Jan. 9, 1934. W. E. CLARIN 1,943,058

FOLDING CHAIR

Filed June 16, 1931

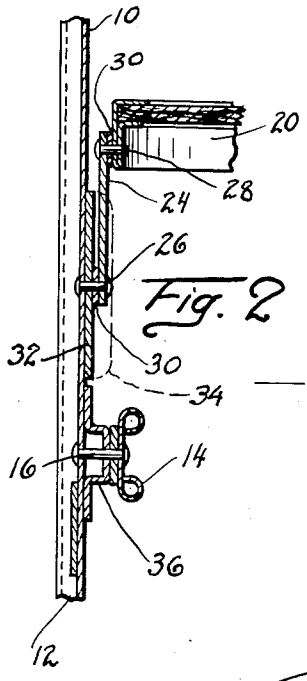


Fig. 2

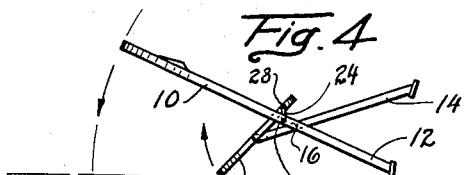


Fig. 4

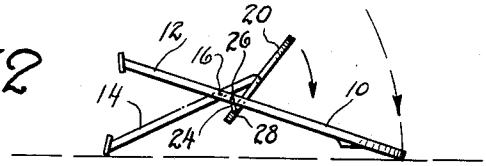


Fig. 5

Fig. 1

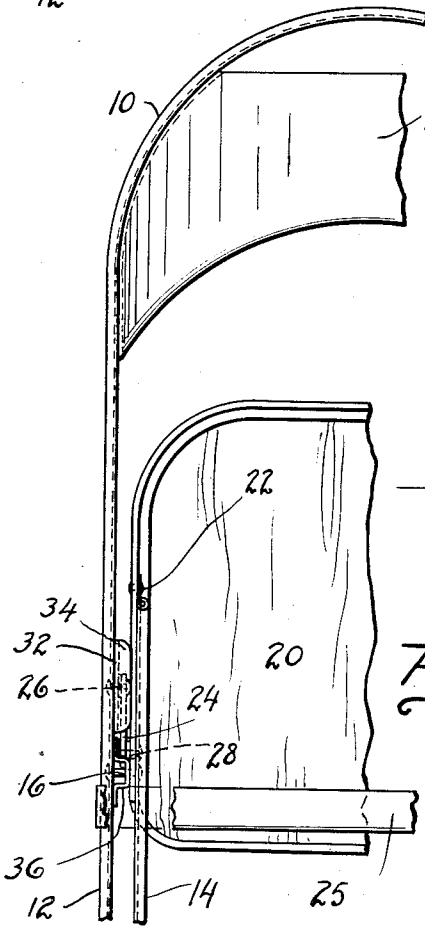


Fig. 3

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FOLDING CHAIR

Werner E. Clarin, Chicago, Ill., assignor to Acme Chair Company, Reading, Pa., a corporation of Michigan

Application June 16, 1931. Serial No. 544,824

3 Claims. (Cl. 155—143)

My invention relates to folding chairs and has particular reference to that type wherein the seat and legs are adapted to fold into a single plane for compactness and convenience.

An object of my invention is to so arrange the various elements of such a chair in their association with one another that it will collapse automatically on simply falling to the floor, or supporting surface, regardless of the direction in which it falls, to wit, frontward or backward. Various types of folding chairs or collapsible chairs have hitherto been available which require very little effort to fold into their compact position when not being used, but hitherto there have been none which, in the event that the chair simply falls rearwardly or forwardly, will automatically and with surety assume their collapsed position.

Such structure is desirable, particularly where this type of chair is utilized in large auditoriums where unexpected events, such as a fire or alarm of some similar type, may readily create a stampede. At such times it is desirable that chairs which have been crowded together for seating purposes be removed insofar as possible. Obviously under such circumstances many of the chairs will be upturned and, unless they collapse into their flat position automatically, will constitute a serious and dangerous impediment to the rapid departure from the auditorium. Unnecessary injury is extremely apt to result.

My improved arrangement insures complete collapse of a chair when it is overturned in either a forwardly or rearwardly direction. No additional effort by way of manual manipulation is necessary.

Various other meritorious features of my invention will be apparent from the following description taken in conjunction with the drawing wherein:

Fig. 1 is a sectional elevation of my improved chair,

Fig. 2 is a section along 2—2 of Fig. 1,

Fig. 3 is a front elevation illustrating the position of the parts when the chair is collapsed, and

Figs. 4 and 5 are diagrammatical illustrations of the principle involved in securing automatic collapse of the structure.

Referring to the drawing, the chair comprises a bowed frame member 10, the lower extremities of which constitute the front legs 12, and a pair of rear legs 14 pivoted to the frame as at 16. Between the sides of the upper portion of the bow there may be a back member 18 of any desired type positioned in any suitable manner. While the structure of the frame 10 and the rear legs 14 may be of any desired type, for purposes of illustration I have shown sheet metal members rolled over along their longitudinal edges.

The seat proper 20 is pivoted on each side to the upper extremity of the rear legs 14 in any suitable fashion. The structure disclosed illustrates a rivet 22 as constituting the pivotal connection at this point. As illustrated, the said pivotal connection is intermediate the forward and rear extremities of the seat and is preferably somewhere near the middle of the seat.

The rear portion of seat 20 is connected to the frame 10 through the medium of a link 24. This link is pivotally secured to the frame at one extremity thereof and pivotally secured to the respective sides of the seat 20 at the other extremity thereof. It is of importance that that extremity of the link 24 to which the seat is pivoted should be the upper extremity thereof when the seat is in its unfolded or usable position. For purposes of illustration we have disclosed rivets 26 and 28 as constituting the pivotal connections hitherto described at each end of the link. A washer 30 is positioned adjacent the side of the link at each extremity and the pivotal connection at 26 includes a stop member 32, welded to the inside faces of front legs 12, which is provided with a flange 34 extending along its length at the forward side thereof against which the edge of the link 24 is adapted to abut when the seat is in its unfolded position.

The pivotal connection 16 between the two pairs of legs 12 and 14 includes a channel shaped member 36 which functions to space the sides of the seat 20 inwardly to permit the link 24 to lie between the two legs when the chair is folded. A cross brace 25 extends between the front legs 12 and is so positioned as to limit the unfolding movement of the front and rear legs, as clearly illustrated in Fig. 1.

Figs. 4 and 5 clearly illustrate the function secured by virtue of the particular manner in which the seat 20 is pivotally supported to the rear frame. In Fig. 4 the chair is falling forwardly and the edge of the seat 20 has just struck the floor. It will be apparent that the force so produced will rock the link 24 about its pivot point 26 at the same time permitting pivotal movement of the seat 20 about the point 28. The link 24, when in the position which it assumes when the chair is unfolded, constitutes a moment arm through which the force created when the front edge of seat 20 hits the floor may

start collapsing movement of the assembly. If the seat 20 was pivotally connected to the frame 10 at a point lying within the plane of the seat itself, or substantially within such plane, this re-action would obviously be impossible. As the chair continues to fall, the upper portion of the frame 10 dropping by gravity and the lower edge of the seat 20 pressing against the floor, the link 24 will be swung through substantially 180° to the position illustrated in Fig. 3.

Fig. 5 illustrates the manner in which the chair automatically collapses on rearward falling movement. As the upper extremity of the frame 10 contacts the floor the seat 20, by virtue of the inertia, will act upon the link 24 to start its swinging movement about its pivot point 26. Here also the fact that the link 24 constitutes a moment arm through which the inertia force will act is responsible for the automatic collapsing of the chair.

It is to be noted that the pivotal connection 28 connecting the seat 20 with one extremity of link 24 is in its uppermost position when the chair is unfolded and swings through substantially 180° towards the foot extremity of the chair during collapsing movement.

Since various modifications of the principle involved herein may readily be devised by those skilled in the art, I intend to limit myself only within the scope of the appended claims.

What I claim:

1. In a folding chair having a pair of upright leg elements, a stop plate secured to each upright leg element, a pair of rear leg elements pivoted to the upright leg elements, a seat element pivoted directly to the rear leg elements, said seat element pivoted indirectly to the other pair of leg elements by a pair of links, each link pivoted at one end to the stop plate carried by the upright leg elements and at the opposite end to the adjacent side rail of the seat element, said stop plate being provided with a flange adapted to engage the link to limit the unfolding of the seat.

2. A folding chair having a pair of upright leg elements, a pair of rear leg elements pivoted thereto to fold therebetween, a seat element pivoted directly to the pair of rear leg elements, said seat element pivoted indirectly to the pair of upright leg elements rearwardly of its pivot connection with the pair of rear leg elements by means comprising a pair of links, each link pivoted at one end to the upright leg element and at the opposite end to the adjacent side rail of the seat, a pivot mounting for each link consisting of an angular stop plate secured to the upright leg element and provided with a flange adapted to engage the link intermediate its ends to limit the unfolding of the seat.

3. A folding chair having a pair of upright leg elements, a pair of rear leg elements pivoted to the upright leg elements to fold therebetween, a seat element pivoted to the upper ends of the rear leg elements, said seat element pivoted indirectly to the upright leg elements rearwardly of its pivotal connection with the rear leg elements by a pair of links, said links being pivoted at their upper ends to the side rails of the seat element and at their lower ends to the upright leg elements, a pivot mounting for each link consisting of an angular stop plate secured to the corresponding upright leg element and provided with a flange extending lengthwise of the leg element and adapted to engage the link to limit unfolding of the seat when the link is disposed lengthwise of the upright leg element.

WERNER E. CLARIN.

CERTIFICATE OF CORRECTION.

Patent No. 1,943,058. January 9, 1934.

WERNER E. CLARIN.

It is hereby certified that the residence of the assignee in the above numbered patent was erroneously described and specified as "Reading, Pennsylvania" whereas said residence should have been described and specified as Reading, Michigan, as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of February, A. D. 1934.

F. M. Hopkins

(Seal) Acting Commissioner of Patents.