July 28, 1942. A. KRAKAUER 2,291,391

FOLDING BED CHAIR

Filed June 28, 1939

Fig. 1.

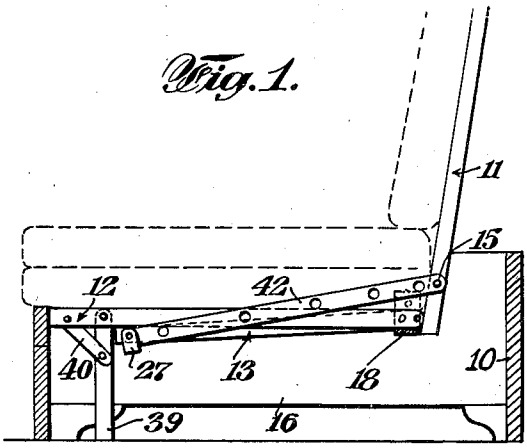


Fig. 4.

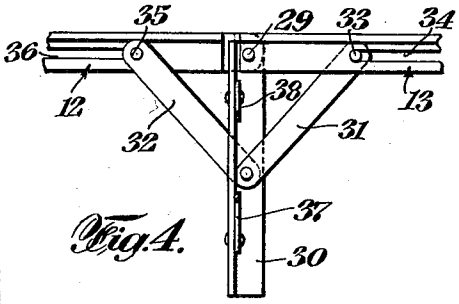


Fig. 2.

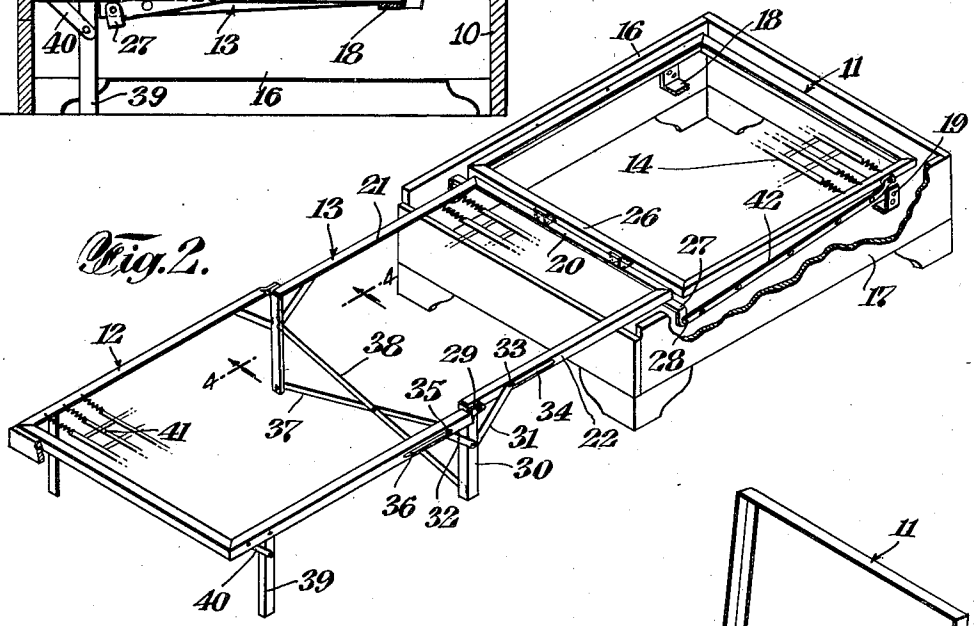


Fig. 3.

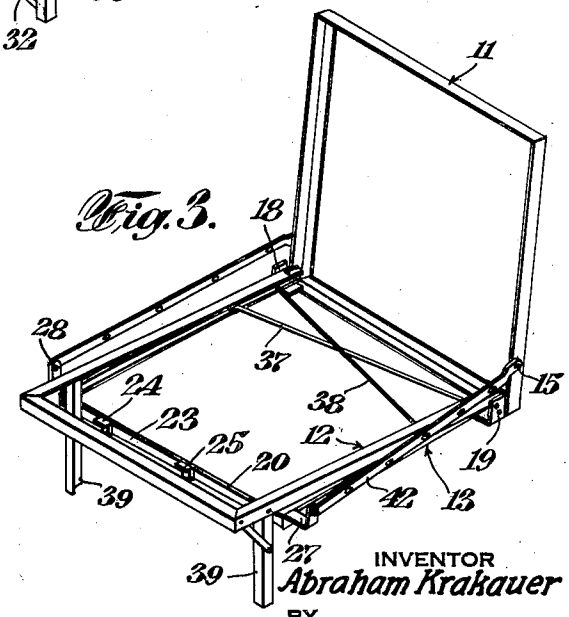
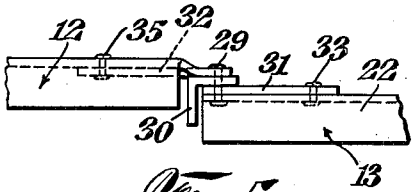


Fig. 5.



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Patented July 28, 1942 2,291,391

UNITED STATES PATENT OFFICE

2,291,391

FOLDING BED CHAIR

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Application June 28, 1939, Serial No. 281,572

5 Claims. (Cl. 155—45)

This invention relates to folding bed-chairs and the like articles of furniture and particularly to the metallic folding frames thereof whereby the frames may be extended to form a bed and collapsed to form a chair, couch, or the like article.

My invention contemplates the provision of a simple and efficient folding structure adequately supported in both the folded and extended positions thereof and adapted to be easily and conveniently manipulated by unskilled persons for converting a chair or couch into a bed and vice versa.

The various objects of the invention will be clear from the description which follows and from the drawing, in which,

Fig. 1 is a vertical section of a bed-chair to which my invention has been applied, showing the removable cushions or mattress in dash-dot lines and showing the bed-chair in its chair-forming position.

Fig. 2 is a perspective view of the bed-chair as it appears in its bed-forming position but with the cushions removed.

Fig. 3 is a similar view of the same in the chair-forming position thereof.

Fig. 4 is a fragmentary vertical section taken on the line 4—4 of Fig. 2, and showing particularly the means for automatically extending and collapsing the folding legs of the frame.

Fig. 5 is a top plan view of the same.

In the practical embodiment of the invention which I have shown by way of example, the chair or couch frame 10 may be of the usual wood construction and of the desired length to accommodate one or more persons. In what follows, the article of furniture to which the invention is applied will be termed a "bed-chair" though it will be understood that the invention is equally applicable to a couch long enough to seat two or more persons, in which case the various frames are made long enough for that purpose. The frame 10 is designed to pivotally support the back-forming frame 11 and the U-shaped frame sections 12 and 13 which are foldable or collapsible into the chair frame into a position to constitute a seat. The back frame 11 is composed of angle iron members, the frame being provided with the usual combined wire and spring structure 14 constituting a spring support for a cushion or mattress. For pivotally securing the back frame in place so that it may be swung from its back-forming position to its bed-forming position, the back frame is pivoted to the side rails 16 and 17 of the chair frame as by means of the pivots 15 in the form of screws, bolts or the like, each entering the inner surface of one of the side rails 16 or 17. A pair of fixed brackets as 18, 19 are secured to the chair rails 16 and 17, respectively, the horizontally extending flanges of said brackets serving to engage the lowermost part of the back below the pivots 15 and to prevent tilting of the back beyond a predetermined position as shown, for example, in Figs. 1 and 3.

The remaining sections 12 and 13 of the bed frame also constitute the seat for the chair (Figs. 1 and 3), and when extended, lie in the same plane as the downfolded back 11 to form a continuous bed frame as shown in Fig. 2. Said sections are each also preferably made of angle iron members and in the form of U-shaped frames, open at the adjacent ends thereof. The rear section 13 comprises the cross bar 20 and the side rails 21 and 22. Secured in spaced relation and to the face 23 of the bar 20 are the brackets 24 and 25, each having a horizontal flange extending underneath the cross bar 26 of the back 11 so that when the back is swung to its horizontal position and the section 13 is in its extended position, said cross bar 26 rests upon the then horizontal flanges of said brackets 24, 25 to support the front end of said back.

Secured to each of the side rails 21 and 22 of the section 13 is a preferably Z-shaped bracket 27 having its inner flange secured to the side rail and having its outer flange pivotally secured, as by the pivot 28, to the inner surface of the side rail or wall 17 of the chair frame. It will therefore be seen that when the back 11 is raised into its back-forming position, the section 13 may be swung from its bed-forming position about its pivots 28 through an angle of 180° and into the collapsed or seat-forming position shown in Figs. 1 and 3.

The section 12 is pivoted at its open rear end to the open front end of the section 13 as by means of the pivots 29 which also serve to pivot the folding legs 30 to said sections. Said legs are also made preferably of angle iron and are adapted to have the sections 12 and 13 folded on opposite sides thereof and in opposite directions so that the legs when folded, lie between said sections. This is accomplished by means of a pair of diagonal braces 31 and 32 for each leg, the braces of each pair being pivoted preferably by a common pivot at their lower ends to one of the legs. The upper end of the brace 31 carries the pin 33 slidably mounted in the longitudinal slot 34 of the side rail 22 of the section 13. Sim-

ilarly, the upper end of the brace 32 is provided with a pin 35 sliding in the longitudinal slot 36 of the side rail of the section 12. Said legs are preferably interconnected and cross-braced to each other as by means of the diagonal braces 37 and 38, each of which is connected at one end to the lower part of one leg and at its opposite end to the upper part of the other corresponding folding leg (Fig. 2).

It will thus be seen that when the section 13 is swung from its bed-forming position about its pivots 28 in a clockwise direction, as viewed in Fig. 2, the section 12 is simultaneously swung about the pivots 29 in a counterclockwise direction, so that while the section 13 is reversed in its folded position from that assumed in its extended position, the section 12 is moved rearwardly but remains in the same relative right-side-up position when folded that it assumes when extended, and while it is withdrawn inside of the chair frame 10, as is shown in Fig. 1.

To support the section 12 so that it serves as a seat when in its folded position and is adequately supported in its extended position to serve as part of a bed, a pair of fixed legs as 39 are secured to the respective side rails of the section 12, being braced, if desired, by means of a suitable fixed brace 40. Each of the sections 12 and 13 is provided with a suitable bed spring structure 41 similar, if desired, to the structure 14 in the back.

It will be understood that when the sections 12 and 13 are folded both with respect to each other and with respect to the chair frame, the upper ends of the braces 31 and 32 move outwardly along the respective slots 34 and 36 so that the side rails of said sections assume a position substantially parallel to said legs 30, the upright flange of the side rail 22 moving into the leg while the upright flange of the corresponding side rail of the section 12 moves outside of the adjacent flange of the leg 30 so that the parts nest to the required extent to form a compact folded structure.

It will also be seen that in the folded position of the parts, shown in Figs. 1 and 3, the fixed legs 39 serve to support the uppermost section 12 whereby said section serves adequately as a seat and is adequately supported by the fixed legs and the fixed pivots 29 against the weight of a user of the bed-chair when said bed-chair is used as a chair. Similarly, the section 13 is supported by its pivots 28 at its front end when folded, and its rear end rests on the brackets 18, 19 which are properly positioned for that purpose.

In the extended positions of the parts, the back 11 is supported at its rear end by the pivots 15, and at its front end by the brackets 24, 25 extending from the frame section 13. Said frame section 13, when extended, is supported by the legs 30 at its front end and by the pivoted brackets 27 at its rear end. The section 12 when extended is supported by the legs 39 at its rear end and by the fixed legs 39 at its front end.

The fixed bars 42 extending between the pivots 28 and 15 and secured to the respective side rails 16 and 17 of the chair frame serve to brace and fix said pivots and to prevent any change in the relative distance therebetween, thereby to permit easy folding and unfolding of the parts without interference or jamming.

It will be seen that I have provided a folding frame structure simple and easy to operate, economical to produce, and efficient in its operation and therefore well designed to effect the purposes for which it is intended.

While I have shown and described certain specific embodiments of my invention, I do not wish to be understood as limiting myself thereto, but intend to claim the invention as broadly as may be permitted by the state of the prior art and the scope of the appended claims.

I claim:

1. In a bed-chair, a pivoted back-forming frame movable into horizontal and inclined positions, a foldable bed-forming frame cooperating with the back frame to form a bed, the bed-forming frame comprising a pair of U-shaped sections pivoted together at their adjacent open ends, means at the other end of one of said sections for pivotally supporting said sections, stop means for limiting the inclined position of the back-forming frame and for also supporting the sections of the bed-forming frame in the folded position thereof, a fixed leg on one of said sections, foldable legs pivoted to said sections at said open ends thereof, said sections each having slotted side bars, and a pair of braces for each of the foldable legs each slidable at one end in the slot of the side bar and each pivoted at the other end thereof to the foldable leg.

2. In a bed chair, a pair of frame sections each having side slots therein, a pair of interconnected opposed foldable legs between said sections, means for pivoting said sections together and to the legs, means for bracing said legs for extension into a position at right angles to the extended position of said sections and into a collapsed position between said sections when the sections are collapsed, and means for supporting said sections in the collapsed positions thereof including a pair of legs fixed to one of said sections, and a pair of brackets fixed to the bed chair and arranged to support one end of the other of said sections, and means pivoted to the bed chair for pivotally supporting the other end of said other of said sections, both in the collapsed position and in the extended position of said other section.

3. In a bed chair, a pair of pivoted sections extensible longitudinally into coplanar relation and foldable longitudinally into superimposed relation, means for supporting said sections in the extended and collapsed positions thereof including a pair of legs between said sections, means responsive to the folding of said sections to fold said legs into a position between said sections and responsive to the extension of said sections to extend said legs into a supporting position, a pivoted back-forming frame and a pair of fixed brackets in the path of movement of the lower part of said frame for limiting the back-forming position of said back-forming frame and for also supporting the rear ends of said sections in the collapsed positions thereof.

4. In a bed chair, a pair of frame sections extensible into coplanar bed-forming position and collapsible into seat-forming position, means for pivotally supporting one of said sections in both of said positions, a pair of fixed brackets arranged to support said one section in the collapsed position thereof, a pair of legs fixed to the other of said sections, a pivoted back-forming frame movable into horizontal position, and means on said one section for supporting said back-forming frame in the horizontal position thereof to form the rear part of a bed when said sections are extended, said brackets being arranged in the path of movement of the back-forming frame

to predetermine the back-forming position thereof.

5. In a bed chair, a chair frame, a pair of frame sections extensible into coplanar relation to form part of a bed and collapsible into superimposed relation to form a seat, a pair of foldable legs at the adjacent ends of said sections, means for pivoting said sections and said legs together, means responsive to the folding movement of said sections to collapse the legs and responsive to the extending movement of said sections to extend the legs, means for pivoting one end of one of said sections to the frame, means on the frame for supporting the other end of said section when in the collapsed position thereof, a back-forming section, said last-mentioned supporting means limiting the back-forming position of the back-forming section, and means on said one section for supporting one end of the back-forming frame when said back-forming frame is in its bed-forming position.

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