Jan. 12, 1960 M. I. THOMAS 2,920,686

FOLDING CHAIR WITH CONCEALED BACK ADJUSTMENT

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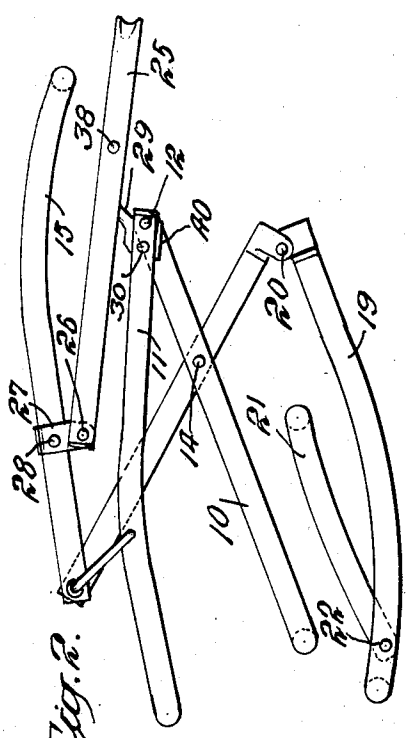


Fig. 2.

Fig. 1.

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Fig. 3.

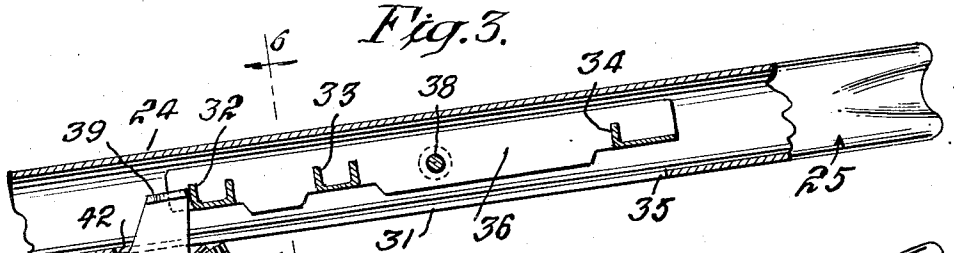


Fig. 4.

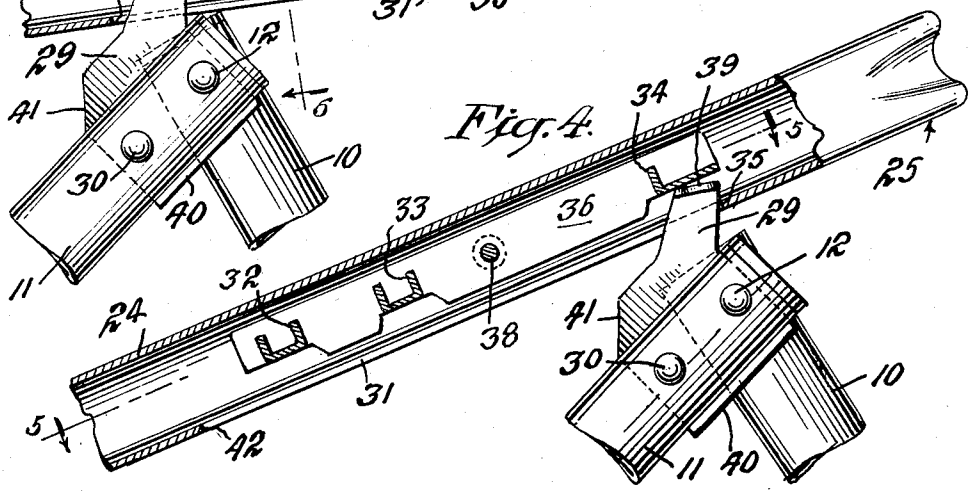


Fig. 6.

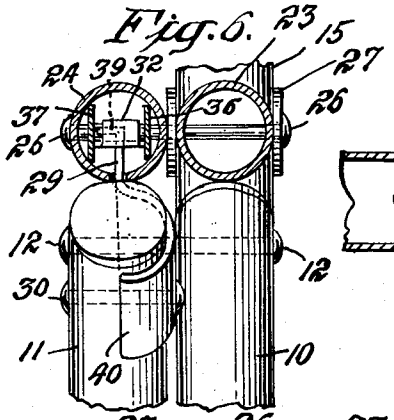


Fig. 5.

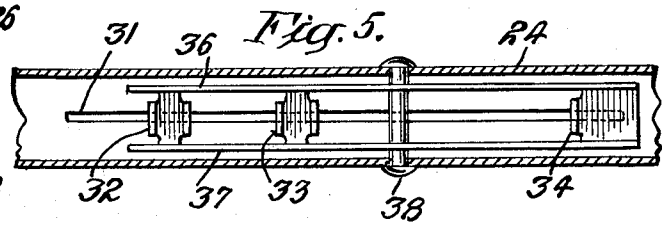
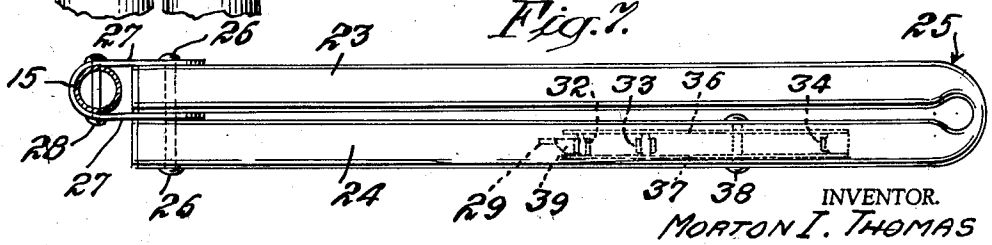


Fig. 7.



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United States Patent Office 2,920,686 Patented Jan. 12, 1960

2,920,686

FOLDING CHAIR WITH CONCEALED BACK ADJUSTMENT

Morton I. Thomas, Monroe, N.Y.

Application October 9, 1958, Serial No. 766,351

2 Claims. (Cl. 155—139)

The invention herein disclosed relates to folding chairs and like furniture of the tubular frame form of construction.

Special objects of the invention are to provide an adjustable folding type of chair or chaise in which the mechanism for affecting and enabling the adjustment and folding operations will be entirely concealed and protected so as not to be in the way and so as not to possibly injure persons or clothing.

Other special objects of the invention are to provide furniture of such character which can be produced at reasonable cost and which will be generally practical and desirable.

The foregoing and other objects are attained by certain novel features of construction, combinations and relations of parts all as hereinafter defined and claimed.

The drawings accompanying and forming part of the following specification are illustrative of a present practical embodiment of the invention. Structure however may be modified and changed as regards such illustration, all within the true intent and scope of the invention as hereinafter defined and claimed.

Fig. 1 in the drawings is a side elevation of a chair embodying features of the invention with broken lines indicating adjustment of same to different positions.

Fig. 2 is a side view illustrating relation of parts in the folding and unfolding operations.

Fig. 3 is a broken enlarged sectional view showing cooperating parts of the adjustment mechanism carried by the leg and arm forming portions of the chair, in the upright back position indicated in full lines, Fig. 1.

Fig. 4 is a similar view with parts in the fully reclined position indicated in broken lines.

Fig. 5 is a broken longitudinal sectional view on substantially the plane of line 5—5 of Fig. 4.

Fig. 6 is a cross sectional view on substantially the plane of line 6—6 of Fig. 3.

Fig. 7 is a part sectional plan view on substantially the plane of line 7—7 of Fig. 1.

The chair illustrated in Figs. 1 and 2 is shown as made up of front and back leg frames **10** and **11** of tubular U formation pivotally connected together at the top at **12**, a seat frame **13** pivoted to the front leg frame at **14**, and a back frame **15** of U formation pivoted at the lower end at **16** to the seat frame by a rod having angular extension **17** pivoted to the rear leg frame at **18**.

A leg rest frame **19** of tubular U formation is shown pivoted to the front end of the seat frame at **20** and this leg rest frame is shown as supported by a folding tubular frame **21** pivotally connected with the leg rest frame at **22**.

The seat frame **13**, back rest frame **15** and leg rest frame **19** are usually covered with webbing or wide fabric secured at the ends by fastenings such as disclosed in Patents No. 2,817,392, December 24, 1957, Morton I. Thomas, "Web Fastening," and No. 2,856,990, Ser. No. 695,276, October 21, 1958, Morton I. Thomas,

"Fastening of Wide Fabric to Metal Chair Frames and the Like."

The arms of the chair illustrated are of special "hairpin" construction made up, as shown in Fig. 7, of parallel lengths of tubing **23**, **24** connected at the front by bends or bows **25**, with the inner lengths **23** pivotally connected at **26** with the back frame **15** and the outer lengths **24** containing the mechanism for adjustably connecting the back rest with the legs.

The pivotal engagement of the arms with the back is shown as effected by U clips **27** secured to the back frame by rivets **28**, receiving the ends of arm elements **23** and through which the pivot studs or rivets **26** are passed.

The mechanism for adjusting the arms and back comprises, in the present illustration, plates **29** secured over the inner sides of the rear leg frames **11** by rivets **30**, Figs. 3, 4 and 6 between the upper ends of the front and back leg frames and projecting up through narrow slots **31** in the outer arm lengths **24** into position to engage spaced stops **32**, **33**, **34** and **35** in said tubular lengths.

The stops **32**, **33** and **34** are shown carried by special brackets secured in the central portions of the tubes **24**, whereas the final stops **35** are shown in Figs. 3 and 4 as formed by the forward ends of slots **31** in the tubes.

The stop carrying brackets are shown as of ladder-like construction having the side rails **36**, **37**, Fig. 5, connected in spaced apart relation by cross pieces constituting the stops **32**, **33**, **34**.

These brackets, as shown in Fig. 6, are of cross sectional dimensions to substantially fit the interior of the tubes, as shown in Fig. 6, so that they each can then be secured against longitudinal or rocking movements in the tubes by a single cross rivet **38**.

Fig. 3 shows how with the first stops **32** engaged with the upstanding plates or lugs **29** the back rest will be held in the upright position shown in full lines Fig. 1. The back may then be easily lowered by lifting the arm rests slightly to carry the stops **32** from engagement with lugs **29** and whereupon the back may be held in either the lowered positions indicated in broken lines, Fig. 1, by releasing the arm rests to engage stops **33** or **34** with the lugs, or, if desired, the arm rests may be held up to permit engagement of the forward ends **35** of the slots with lugs **29** as in Fig. 4 for fully lowered position of the back rest.

In these adjustments the arms are prevented from being lifted out of engagement with the upstanding lugs **29** by angular extensions **39** on the upper ends of the lugs of greater lateral extent than the width of slots **31**.

This interlocked engagement of the lugs within the tubes may be effected by inserting the lugs up through the slots before secured the lugs in position on the upper ends of the legs and the ladder brackets may be inserted and secured in place in the arm forming tubes before those tubes are pivoted to the back rest.

The clips **28** to which the arm rests are pivoted hold the arm rests against twisting and keep the enclosed stop brackets in position for proper engagement with the upstanding stops on the legs.

The lugs or stop plates **29** are shown in Figs. 3, 4 and 6 as having rounded lower end portions **40** extending about the inner sides of the rear leg tubes **11**, thus to center the lugs over these tubes into direct alignment with the slots **31** in the undersides of the arm tubes **24**.

Inclined cam slopes **41** on the inner edges of the stop lugs **29** operate in the folding movement of the chair frame, Fig. 2, by engagement with lower ends **42** of the slots to lift the arms sufficiently to avoid any interference with the folding action. These cams also operate to lift the arm rests when the back rest is raised, making it

unnecesary to release the arm rests by hand when it is desired to lift the back rest to an upright or more nearly upright position.

In addition to mechanical and manufacturing advantages the chair, constructed as described, is of neat, clean, ornamental appearance. The stop brackets within the arms are secured by single rivets, hardly to be noticed on the arms and the adjusting mechanism, except for the small portions of the lugs below the arms, is entirely concealed and protected against any contact with the hands or clothing of the occupant of the chair. The doubled arm construction provides more comfortable rest for the arms and while the outer tubes of these arm rests contain the stop mechanism the inner tubes of the arm rests may serve as guards, preventing the fingers reaching the small exposed portions of the stop mechanism.

The few parts required in the make-up of the chair also is a factor in the low cost of manufacture of this chair construction.

What is claimed is:

1. A folding chair with concealed back adjustment means comprising in combination, front and back leg forming tubes with their upper ends in side-by-side relation, a lug plate interposed between said upper ends and having a lower portion curved in close fitting engagement with the back leg tube and a straight flat upper portion projecting above said upper ends of said tubes, a fastening securing said curved portion of the plate in close fitting non-rotative engagement with said back leg tube, a pivot pin extending through the upper end portions of said leg tubes and through the portion of the plate between the same and whereby said plate is rigidly secured in upstanding relation between the pivotally connected leg tubes, a seat frame pivoted to the front leg tube at its forward end, a back frame pivotally connected at its lower end to the back leg tube and to the seat frame, a tubular arm rest pivotally connected to said back frame at its rearward end and having an elongated, straight, narrow slot in the underside of the same slidingly receiving said upwardly projecting flat straight upper lug portion of said plate, the upper end of said lug portion having an angular extension disposed within the tubular arm rest to prevent escape of said lug portion through said narrow slot in the arm rest and a bracket fixedly secured within said tubular arm rest having spaced stop shoulders disposed over said longitudinal slot in position for engagement by the upper end portion of the lug disposed within said tubular arm rest.

2. A folding chair with concealed back adjustment means comprising in combination, front and back leg forming tubes with their upper ends in side-by-side relation, a lug plate interposed between said upper ends and having a lower portion curved in close fitting engagement with the back leg tube and a straight flat upper portion projecting above said upper ends of said tubes, a fastening securing said curved portion of the plate in close fitting non-rotative engagement with said back leg tube, a pivot pin extending through the upper end portions of said leg tubes and through the portion of the the plate between the same and whereby said plate is rigidly secured in upstanding relation between the pivotally connected leg tubes, a seat frame pivoted to the front leg tube at its forward end, a back frame pivotally connected at its lower end to the back leg tube and to the seat frame, a tubular arm rest pivotally connected to said back frame at its rearward end and having an elongated, straight, narrow slot in the underside of the same slidingly receiving said upwardly projecting flat straight upper lug portion of said plate, the upper end of said lug portion having an angular extension disposed within the tubular arm rest to prevent escape of said lug portion through said narrow slot in the arm rest and a bracket fixedly secured within said tubular arm rest having spaced stop shoulders disposed over said longitudinal slot in position for engagement by the upper end portion of the lug disposed within said tubular arm rest and said tubular arm rest being of "hairpin" construction with double lengths in substantially parallel side-by-side relation connected by a rounded bend forming a hand support at the front of the chair and the pivotal connection between said arm rest and said back frame comprising a U-clip embracing the back frame and having forwardly projecting spaced side portions with the inner length of said doubled arm rest interposed between said spaced sides and a pivot pin extending through both said lengths and through said side portions of said U-clip.

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