

Oct. 14, 1952

E. W. ANDERSON ET AL

2,613,730

FOLDING CHAIR

Filed March 7, 1951

2 SHEETS—SHEET 1

*Fig. 1.*

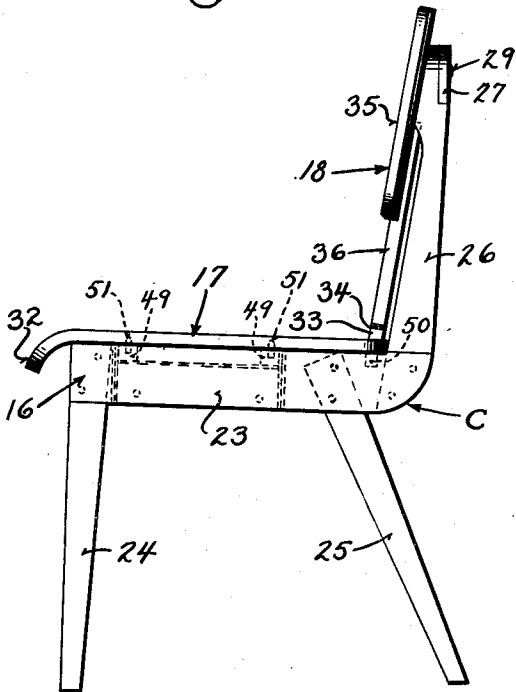


*Fig. 2.*

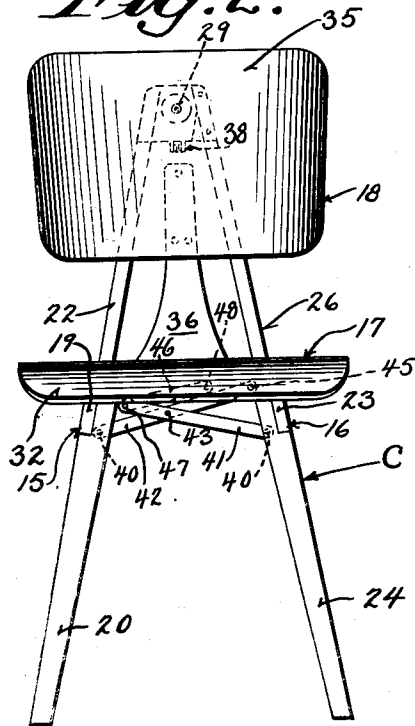


*Fig. 3.*

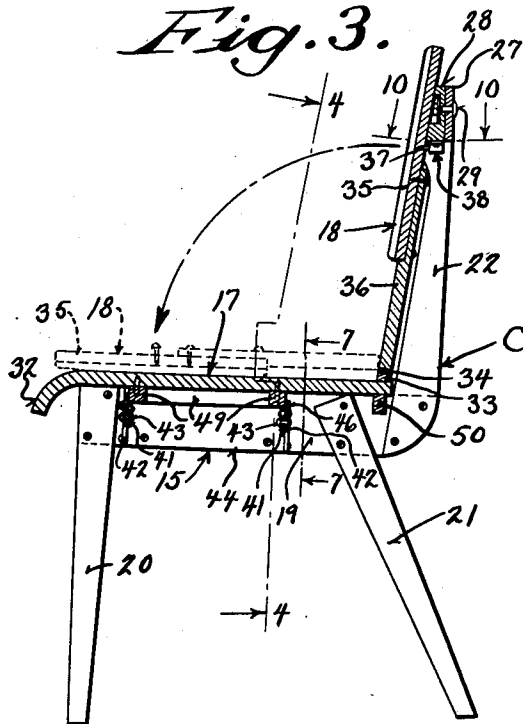
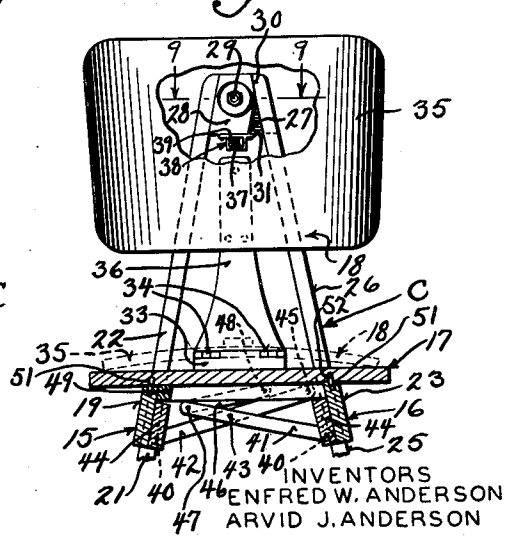


*Fig. 4.*



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2 SHEETS—SHEET 2

*Fig. 5.*

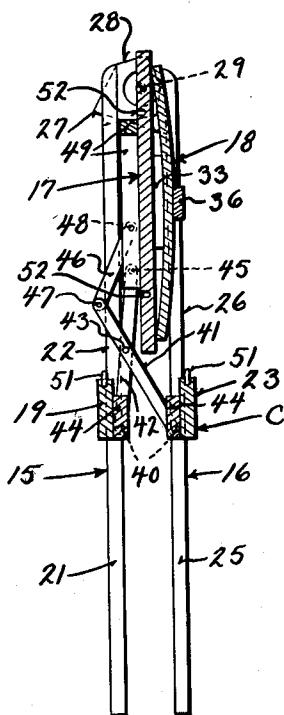


*Fig. 6.*

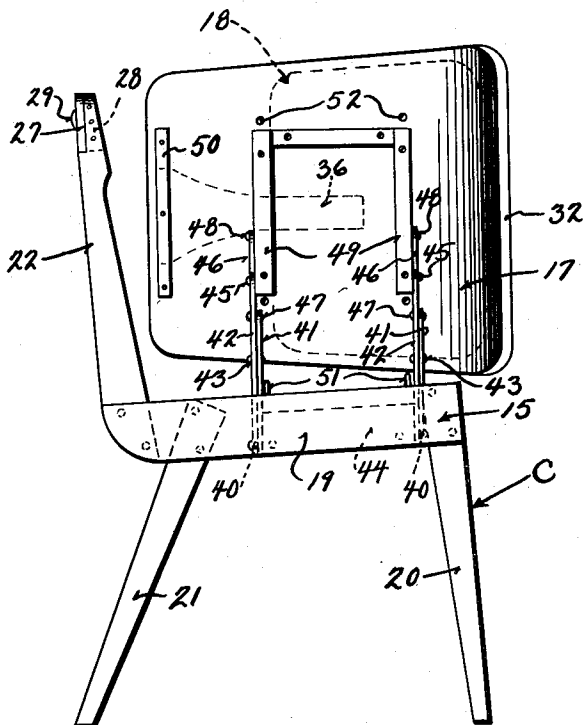


*Fig. 7.*

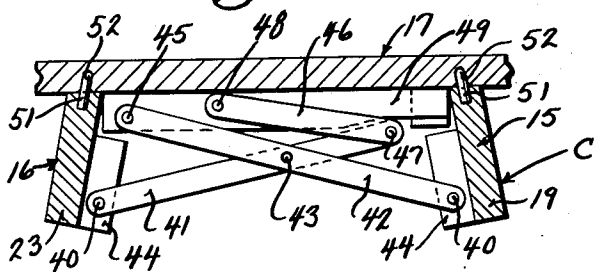


*Fig. 8.*

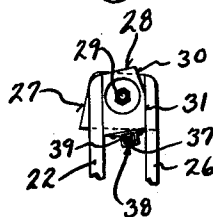
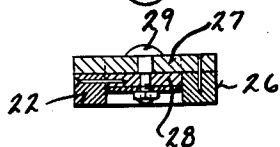
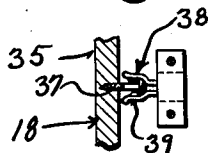


*Fig. 9. Fig. 10.*



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## UNITED STATES PATENT OFFICE

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## FOLDING CHAIR

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5 Claims. (Cl. 155—140)

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This invention relates to folding chairs and is an improvement on our pending application Serial Number 180,118, filed August 18, 1950.

As brought out in the objects of our pending application, the basic purpose of the invention resides in the provision of a sturdy folding chair having the appearance of a permanent full sized chair when set up for use, and which will not accidentally close or pinch persons using the chair, and when collapsed, will occupy a minimum amount of space and stand vertically in an upright position on its own legs.

The primary object of our present invention is to improve the chair construction, not only to enhance the appearance thereof, but to give additional comfort and an effective back support for the user of the chair.

Another salient object of the invention, is the provision of means whereby a wide chair back can be hingedly carried by the chair seat, so that said back can be folded over the chair seat and thereafter the chair seat with the back can be utilized to bring about the collapsing of the side frames of the chair toward one another.

A further important object of the invention is the provision of means, whereby the chair bottom or seat and the back will be disposed directly between the side frames, when the chair is in its collapsed position to aid in the stability of the chair when the chair is collapsed and stood upright on its legs.

A further important object of our invention is the provision of an improved linkage for facilitating the collapsing and opening of the chair.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described and claimed, and illustrated in the accompanying drawings, in which drawings,

Figure 1 is a side elevational view of our improved chair in its set up position.

Figure 2 is a front elevational view of the chair in its set up position.

Figure 3 is a vertical sectional view through the chair.

Figure 4 is a transverse sectional view through the chair taken on the line 4—4 of Figure 3, looking in the direction of the arrows.

Figure 5 is a transverse sectional view through the chair showing the same in its collapsed position, the view showing the position of the chair seat or bottom and the back relative to the side frames.

Figure 6 is a side elevational view of the chair in its collapsed position.

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Figure 7 is an enlarged fragmentary detail transverse sectional view taken on the line 7—7 of Figure 3, looking in the direction of the arrows illustrating the linkage.

Figure 8 is a fragmentary front elevational view showing the chair in its collapsed position and illustrating the means of pivotally connecting the side frames of the chair together.

Figure 9 is a detail horizontal sectional view taken on the line 9—9 of Figure 4, looking in the direction of the arrows.

Figure 10 is a detail horizontal sectional view taken on the line 10—10 of Figure 3, looking in the direction of the arrows illustrating the means employed for detachably connecting the chair back to the back uprights, when the chair is in its set up position.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter C generally indicates our improved folding chair.

As set forth in our co-pending application, the chair includes a pair of companion-like side frames 15 and 16, a chair seat or bottom 17, and a back rest 18.

The frames 15 and 16 can be fabricated in any preferred manner, but as illustrated, the side frame 15 includes a top rail 10 and front and rear legs 20 and 21. The top rail 15 extends rearwardly of the leg 21 and has rigidly secured thereto a back upright 22. The side frame 16 also includes a top rail 23 and front and rear legs 24 and 25. The rail 23 extends rearwardly of its leg 25 and has rigidly secured thereto a back upright 26. The back legs 21 and 25, diverge rearwardly from the front legs 20 and 24, so as to form a wide, spreading base when the chair is in its open position.

The back uprights 22 and 26 have rigidly secured to their upper ends inwardly extending over-lapping plates 27 and 28. The plates 27 and 28 are pivotally connected together by a centrally disposed pivot bolt 29, so that the chair frames 15 and 16 can be swung toward one another when the chair is in a collapsed position. The free edge of the plate 28 is provided with angular faces 30 and 31. The face 30 acts as a stop to limit the outward swinging movement of the frames 15 and 16 and the face 31 acts as a stop to limit the inward swinging movement of the frames when the chair is collapsed.

In accordance with our present invention, the chair seat 17 and the back 18 are arranged and constructed in a novel fashion and are joined to the side frames 15 and 16 in an improved

way. The seat 17 can be provided with a rolled front edge 32 so that when the seat is in its lowered position, the same will give an ornamental effect and hide to a degree, certain operating mechanism from view. The seat can be upholstered, should such be desired. Rigidly secured to the seat 17, adjacent to its rear edge, is a centrally disposed upstanding cleat 33 to which is connected by hinges 34, the back 18. The back 18 includes a relatively wide back rest panel 35 and the supporting piece 36. This supporting back piece 36 at its lower edge is connected directly to the cleat 33 by the hinges 34, so that the back 18 in its entirety can be folded over the seat 17. When the back 18 is in its raised position the same is held against accidental displacement by means of a headed pin 37 (see Figure 10) carried by the panel 35.

The plate 28 has secured to its lower edge a keeper 38 for receiving and gripping the head of the pin 37. This keeper 38 can embody resilient gripping jaws 39.

In contra-distinction to our chair shown in the mentioned pending application, the chair seat 17 is independent of the side frames 15 and 16; that is, the chair seat is not hinged directly to either of the side frames.

As illustrated, (see Figures 5 and 7) the frames 15 and 16 have pivotally connected thereto, as at 40, crossed levers 41 and 42, respectively, and the levers are pivotally connected together intermediate their ends by means of a pivot pin 43. Preferably, there are a front and rear set of the crossed levers 41 and 42. If desired, the pins 40, for the levers, can be carried by brace boards 44 secured to the inner faces of the side rails 19 and 23. The levers 42 of each set have their upper ends pivotally connected by means of pins 45 directly to the chair seat 17. The upper ends of the levers 41 are pivotally connected to the chair seat 17 by connecting links 46. As illustrated, the links are joined to the levers 41 by pivot pins 47, and to the chair seat by pivot pins 48. It is preferred to secure to the chair seat 17, cleats 49 and the pivot pins 45 and 48 can be carried by these cleats. A third transversely extending cleat 50 can also be secured to the lower surface of the seat 17, should such be desired.

The upper faces of the side rails 19 and 23 carry tapered dowel pins 51 and socket openings 52 are formed in the lower surface of the seat 17 for receiving these pins when the seat is in its lowered position.

In use of our improved chair, and considering that the chair is in its set up position, as shown in Figures 1 to 4, inclusive, and it is desired to collapse the same, the back 18 is pulled forwardly to detach the headed pin 37 from the keeper 38, and the back is lowered over the seat as shown in dotted lines in Figures 3 and 4. The seat 17 itself is now grasped adjacent to the side frame 15 and is pulled upwardly and at the same time, the frame 16 is moved toward the frame 15. The upward swinging movement of the seat 17 will automatically move the lower ends of the levers 41 and 42 toward one another and the links 46 will push and carry the seat 17 upward to the position shown in Figures 5 and 6.

By referring to Figure 5, it will be noted that the seat 17 is moved to a substantially vertical position between the side frames 15 and 16 and that the side frames 15 and 16 are parallel to

one another, but spaced a sufficient distance apart so that the chair can still be set upright on its four legs. The seat 17, lying between the frames 15 and 16, adds to the stability of the chair when the same is in its collapsed, upright position.

When it is desired to open and use the chair the upper end of the seat is grasped in one hand and the frame 16 is grasped in the other hand and the seat is given a downward swinging motion and the frame 16 is pulled outwardly. The swinging of the levers 41 and 42 will push the lower ends of the frames 15 and 16 away from one another to a diverging position, and as the seat approaches the rails 19 and 23, the tapered dowel pins 51 will be received in the socket openings 52. The terminals of the cleats 49 and 50 rest between the side frames 15 and 16, which strengthen the chair and these cleats form abutments against which the side frames rest.

From the foregoing description, it can be seen that we have improved the original chair in the back construction and in the means of folding the chair.

Changes in details may be made without departing from the spirit or the scope of this invention, but what we claim as new is:

1. A folding chair comprising a pair of like companion side frames, each of said frame including a top rail, depending front and rear legs and a back upright, means pivotally connecting the back uprights together whereby the side frames can be moved toward and away from one another, a seat movable relative to the side frames, front and rear pairs of crossed levers, the crossed levers of each pair being pivotally connected intermediate their ends, means pivotally connecting the lower ends of the crossed levers of each pair to the side frames, means pivotally connecting the upper end of one lever of each pair of levers to the seat, and links pivotally connecting the upper ends of the other levers to the chair seat.

2. A folding chair as defined in claim 1, and depending cleats carried by the seat adapted to engage the inner faces of the side rails when the seat is in its lowered position.

3. A folding chair as defined in claim 1, and said side frames and seat having cooperating pins and sockets when the chair seat is in its lowered position over the side frames.

4. A folding chair as defined in claim 1, and a hinged back secured to the rear end of the seat movable to an inoperative position over the seat.

5. A folding chair as defined in claim 1, and said chair seat being movable to a raised vertical position for drawing the frames toward one another by said levers with the seat lying between the frames.

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