quickly disassembled for storing or for moving of the glider and subsequent erection at another location and wherein the frame can be easily assembled from the "knock-down" condition by an unskilled person.

Further objects of the present invention are to provide a frame for gliders and the like in which the connecting elements thereof are constructed of simple structural members, which is of comparatively light weight, and in which there are no loose members which can be misplaced or lost in transit.

A still further important object of the present invention is to provide a frame for gliders and the like in which the frame in its "knock-down" condition is composed of three principal members which may be rigidly secured together and in the proper angular relation by the use of simple securing means, the application of which requires no special tools.

Other objects and advantages of the invention will appear more fully herein.

The invention consists substantially in the combination, construction, location and relative arrangement of parts, all as will appear more fully hereinafter, as shown in the accompanying drawings and as finally pointed out in the appended claims.

In the accompanying drawings, wherein have been illustrated preferred embodiments of the present invention:

Figure 1 is a perspective view of the structural parts of a glider in which the frame has been constructed in accordance with and embodying the principles of the present invention;

Figure 2 is a disassembled perspective view of one end of the frame shown in Figure 1 showing fragmental portions of the vertical and horizontal frame members;

Figure 3 is a perspective view similar to Figure 2 showing the horizontal and vertical frame members assembled;

Figure 4 is a sectional view taken on the line 4—4 of Figure 3 showing the manner of securing the lower end of the horizontal frame member to the vertical frame member;

Figure 5 is a perspective view of a glider frame showing a modified type of vertical member and method of securing the frame members together;

Figure 6 is a sectional view taken on the line 6—6 of Figure 5; and

Figure 7 is a sectional view similar to Figure 6 showing one end of the frame in disassembled relation.

Referring now to the drawings and more particularly to Figure 1 thereof, it will be observed that the present invention has been shown as applied to a glider, designated generally by the reference numeral 10, in which the swinging seat assembly 11 is swingably suspended from the supporting frame, designated generally by the reference numeral 12, by means of front and rear suspension bands 13 and 13a provided at each end of the glider. The seat assembly 11 may be of any desired type and in Figure 1 is shown as having horizontally extending angle extension members 14 to which the suspension bands 13 and 13a are connected through the hooks 14a. The present invention relates more particularly to the supporting frame 12 for the seat assembly and more particularly to the means for quick-detachably and yet rigidly securing the intermediate frame assembly 15 and the similar vertical side frame assemblies 16—16 in assembled relation.

The vertically disposed side members 16 (see Figures 2 and 3) of the glider frame each essentially include a horizontally extending right angular floor engaging member 17 to which is secured (by the rivets 18 or by welding, if desired) a pair of vertically extending laterally spaced members 19 and 20. Secured permanently to the upper ends of the members 19 and 20 (by rivets, welding or otherwise) is a horizontally extending member 21 from the opposite extremities of which are suspended the seat suspension bands 13 and 13a. Spaced above the floor engaging member 17 and interconnecting the vertical members 19 and 20 is a horizontally disposed member 22, the opposite ends of which are rigidly connected to the vertical members, as at 23, by rivets, welding or otherwise. It will

be observed that all of the structural elements of the glider end frame are of simple right-angular cross-section and that they are relatively so disposed and secured together that the flanges 17a, 19a, 20a, 21a and 22a thereof all project inwardly, that is, toward the center of the glider, in consequence of which the remaining flanges thereof 17b, 19b, 20b, 21b and 22b, which conjointly constitute the outer face of the glider end frame, are disposed in a substantially common vertical plane. It will further be observed that the members 17 and 22 are relatively so disposed that the vertical flanges 17b and 22b thereof present toward each other.

The intermediate frame assembly 15 which extends between and is adapted to maintain the glider end frames in their proper vertical position generally consists of a horizontally disposed structural frame member 24 extending substantially the entire length of the glider and having at each end thereof an anchoring means adapted for quick-detachable connection to the glider end frame. Each of these anchoring means, designated generally by the reference numeral 25, (see particularly Figures 2, 3 and 4) includes a vertically extending member 26 which is rigidly secured to the longitudinally extending member 24 by riveting or welding, as at 27, and, if desired, by a diagonal bracing strut 28 extending between and connecting together proximate parts of the members 24 and 26. The vertically extending member 26 is provided adjacent its upper extremity with a headed stud 29, while the lower extremity of the member 26 is cut away or otherwise formed to provide a downwardly projecting tenon 30. While the opposite ends of the longitudinally extending member 24 may be secured to the vertically extending members 26 at any points in the lengths of the latter, it is a characteristic of these vertically extending members 26 that their lengths are each such that their opposite extremities are adapted to nest within the opposed angles of the horizontal members 17 and 22 of the end frames.

As appears most clearly in Figures 2, 3 and 4, the horizontal member 22 of each end frame is provided in the flange 22b thereof with an aperture 31 of a size sufficient to permit the headed stud 29 to be freely projected therethrough, said flange 22b being further provided with a notched detent 32 pivoted thereto, as at 33. The notch 32a of the detent is so located therein that when the detent is swung into substantially horizontal position (see Figure 3) it engages the shank of the stud 29 behind the head thereof to prevent withdrawal of the stud from the end frame aperture 31. Provided in the flange 17a of the floor-engaging member 17 of the end frame in substantially vertical alignment with the aperture 31 aforesaid is a slot or mortise 34 which is adapted to receive the downwardly projecting tenon 30 of the anchoring member 26.

In assembling the glider end frames and the intermediate frame, all that is necessary is to project the tenons 30 at opposite ends of the intermediate frame into the slots 34 respectively provided therefor in the end frames, at the same time projecting the headed studs 29 through the apertures 31 of the end frames. With the frame members so assembled, the locking detents 32 are swung into their horizontal or stud-engaging position whereupon the three principal units comprising the supporting frame for the glider seat become quick-detachably connected together to form a rigid unitary assembly. In this unitary assembly displacement of the end frames in a direction longitudinally of the intermediate frame member 15 as well as laterally thereof is effectually precluded by the interlocked detent and headed stud and by the mortise and tenon connection between said intermediate frame member and the floor engaging elements of each end frame member, while displacement of the frame members vertically with respect to the intermediate frame member is effectually precluded not only by the foregoing connections but also by the flanges 17a and 22a which respectively engage the lower and upper extremities of the vertically extending member 26 of the intermediate frame.

Figures 5, 6 and 7 show a glider frame which is constructed in accordance with and embodies the principles of the present invention but with a modified type of vertical frame member from that shown in Figures 1, 2, 3 and 4. As is best shown in Figure 5, the intermediate frame assembly, designated generally by the reference numeral 35, is similar to the previously described intermediate frame assembly 15 with the exception that in the modified construction the vertical anchoring member 36 is longer than the previously described vertical anchoring member 26, this variation in length being required to accommodate the anchoring members to the structurally different side frame assemblies of Figures 5 to 7.

These vertical side frame assemblies 37—37 each comprises a substantially trapezoidal-shaped panel 38 bounded along its peripheral edge with a right angle frame member 39, one flange 40 of which extends inwardly of the panel, while the remaining flange 41 thereof extends marginally over and is secured to the panel 38.

Provided in the floor engaging or lower horizontally extending flange 40 of the angular frame member 39 intermediate the extremities thereof is a mortise 42 to receive the tenon 43 formed at the lower extremity of the vertical anchoring member 36. The vertically extending flange 41 of the upper section of the frame member 39 is provided intermediate its extremities with an aperture 44 through which a bolt 45 may be projected to secure the upper extremity of the anchoring member 36 in position, the anchoring member being provided with a registering aperture 46 for this purpose. While the vertical and horizontal members have been shown as being secured together at their upper extremities with a bolt and nut, it is, of course, understood that the latch and headed stud previously described or any other securing means can be used in this modified construction.

In this modified construction illustrated in Figures 5 to 7, inclusive, the assembled frame is adapted to support therewithin a seat unit of substantially the same type as that shown in Figure 1, this latter unit being swingably suspended within the frame by means of suspension straps 47—47 functionally similar to the straps 13 and 13a of Figure 1. These suspension straps 47—47 are provided at their lower ends with hooks 48 or other suitable means for engaging the base frame of the seat unit, while the upper ends of the straps 47—47 are each pivotally secured, as at 49, to the upper member of the side frame unit, these pivoted connections 49—49 being preferably located, in the construction of Figure 5, in the immediate vicinity of the upper corners of the side frame.

In the modified construction just described, it

will be observed that the principles of the invention are identical with those previously described, the sole difference being that in the former case the vertically extending anchoring member is much shorter than in the modified construction illustrated in Figures 5 to 7. In this connection, it will be noted that in the side frames of the modified construction there is no intermediate horizontally extending structural element and that the upper and lower flanges of each end frame respectively abut the upper and lower extremities of the elongated anchoring member in the same manner as the flanges **22***a* and **17***a* respectively abut the upper and lower ends of the shorter anchoring member of Figures 1 to 4. Accordingly, relative displacement of the end frames with respect to the intermediate frame assembly of Figures 5 to 7 is effectually precluded in the same manner and by the same means as in the first described construction.

Similarly, in erecting the modified construction of frame as shown in Figures 5 to 7, inclusive, substantially the same procedure is followed as previously described, the only difference being that in place of using a headed stud which is locked against withdrawal by a pivoted detent, a bolt and nut is employed preferably because in the modified construction it is desirable that the securing elements be as inconspicuous as possible. To this end, the head of the bolt **45** matches in appearance the bolts **46** which secure the panel **38** in position within its marginally surrounding frame. It will be understood, of course, that the panel **38** could well be omitted without affecting the principles of the present invention or it might be replaced by a panel of different shape and also it will be apparent that the end frames of the gliders may themselves be of different configuration than that illustrated without requiring any change in the intermediate frame assembly.

In both forms of the invention as illustrated in the drawings, it will be observed that the central portions of the floor engaging members of the side frame units are raised somewhat above the floor. In the construction shown in Figure 1, this is accomplished by means of rubber cushions fitted over the opposite extremities of said floor engaging members while in the construction shown in Figure 5 the floor engaging members are upwardly bowed for the same purpose. When the central portions of the floor engaging members are so elevated above the floor surface, the tenons (**30** of Figure 2 and **43** of Figure 6) may be somewhat greater in depth than the thickness of the mortised flange, but it will be understood that this is not always necessary and that in certain instances the tenons may be of a depth such that their lower extremities are substantially flush with the bottom surfaces of the mortised members. In fact, in certain instances it may be desirable to provide the mortise and tenon connection at the top rather than at the bottom in which case it would be desirable to provide that the tenon extremity is flush with the exposed surface of the member in which it is fitted.

From the foregoing, it will be apparent that the present invention provides a frame for a glider which can be quickly and securely assembled from a knock-down condition, and in which the frame units, when once assembled, form a rigid and unitary assembly. Further, it is apparent that the assembly of the several units may be effected with a minimum of necessary adjustment and without any special tools. Still further, all of the elements which cooperate to quick-detachably connect the several frame units together are self-contained in the several units so that it is not possible for them to become lost or misplaced.

It will be apparent that the present invention is applicable to structures other than gliders and, accordingly, it will be understood that the present invention is not intended to be limited in its application to the latter. It will also be understood that the invention is susceptible of various changes from time to time without departing from the general principles thereof and it is accordingly intended to claim the same broadly, as well as specifically, as indicated by the appended claims.

What is claimed as new and useful is:

1. A supporting frame for a glider comprising, in combination, a pair of laterally spaced vertical end frames each including a pair of vertically spaced horizontally extending members one of which constitutes the base of the end frame, each of said members being apertured intermediate the ends thereof with the aperture of one member disposed in a plane normal to the plane of the aperture in the other member, a stretcher extending between said end frames, and means provided at each end of said stretcher for respective projection through said apertures whereby to secure the frame to the stretcher at vertically spaced points.

2. A supporting frame for a glider comprising, in combination, a pair of laterally spaced vertical end frames each including a pair of vertically spaced horizontally extending members one of which constitutes the base of the end frame, each of said members being apertured intermediate the ends thereof with the aperture of one member disposed in a plane normal to the plane of the aperture in the other member, a stretcher extending between said end frames, and means provided at each end of said stretcher for respective projection through said apertures whereby to secure the frame to the stretcher at vertically spaced points, one of said means being in the form of a headed pin, and a pivoted detent adapted to engage the shank of said pin to prevent withdrawal thereof from the aperture through which it is projected.

3. A supporting frame for a glider comprising, in combination, a pair of laterally spaced vertical end frames each including a pair of vertically spaced horizontally extending members one of which constitutes the base of the end frame, one of said members having a horizontal flange and the other of said members having a vertical flange, each of said flanges being apertured intermediate the ends thereof, a stretcher extending between said end frames, and means provided at each end of said stretcher for respective projection through said apertures whereby to secure the frame to the stretcher at vertically spaced points, one of said means being in the form of a vertical projection receivable within that one of said apertures which is disposed in a horizontal flange.

4. In a supporting frame for a glider, in combination, a pair of vertical end frames, a horizontal stretcher intermediate said end frames, means for removably securing the said end frames and stretcher together and in proper angular relation, said means consisting of mortise and tenon elements respectively provided in engaging parts of said end frames and stretcher, and

additional means interconnecting said end frames and stretcher and preventing disengagement of said mortise and tenon elements, said additional means including studs projecting longitudinally from each end of the stretcher and adapted respectively to project through apertures provided in each of said end frames and latch elements adapted to prevent withdrawal of said studs from the apertures in which they are respectively projected.

5. In a supporting frame for a glider, in combination, a pair of vertically disposed end frames and an intermediate stretcher extending between and adapted to connect said end frames in assembled relation, each end frame including a floor-engaging member of angular cross-section arranged with the floor-engaging flange thereof presenting inwardly of the glider frame, and a vertically spaced member also of angular cross-section arranged oppositely to said floor-engaging member so that the horizontally disposed flanges of said angle members project inwardly of the end frame while the vertically disposed flanges thereof lie in a common vertical plane, vertical elements secured to each end of said stretcher, each of said vertical elements being of a length adapted to snugly fit between the horizontally disposed flanges of said end frame members, and means for quick-detachably securing opposite extremities of said vertical elements respectively to said end frame members, one of said means including a headed stud adapted to project through an aperture in one of said end frame members and a latch fitted to said last-mentioned end frame member and engageable with the shank of said stud behind the projecting head thereof to prevent a withdrawal of the stud from said end frame member.

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