Oct. 2, 1934. H. W. REVELL 1,975,664

CONVERTIBLE CHAIR

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Fig. 1.

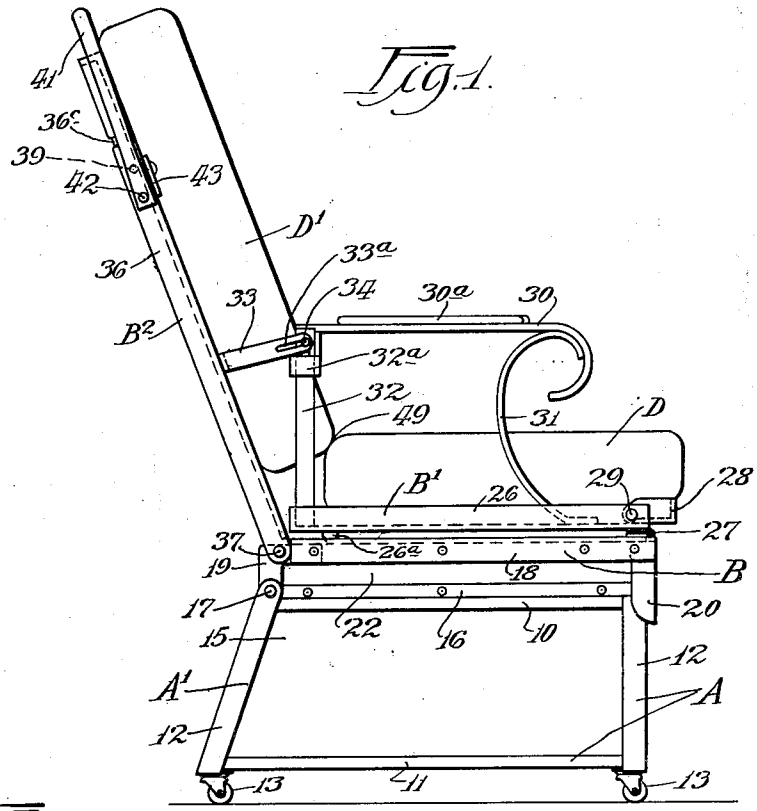
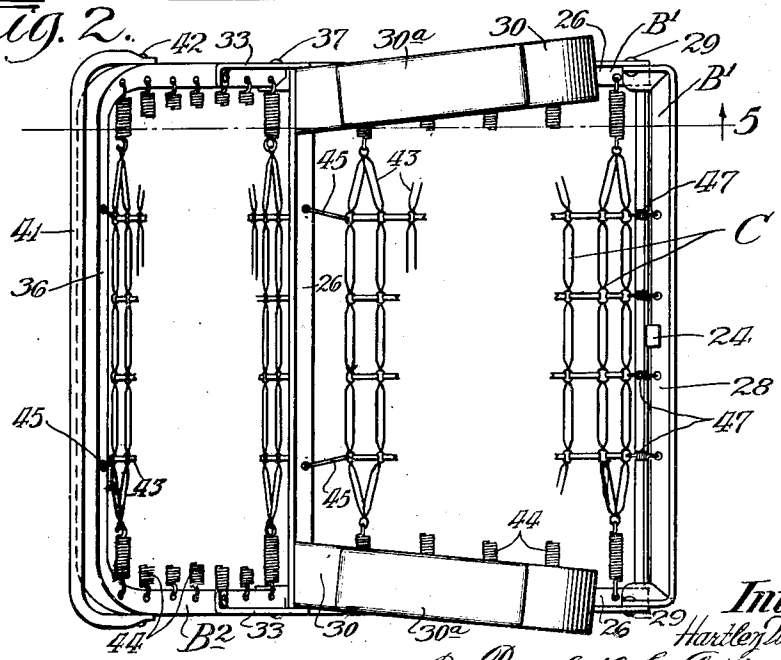


Fig. 2.



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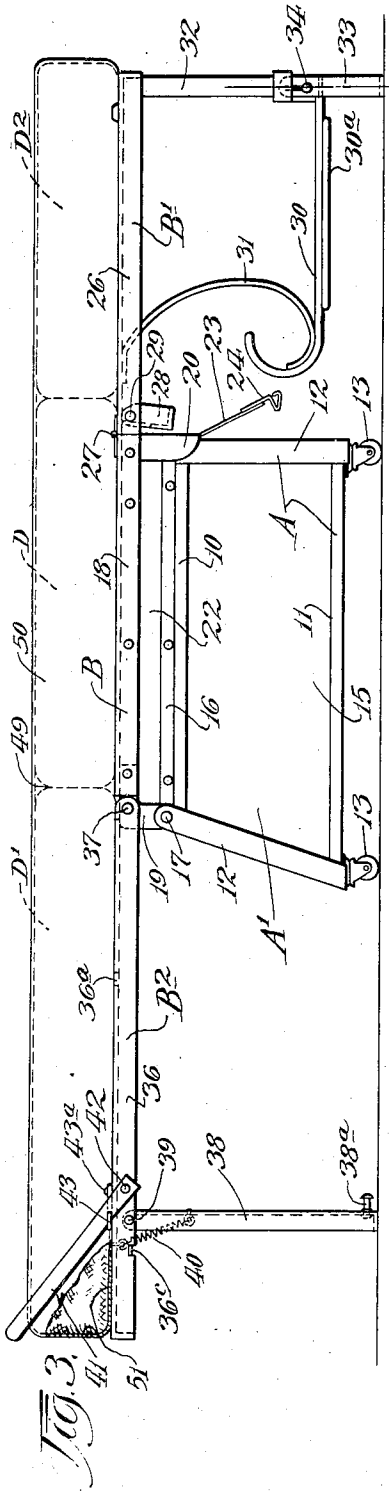


FIG. 3.

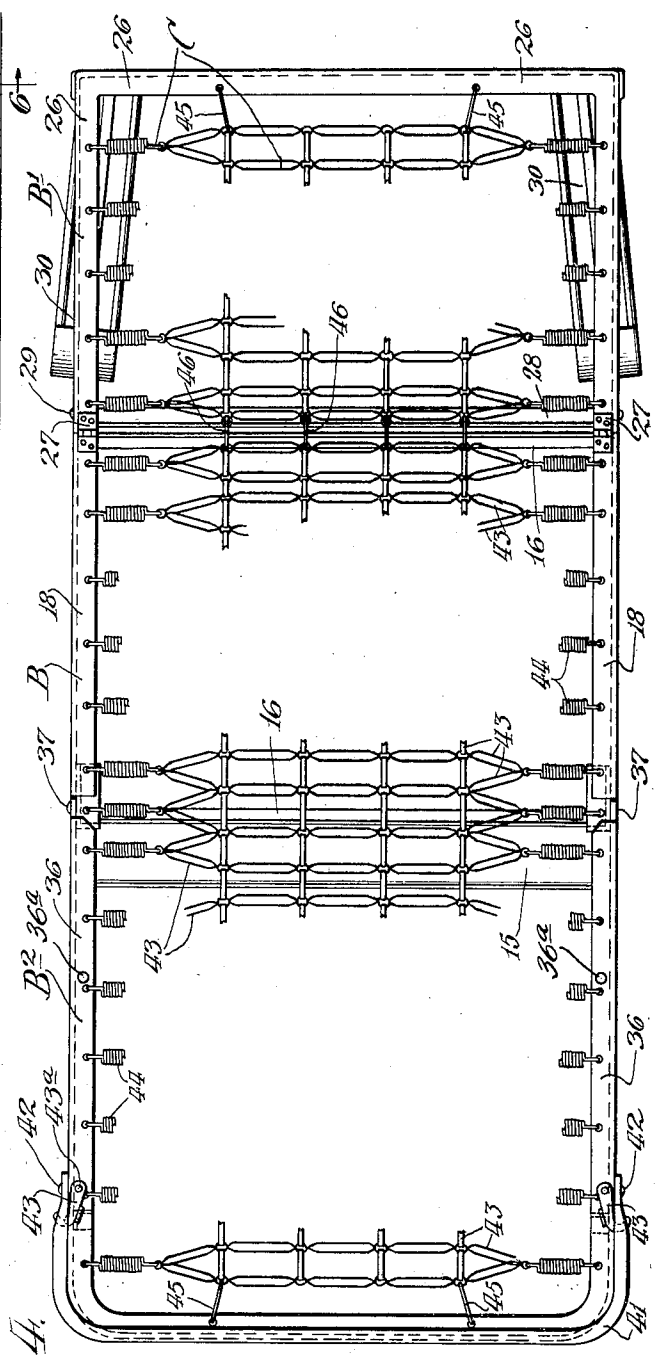


FIG. 4.

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Fig. 5.

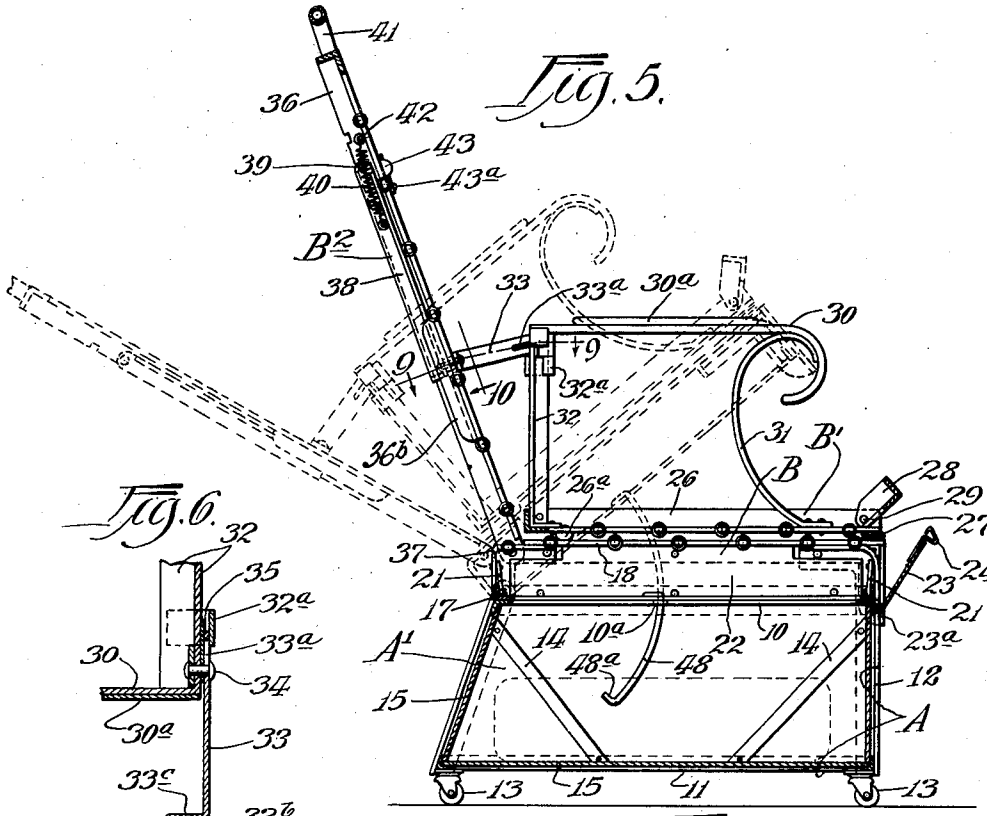


Fig. 6.

Fig. 7.

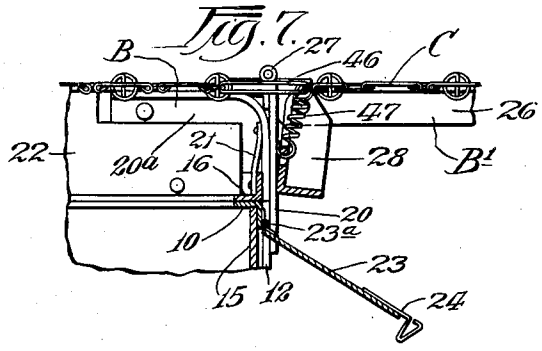


Fig. 8.

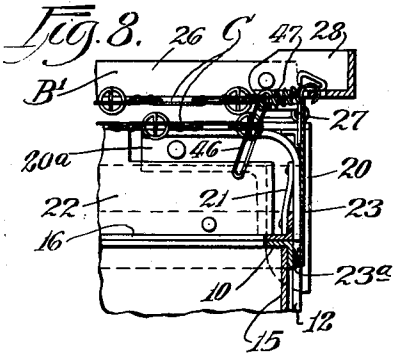


Fig. 9.

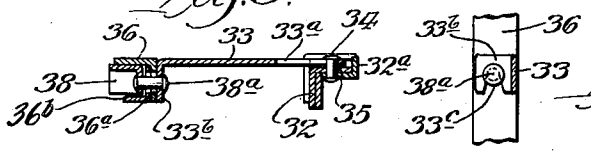


Fig. 10.

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UNITED STATES PATENT OFFICE

1,975,664

CONVERTIBLE CHAIR

Hartley W. Revell, Chicago, Ill.

Application June 6, 1932, Serial No. 615,649

6 Claims. (Cl. 155—49)

This invention relates particularly to convertible chairs adapted to be unfolded and transformed into a bed.

The primary object of the invention is to provide a comfortable, inexpensive armchair of pleasing appearance which can easily be converted into a soft and resilient bed wherein the arm-rests and other unneeded chair parts are turned down to a position where they will not interfere with the use of the bed.

A further object of the invention is to provide a continuous spring structure whose full length is resiliently supported, free from cross-bars when used as a bed, and when folded up to form a chair provides a double thickness at the seat portion of the chair with the top layer of the spring structure supported at its four marginal edges.

A further object of the invention is to provide a storage compartment which is easily accessible and may be used to house a cushion, bedding material and the like, while the device is serving as an easy chair.

The invention is illustrated in a preferred embodiment in the accompanying drawings, in which—

Fig. 1 is a side elevational view of a chair embodying the invention; Fig. 2, a plan view of the same with the cushions removed, the spring structure or wire webbing shown brokenly; Fig. 3, a side elevational view of the device, opened to form a bed, and a portion of the cover-slip broken away to show its pocket; Fig. 4, a plan view of the same, the webbing shown brokenly; Fig. 5, a vertical sectional view, taken as indicated at line 5 of Fig. 2, the dotted lines indicating how the chair may be tilted back to give access to a compartment beneath the chair-seat; Fig. 6, a vertical sectional view, taken as indicated at line 6 of Fig. 3; Fig. 7, a fragmentary enlarged sectional view of the upper front portion of the seat frame when the chair is opened to form a bed; Fig. 8, a sectional view similar to Fig. 7, showing the same structure when serving as a chair; Fig. 9, a sectional view of one of the front legs when serving as a latch for the back-rest, taken as indicated at line 9—9 of Fig. 5; and Fig. 10, a sectional view, taken as indicated at line 10 of Fig. 5.

In the embodiment illustrated, A designates a supporting frame in which a storage chamber A′ is housed; B, an intermediate bed-section to which the front end-section B′ is hinged so that the two together form a folding seat-frame; B^2, a back-section which is pivotally mounted on the section B; C, a spring structure or wire webbing which is resiliently supported by the frames of sections B, B′ and B^2; and D, a seat cushion to which is flexibly hinged a back cushion D′, and both of which are adapted to be enclosed by a slip cover attached to a companion cushion D^2.

The supporting frame A comprises upper and lower perimetral frames 10 and 11 which are supported at their corner portions by standards 12 which, preferably, are made of angle iron. The supporting frame A, may be mounted on casters 13, if desired, and suitable reenforcing bars or sway-bars 14 may be employed to give the structure greater rigidity. The storage compartment A′ is an open top, box-like structure formed by providing panels 15 between the structural members of the supporting frame A.

The intermediate bed-section frame B is provided with an underlying perimetral frame 16, which is pivotally connected at 17 to the upper rear portion of the supporting frame. Side members 18, to which the spring structure C is attached, may be made of suitable angle iron and are supported at the rear by angular members 19, which extend down to the pivot 17. The side members 18 are rigidly connected to the front portion of the perimetral frame 16 by means of angle members 20^a. Corner posts 20 are also rigidly connected to the angle members 20^a and are positioned to overlap the standards 12 of the supporting frame. Suitable corner braces 21 connect members 20^a to frame 16 and brace the side members 18 against being drawn together by the springs of the structure C. Side panels 22 serve as continuations of the side walls of the chamber A′. A door 23 is hinged at 23^a to the frame 10 and serves as a continuation of the front wall of the chamber A′. The door is provided with a spring latch 24 which is adapted to engage a frame member of the front end-section B′.

The frame of the front end-section B′ comprises a U-shaped member 26, which is attached to the intermediate section B, by means of hinges 27, so that it may be superposed thereover by a swinging movement. If desired, rubber bumpers 26^a may be provided between the sections. The rectangular form of the upper section frame B′ is completed by means of a U-shaped member 28, which is pivotally connected to the end portions of the member 26, near the hinges, by means of pivots 29. The member also serves as a cross brace for the section B′.

Suitable arm-rests 30 are rigidly connected to the member 26 by means of an ornamental front standard 31 and a rear standard 32. The arm-rest 30 can be provided with any desired padding or upholstery, as indicated at 30^a. The frame 26

is provided with front legs 33, which serve to support the front end of the bed-section B' when in extended position and also serve to latch the back section B^2 in upright position when the device is used as a chair. The legs are provided with a slot 33^a, which is engaged by a capped pin 34, which is rigidly attached to the standard 32. As indicated in Figs. 5, 6 and 9, the standards 32 are provided with a keeper 32^a adapted to slidably receive the end portion of legs 33 when supporting the section B' in extended position. A small leaf spring 35 is provided within the keeper so as to frictionally engage the leg and hold it in position while the structure is being inverted. The lower end portion of the leg is turned at right angles as indicated at 33^b, and is provided with a slot 33^c adapted to engage a stud, hereinafter described.

The back section B^2 comprises a U-shaped member 36, which is carried on the intermediate section by means of pivots 37. A pair of rear legs 38 are connected to the frame 36 by means of pivots 39, and springs 40 tend to pull the legs, at right angles to the frame, against a stop member (not shown) on the frame. The lower portions of the legs 38 are provided with a capped stud 38^a which is adapted to extend through an aperture 36^a in the frame 36, when the leg is in folded position. If desired, angular guide members 36^b may be fastened to the inner side of the frame 36, to guide the legs into locking position, as shown in Figs. 5 and 9. As will be readily understood, this stud may be engaged by slot 33^c in the leg 33 and will serve to hold the leg in a folded position and the back frame B^2 in an upwardly inclined position. A U-shaped tubular pillow rest 41 is connected to the frame 36 by means of pivots 42. A hook-shaped latch 43, is pivoted to the frame at 43^a and may be used to hold the member 41 in inclined position. The frame member 36 is further provided with a stop 36^c, which limits the lower swing of the member 41, and against which the member rests when the device is folded up as a chair.

The spring structure C may be of any suitable construction which may be folded upon itself. In the construction shown, a continuous wire webbing is secured to the side members of the sections B, B' and B^2, by means of tension springs 44. The end portions of the webbing are connected to the frames 26 and 36 by means of links 45. Preferably, loop members 46 are employed in that portion of the webbing where the fold occurs on the seat frame when the upper frame is superposed on the lower frame. The forward ends of these loops are connected to the movable member 28 of the front frame 26 by means of a series of tension springs 47. Accordingly, when the device is folded up to form a chair, that portion of the webbing which lies within the front frame is supported at one end by links 45, at its side portions by springs 44, and at its then front end-portion by springs 47.

It will be noted that when the front frame B' is swung into extended position, the U-shaped member 28 swings down out of the plane of the spring structure C and the wire webbing in B' is tautly connected to the wire webbing in B by means of the loops 46. Thus, it will be understood that there will be no rigid cross-bars in the plane of the spring structure when the device is extended to form a bed.

When the device is in the form of a chair, as shown in Fig. 1, the seat frame B' is held in horizontal position by the latch member 24 engaging the member 28, as shown in Fig. 8. When it is desired to open the chamber A', the latch 24 is pressed inwardly and the chair is tilted back on the pivot 17, as illustrated by the dotted lines in Fig. 5. The backward tilt of the chair is limited by means of an arcuate rod 48 which is attached to the section B and extends through an aperture 10^a in frame 10. The lower portion of the rod 48 is provided with a suitable stop 48^a.

A suitable seat cushion D may comprise a mattress-like structure provided with inner coil springs, not shown, and covered with a suitable finish fabric. The seat cushion is shaped to lie within the rectangular seat frame B'. It will be noted that by means of the present invention the front edge of the seat cushion is supported by member 28. The back cushion D' may be of similar construction and shaped to fit the back section B^2. Preferably, the cushions D and D' are hinged together flexibly, as indicated at 49. A companion cushion D^2, of similar construction, is of the same width as the cushion D and is long enough to cover the remaining area of the spring structure when the device is extended to form a bed. The cushion D^2, preferably, is provided with an open-sided mattress cover 50, which is equipped at its far end with a pocket 51 adapted to slip over the end of the cushion D'. The cover has sufficient length to receive snugly and cover the top and side portions of the cushions D and D'. It will be understood that when the device is converted from a bed to a chair, the cover 50 may be removed from the seat and back cushions and inserted and stored, with the cushion D^2, in the chamber A' of the supporting frame.

The convertible chair is particularly adapted for use in hotel rooms, summer resorts, or any place where space is at a premium, and it becomes desirable to have a comfortable chair which may be converted quickly into a bed. By providing a storage chamber in the base, it is unnecessary to provide other space for storing mattresses, bedding and the like.

It will be noted also that the chair may be moved through a comparatively narrow space by turning up the member 28, releasing the legs 33 and tilting forwardly the back portion of the chair. By a slight modification of the legs 33, the back portion of the chair B^2 may be made adjustable to suit the comfort of the user.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

What I regard as new and desire to secure by Letters Patent is:

1. A convertible structure comprising: a supporting-frame; a two-section seat-frame surmounting said supporting-frame and comprising an intermediate bed-section pivotally connected with the rear portion of said supporting-frame and an end bed-section pivotally connected with the front portion of said intermediate section; a supplemental short cushion-supporting section pivotally connected with said end-section near its point of connection with said intermediate section; a back-frame pivotally connected with the rear portion of said intermediate bed-section and adapted to serve as an end bed-section; and releasable connections between said first-mentioned end bed-section and said back-frame.

2. A convertible structure as specified in claim 1, in which said first-mentioned end bed-section

is equipped with arm-rests and the releasable connections include members connecting said arm-rests with said back-frame.

3. In a structure of the character set forth: a back-section, a plural-section folding seat-frame pivotally connected to said back-section and comprising a main bed-section and a superposed bed-section pivotally connected to the main bed-section so as to swing forwardly to an inverted position in the plane of said main bed-section, means movably mounting one edge of said superposed bed-section to cooperate with said section to form a cushion-supporting member, and means for moving said member out of the plane of the bed-sections when the superposed bed-section is moved to extended position.

4. In a structure of the character set forth: a plural-section folding seat-frame comprising a main bed-section and a superposed bed-section pivotally mounted thereon so as to swing forwardly into inverted position in the plane of said main bed-section, means movably mounting one edge of said superposed bed-section so that it may be moved out of the plane of its bed-section when the latter is moved to extended position; and a continuous spring structure connected to said bed-sections and having a fold portion flexibly connected to said movable member.

5. In combination: a back-frame pivotally connected to an intermediate frame, a front end-frame pivotally connected to said intermediate frame, and a disappearing U-shaped cross-bar pivotally connected to said end-frame so as to swing into the plane of the same to form with the end-frame a cushion rest when said frame is swung onto the intermediate frame and a continuous foldable wire fabric supported by said frames so as to bend at the junctions between frames, said wire fabric being adapted to fold double at the front junction and the fold portion having yielding connections with said disappearing cross-bar.

6. A structure of the character set forth comprising a supporting frame provided with a housing having a front forwardly-swinging drop door provided with a latch; a two-section seat-frame surmounting said supporting frame and comprising a main bed-section pivotally connected with the rear portion of said supporting-frame and an end bed-section pivotally connected with the front portion of the main section; and a supplemental short cushion-supporting section pivotally connected with said end-section near its point of connection with said main section, said supplemental section being releasably engaged and held in position by the latch on said door.

HARTLEY W. REVELL.