March 12, 1957 R. HALE 2,784,766

CHAIR FOLDABLE TO FORM A BED

Filed Jan. 12, 1953 2 Sheets-Sheet 1

FIG. 1

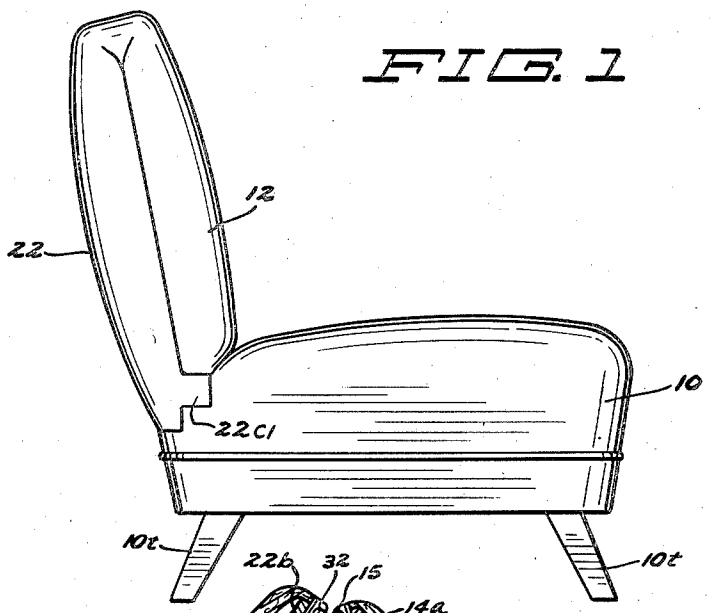


FIG. 3

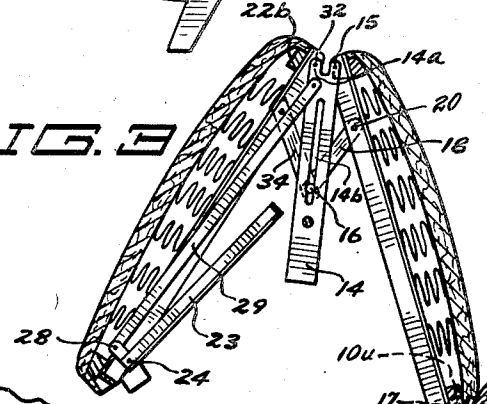
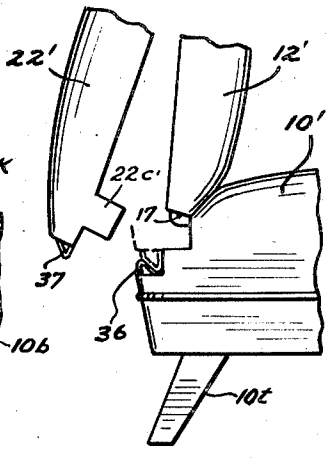


FIG. 4



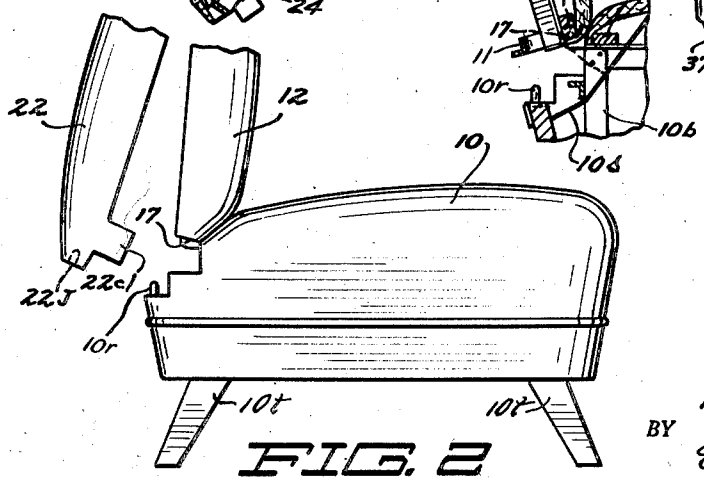


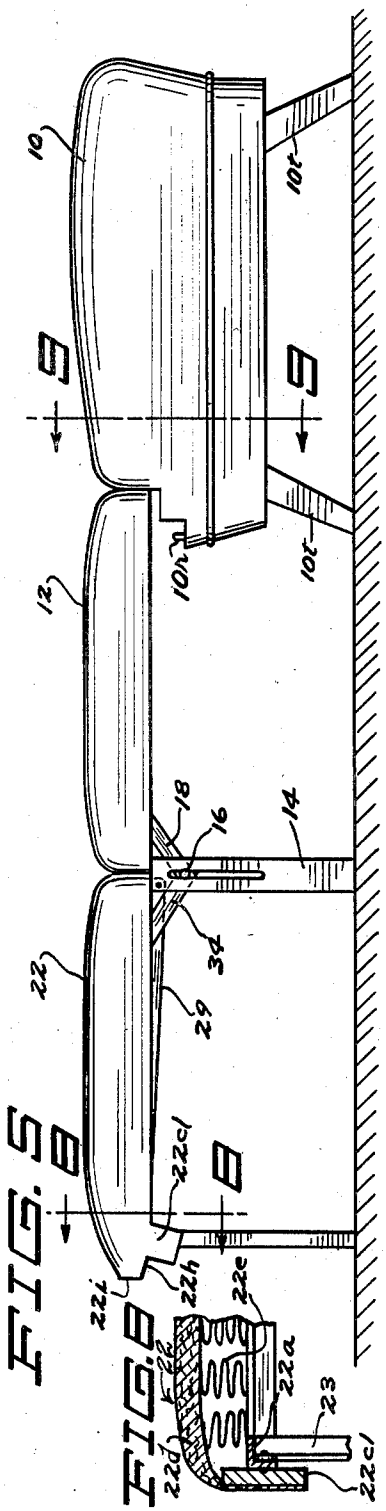
FIG. 2

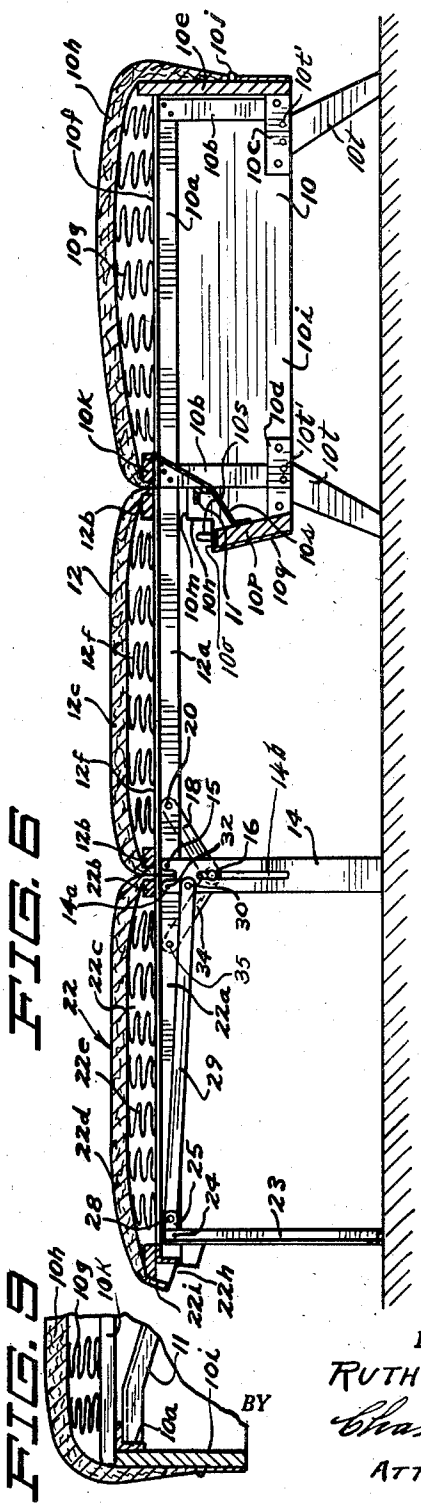
INVENTOR.
RUTH HALE
BY Chas. C. Reif
ATTORNEY.

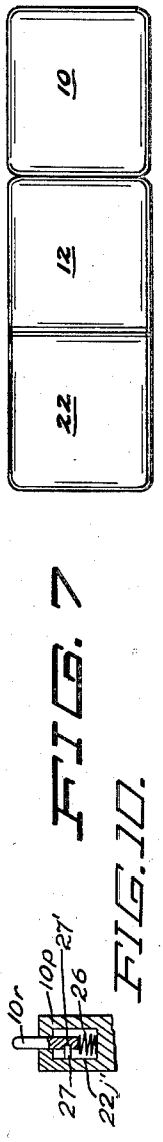
March 12, 1957 R. HALE 2,784,766

CHAIR FOLDABLE TO FORM A BED

Filed Jan. 12, 1953 2 Sheets-Sheet 2







INVENTOR.
RUTH HALE
BY Chas. E. Reif
ATTORNEY.

United States Patent Office

2,784,766

Patented Mar. 12, 1957

2,784,766

CHAIR FOLDABLE TO FORM A BED

Ruth Hale, Minneapolis, Minn.

Application January 12, 1953, Serial No. 330,813

7 Claims. (Cl. 155—47)

This invention relates to a chair, and particularly to a chair comprising a stationary section and pivoted sections. Said pivoted sections are swingable together to form the back of said chair and are also swingable into substantial horizontal alignment with each other and with said first mentioned section to form a bed. Said first mentioned section is provided with legs and said second and third sections carry leg members which are pivoted to be swung between said second and third sections when said sections form the back of said chair.

It is an object of this invention to provide such a chair as above set forth which is of simple construction and which can be easily converted from its position forming a chair to its position forming a bed.

It is another object of the invention to provide a chair having a stationary section comprising a substantially rectangular frame having a cushion at its top with leg members supporting said frame, a second section pivoted to the rear side of said section and also comprising a substantially rectangular frame with a cushion at its top, together with a third section pivoted to the free side of said second section, said third section also comprising a substantially rectangular frame with a cushion at its top, said second and third sections being swingable into substantially horizontal position with their cushions substantially aligned with the cushion of said first mentioned section to form a bed, said second and third sections comprising pivoted members adapted to be extended to form legs and which are foldable between said second and third sections when the latter are in position forming the back of said chair.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a view in side elevation of the chair;

Fig. 2 is a partial view showing certain sections in different positions;

Fig. 3 is a partial vertical section taken centrally through the chair showing sections in partly folded position;

Fig. 4 is a partial view similar to Fig. 2 showing a modification;

Fig. 5 is a view in side elevation showing the chair in position forming a bed;

Fig. 6 is a central vertical section through Fig. 5;

Fig. 7 is a top plan view of the bed as shown in Figs. 5 and 6 and shown on a reduced scale;

Fig. 8 is a vertical section taken on line 8—8 of Fig. 5, as indicated by the arrows;

Fig. 9 is a vertical section taken on line 9—9 of Fig. 5, as indicated by the arrows; and

Fig. 10 is a broken away portion on an enlarged scale with a portion thereof in vertical section.

Referring to the drawings, a device is shown comprising a stationary section 10. This section comprises a rectangular frame 10*a* from the corners of which depend

rigid members 10*b* which have secured to their lower ends front and rear horizontal members 10*c* and 10*d* respectively. While various forms of material might be used, in the embodiment of the invention illustrated, members 10*a* and front members 10*b* are shown as made of angle iron. A board or plate 10*e* is secured to the front of said frame, the same being flush with the bottom of plates 10*c* at its lower end and extending a short distance above the top members 10*a*. A support 10*f* is provided for a plurality of compression springs 10*g*, which support might take various forms, such as the plate shown. A suitable cover 10*h* extends over the springs 10*g* thus forming a cushion, the same extending down over the front of member 10*e*. While cover 10*h* can be variously made, in the embodiment of the invention illustrated, it is shown as having spaced layers of suitable fabric with cushioning material therebetween. The cushioning material tapers downwardly at the front and sides and only the fabric layers are used adjacent the bottom of the cover. Boards or plates 10*i* are provided at the sides of said frame and said cover extends downwardly at the sides to the bottom of members 10*i*. The cover is divided near its bottom and a cord or bead 10*j* is shown extending around the front and sides of section 10 and partially around the rear thereof. Cover 10*h* at its rear side is secured to the rear side of a bar 10*k* extending transversely of the frame and on top of members 10*a*. Cover 10*h* can be secured in any suitable manner, as by tacks or nails. The plates 10*i* extend rearwardly beyond the vertical members 10*b* and the same are provided with horizontal surfaces 10*m* from which extend downwardly vertical surfaces 10*n*, which in turn extend to horizontal surfaces 10*o*. A board or plate 10*p* extends between plates 10*i*, the same inclining downwardly and forwardly and being covered at its rear side with a layer of fabric 10*q*. One or more pins 10*r* which extend vertically from the top of board or plate 10*p* are disposed in recesses 22*j'* and are preferably yieldingly or resiliently supported. Said recesses 22*j'* have compression coiled springs 26 therein engaged at their tops by said pins 10*r*. Each pin 10*r* has a small pin 27 projecting into a recess 27' extending transversely into each of said pins. Said pins 27 engage the top of recess 22*j'* so as to limit the outward movement of pins 10*r*. Pins 10*r* move into recesses 22*j* in bores 22*c*. A layer of strong fabric 10*s* is secured to the rear side of board 10*p* at its lower end and is secured to the rear side of bar 10*k* at its upper end. A bar 11 shown as an angle bar extends transversely of the frame 12*a* of a section 12 of the device and is arranged to engage the fabric 10*s*. Section 10 has a pair of legs 10*t* at its front end and a similar pair of legs 10*t* at its rear portion. The pairs of legs 10*t* are of course spaced laterally. Said legs 10*t* are secured to members 10*c* and 10*d* respectively as by bolts 10*t'* and are respectively positioned between said members and said sides 10*i*. The rear legs 10*t* are additionally secured to the rear supporting members 10*b*. Frame 10*a* has a lug 10*u* which is pivoted to frame 12*a* of section 12 by pivot 17.

The frame 12*a* of the central section 12 is of rectangular form. Bars 12*b* are disposed at the ends thereof and a cushioned cover 12*c* similar to cover 10*h* is secured at its edges to the bars 12*b*. A plurality of coiled compression springs 12*d* are disposed beneath cover 12*c* and a plate 12*f* supported on frame 12*a*. A pair of bars 14 are provided having spaced lugs 14*a* at their upper ends. The frame 12*a* is pivoted at each side by a pivot 15 to one of the lugs 14*a*. Bar 14 has an elongated slot 14*b* extending longitudinally therein in which is movable a headed pin 16. A link 18 is pivoted at one end to pin 16 and at its other end to the frame 12*a* by a pivot 20. There is a link 18 at each side of frame 12*a*. A third

section 22 is provided, the same having a rectangular frame 22*a* shown as made of angle bars. A bar 22*b* extends along and is secured to the inner end of frame 22*a* to which is secured the inner edge portion of a cushioned cover 22*d* similar to cover 10*h*. Plates or boards 22*c* extend along frame 22*a* at the sides thereof and the side portions of cover 22*d* are secured to the outer sides thereof. Said boards 22*c* have projecting portions 22*c*1 having sides at right angles, as shown in Figs. 1 and 5. Boards 22*c* have edge portions and surfaces 22*h* extending at right angles to the outer sides of projections 22*c*1 and edge portions and surfaces 22*h* extend at obtuse angles to portions 22*i* across the ends of said boards and form the outer ends thereof. The end portions of boards 22*c* are provided with recesses 22*j* which receive pins 10*r*. A multiplicity of compression coiled springs 22*e* are disposed between cover 22*d* and a plate supported on frame 22*a*. A pair of legs 23 are provided and while these may be variously made, they are illustrated as made of angle bars. These legs are respectively pivoted adjacent the free end of frame 22 by pivots 24. A short bar 25 extends inwardly from the end of each leg 23 to which is pivotally secured by a pivot 28 a link 29 which is pivoted at its other end to bar 14 adjacent the upper end thereof by a pivot 30. There will be two of the bars or links 29, one at each side of frame 22*a*. Frame 22*a* is pivotally connected to one of the lugs 14*a* of bar 14 by a pivot 32. A link 34, similar to link 18, is pivoted at one end to pin 16 and at its other end is pivoted by a pivot 35 to frame 22*a*.

In operation, when the device is in position forming a chair, as shown in Fig. 1, sections 22 and 12 are folded together, as shown, so that their frame portions are in contact. At this time the projections 22*c*1 are disposed in the angle formed by surface 10*m* and the rear end of section 10. The edges and surfaces 22*h* of boards 22*c* engage the vertical surfaces 10*n* on the boards 10*i* of section 10. The end portions 22*i* of boards 22*c* engage the horizontal surfaces 10*o* of boards 10*i* of section 10. When the end portion 22*i* of section 22 swings to the position shown in Fig. 1, the pins 10*r* are depressed and when said section comes into place, said pins move upwardly into the recesses 22*j*. Section 22 is then firmly locked in the position shown in Fig. 1. When the sections 12 and 22 are folded together, the links 18 and 34 swing about their pivots and approach each other, as shown in Fig. 3, and pivot member 16 moves toward the free end of member 14. The leg 23 swings inwardly about pivot 24 so that it folds into the frame 22*a*. All of the parts are thus nicely folded within sections 12 and 22.

When the device is to be opened to form a bed, section 22 is swung outwardly from the position shown in Fig. 1 about pivot 32 and section 22 and 12 are then brought into substantial horizontal alignment, as shown in Figs. 5 and 6. Section 12 swings down to horizontal position about its pivots 17. The members 14 and 23 are brought to vertical position and the sections are supported on these members and the legs 10*t*. Link 29 tends to hold members 14 in vertical position. The device now forms a very comfortable bed. The provision of the projection 22*c*1 which fits as above described and the catch or latch 10*r* makes it possible to push the chair about by pressing on the back at the top portion, as shown in Fig. 1, without swinging section 12 to move the parts out of the position shown in Fig. 1. The chair can thus be moved forwardly or backwardly by taking hold of the top of the back portion without displacing the sections. The strip 10*s* is provided to form resistance when section 12 is swung down to horizontal position. The member 11 moving along said strip causes considerable frictional resistance and prevents section 12 from dropping.

In Fig. 4 substantially the same structure is shown as already described, sections 10', 12' and 22' being identical

with sections 10, 12 and 22 already described, with the exception that instead of the pins 10*r* a depressible plate spring catch 36 is shown projecting above surface 10*a*. Catch 36 has portions disposed at an acute angle. The end of section 22' carries a catch or latch member 37 having parts disposed at an acute angle. Catch 37 will be rigid with section 22'. When section 22' swings to the position shown in Fig. 1, lower portion of latch member 37 will cam against and rest in latch member 36 and will come to the position shown in dotted lines in Fig. 4. Section 22' will thus be held firmly in position and the chair can be pushed or pulled about by the back member without displacing the sections.

From the above description it will be seen that I have provided a comparatively simple and very efficient device which can form either a chair or a bed. The device is easily converted from one to the other and is very securely held in either of said positions. The device has been amply demonstrated in actual practice, found to be very successful and efficient and is being commercially made.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A convertible chair having in combination, a front section having a leg-supporting frame and being unobstructed at its sides, a cushion supported on said frame, a second section pivoted to the rear side of said frame and comprising a second frame with a second cushion thereon and swingable upwardly to a position to form the back of said chair and downwardly to bring said cushions into substantially horizontal alignment, a third section pivoted to said second frame at the side thereof opposite said first mentioned section and comprising a third frame with a third cushion thereon, said third section being swingable to a position in the rear of said second section to form a portion of the back of said chair and being swingable to a horizontal position with said third cushion in substantially horizontal alignment with said first mentioned and second cushions, legs pivoted to the free end of said third frame for supporting the same when in horizontal position, a bar at each side of said third frame pivoted to said second and third frames at their adjacent ends, links pivoted to said bars respectively and pivoted to said legs adjacent the free end of said third frame, said bars each having a longitudinal slot therein, a pin movable in said slot, links pivoted to said pin at one end and respectively pivoted to said second and third frames, said bars forming legs when said sections are in substantially horizontal alignment, said links and said leg members being foldable between said second and third sections when said sections are in position forming the back of said chair, a projection at the rear of said first section and means in said projection for holding said third section in locked position on said projection.

2. A convertible chair having in combination, a front section having a leg-supported frame, a cushion supported on said frame, a second section pivoted to the rear side of said frame and comprising a second frame with a second cushion thereon and swingable upwardly to a position to form the back of said chair and downwardly to bring said cushions into substantially horizontal alignment, a third section pivoted to said second frame at the side thereof opposite said first mentioned section and comprising a third frame with a third cushion thereon, said third section being swingable to a position in the rear of said second section to form a portion of the back of said chair and being swingable to a horizontal position with said third cushion in substantially horizontal alignment with said first mentioned and second cushions, said

first mentioned section having members at the sides thereof having rearwardly extending projections, each having a ledge thereon with a vertical surface at its inner side, said third section having second members at its sides each with projections thereon having surfaces engageable with said ledges and vertical surfaces respectively for supporting the free end of said third section when said chair is in folded chair-forming position one of said surfaces of said second members forming the outer end surface of said third section and cooperative locking means respectively on said ledges and a pair of said engageable surfaces for freely detachably holding said second and third sections in locked position when in said last mentioned position said end surface of said third section resting on the lowermost of said ledges.

3. A convertible chair having in combination, a front section having a leg-supported frame, a cushion supported on said frame, a second section pivoted to the rear side of said frame and comprising a second frame with a second cushion thereon and swingable upwardly to a position to form the back of said chair and downwardly to bring said cushions into substantially horizontal alignment, a third section pivoted to said second frame at the side thereof opposite said first mentioned section and comprising a third frame with a third cushion thereon, said third section being swingable to a position in the rear of said second section to form a portion of the back of said chair and being swingable to a horizontal position with said third cushion in substantially horizontal alignment with said first mentioned and second cushions, said first mentioned section having memebrs at te sides thereof having downwardly stepped formations at their rear ends respectively comprising horizontal and vertical surfaces, said third section having second members at its sides each having end portions with stepped formations at the free ends thereof comprising vertical and horizontal surfaces and the outermost of said surfaces forming an end portion of said third section, said last mentioned surfaces being adapted respectively to engage said first mentioned surfaces with said end portion of said third section resting on the lowermost horizontal surface of said first section when said second and third sections are in positions forming the back of said chair and cooperating means respectively on an engaging pair of said surfaces for freely detachably holding said second and third sections locked in said last mentioned position.

4. A convertible chair having in combination, a front section having a first rigid frame, a cushion carried by said frame, a second section having a second frame swingingly connected to the rear of said first frame, a third section having a third frame swingingly connected to the rear of said second frame, said sections being adapted to be moved to position in substantially horizontal alinement to form a couch, and said second and third sections being swingable upwardly to form the back of said chair, said front section having a strip of flexible material secured thereto extending downwardly adjacent its rear end and said second frame having a bar extending transversely and adapted to engage said strip to prevent dropping of said second section.

5. A convertible chair having in combination, a front section comprising a first frame being unobstructed at its sides, a cushion supported on said frame, a second section comprising a second frame swingingly connected to the rear of said first frame, a second cushion on said second

frame, said second section being swingable upwardly to a position to form the back of said chair, a third section comprising a third frame swingingly connected to the rear of said second frame, a cushion carried by said third section, legs adjacent the rear of said third section, a leg at each side of said chair adjacent the adjacent ends of said second and third sections, a pair of links at each side of said chair connected at one of their ends to said second and third sections respectively, a member connecting the other ends of said links, said last mentioned leg having a slot extending longitudinally thereof in which said member is movable, a projection at the rear of said first section for supporting said third section when placed in vertical position and means on said projection for holding said third section in locked position thereon.

6. A convertible chair having in combination, a stationary section provided with spaced supporting legs and having unobstructed sides, a second swingable section having one end pivoted to the rear of said first section, a third section pivoted to the free end of said second section, said second and third sections being swingable into substantially horizontal positions substantially aligned with said first section, and said second and third sections being foldable together and disposed adjacent the vertical to form the back of the chair, a surface at the free end of said third section and a mating surface at the rear end of said first section having freely disengageable abutting latch members, said latch members respectively comprising angle members having engaging surfaces forming acute angles, said engaging surfaces inclining downwardly and inwardly when in engaged position whereby when said second and third sections are in position forming the chair back said latch members hold the second and third sections upright in locked position, and legs carried by said second and third sections for supporting said second and third sections when in substantially horizontal position.

7. A convertible chair having in combination, a front section having a first rigid frame, a cushion carried by said frame, a second section having a second frame swingably connected to the rear of said first frame, a third section having a third frame swingably connected to the rear of said second frame, said sections being adapted to be moved to position in substantially horizontal alinement to form a couch, and said second and third sections being swingable upwardly to form the back of said chair, said front section having flexible means at its rear end portion adapted to be engaged by an adjacent portion of said second section to provide support for said portion of said second section when said second section is moved to horizontal position.

References Cited in the file of this patent

UNITED STATES PATENTS

685,017	Umstead	Oct. 22, 1901
746,446	Bown	Dec. 8, 1903
1,083,424	Anderson	Jan. 6, 1914
1,395,153	Schomacker	Oct. 25, 1921
2,257,753	Martin	Oct. 7, 1941

FOREIGN PATENTS

198,302	Canada	Mar. 16, 1920
441,106	Great Britain	Jan. 13, 1936
839,548	Germany	Sept. 8, 1952