Sept. 29, 1959 A. GOLDSTEIN 2,906,319

FOLDING CHAIRS AND THE LIKE

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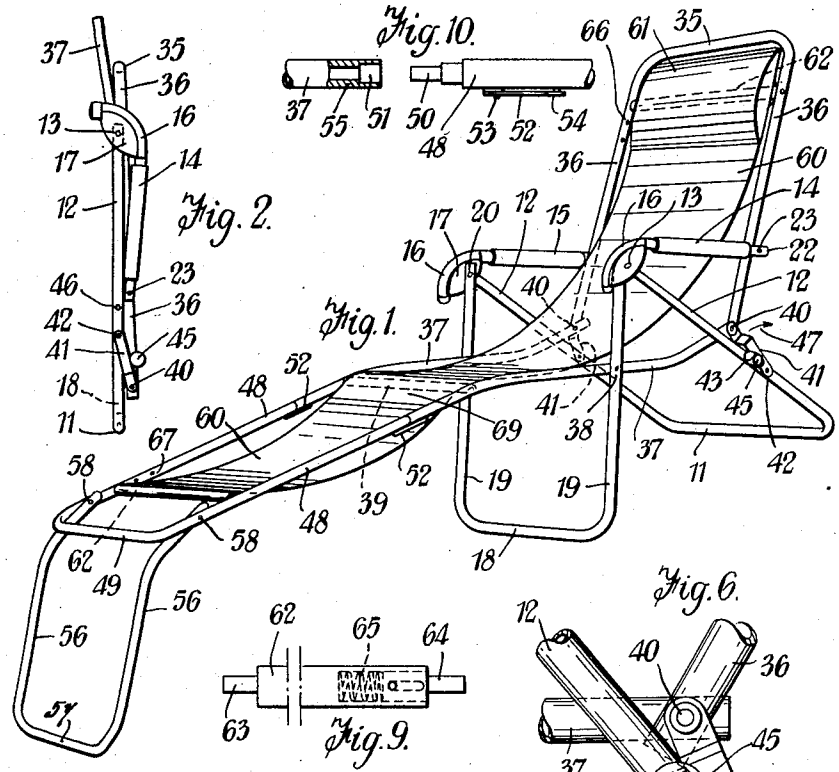


Fig. 1.

Fig. 2.

Fig. 10.

Fig. 9.

Fig. 6.

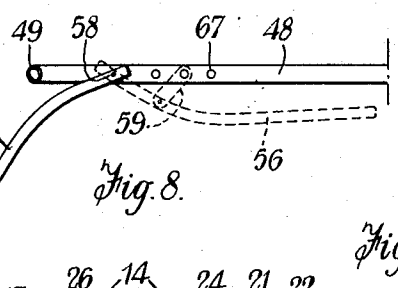


Fig. 8.

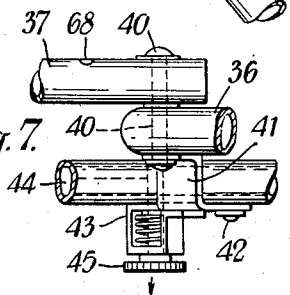


Fig. 7.

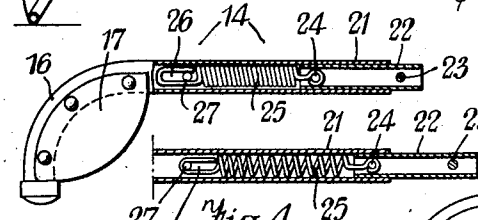


Fig. 3.

Fig. 4.

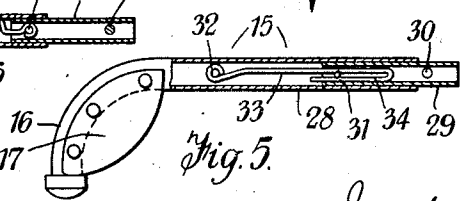


Fig. 5.

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FOLDING CHAIRS AND THE LIKE

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4 Claims. (Cl. 155—139)

This invention relates to folding chairs and the like and particularly to such chairs having tubular metal frames with detachable canvas or other fabric back and seat and which can also function as lounge chairs, and has for its object to provide such chairs which are comfortable and adaptable in use and which readily fold into a small compass for transport and storage.

A foldable chair of the type set forth in accordance with the present invention comprises a first U frame forming the rear legs, the upper ends of the sides of which are pivoted to the upper ends of the sides of a second U frame forming the front legs and which lies within the first U frame when folded. Telescopic arms are in pivotal relation at one end with the upper ends of the first and second U frames, the other ends of the arms being pivoted to an intermediate position of the side members of an inverted U frame forming the back of the chair. This has a width that can come within the first U frame and the lower ends of the sides of this inverted U frame are pivoted to the ends of side members of a seat frame, each said side member being pivoted in an intermediate position to an intermediate position of the sides of the second U frame and connected together short of the free ends thereof by a fixed cross tubular bar. The pivotal joints at the lower ends of the sides of the inverted U frame forming the back are connected by bent links to an intermediate position of the sides of the first U frame and releasable means are provided for holding the pivots between the inverted U frame and the sides of the seat frame in fixed relation to the rear leg frame when in the erected position, these releasable means being advantageously formed by a spring-pressed pin in a housing carried by one of the links. The seat is completed by a canvas or other textile support held by detachable cross bars to the upper portion of the sides of the inverted U frame for the back and the side members of the seat frame when the device is functioning as a seat, or a forward extension of these sides when the device functions as a lounge chair. The canvas passes freely over the cross bar extending between the sides of the seat frame and is not connected thereto. The front extension in practice is constituted by another U frame and has pivoted thereto a front support also formed from a further U frame. This front support may if desired be held out of action by suitable means even when the front extension is converting the device into a lounge chair.

The telescopic arms permit the ready folding of the chair and are at their shortest in the folded condition. When erected for use they are extended and preferably spring means are included so that when the arms are thus extended the back is resiliently supported. Such spring means can comprise a single tension spring housed in one telescopic arm and having lost motion in the telescopic action before the spring comes into operation.

The detachable cross bars by which the canvas is carried by the framework preferably are of the form including pegs at the ends for passing into apertures in the side members of the relative U frames. Preferably, one of the pegged ends operates against a compression spring so that such pegged end has to be forced inwards

before it can be engaged in position. To give an adjustable setting, there may be two, three or even more spaced apertures to receive the pegged ends of the detachable cross bars in their positions of mounting.

Further features of the invention will be gathered from the following description of the accompanying drawings.

In order that the invention may be better understood, it will now be described with reference to the accompanying drawings which are given by way of example only and in which:

Fig. 1 is a perspective view of one embodiment of a lounge chair in accordance with the invention, in the position of use.

Fig. 2 is a side elevation of the main portion of the chair shown in Fig. 1, with the canvas removed and in the folded condition.

Fig. 3 is a side elevation, to a larger scale, of one of the telescopic arms of the chair shown in Fig. 1, detached and partly in section, with the parts fully telescoped.

Fig. 4 is a sectional side elevation of a portion of the arm shown in Fig. 3, but with the telescopic parts in an extended position.

Fig. 5 is a view similar to Fig. 3 but of the other telescopic arm.

Fig. 6 shows to a still larger scale a side elevation of the joint connections between back, side and rear of the tubular members of the chair framework.

Fig. 7 is a plan of Fig. 6.

Fig. 8 shows to a smaller scale a sectional elevation of the front portion of the framework of the lounge chair shown in Fig. 1 in the "in use" position.

Fig. 9 shows to a larger scale a detail hereinafter referred to, and

Fig. 10 is a fragmentary side elevation showing the parts of a joint detached, between a side member and the front extension of the tubular framework of the lounge chair.

The lounge chair shown in the drawings has rear legs formed by a tubular metal U frame having a ground-contacting base bar 11 and sides 12. The upper ends of these latter are pivotally connected at 13 to the front portions of arms 14 and 15, more fully described hereafter, but each comprising a bent end 16 to which are riveted two shaped plates 17 which form bearings for the pivots 13 and accommodate the actual upper ends of the sides 12 of the rear legs between them.

Another tubular metal U frame forms the front legs and comprises a ground-contacting base bar 18 and sides 19. The upper ends of these latter are pivotally mounted at 20 on the innermost surfaces of the inner plates 17. The relative dimensions of the two U frames are such that when folded the front legs fold into and come in the same plane as the rear legs.

The arm 14 is shown in Figs. 3 and 4 and consists of an outer tube 21 and an inner tube 22, which latter at its outer end is pivoted at 23 to the side of a back frame hereafter described. At its inner end, the inner tube 22 has a pin 24 to which is connected one end of a strong tension spring 25 the other end of which is formed as an elongated loop 26 which is mounted on a pin 27 extending across the outer tube 21.

In the fully telescoped position as shown in Fig. 3, the spring 25 is at its minimum unextended length and the pin 27 is at the inner end of the loop 26. It will be appreciated that the inner tube 22 can be moved outwardly for the length of the loop without stretching the spring. After this, any further outward movement is against the action of the spring.

The arm 15 shown in Fig. 5 has an outer tube 28 and an inner tube 29. This latter at its outer end is pivoted at 30 to the side of the back frame hereafter de-

scribed and at its inner end has a pin 31 extending thereacross. The outer tube 28 has a similar pin at 32 and to this is anchored one end of a stiff rod 33 which extends into the inner tube where it is doubled on itself at 34 to come on each side of the pin 31 and leave a species of slot to work over the pin 31 when the inner tube 29 is caused to move out of and into the outer tube 28 by the movement of the back tubuler frame of the chair.

Preferably, each of the telescopic arms is covered by an enclosing flexible sleeve, as indicated in Fig. 1, which can be of a plastic material, rubber, or otherwise.

The back of the chair comprises a tubular metal inverted U frame having an upper bar 35 and two sides 36 to which in an intermediate position the outer ends of the inner tubes 22 and 29 of the arms 14 and 15 are pivoted, as hereinbefore set forth. The inverted U frame of the back has a width to fit between the sides of the U frame forming the rear legs.

The portion of the tubular framework for the seat comprises side members 37 bent as shown and pivoted in an intermediate position at 38 to an intermediate position of the sides 19 of the U frame forming the front legs. The side members 37 are connected together a short distance from their outer ends by a fixed cross tube 39, shown dotted in Fig. 1.

The lower ends of the sides 36 of the back frame and the rear ends of the sides 37 of the seat frame are pivoted together at each side by a pivot 40 (Figs. 6 and 7) and at these pivoted joints on the exterior are also pivoted strong bent links 41 which hang down and their bent portions pass over the sides 12 of the U frame forming the rear legs. The outer ends of these links 41 are pivoted at 42 to the sides 12 and one of these links has an integral housing 43 for a spring-pressed locking pin 44 having a head 45. This pin, when the parts are in the position for use, can be brought into engagement with an aperture 46 in one of the sides 12 and retained in this position by the spring in the housing 43 to hold the parts erect as shown in Figs. 1, 6 and 7.

To disengage the parts for folding, the head 45 is pulled outwardly to withdraw the locking pin 44 and this allows the links 41 to be turned about the pivots 40 in the direction of the arrow 47 to bring the parts to the position shown in Fig. 2.

The relative dimensions and disposition of the parts are such that the arms 14 and 15 are their shortest when the parts are folded, and when the parts are erected for use (Fig. 1) the arms are extended and the spring 25 just slightly stretched.

The front extension, to change the chair proper to a lounge chair, is also formed from a tubular U frame having sides 48 and an end member 49. These sides 48 have spigots 50 (Fig. 10) to be detachably engaged in the open outer ends 51 of the sides 37 of the seat frame. They can be held engaged by short pivoted arms 52 on the ends of the sides 48, being turned on their pivots 53 to bring engaging pins 54 to enter recesses 55 in the sides 37.

The front extension has a support formed from a tubular U frame with bent sides 56 and a ground-contacting base bar 57. The ends of the sides 56 are pivoted at 58 within the sides 48 of the front extension, so that when turned down and forwardly the end member 49 bears on and is supported by the bent sides 56.

In some cases when the front extension is to be used without the front support, this latter is turned up to the position shown dotted in Fig. 9 and held there as hereinafter explained, by links 59 pivoted to the bent sides 56 near the pivots 58 one of which links 59 is shown dotted in Fig. 8.

The chair is completed by the supporting canvas 60 or other fabric which can extend as shown in Fig. 1 from the top bar 35 of the back to a position adjacent the end member 49 of the front extension. At one end it is formed as a pillow or cushion 61. It is supported in position in the tubular framework by detachable cross bars 62 as shown in Fig. 9. One end of each bar 62 has a fixed peg 63 projecting therefrom and the other end has a similar peg 64 which is controlled by an inner compression spring 65 in such manner that the peg can be caused to project as shown in the drawing, or can be pushed inwards.

On the inside the two sides 36 of the back inverted U frame near the upper end have similiarly spaced and disposed apertures 66. These are to receive the pegs 63 and 64 of a detachable cross bar 62, which is fitted in a sleeve at the rear of the canvas, and the bar is of such length that it can only be located in one of the possible positions by first pushing in the peg 64. On the inside of the sides 48 of the front extension there are similarly spaced and disposed apertures 67 to take the other detachable pegged cross bar 62 which passes through a sleeve formed at this end of the canvas. By this arrangement it will be realized that it is possible to set up the canvas in the tubular framework in a number of adjusted positions.

The pegs 63 and 64 of the bar 62, which is located between the sides 48 of the front extension, are utilized to hold the front support in the raised position by the links 59. For this purpose these links have apertures at their outer ends which are brought into coincidence with the apertures 67 in the sides 48, before the pegs 63 and 64 are located in position. When the cross bar 62, however, is fitted in position, the links are held and hold the front support raised.

When the front extension is not used, that is, when the device functions as an ordinary chair, then the front portion of the canvas 60 is turned back under the fixed cross bar 39 and the pegged cross bar 62 is mounted between apertures on the inner portion of the sides 37 of the seat portion, which apertures are located adjacent the pivots 40; one of these apertures 68 is indicated in Fig. 7.

For the added comfort of the user, the canvas is doubled and carries a flexible insert at 69 in the position of the fixed cross bar 39, over which the canvas passes but to which it is not attached. By this means the thighs and legs of the user are not subject to the hard outline of the cross bar, but to the surface of a curved saddle-like portion of the canvas which is supported by the cross bar.

Fig. 2 shows the seat portion folded and to complete the structure the detached front extension with its front support are brought to the collapsed position and associated with the folded portion shown in Fig. 2 for packing and storage. This Fig. 2 does not show the canvas, for the sake of clearness, but, of course, the canvas could remain in position when the seat is folded if required.

In use it will be understood that when pressing backwards the user causes the back frame to turn on the pivots 40, which latter are held fixed in relation to the rear leg frame by the disposition of the links 41 and the anchorage of the locking pin 44. This rear movement of the back frame is of a springy nature and against the action of the spring 25.

Again, when in use the device can be utilized simply as a chair with a springy back if the front extension is not fitted. However, it can be utilized as a lounge chair when the front extension is fitted and the front support is in operation. This is the condition of the parts shown in Fig. 1. It still can be used as a lounge chair, however, with what may be regarded as additional springiness of the front extension, if the front support is turned up and held from contact with the ground in the manner indicated in Fig. 8.

The invention is not limited to the precise forms or details of construction herein described, as these may be varied to suit particular requirements.

What I claim is:

1. A foldable chair of the type having a tubular metal

framework and a detachable canvas or similar back and seat, comprising a first U-frame forming the rear legs, the upper ends of the sides of which extend forwardly, a second U-frame forming the front legs having their free ends connected to the ends of the first U-frame and arranged to fold within the same plane with the first U-frame, arms for said chair each formed from two tubes capable of sliding one within the other and pivotally connected at one end with the upper ends of the first and second U-frames, the other ends of the arms being pivoted to an inverted back member formed of a U-frame of a width such that it can be folded within the first U-frame, side members of a seat frame pivotally connected to the intermediate portion of the second U-frame, said side members being connected short of their free ends by a fixed cross tubular bar, the pivotal joints at the lower ends of the sides of the back inverted U-frame being connected by bent links to an intermediate portion of the sides of the first U-frame, and releasable means for holding the pivots between the inverted U-frame for said back and the sides of the seat frame in fixed relation with the rear leg frame when said chair is in its erected position, a U-shaped leg frame detachably secured to the sides of said seat frame members to provide an extension, detachable cross-bars mounted between the sides of said detachable leg frame, an additional U-frame forming a front support pivotally connected to the end of the U-shaped leg support and links to hold said last named U-shaped support in a folded position.

2. A foldable chair of the type having a tubular metal framework and a detachable canvas and fabric back and seat, comprising a first U-frame forming rear legs, a second U-frame pivotally connected at its free ends to the free ends of said first U-frame, said first and second U-frames forming the rear and front legs respectively of said chair structure and said legs being adapted to fold one within the other, arm members for said chair each formed from a pair of tubes capable of sliding one within the other with one of the sliding tubes of each arm pivotally connected to the upper ends of the first and second U-frames, the other ends of said arms being pivotally connected to an intermediate position of an inverted back U-frame member of such width that it can fold within the first U-frame, the lower ends of said inverted U-frame extending below the arm members, side frame members adapted to form a seat pivotally connected to the downwardly projecting ends of said inverted U-shaped back member, said side frame members being pivoted intermediate their ends to the intermediate portion of the sides of the second U-frame member, a tubular bar connected between the ends of said side frame members, offset link members pivotally connecting the rear ends of the side frame members and the lower ends of the inverted U-shaped frame to the first U-frame member at the intermediate portions of the sides thereof, releasable means for holding the inverted U-frame and the sides of the seat frame in a fixed position with respect to the rear leg frame when the chair is erected, a U-frame extension detachably secured to the front ends of said supporting frame members, a supporting U-frame pivotally secured to said extension frame to fold within the sides of said front extension frame, spring means associated with said tubular arms to exert a resilient force tending to pull said arms together and a canvas flexible support detachably secured to the cross bars of the folding chair structure with one end connected to the cross bar of the inverted U-frame back member and the other end connected to the cross bar of the side members of the seat frame and extending between the sides of the seat frame.

3. A foldable chair having tubular metal framework members and a detachable fabric back and seat, comprising a first U-frame forming rear legs, a second U-frame forming the front legs and arranged to fold within the first U-frame, the upper ends of said frames being pivotally connected, arm members each formed of two tubes slidable one within the other with one of said tubes of each arm member pivotally connected to the upper ends of the front and rear leg members, an inverted U-frame to form a back member, the other sliding tube of each arm member being pivotally connected to the sides of said inverted U-frame intermediate their ends, spring means for urging the sliding tubes of said arm members toward one another so that the back member will be resiliently supported, side frame members pivotally connected to the lower ends of said inverted U-frame and also pivoted to the second U-frame forming the front legs, a U-shaped extension frame detachably secured to the front ends of said side frame members, cross bars between said side frame members and said inverted U-frame back member, a supporting U-frame pivotally connected to the U-frame extension, links having offset bent portions pivotally connecting the first U-frame intermediate its ends to the side frame members and the lower ends of said inverted U-frame member, a spring pressed locking pin slidably mounted in a housing adjacent said offset link adapted to be received in an aperture in the first U-frame and project into the path of said offset bent link to hold the pivots between the inverted U-frame and the sides of the seat frame in fixed relation to the first rear leg U-frame, and a flexible support detachably secured to the cross bars on said inverted U-frame member, side frame members and U-shaped extension frame member.

4. A foldable chair formed of a tubular metal framework and having a detachable fabric back and seat, comprising first and second U-frames forming the rear and front legs respectively arranged to fold one within the other and pivotally connected at their upper free ends together, arm members each formed of a pair of interfitting tubes slidably mounted one within the other with one of the tubes of each arm member pivotally connected to the upper ends of the front and rear leg members, an inverted U-frame to form a back member, the other sliding tube of each arm member being pivotally connected to the intermediate portion of the sides of said inverted U-frame back member, a spring mounted within said arm members connected at one end directly to the inner tube of said sliding tubes forming the arm members and the other end of said spring being directly connected by a pin and loop connection to the outer sliding tube of each arm member to permit limited movement of said tubular arm members one within the other without exerting a stretching force on the spring, side frame members pivotally connected to the lower ends of said inverted U-frame member and also pivotally connected to the intermediate portion of the U-frame forming the front legs, a U-shaped extension frame detachably secured to the front ends of said side frame members, cross bars extending between said side frame members and said inverted U-frame back member, a U-shaped supporting frame member pivotally connected to the end of the U-frame extension, links having offset bent portions pivotally connecting the intermediate portion of the first U-shaped frame member to the side frame members and lower ends of said inverted U-frame back member, releasable means for holding the inverted U-frame back member and the side frame members in fixed relation to the rear leg frame U-shaped member in an erected position, and a flexible textile support detachably connected to the cross-bar on the inverted U-frame back member and extending freely over the cross bar extending between the sides of the seat frame.

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