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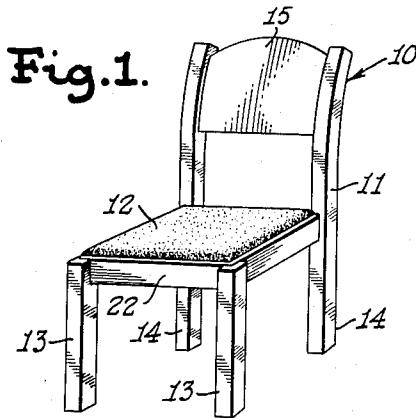
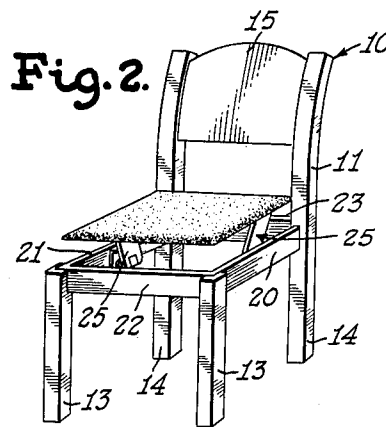
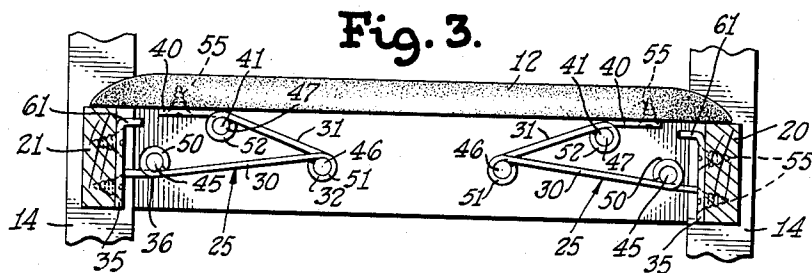
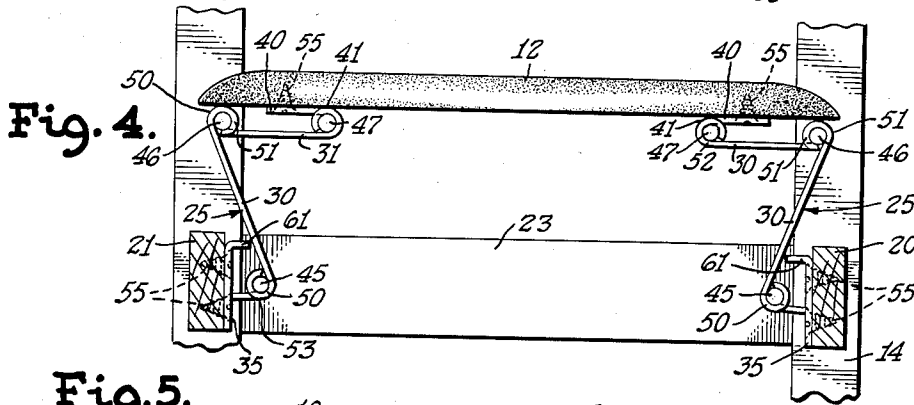
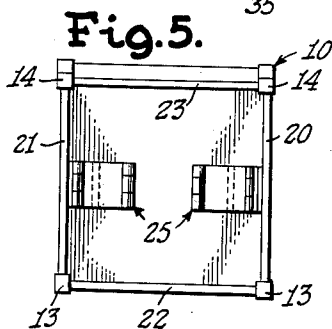
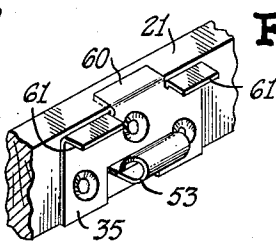
A. J. BOSCHETTI ET AL

2,729,274

ADJUSTABLE CHAIR

Original Filed Oct. 22, 1945

2 Sheets-Sheet 1



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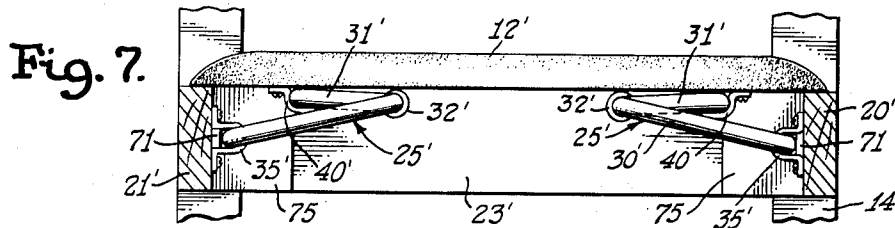
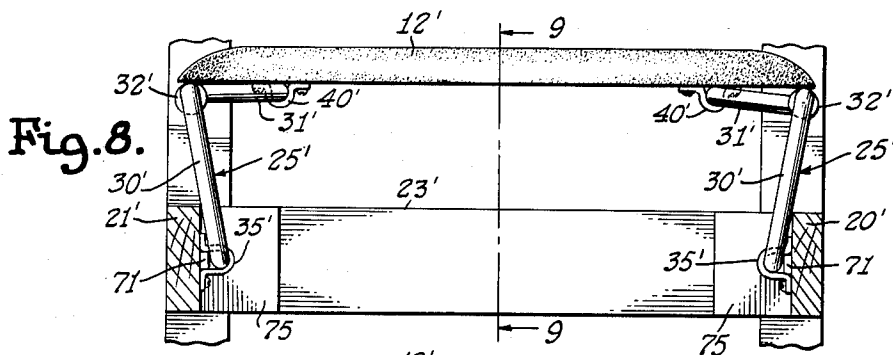
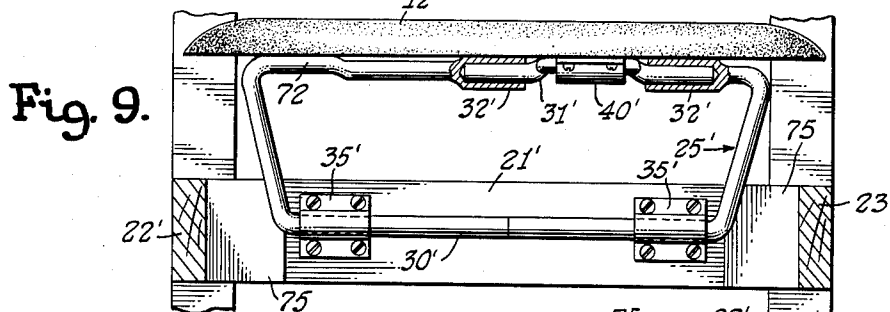
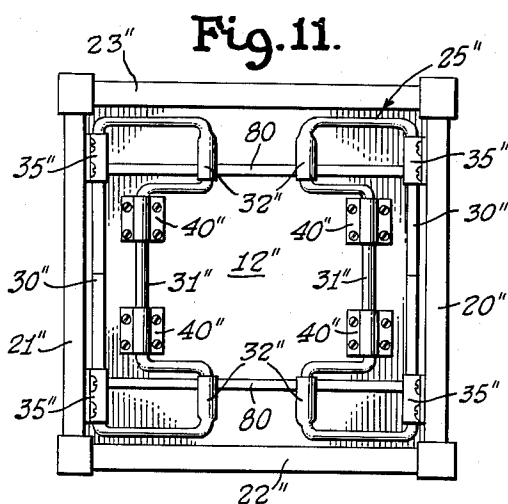
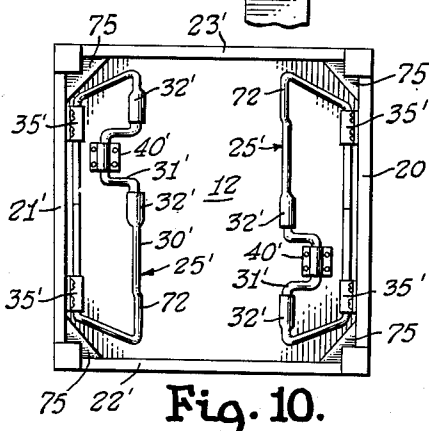
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1

2,729,274

ADJUSTABLE CHAIR

Anthony J. Boschetti and Paul A. Terry, Huntington Park, Calif., assignors, by direct and mesne assignments, of one-half to Herbert A. Huebner and Albert M. Herzig, jointly

Continuation of application Serial No. 623,646, October 22, 1945. This application August 30, 1951, Serial No. 244,297

11 Claims. (Cl. 155—91)

This is a continuation of application Serial No. 623,646, filed October 22, 1945, in the names of Anthony J. Boschetti and Paul A. Terry, for Adjustable Chair.

This invention relates to convertible chairs and more particularly to adult chairs of the conventional type, the seat of which is adapted to be raised when it is desired to form a child's seat.

It is an object of this invention to adapt a conventional chair for selective use, either as a child's high chair or an adult's chair.

It is another object of this invention to provide a conventional adult's chair having a seat loosely disposed upon the frame and novel means associated with the frame and the seat for converting the adult's chair into a high chair.

Still another object of this invention is to provide a novel mechanism for converting an ordinary dining type chair into a child's chair.

Another object of this invention is to construct an ordinary adult's chair convertible to a child's high chair of singular stability and of simple and economical construction.

A further object is to provide a conventional adult's chair with a bracket attachment for the seat mounted inside the frame of the chair in a manner such that the bracket is normally folded permitting the seat to assume its regular position but which can be extended, and locked in extended position so that the seat can be elevated above its regular position when need be to accommodate a child.

A further object of this invention is to provide a light but sturdy hinged bracket of rod-like construction supported on and by the frame structure of a conventional chair whereby the chair seat may be selectively raised or lowered.

While we have referred especially to our novel hinge or bracket in connection with a convertible chair, it will be obvious that the hinge may be used to advantage on any installation where it is desired to support a platform in a selectively lower or higher position.

Other objects and advantages will appear and be brought out more fully from the following description considered with reference to the accompanying drawings throughout which like parts are designated by like numerals.

In the drawings:

Fig. 1 is a perspective view of a conventional dining chair suitable for use with our invention.

Fig. 2 is a view similar to Fig. 1, showing the seat of the chair in a raised position for use as a child's high chair.

Fig. 3 is a detailed front sectional view of our chair seat showing our novel hinge mechanism in the lowered position of the seat.

Fig. 4 is a view similar to Fig. 3 showing the position of the parts when the seat is in raised position.

Fig. 5 is a bottom view of a chair embodying our hinged bracket in lowered position.

Fig. 6 is a detail view of a portion of the hinge mechanism, parts of the chair being cut away.

2

Fig. 7 is a detailed sectional view of our chair seat embodying another form of our novel hinge mechanism showing the seat in lowered position.

Fig. 8 is a view similar to Fig. 7, but showing the seat in raised position.

Fig. 9 is a detailed fragmentary sectional view taken on the line 9—9 of Fig. 8.

Fig. 10 is a bottom view of a chair incorporating our novel hinge mechanism in lowered position.

Fig. 11 is an enlarged detail view similar to Fig. 10 illustrating a further modification of our invention.

Referring more particularly to the drawings, we show, generally, a chair 10 comprising a frame 11 and a seat 12. The frame 11 may be of any conventional construction and is provided with forward legs 13, and rearward legs 14 extending upwardly beyond the seat 12 to support a back-rest 15. The frame 11 further comprises side rails 20 and 21, a front rail 22, and a rear rail 23, the seat 12 when used for an adult, being normally supported in a lowered position upon the upper surfaces of the rails 20, 21, 22 and 23.

In an embodiment of the invention chosen for purpose of illustration and appearing in detail in Figs. 1 through 6, the novel hinge mechanism preferably comprises a pair of hinged brackets 25 each having a long arm or base link 30 and a relatively short or positioning link 31 making a hinged connection 32 with its associated base link 30. The base links 30 may be secured to the side rails 20 and 21 respectively by means of fixed brackets 35 having hinged connections 36 with the base links 30. Each short link 31 is similarly secured to the under side of the seat 12 by means of a fixed bracket 40 with which the short link 31 makes a hinged connection 41.

The hinges of the brackets 25 may be formed in the conventional manner by means of ears 50, 51 and 52 shaped around pintles 45, 46 and 47.

The fixed brackets 35 and 40 may be firmly affixed to the side rails 20 and 21 and the seat 12 in an accepted manner by any suitable means such as screws 55 and brackets 35 may be provided with ears 60 normally resting upon the top of the side rails 20 and 21 and with ears 61 projecting inwardly and normally abutting and bearing against the base links 30 to steady the seat 12 in its raised position upon the base links, as most clearly shown in Fig. 4.

Preferably, the relative sizes of the arms 30 and 31 are such that the short arms 31 are over one-half the length of the long arms 30 as measured from center to center of the pivots 32, 36, and 41. Also, the pivots 41 are preferably spaced farther inwardly from the side rails 20 and 21 as compared to the pivots 36 so that the medial or common pivots 32 may be held in substantially upright and horizontal positions in the raised and lowered positions of the seat, respectively. By such a construction, the base links 30 may be slightly inclined from the vertical in their upright position, thereby locking the seat in its raised position due to the weight of the seat and to the added weight of an occupant when occupied, and moreover, holding the base links in a steady position against the side rails 20 and 21 or projections 61.

When it is desired to convert the chair 10 from its conventional use and appearance as an adult's chair (Figs. 1 and 3) to a child's chair (Figs. 2 and 4) the seat 12 is grasped and raised manually whereby the hinges 32 are moved from their central position relative to the seat as shown in Fig. 3 to a more lateral position under and against the edges of the seat 12 as shown in Fig. 4. The seat 12 in its raised position is supported against side-wise movement by the abutment of the base links 30 against the ends of the inwardly turned ears 61, stabilizing the seat in its raised position.

When it is desired to lower the seat from its raised

position the seat 12 is again raised manually, causing the brackets 25 to unfold from the position shown in Fig. 4, whereupon the seat is again lowered and the brackets 25 folded inwardly until they have reassumed their inwardly folded positions as shown in Fig. 3, the chair 10 by said latter operation being reconverted into an adult's chair.

If the hinge joints 32, 36, and 41 move freely without binding it will be found that the initial act of raising the seat 12 functions to move the common pivot 46 initially outwardly in the operation of converting the chair from an adult's chair to a child's chair and initially inwardly in converting from a child's chair back to an adult's chair. As a consequence of this initial motion the inertia of the folding and unfolding brackets 25 may make it necessary only to raise the seat 12 to its limit of upward extension and immediately lower it to the altered position desired, the action of the brackets being automatic. If necessary, however, the brackets 25 may be directly folded in either direction by pressing them manually inwardly or outwardly as desired.

In a form of the invention illustrated in Figs. 7 through 10 having certain preferred features a seat 12' normally rests in its lowered position upon the side rails 20' and 21' and upon the front and rear rails 22' and 23'. Brackets 25' are provided with floating hinges or central pivots 32' and with fixed pivots 35' and 40' of any conventional type. The brackets 25' may be said to comprise rod-like base links 30' and rod-like short links 31' pivotally secured to the side rails 20' and 21' respectively, and to the seat 12'. The hinges 32' may be in the form of sleeves or sockets forming the ends of the base links 30' rotatably receiving the ends of short links 31', or vice versa.

In order to provide a maximum width of the base link 30' at its seat-supporting end while clearing corner reinforcements 75 in those chairs constructed with such corner reinforcements, the base links 30' are preferably formed in the general shape of trapezoids. To accommodate the short link 31', a portion of the longer of the parallel sides is cut out and provided with sleeves. The sleeves are adapted to receive ends of the short links 31' to form hinges 32'. Again in order to provide the broadest possible base for the seat 12', the base link 30' may be formed with offsets 72 so that the outer edges of the base link will support and steady the seat.

The brackets 25' and also similar brackets 25'' in the form illustrated in Fig. 11, are preferably constructed of a continuous tube or rod of metal, plastic, or the like, or may be formed, as for example, from flat sheets of the selected material.

Spacing pads 71 may be provided between the side rails and the base links 30' so that in their upright position, as illustrated in Fig. 8, the brackets tilt outwardly against the upper edge of the side rails 20' and 21' to prevent the sidewise movement of the seat 12' in its upright position.

The construction of the modified form shown in Fig. 11 may be generally similar to that of the form illustrated in Figs. 7 through 10, except that a base link 30'' is of substantially rectangular construction. Hangers 35'' are used to secure the base link to the side rail in each case. In this latter form positioning links 31'' may be secured in place under a seat 12'' as by means of a pair of hangers 40''. Sleeves or sockets forming floating pivots 32'' may be positioned close to seat 12'' permitting the seat 12'' to rest directly upon the sleeves 32'' in the upright position of the base links 30''.

Any suitable reinforcements 80 may be provided for the seat 12'', as needed.

The flat or bar stock of which the brackets 25 are made may be of any suitable material such as iron or other metal or of composition or plastic. The rod stock of which the modified forms of brackets 25' and 25'' are made may be rolled or formed from any mentioned or other material and may have a round, rectilinear or other

cross-sectional shape. By way of example only, a suitable rod material has been found to be steel wire of approximately $\frac{1}{4}$ inch diameter.

In the formation of the foldable bracket and of the fixed bracket by which the foldable brackets are pivotally secured to the chair parts any other conventional hinge or pivotal construction than those illustrated may be used.

Preferably the center of the pivots of the fixed bracket secured to the inside of the side rails should fall substantially below the upper edges of the side rails so that the lower links 30', in raised position, may bear against said upper edges thereby to furnish stability to the seat in its raised position. A distance of an inch and a quarter from the top of the side rail to the center of the pivot of the fixed bracket secured to the side rail has been found satisfactory.

It will be understood that the angle of inclination from the vertical of the base links (in their upright position) depends upon the relative lengths of the long and short links and also upon the horizontal distance between the fixed pivots by which the long and short links, respectively, are secured to the chair parts.

Obviously, the relative positions of the long and short links may be reversed so that the short or positioning link is pivotally affixed to the rails while the base link may be pivotally secured to the seat.

The several hinges may be of the continuous type, shown for example in Fig. 6, or of the spaced type, shown in Fig. 11; or any other suitable type of hinge may be used, both to pivot the links to the chair frame and seat, respectively, and also to pivot the links together. It is preferable to provide in the chair brackets and links which will furnish a seat support of maximum width along the frame and also under the seat so as to give a firm support to the elevated seat at widely spaced points. Simplicity of design and lightness, consistent with rigidity and strength, are prime requisites. While it is contemplated that chairs may be manufactured originally embodying our novel bracket, we also envision the creation of a universally adaptable bracket readily and economically manufactured and conveniently installable into any conventional ready-made chair.

While the instant invention has been shown and described herein in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is therefore not to be limited to the details disclosed herein but is to be accorded the full scope of the claims.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. An article of furniture comprising an open frame having side bars, a seat normally resting on the frame, two toggle links set at opposite sides of the seat, each toggle link comprising a lower long link pivoted to the inside of a frame side bar and a shorter upper link pivoted to the underside of the seat, the seat adapted to be held in an elevated position by the longer links extending upwardly and outwardly and bearing against the frame bars and the shorter links extending horizontally inwardly from and holding the lower links in said elevated position.

2. An article of furniture comprising an open frame having side bars, a seat normally resting on the frame, two toggle links at opposite sides of the seat, each toggle link comprising a lower long link pivoted to the inside of a frame side bar and a shorter upper link pivoted to the underside of the seat, the seat adapted to be held in elevated position by the longer links extending upwardly and outwardly past dead center position, and bearing against the inner sides of the frame bars and the shorter links extending horizontally inwardly from the longer links along the underside of the seat.

3. An article of furniture comprising an open frame having side bars, a seat normally resting on the frame, two

5

6

toggle links at opposite sides of the seat, each toggle link comprising a lower long link pivoted to the inside of a frame side bar and a shorter upper link pivoted to the underside of the seat, the latter pivots being spaced inwardly from the longer link pivotal connections to the frame side bars, the seat adapted to be held in elevated position by the longer links extending upwardly and outwardly, and bearing against the inner sides of the frame bars and the shorter links extending horizontally inwardly from the longer links along the underside of the seat.

4. An article of furniture comprising an open frame having side bars, a seat normally resting on the frame, two toggle links at opposite sides of the seat, each toggle link comprising a lower long link pivoted to the inside of a frame side bar and a shorter upper link pivoted to the underside of the seat, the latter pivots being spaced inwardly from the longer link pivotal connections to the frame side bars, the seat adapted to be held in elevated position by the longer links extending upwardly and outwardly past dead center position, and bearing against the frame bars and the shorter links extending horizontally along the underside of the seat.

5. An article of furniture comprising an open frame having side bars, a seat normally resting on the frame, two toggle links at opposite sides of the seat, each toggle link comprising a lower long link pivoted to the inside of a frame side bar and a shorter upper link pivoted to the underside of the seat, the latter pivots being spaced inwardly from the longer link pivotal connections to the frame side bars, the seat adapted to be held in elevated position by the longer links extending upwardly and outwardly past dead center position, and bearing against the inner sides of the frame bars and the shorter links extending horizontally and holding the lower links in said elevated position.

6. In a chair having an elevator seat apparatus, said chair having a frame including frame bars and a seat normally supported thereon, said apparatus comprising opposed seat elevating hinges secured to opposite sides of the seat and frame, each hinge comprising opposed bail-shaped members pivotally secured to each other at the outer ends of their respective legs, the bight portions of said bails being parallel and pivoted to the seat member and to the inside of a frame bar, respectively, said bail-shaped members folding inwardly to lie horizontally when the seat is in its lowered position on the frame, and when the seat is raised the lower of said bail-shaped members diverging upwardly and bearing against the frame bar and the upper of said bail-shaped members folding outwardly to lie horizontally and support said seat in elevated position.

7. In a chair comprising a frame member and a seat member, toggle hinges each comprising two links having a joint in common at one of their ends and means pivotally connecting the other end of each of said links to said frame and seat members respectively, said seat connecting means and said frame connecting means being horizontally off-set relative to one another, the lower links being secured below the upper edge of and bearing outwardly against the inner surfaces of the horizontal side portions of the frame, whereby said seat has a lowered position upon said frame and a raised position upon the upper end of the lower links in a generally vertical position thereof.

8. In a chair comprising a frame member and a seat member, toggle hinges each comprising two links having a joint in common at one of their ends and means pivotally connecting the other end of each of said links to said frame and seat members respectively, said seat connecting means

and said frame connecting means being horizontally off-set relative to one another, the lower links being secured below the upper edge of and bearing outwardly against the horizontal side portions of the frame, whereby said seat has a lowered position upon said frame and a raised position over the upper end of one of said links in a generally vertical position thereof, said pivotal means associated with said frame providing an abutment disposed above the pivot point of the corresponding link against which the corresponding link rests in the raised position of said seat.

9. In a chair comprising a frame member and a seat member, a toggle hinge comprising two links having a joint in common at one of their ends and means pivotally connecting the other end of each of said links to said frame and seat members respectively, said seat connecting means and said frame connecting means being horizontally offset relative to one another, and a lateral abutment formed on said frame connecting means above the pivotal connection of the link with the frame, said link in raised position bearing against said abutment to be steadied thereby, said seat member thereby having a lowered position upon the frame and a raised position supported upon said toggle hinge.

10. In combination in a chair: a chair frame including legs, a chair seat, and means connecting said frame and said seat whereby the seat may be raised from a position resting on the frame to an elevated and supported position above the frame, said means comprising a pair of toggles secured to and between said frame and seat on opposite sides thereof, each toggle comprising a unitary substantially rigid lower member and a unitary substantially rigid upper member, said members being pivoted together at spaced points along their juncture line, a first of said lower members being pivoted to one side of said frame at spaced points along a line paralleling a first juncture line between said first lower member and the first upper member pivoted thereto, the second of said lower members being pivoted to the opposite side of said frame at spaced points along a line paralleling a second juncture line between said second lower member and the second upper member pivoted thereto, said first upper member being pivoted to said seat at spaced points along a line paralleling said first juncture line, said second upper member being pivoted to said seat at spaced points along a line paralleling said second juncture line, said seat having two positions with respect to said frame, one resting on said frame with said toggles folded inwardly and said juncture lines moved toward each other, the other spaced above said frame and resting on said toggles with said juncture lines moved outwardly away from each other and means retaining said toggles in said other position.

11. A two-link toggle hinge of the character described, said links being substantially U-shaped, the ends of said U being pivotally connected to form said toggle joint, the arms of one of said links being longer than the other, means for pivotal securement of the cross member of said long link to the frame of a chair and means for pivotally securing the cross member of the relatively shorter link to the underside of the seat of a chair, said hinge being adapted to be pivoted outwardly to support said seat upon the ends of the arms of the relatively longer link, said hinge being adapted to be pivoted inwardly enabling said seat to rest at substantially conventional height upon said frame.

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