Feb. 16, 1943. H. C. BRIDGE 2,311,515

COLLAPSIBLE STRUCTURE

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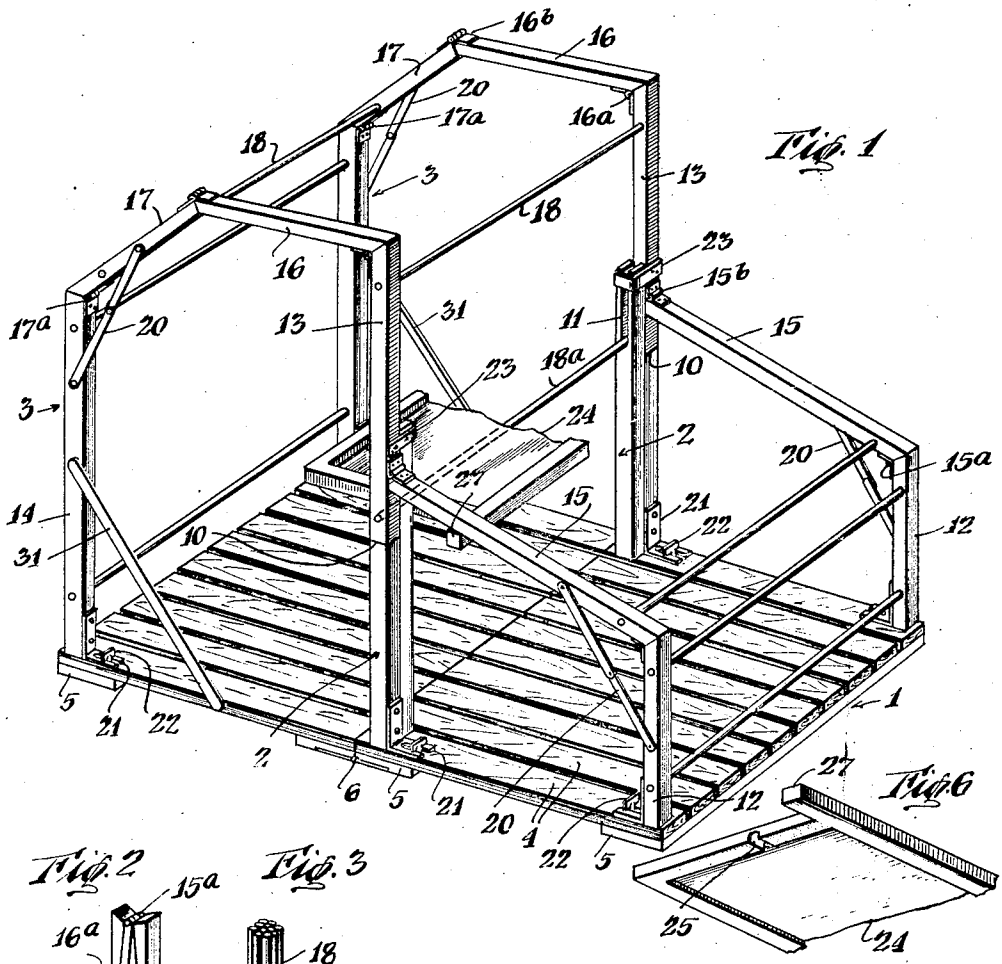


Fig. 1

Fig. 6

Fig. 2

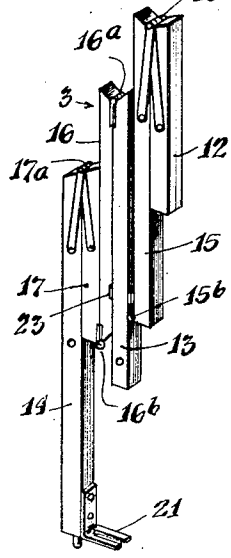


Fig. 3



Fig. 4

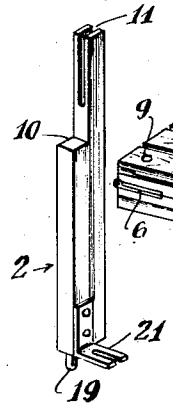
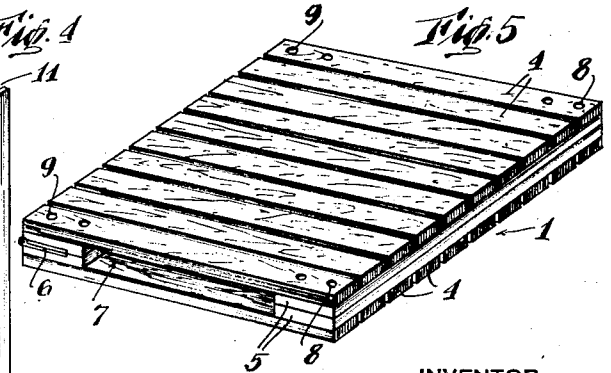


Fig. 5



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Fig. 7

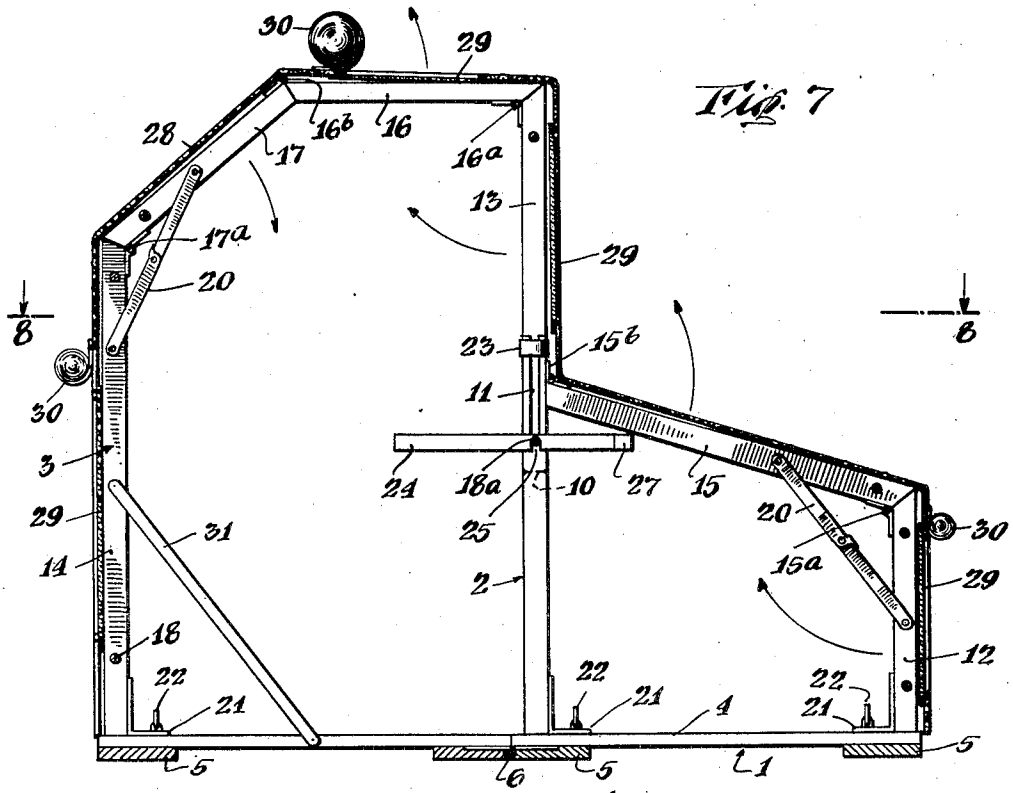
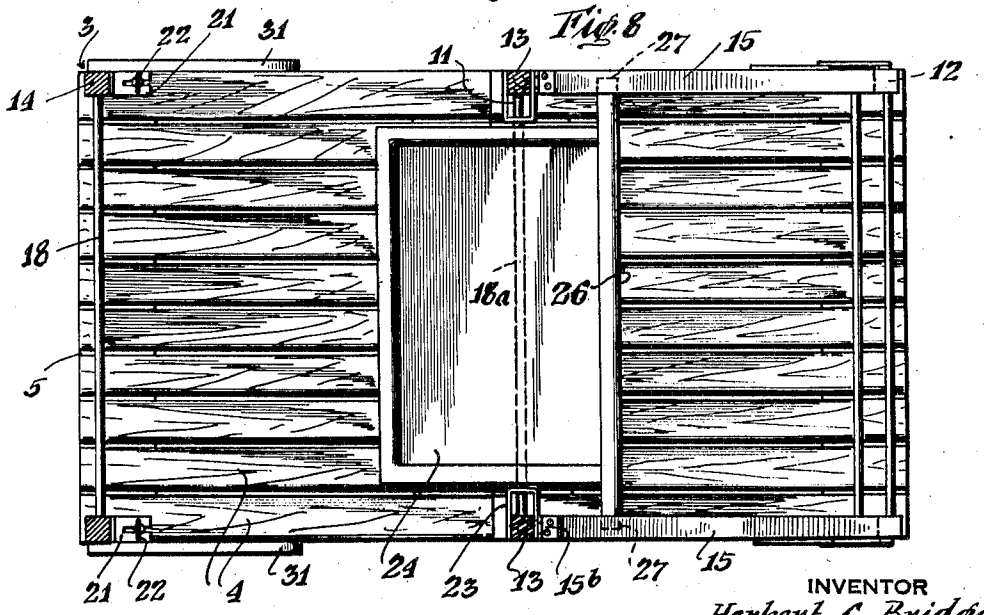


Fig. 8



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COLLAPSIBLE STRUCTURE

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Application February 18, 1941, Serial No. 379,402

4 Claims. (Cl. 135—4)

This invention relates to portable and collapsible enclosures for use as bath houses, sun houses, sleeping cabins, duck blinds, and other similar purposes.

It is an object of this invention to provide such a shelter which is readily collapsible, into a small unit capable of being placed in the average automobile trunk, or secured to the side of an automobile in a normal trunk rack or otherwise carried or carted at will.

It is a further object to have such a structure with sufficient strength and rigidity so that in its assembled position it will provide a substantial and strong housing.

Its further object is to have such a structure with sufficient height to enable the occupants to sit upright in a comfortable position, and have sufficient head room over said position so as not to be too close to the top and hot air, normally adjacent to the inside of the top.

A still further object is the provision of such a shelter with sufficient length and width to provide comfortable sleeping accommodations for two people.

A further object is the construction of a shelter with a cover member having its curtains so arranged that the occupants may receive the direct sun through the windows or else may completely or partially cover the structure from sunlight.

The achievement of these and other objects will be apparent from the specification and drawings.

Fig. 1 is a perspective view of the structure with the outer covering removed.

Fig. 2 is a detail of the main folding members in their folded position;

Fig. 3 shows the alternative with the dowels 13 in packed condition;

Fig. 4 is a detail of the bottom compressive upright member;

Fig. 5 shows the floor member in its folded position;

Fig. 6 is a detail of the table member;

Fig. 7 is a side elevational view of the structure showing the covering in place;

Fig. 8 is a cross sectional view taken along the lines 7—7 and looking in the direction of the arrows and showing the floor and table members in place.

The structure comprises essentially, a single unit collapsible floor structure 1, a pair of single upright members 2, and a foldable series of pairs of uprights and top members 3, shown in their folded position in Fig. 2. It will thus be apparent that the entire supporting structure and floor members consist of at the most, only three major units. This simplicity makes the entire structure a highly desirable commercial product.

Referring now especially to Fig. 1 through 5, inclusive, it will be seen that the floor structure may consist of slated boards or other material 4, supported and secured by cross sills 5. The floor is in two sections and is hinged at its line of fold by hinge 6, and is foldable along said line. In its folded position, the abutment of adjacent cross sills 5 leaves an opening 7. Said floor member has adjacent its four corners dowel receiving holes 8, for receiving the bottom dowels from the upright members. Near the edge of the floor and adjacent the line of fold and on only one side thereof are two dowel openings 9, for receiving the bottom dowels of the main upright members 2.

The main pair of compressive upright members 2, each consist of a short upright member having a ledge 10, and a taller upright member adjacent thereto and having a vertical slit opening 11, for receiving a cross dowel support member. This upright 2 may be formed of two pieces secured in any suitable manner or may be of one piece as desired. It has also been found that the upright 2 may be made integral with the collapsible upright structure 3. This is of course, only desirable where the height of entire structure in its folded position is not undesirable or where the structure is made lower to accommodate solely children or people not demanding complete comfort.

The collapsible upright structure 3 consists of the pair of short upright members 12, which form upright supports for the low end of the completed structure and a pair of center upright members 13, so positioned that in their assembled condition they rest upon the ledges 10. Taller upright members 14 form the other and taller end of this collapsible structure 3. The uprights are secured together in collapsible manner by means of cooperating top members. The upright members 12 and 13 are secured to one another and to the slanting top member 15, by means of hinges 15*a* and 15*b* while upright members 13 and 14 are secured to one another and to the adjacent foldable top members 16 and 17 by means of hinges 16*a* and 17*a*. The hinge for engaging top members 16 and 17 is placed on the outside of the member and is shown as 16*b*. It will be observed that hinged member 16*b* is secured to upright 13, at a point higher than the top of member 12. This gives the completed structure a sufficient down slant to cause a drainage of rain water

from the roof. It will also be observed that the uprights 14 are of less height than the combination of uprights 12 and 13. This results in a similar slant to the roof structure on the higher side of the enclosure.

Each pair of uprights of collapsible structure 3 may be secured by means of dowels 18. In the preferred embodiment it has been found desirable to secure dowels 18 permanently so that the pair of units 3 remain connected at all times. However, should it be desirable these dowels may be removably positioned in place in which event they could be packed as shown in Fig. 3. It will be obvious that the number of dowels so placed will depend upon the rigidity desired. Dowel 18a which cooperates with slots 11 serves as a steadying means for upright 13.

Each of the uprights have bottom extended tongue portions 19 which may be wooden or metal dowels or extensions for engagement with the openings 8 and 9 in the floor.

As shown in Fig. 1, the collapsible structure 3 may be secured at its hinged points by foldable brackets 20. It will be seen, however, that due to the manner of suspension of the various parts, the foldable brackets are not absolutely necessary and may be eliminated without affecting the strength of the unit. The securing of the upright members to the floor, in addition to the engagement of the tongue portions 19, is affected preferably by means of metal knees 21 having slots for receiving the turn buttons 22. These turn buttons may be mounted permanently to the floor or may be removable at the will of the operator.

Secured permanently to uprights 13 are collars 23, preferably of metal. These collars are positioned a short distance above the bottom of uprights 13 and have openings on the inside of uprights 13, which openings are of sufficient size and shape to snugly secure the top portion of uprights 2.

Provided with said unit is a separable table member 24 shown in its unassembled position at Fig. 6 and shown more clearly in a broken section in Fig. 1. This table member may be formed with notches 25 on each side thereof. These notches are so positioned as to form a pivotal groove for cross dowel 18a. On one end of said table member, the end member 26 is extended over the side of the table forming extensions 27. As will be seen from Fig. 1, these extensions 27 serve to hold the table member in its assembled position. It will be noted that the groove 25 is placed, not in the center of the table but to the rear or closer to the end member 26 than to the front of said table. This positioning of the groove enables the table to remain in its assembled position by means of gravity. While this manner of forming the table has proved satisfactory, it has also been found that permanently pivoting the table on the dowel 18a so that in its folded position the table member becomes part of the structure shown in Fig. 2, is also satisfactory. It is to be observed that the structure shown in Fig. 6 has the advantage of being easily removed, should the user care to eliminate it from the shelter, and has the additional feature, in that its length and width, has been so regulated that the table member 24 in its unassembled position can be placed in the opening 7 between the floor member in its folded position.

Furnished with said structure, may be a unitary canvas or other suitable fabric cover 28, shown in Fig. 7. This cover, which fits the entire structure, in its assembled position has a suitable isinglass or pliable film door panel, and isinglass or pliable film windows 29, all of which are positioned for opening or removal, as desired. The positioning of said openings is such that the occupants receive direct sun's rays from any position and, additionally, the openings provide ready and adequate ventilation. In addition to the isinglass or pliable film, the openings may be provided with curtains 30 and screening.

The assembling of the structure from its folded position may be readily understood by referring to Fig. 7 and noting the direction of the arrows on the various upright and top members, showing the manner in which they collapse. Starting with the units shown in Figs. 2, 4 and 5, the manner of assembly is as follows:

The floor member 4 is opened and placed upon the ground. Next, uprights 2 are put in position adjacent the line of fold of the floor member. The turn buttons 22 which cooperate with the knee and slot on members 2 are then turned to secure said members. Next, the uprights 14 of collapsible structure 3 shown in Fig. 2 are placed in position at the end of the floor member, as shown in Fig. 1. Top members 17 and 16 are then pulled out to their extended length and the uprights 13 are then fitted into position. This means that the collars 23 fit over uprights 2 and that dowel 18a drops into slots 11. The next step is simply to extend top members 15 and place uprights 12 into position at the opposite end of the floor member, as also shown in Fig. 1. The dowels or extended tongue portions on the bottom of each of the upright members are of course engaged with their respective dowel openings in the floor member, and the turn buttons are all turned to secure the knees properly in place.

If it is desired to use the table member, it is then placed over dowel 18a, such that the dowel fits into the groove 25. The extensions 27 of the end member 26 are under and abut against the top members 15. It will thus be apparent that, in its preferred form, the sole means of keeping the table from tipping is the positioning of the groove members 25, such that a greater turning moment is exerted in a downward direction forward of the dowel 18a than in back of the dowel 18a. Should it be desired, a hook securing means may be utilized to fasten the table to top members 15.

If it is desired to impart greater rigidity to the structure, braces 31 may be secured to the floor member and to the upright members 14. Now that the frame work is in position, the cover, which as aforementioned, is of any suitable material, may be applied. The cover member is shown in position in Fig. 7 and, as can be seen from that figure, in its completed assembled position, the structure provides a rigid and commodious cabin or bathhouse.

It should be appreciated that within the essentials of this invention, numerous modifications might be affected without in any manner departing from the spirit of the invention, as defined in the claims.

I claim:

1. A three-piece collapsible frame cabin structure comprising floor boards collapsible along a line of fold, a pair of detachable upright retentive members adjacent each side of said floor, and on one side only of said line of fold, a completely foldable connected series of three pairs

of uprights and connecting top members, two pairs of said uprights arranged for detachably securing to the ends of said floor member and the third pair of uprights arranged for positioning on said first mentioned uprights.

2. A three-piece collapsible frame cabin structure comprising floor boards collapsible along a line of fold, a pair of detachable upright retentive members adjacent each side of said floor, and on one side only of said line of fold, a completely foldable connected series of three pairs of uprights and connecting top members, two pairs of said uprights arranged for detachably securing to the ends of said floor member and the third pair of uprights arranged for positioning on said first mentioned uprights and having a collar for snugly securing said latter upright retentive member.

3. A three-piece collapsible frame cabin structure comprising floor boards collapsible along a line of fold, a pair of detachable upright retentive members adjacent each side of said floor, and on one side only of said line of fold, a completely foldable connected series of three pairs of uprights and connecting top members, each pair of uprights secured by a cross dowel member, two pairs of said uprights arranged for detachably securing to the ends of said floor member and the third pair of uprights arranged for positioning on said first mentioned uprights, and means for securing said first mentioned uprights and said third pair.

4. A collapsible frame cabin structure comprising a floor member hingedly secured along a center line of fold and foldable through an angle of 180 degrees, a plurality of detachable uprights for cooperation with said floor member and for supporting a cabin covering, said uprights consisting of a pair of short upright compressive members for attachment at either side of said floor member and adjacent the center line of fold, and a separate collapsible series of three pairs of uprights, and hinged cooperating top members, the end pairs of said uprights forming, in assembled position, supports at each corner of said floor and the central pair of uprights forming a continuation of the short upright compressive member.

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