

April 8, 1952

H. A. EVEREST ET AL
COLLAPSIBLE COMMODE CHAIR

2,592,405

Filed June 14, 1948

4 Sheets-Sheet 1

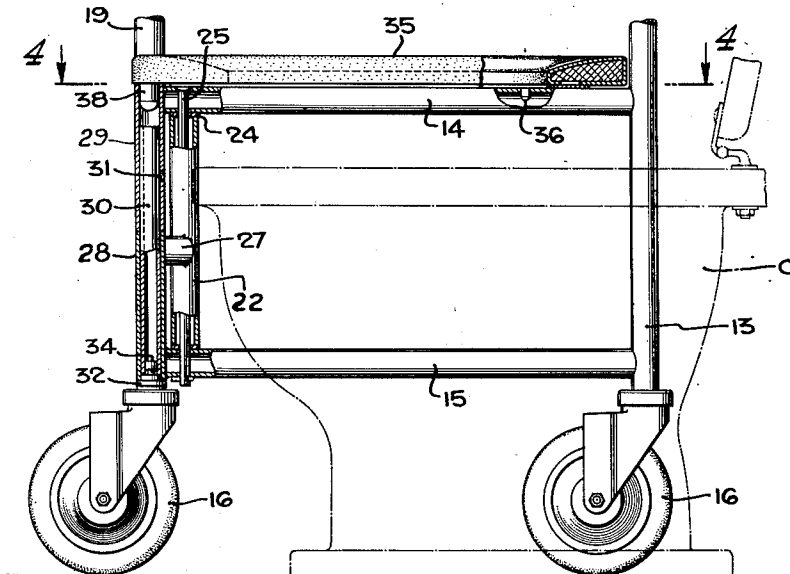
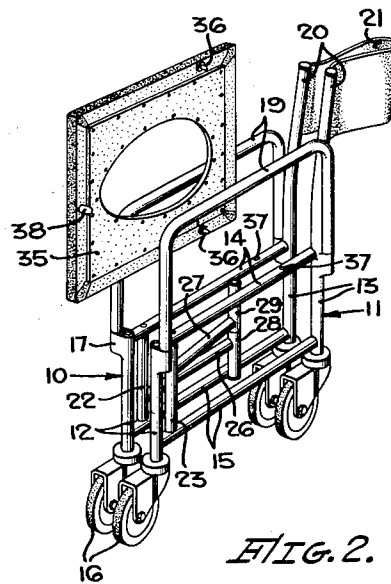
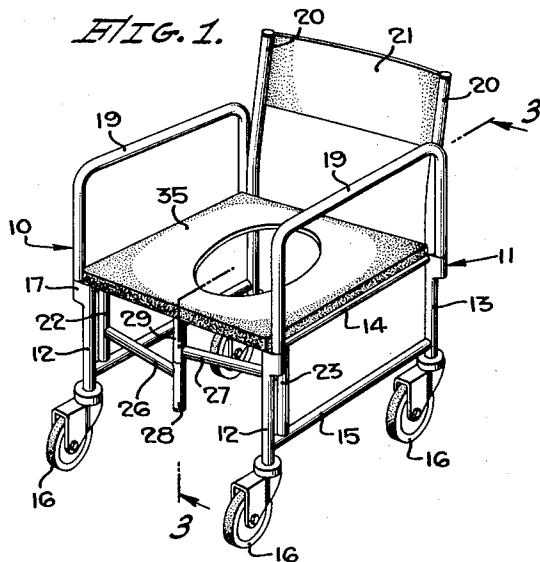


FIG. 3.

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H. A. EVEREST ET AL
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4 Sheets-Sheet 2

FIG. 4.

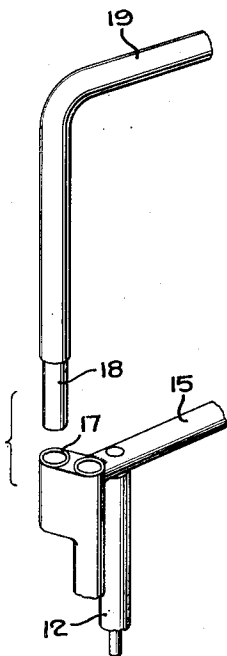


FIG. 6.

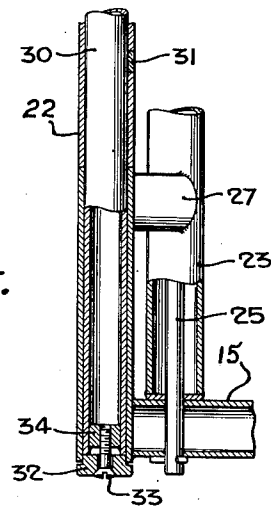


FIG. 5.

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4 Sheets-Sheet 3

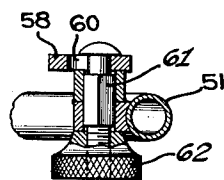
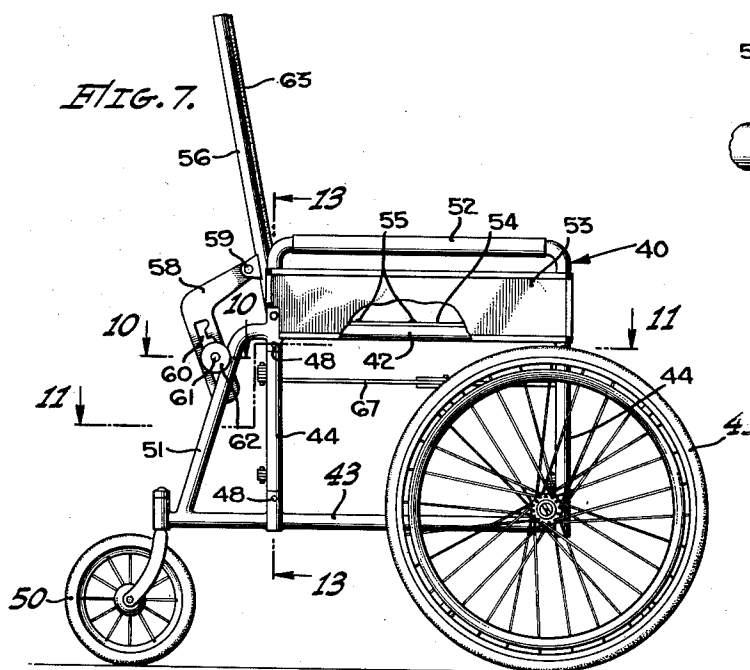


FIG. 10.

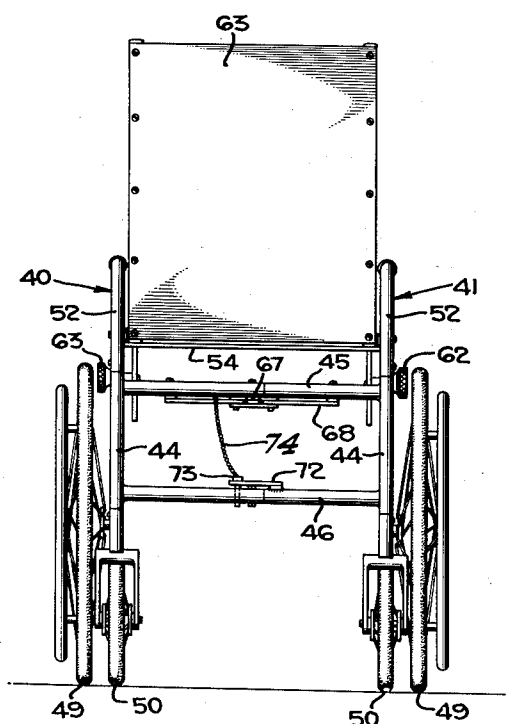


FIG. 8.

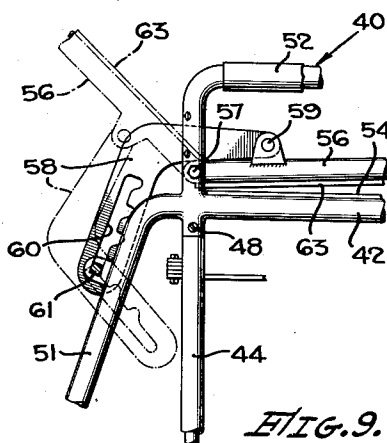


FIG. 9.

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4 Sheets-Sheet 4

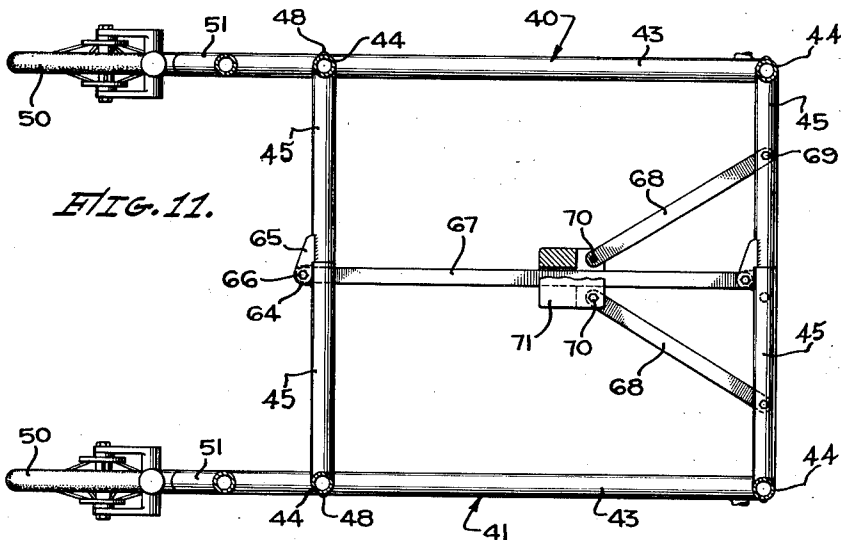


FIG. 11.

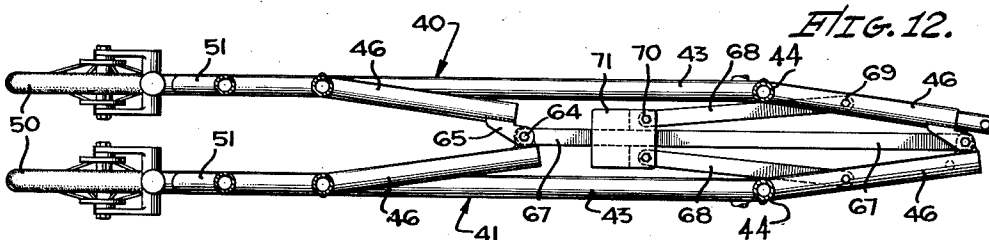


FIG. 12.

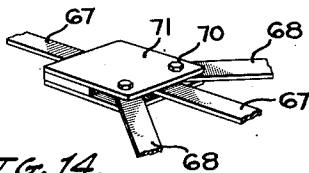


FIG. 14.

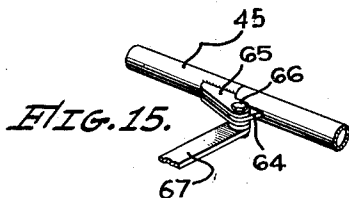


FIG. 15.

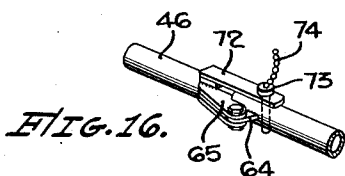


FIG. 16.

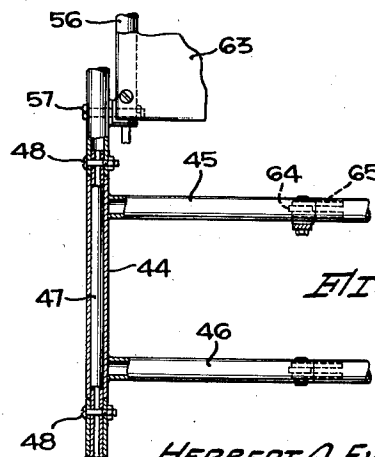


FIG. 13.

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UNITED STATES PATENT OFFICE

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COLLAPSIBLE COMMODOE CHAIR

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Application June 14, 1948, Serial No. 32,826

10 Claims. (Cl. 155-140)

1

This invention relates to improvements in collapsible chairs.

A primary object of the invention is to provide an improved collapsible chair consisting of two opposed side members adapted to support a seat and a back rest therebetween when in spaced relation and which are capable of assuming positions in side by side relationship when the chair is collapsed so that in this position the chair will occupy a minimum amount of space.

Particularly the invention relates to a novel collapsible and extensible brace which will hold the side members in spaced relationship when the chair is extended and which will enable the side members to be conveniently collapsed into side by side relationship.

More specifically, an object of the invention is to provide a chair having a novel form of collapsible brace between the side members thereof which brace is located near the forward part of the chair leaving the space between the side members near the rear ends thereof open and unobstructed. A chair embodying this construction may be advantageously used by invalids as a commode chair and when equipped with caster wheels enables an invalid to be transported and positioned over a commode.

Another object of the invention is to provide a collapsible chair preferably of the wheel chair type having a novel, simple yet highly effective collapsible brace arrangement between the side members which will facilitate the collapse and extension of the chair.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a perspective view of a commode chair embodying the present invention and illustrating the same in extended position;

Fig. 2 is a view of the commode chair illustrated in Fig. 1 but illustrating the same in collapsed position;

Fig. 3 is a sectional view taken substantially upon the line 3-3 of Fig. 1 and illustrating the position that the chair may assume with relation to a commode;

Fig. 4 is a horizontal section taken substantially upon the line 4-4 upon Fig. 3 and illustrating in dotted lines the positions assumed by the various parts when the chair is collapsed;

Fig. 5 is a view on an enlarged scale of a portion of the construction illustrated in Fig. 3;

2

Fig. 6 is an exploded view of a portion of the chair illustrating the manner of attachment of the arm rests;

Fig. 7 is a view in side elevation of a wheel chair also embodying the present invention;

Fig. 8 is a view in front elevation of the same;

Fig. 9 is a partial view in side elevation illustrating the details of construction of the back rest brace;

Fig. 10 is a horizontal section taken substantially upon the line 10-10 upon Fig. 7;

Fig. 11 is a horizontal section taken substantially upon the line 11-11 upon Fig. 7;

Fig. 12 is a view similar to Fig. 11 but illustrating the chair as having been collapsed;

Fig. 13 is a vertical section taken substantially upon the line 13-13 upon Fig. 7; and

Figs. 14, 15 and 16 are partial views in perspective illustrating details of construction of the brace.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, and referring particularly to that form of chair illustrated in Figs. 1 to 6 the chair illustrated consists of two opposed substantially rigid side members generally indicated at 10 and 11. These side members are preferably made up of metal tubing, each side member consisting of a front leg 12, a rear leg 13, a seat bar 14 connecting the upper ends of the legs and a bottom rung 15 connecting the lower ends of the legs. On the bottoms of the legs 12 and 13 there may be mounted caster wheels 16 and near the tops of each leg sockets 17 are secured thereto so as to removably receive the reduced lower ends 18 of arm rests 19 which extend from front to back across the tops of the side members and form detachable portions thereof. The rear legs 13 of the side members extend upwardly above the tops of the seat bars 14 forming supports 20 between which a flexible back rest 21 extends. This back rest may be formed of canvas or equivalent flexible material capable of folding readily when the side members are collapsed together into the position as shown in Fig. 2.

Near the forward ends of the side members immediately behind the front legs 12 there are rotatable knuckles 22 and 23. These knuckles extend from the under side of each seat bar 14 to the bottom rung 15 thereof, washer 24 being interposed between the tops and bottoms of these knuckles and the seat bar and bottom rung respectively. A pivot bolt 25 extends through each seat bar, its respective knuckle and its respective

lower rung 15 and serves to pivotally mount the knuckle on the side member for rotation or swinging movement about a vertical axis. Brace arms 26 and 27 are secured to the respective knuckles 22 and 23 and carry them and inner ends of knuckles 28 and 29 respectively which are disposed in vertical alignment with each other. Within these knuckles there is disposed an inner section of tubing 30 which is rigidly secured within the upper knuckles 29 such as by being brazed through an aperture therein as indicated at 31. This tubing extends downwardly through the lower knuckle 28 and has its lower end closed by means of a button 32 that is attached to the bottom of the tubing by means of a bolt 33 that screws into a nut 34 that is brazed or otherwise secured in the bottom of the tubing. The button 32 forms a suitable closure for the lower end of the lower knuckle whereas as illustrated in Fig. 3 the upper end of the upper knuckle 29 is left open.

As will be appreciated from the above described construction when the brace arms 26 and 27 are arranged in substantially the same transverse plane the side members will be held thereby in spaced relation. However, on buckling the brace formed by the brace arms 26 and 27 rearwardly, as shown in Fig. 2, the side members may assume a position in side by side or collapsed relationship.

As a means for holding the brace against collapse when the bar is extended a relatively rigid seat 35 is provided carrying studs 36 adjacent the rear end thereof which are receivable in apertures 37 formed in the tops of the seat bars 14. This seat is adapted to rest on the seat bars and carries a stud 38 at the forward end thereof which is receivable in the top of the upper knuckle 29. Consequently, when the chair is in extended position and the seat is applied the studs 36 prevent collapsing movement of the rear ends of the side members of the chair and at the same time the stud 38 prevents buckling of the brace made up of the brace arms 26 and 27. The seat consequently serves to effectively lock the elements of the chair against collapse when it is in applied position.

As will be noted, the brace arm 26 is secured to its knuckle 22 adjacent the lower end thereof and near the top of the knuckle 28. Conversely, the brace arm 27 is secured to the knuckle 23 near the top thereof and to the knuckle 29 near the bottom thereof. The two brace arms, therefore, may be exact duplicates of each other so that in the construction of the chair it is not necessary to make up right and left-hand parts. Any brace arm 26 may be utilized for the brace arm 27 and vice versa thus simplifying construction of the brace to a great extent.

The seat 35 may or may not be built to conform to a toilet seat but when so constructed due to the fact that the brace when extended is locked entirely at the forward end of the chair, it may be advantageously manufactured as a commode chair in transporting an invalid to a position over a commode indicated at "C" on Fig. 3. By the improved construction of the chair it will be appreciated that whenever it is desired to collapse the chair to conserve space it is merely necessary to lift and remove the seat 35 after which the chair may be readily collapsed by buckling the cross brace rearwardly and bringing the two side members towards each other. The arm rests 19 may or may not be improved and when undesired they may be removed by merely withdrawing their ends 18 from the sockets 17 at the tops of the legs.

In that form of construction illustrated in Figs.

7 to 16 inclusive the chair consists essentially of two opposed rigid side members generally indicated at 40 and 41, each side member consisting of an upper seat bar 42 and a lower rung 43. The front and rear legs of each side member are substantially duplicates of each other consisting of upright tubes or knuckles 44 having top and bottom brace arms 45 and 46 rigidly secured thereto. Tubes 47 extend through these knuckles and are rigidly secured to the seat bar and to the bottom rung 43 respectively such as by bolts 48. Thus, the knuckles 44 which form the legs at the front and rear of the side members can freely swing on their respective tubes 47 in collapsing or extending the braces formed between brace arms 45 and 46.

Wheels may be provided for the chair such as the large or drive wheels 49 whose axles may be rigidly secured to the forward ends of the bottom rungs 43. In a similar manner, caster wheels 50 may be mounted on the rear ends of the bottom rungs near the junctures of downwardly extending braces 51 which rigidly connect the rear ends of the seat bars 42 with the rear ends of the bottom rungs. The seat bars may also have rigidly secured thereto arm rests 52 and metal side plates 53 may be secured to the front and back of the arm rests providing sides for the chair. In this form of construction the seat for the chair indicated at 54 is flexible such as canvas or equivalent material that is secured to the seat bars 42 such as by bolts or rivets 55. A back rest is provided consisting of a pair of uprights 56 pivotally secured to the rear ends of the seat bars 42 as indicated at 57. Angular braces 58 are pivotally secured to these uprights as indicated at 59 and have their downwardly extending portions disposed adjacent the braces 51. These braces are equipped with serrated slots 60 through which tightenable bolts 61 extend which are slidable upon but are held against rotation with respect to the braces 51. These bolts may be tightened by means of thumb nuts 62 and when tightened serve to lock the braces 58 and consequently the back rest in any adjusted position. By reason of this arrangement as illustrated in Fig. 9 it is possible to swing the back rest into a position overlying the seat 54 or cause it to assume any desired adjusted position that is substantially upright. The back rest 63 which connects the uprights 56 is likewise formed of a flexible material such as canvas so that on collapsing the two side members of the chair towards each other both the seat and back rest will merely fold therebetween regardless of whether the back rest has been collapsed into a position overlying the seat or is still substantially upright.

As previously explained, the brace arms 45 and 46 on the knuckles 44 that form the front and rear legs of the chair cooperate to form upper and lower collapsible braces at the front and rear of the chair. One brace arm of each brace has an ear 64 rigidly secured thereto and which extends between a pair of ears 65 on its companion brace arm. A pivot bolt 66 extends through these aligned ears and is so arranged with relation to the lengths of the brace arms that when the braces are fully extended the brace arms will abut each other in end to end relationship. A tie rod 67 connects the pivot bolts 66 on the front and rear braces causing all of the braces to collapse or expand in unison. As a means of causing the collapse or expansion of the braces to take place equally, links 68 are pivotally connected to the brace arms 45 of the upper forward brace as indi-

cated at 69. These links in turn are pivotally connected as at 70 to a slide 71 that is slidable on the tie rod 67. As a means for locking the chair in extended position one of the lower forward brace arms 46 carries a short extension 72 in which there is an aperture designed to receive a locking pin 73 when the aperture is in alignment with an aperture in the companion lower brace arm 46. The locking pin may be permanently associated with the chair such as by a chain 74.

On removal of the locking pin 73 and pressing the side members of the chair towards each other the front and rear braces will buckle forwardly and as the lower brace arms 46 of the lower braces are rigid with the upper brace arms 45 through the knuckle 44 all braces will be caused to buckle simultaneously. During this buckling movement the slide 71 slides rearwardly with relation to the tie rod 67 so that whenever a brace arm associated with one side member swings through a given arc with relation to that side member the companion brace arm will be caused to swing with relation to its side member through an equal arc. Consequently, collapse of the braces is equalized on collapsing the chair. To extend the chair the side members are merely pulled apart and when they have reached their extreme positions they may be locked in such positions by the insertion of the locking pin 73.

From the above described constructions it will be appreciated that improved collapsible chairs are provided wherein the collapsible brace is made up of elements which pivot and buckle about vertical axes and that by reason of such an arrangement it is possible to construct a chair wherein the brace is locked at the forward end of the chair only. A feature of the present chair resides in the fact that when the chair is collapsed its over-all height is not increased which is highly desirable in many instances.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

We claim:

1. A collapsible chair comprising a pair of opposed side structures including supporting legs, brace elements pivotally mounted upon said side structures and pivotally connected to each other for swinging movements about vertical axes enabling the side structures to assume positions in side by side or spaced relation, said brace elements being mounted adjacent the forward ends of the side structures and forming a collapsible brace between the side structures between their forward ends only and means for locking said side structures in spaced relation comprising a seat removably mounted on said side structures having portions engageable therewith to prevent movements of the side structures toward or away from each other.

2. A collapsible chair comprising a pair of opposed side structures including supporting legs, brace elements pivotally connected to said side structures adjacent the forward ends thereof and to each other forming a collapsible brace between the forward ends of the side structures, a seat removably mounted upon the side structures, the space between the side structures below the seat adjacent the rear of the chair being free and unobstructed so that the chair may be positioned over a commode.

3. A collapsible chair comprising a pair of opposed side structures, a seat and a back rest therebetween, vertical knuckles rotatably mount-

ed upon the side structures adjacent the forward ends thereof and adjacent the rear ends thereof, brace elements secured to said knuckles adjacent the tops and bottoms thereof, means pivotally connecting opposed brace elements together, and means for locking at least one pair of brace elements against pivotal movement.

4. A collapsible chair comprising a pair of opposed side structures, brace elements pivotally mounted adjacent the forward ends of the side structures for swinging movement about vertical axes, means pivotally connecting the swinging ends of the brace elements to each other, the space between the rear ends of the side structures being open and unobstructed, and a seat removably mounted on the side structures and engageable therewith to prevent collapsing movement of the side structures when the seat is in applied position.

5. A collapsible chair comprising a pair of opposed side structures, brace elements pivotally mounted adjacent the forward ends of the side structures for swinging movement about vertical axes, means pivotally connecting the swinging ends of the brace elements to each other, the space between the rear ends of the side structures being open and unobstructed, a seat removably mounted on the side structures and engageable therewith to prevent collapsing movement of the side structures when the seat is in applied position, and a flexible back rest connecting the side structures at the rear ends thereof.

6. A collapsible chair comprising a pair of opposed side structures, brace elements pivotally mounted adjacent the forward ends of the side structures for swinging movement about vertical axes, means pivotally connecting the swinging ends of the brace elements to each other, the space between the rear ends of the side structures being open and unobstructed, a seat removably mounted on the side structures and engageable therewith to prevent collapsing movement of the side structures when the seat is in applied position, and means on the seat engageable with at least one of the brace elements to lock the brace elements in position when the chair is expanded.

7. A collapsible chair comprising a pair of opposed side structures, brace elements pivotally connected to the side structures and pivotally connected to each other, a rigid seat removably mounted on the side structures carrying means engageable with at least one of the brace elements to lock the brace elements against collapsing movement when the seat is in applied position.

8. In a collapsible chair, a pair of opposed side structures, each side structure having an upper seat bar and a lower bar extending from front to rear thereof, a brace element for each side structure, each brace element having a knuckle extending from the seat bar to the lower bar and being pivotally mounted on said bars for swinging movement about a vertical axis, and means pivotally connecting the swinging ends of the brace elements to each other.

9. In a collapsible chair, a pair of opposed side structures, each side structure having an upper seat bar and a lower bar extending from front to rear thereof, a brace element for each side structure, each brace element having a knuckle extending from the seat bar to the lower bar and being pivotally mounted on said bars for swinging movement about a vertical axis, means

7

pivotally connecting the swinging ends of the brace elements to each other, the pivotal connection between the brace elements extending upwardly to approximately the elevation of the seat bars, and a seat removably mounted on the seat bars having means engageable with said pivotal connection to lock the brace elements against collapsing movement.

10. In a collapsible chair, a pair of opposed side structures, each side structure having an upper seat bar and a lower bar extending from front to rear thereof, a brace element for each side structure, each brace element having a knuckle extending from the seat bar to the lower bar and being pivotally mounted on said bars for swinging movement about a vertical axis,

8

means pivotally connecting the swinging ends of the brace elements to each other, and means for releasably locking the brace elements against collapsing movement.

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The following references are of record in the file of this patent:

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