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FOLDING CHAIR STRUCTURE

Filed Jan. 26, 1956

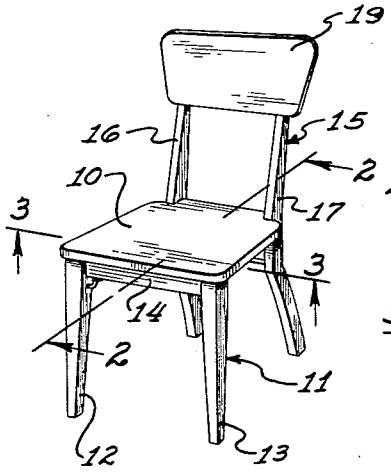



Fig. 1

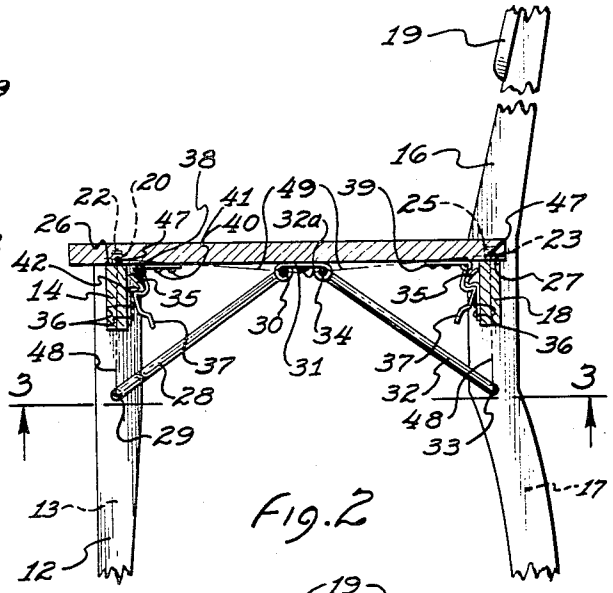



Fig. 2

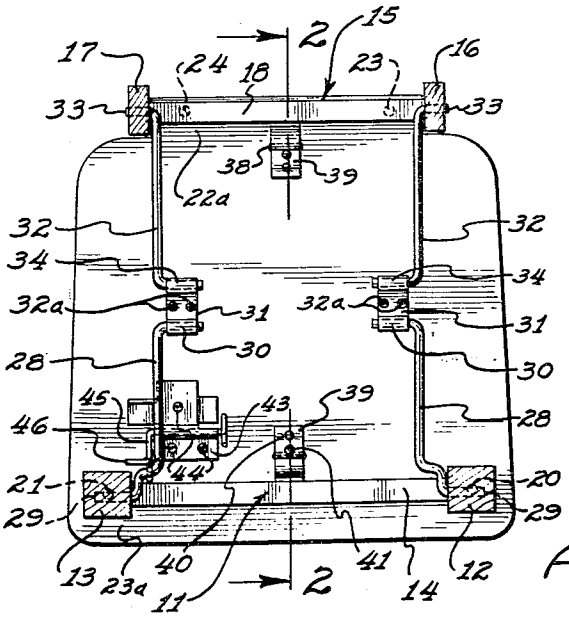



Fig. 3

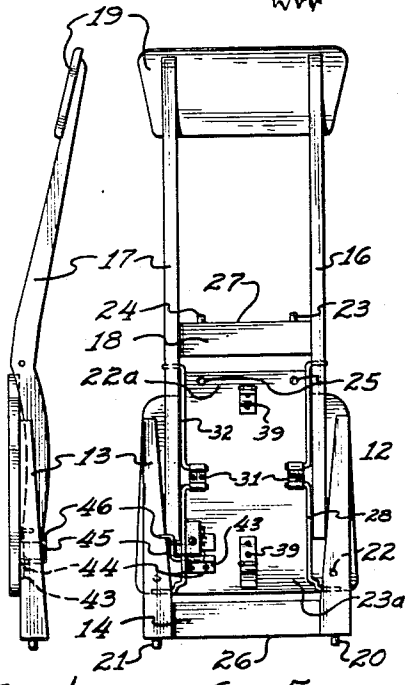



Fig. 4

Fig. 5

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# FOLDING CHAIR STRUCTURE

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Application January 26, 1956, Serial No. 561,411

3 Claims. (Cl. 155—196)

This invention pertains to improvements in folding chair structures and is particularly directed to a self-contained folding arrangement wherein all of the chair elements are at all times inter-connected both in folded and in open condition.

One of the objects of this invention is to provide a simplified and improved folding chair mechanism which is cheap to manufacture, and highly efficient in clamping up and holding the chair in rigid open condition.

Still another object of this invention is to provide an improved chair structure having critically positioned points of pivoting, abutting contact surfaces, and points of clamping pressure to provide both a simplified structure and an extremely rigid folding chair arrangement.

Still another object of this invention is to provide an improved folding chair structure having a pair of hinge means between the leg structures and the seat together with a critically positioned clamping latch to automatically hold the chair in open condition in a rigid satisfactory manner.

Further features and advantages of this invention will appear from a detailed description of the drawings in which:

Fig. 1 is a general perspective view of a chair incorporating the features of this invention.

Fig. 2 is an enlarged sectional view on the line 2—2 of Figs 1 and 3.

Fig. 3 is an enlarged sectional view on the line 3—3 of Figs. 1 and 2 showing the bottom of the chair seat.

Fig. 4 is a side view of the chair in folded condition.

Fig. 5 is a bottom view of the chair in folded condition.

As an example of one embodiment of this invention there is shown a chair structure having a seat **10**, the front leg assembly **11** comprising the front legs **12** and **13** and the front cross rail **14**, and the rear leg assembly **15** comprising the rear legs **16** and **17**, the rear cross rail **18** and the back **19**.

Upstanding dowel pins **20** and **21** fixed in the top of front legs **12** and **13** engage in dowel pin holes **22** in the under side **23***a* of the front portion of the seat **10**. Upstanding dowel pins **23** and **24** are fixed in the top of the rear cross rail **18** and engage in dowel pin holes **25** in the underside **22***a* of the rear portion of the seat **10**. The top **22***a* abutment surfaces **26** and **27** respectively of the front and rear cross rails **14** and **18** firmly engage the bottom surfaces **23***a* and **22***a* respectively of the seat **10**.

Interconnected between the front leg assembly **11** and the underside of the seat are the link pieces **28** being pivotally mounted at **29** to the front legs **12** and **13** and pivotally mounted at **30** to the hinge plate **31** fixed by suitable screws **32** to the underside surface **22***a* of the seat **10**. Similarly, the rear leg assembly **15** is connected through the links **32** which are pivotally connected at **33** to the rear legs **16** and **17** and the other ends of the link **32** being pivotally connected at **34** to the hinge plates **31**.

Latch means are provided to interconnect the front



rail **14** and also the rear cross rail **18** to the under side of the seat of a character such as shown in my application, Serial No. 355,469, filed May 18, 1953, which consists of the latch piece **35** suitably secured by screws **36** to the inside faces of the respective front and rear cross rails **14** and **18**. The lock piece **37** of the latch is pivotally mounted at **38** on the adjustable base plate **39** mounted by suitable screws **40** and **41** to the under side of the seat, the screw **41** being suitably adjustable to regulate the tension on the latch piece at the grip point **42** as required.

There has thus been provided a leg assembly support for both the front leg assembly and the rear leg assembly having the respective pivotal connections **29—30** and **33—34**, the abutment surfaces **26** and **27** of engagement of the cross rails with the under side **22***a* of the seat, dowel pin means between these cross rails and the under side of the seat and finally a latching means having a point of action at **42** lying within the center of a triangle formed by the pivotal connections **29—30** and **33—34** with the point of inner action of the dowel pins with the under side of the seat. Thus a very stable clamping action is affected in holding the leg assemblies in open position by this specific arrangement as recited.

In Figs. 4 and 5 the chair is shown in folded up position and it may be desirable to use a latch device such as the plate **43** secured to the bottom of the seat **10** by suitable screws **44** having a swingable and slidable holding arm **45** having a pin **46** engaging over the legs **13** and **17** of the respective front and rear leg assemblies to hold the chair in folded position. Release of the latch arrangement **46** enables the chair to be opened out and assembled in using position as shown in Fig. 1, with the latch in released position as best shown in Fig. 3.

Thus there is provided a novel folding chair arrangement in which there are provided the points of pivoting **33—34** or **29—30** forming with the point of engagement of the dowels with the under side of the seat at **47** a triangle defined by the lines **48** and **49** an arrangement wherein the point of gripping **42** of the latch means lies within this triangle **28—48—49** or **32—48—49** as best seen in Fig. 2 to provide a highly stable and efficient chair structure which is simple in construction and in cost of manufacture.

While the apparatus herein disclosed and described constitutes a preferred form of the invention, it is also to be understood that the apparatus is capable of mechanical alteration without departing from the spirit of the invention and that such mechanical arrangement and commercial adaptation as fall within the scope of the appendant claims are intended to be included herein.

Having thus fully set forth and described this invention what is claimed and desired to be obtained by United States Letters Patent is:

1. A folding chair structure including a leg assembly having a cross rail, dowel pin means on the top of said rail, a seat, means on the under side of said seat to receive said dowel pin means, a link pivotally connected to said leg assembly below said cross rail and pivotally connected to the underside of said seat at a point inwardly from said cross rail, and a latch means between said rail and the under side of said seat having a point of clamping pressure located within a triangle defined by the pivotal connections of the ends of said link and the point of engagement of said dowel pin means with said seat.

2. A folding chair comprising, a seat, a front leg assembly having a pair of front legs, and a front cross rail, a rear leg assembly having a pair of rear legs, a rear cross rail and a back, dowel pins projecting upwardly from the top surfaces of said cross rails, dowel pin holes in the bottom of said seat adapted to receive said dowel pins, said top surfaces of said cross rails abutting the bottom surface of said seat when said dowel pins are engaged in

said dowel pin holes, link pieces pivoted at one end in said legs below said cross rails and pivotally at their other ends intermediate the bottom of said seat, and a latch between said cross rails and said seat comprising a latch piece fixed to the inside face of said cross rails, a lock piece pivotally mounted on the underside of said seat intermediate said dowel pin holes and the pivotal connection of said links with said seat, the point of action of said latch being located within a triangle defined by axes of pivotally mounting of the ends of said links and the point of engagement of said dowel pin means.

3. A folding chair comprising, a seat, a front leg assembly having a pair of front legs and a front cross rail, a rear leg assembly having a pair of rear legs, a rear cross rail and a back, dowel pins projecting upwardly from the top surfaces of said cross rails, dowel pin holes in the bottom of said seat adapted to receive said dowel pins, said top surfaces of said cross rails abutting the bottom surface of said seat when said dowel pins are engaged in said dowel pin holes, link pieces pivoted at one end in said legs below said cross rails and pivotally at their other ends intermediate the bottom of said seat, a latch between said cross rails and said seat comprising a latch piece fixed to the inside face of said cross rails, a



lock piece pivotally mounted on the under side of said seat intermediate said dowel pin holes and the pivotal connection of said links with said seat, the point of action of said latch being located within a triangle defined by axes of pivotally mounting of the ends of said links and the point of engagement of said dowel pin means, and securing means on the bottom of said seat to hold the front and rear leg assemblies in folded position against said seat bottom.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 948,416 | Deweese | Feb. 8, 1910 |
| 1,188,550 | Meyer | June 27, 1916 |
| 1,531,837 | Boldin | Mar. 31, 1925 |
| 2,044,473 | Geller | June 16, 1936 |
| 2,589,372 | Hake | Mar. 18, 1952 |
| 2,669,295 | Shepherdson | Feb. 16, 1954 |
| 2,755,846 | Shepherdson | July 24, 1956 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 33,901 | Netherlands | Oct. 15, 1934 |