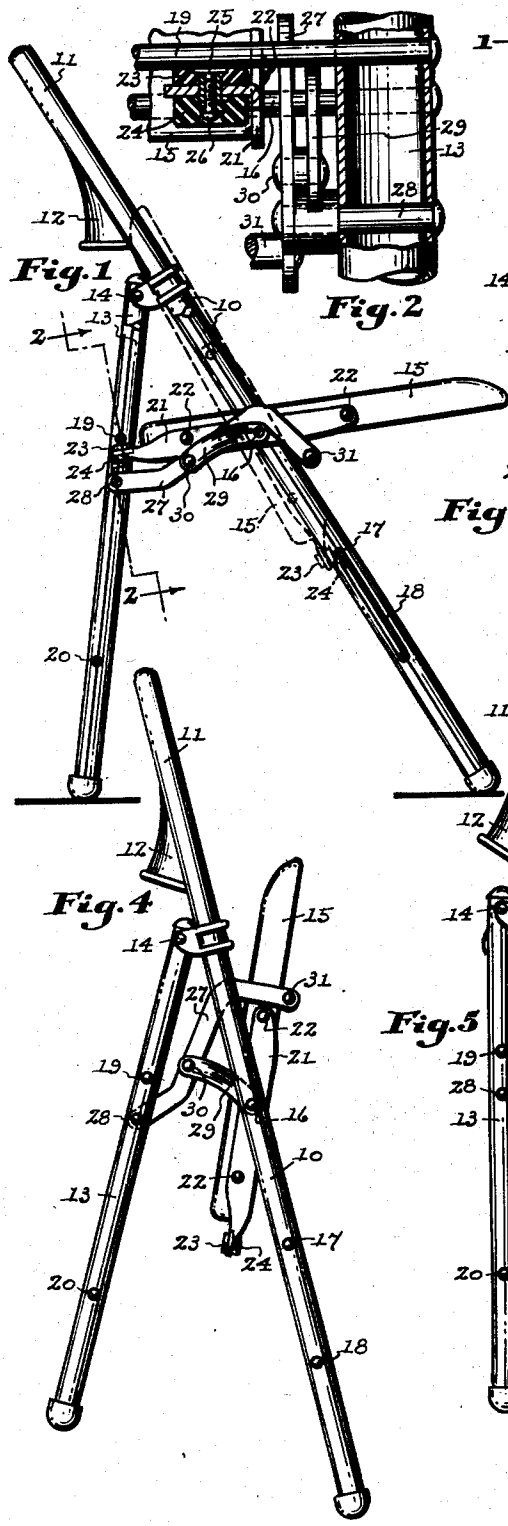
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FOLDING CHAIR WITH INDEPENDENT SEAT FOLD

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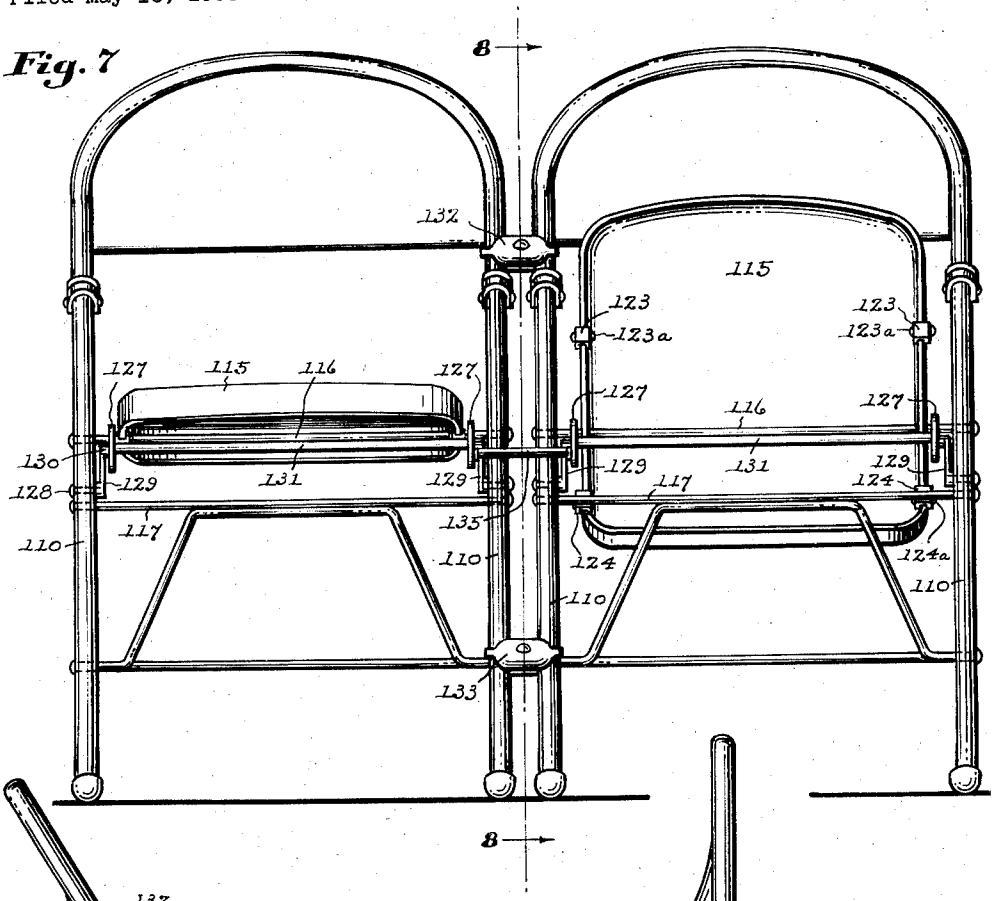
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Fig. 7



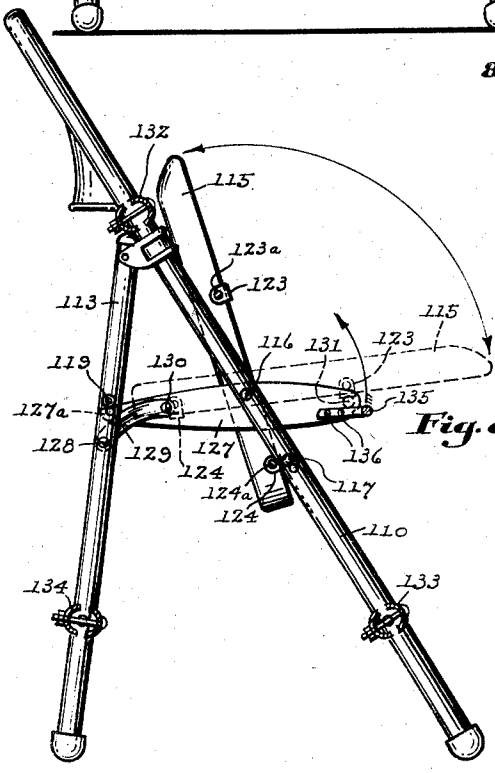


Fig. 8

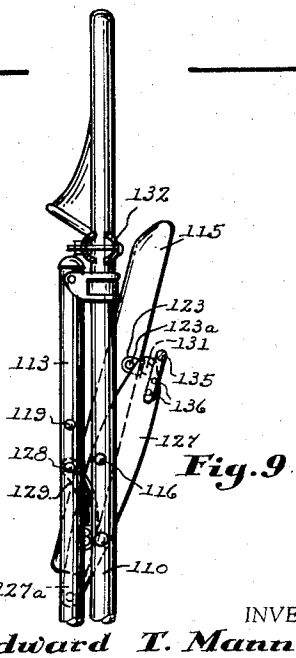


Fig. 9

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FOLDING CHAIR WITH INDEPENDENT SEAT FOLD

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5 Claims. (Cl. 155—142)

The present invention relates to folding chairs and more particularly to steel folding chairs of the inverted Y-type.

The primary objects of the invention are to provide a folding chair of the type indicated in which, when the chair is unfolded for use, the seat may be lowered to a use position for occupancy or raised to a non-use position permitting the chair occupant to rise and stand rearwardly to facilitate ingress and egress of other persons passing in front of him between rows of such chairs; to provide such a folding chair having an operating rod which may be lifted for folding the chair into a compact unit for storage with the rear legs thereof lying alongside the front legs and with the seat positioned between the front legs, and which operating rod can be lowered to unfold the chair for use; to provide such a chair which is so constructed that two or more chairs can be connected in side-by-side relation and the operating rods thereof interconnected so that the connected chairs can all be folded simultaneously, and with the interconnecting means for the operating rods serving as a handle or handles by means of which the folded section of chairs can be carried; to provide such a folding chair which is especially quiet in operation; and in general to provide such a folding chair which is sturdy in construction, efficient in use and reasonably economical in manufacture.

Illustrative embodiments of the invention are shown in the accompanying drawings, wherein:

Figure 1 is a view partly in side elevation and partly in vertical section taken on line 1—1 of Figure 3, of one form of the new chair in its unfolded condition, the seat thereof being shown in lowered use position in full lines and in raised non-use position in dotted lines;

Figure 2 is an enlarged fragmentary sectional view of parts of the chair, taken on line 2—2 of Figure 1;

Figure 3 is a front elevational view of the unfolded chair shown in Figure 1 with the seat in its raised non-use position;

Figure 4 is a side elevational view of the chair in partially folded condition;

Figure 5 is a side elevational view of the same in fully folded condition for storage;

Figure 6 is a fragmentary front elevational view of parts of the same in their fully folded condition;

Figure 7 is a front elevational view of two unfolded chairs connected together in side-by-side relation with the seat of one chair in a lowered use position and the seat of the other chair in a raised non-use position, the chairs here shown being of a modified form from that shown in Figures 1 through 6;

Figure 8 is a vertical sectional view of the same taken on line 8—8 of Figure 7 and showing the seat of one chair in raised non-use position in full lines and in lowered use position in dotted lines; and

Figure 9 is a fragmentary sectional view of the same with the chairs shown in their fully folded condition for storage.

Referring now in detail to these drawings, and referring

first to the form of the invention shown in Figures 1 through 6, the chair there shown generally comprises an inverted U-shaped tubular metal front frame forming a pair of spaced rearwardly-upwardly extending front legs **10** connected by a bight portion **11** in which is secured a back support panel **12**, a pair of forwardly-upwardly extending tubular metal rear legs **13** having their upper ends hingedly connected at **14** to the front legs **10**, and a seat **15** pivotally mounted between the front legs **10** for swinging movement between a fully lowered use position indicated in full lines in Figure 1 and a fully raised non-use position indicated by dotted lines in Figure 1. The seat is pivotally mounted for such swinging movement on an upper front tie-rod **16** which connects the front legs **10** at the approximate seat level of the chair.

A lower front tie-rod **17** also connects the front legs **10** of the chair below the seat level thereof, and the chair is strengthened by an inverted U-shaped strut **18** of rod stock which has its lower ends secured to the front legs **10** and its upper middle portion secured as by welding to the lower tie-rod **17**.

An upper rear tie-rod **19** connects the chair's rear legs **13** at the approximate seat level thereof, and a lower tie-rod or strut **20** connects the rear legs **13** near their lower ends for additionally strengthening the chair. Seat stiles **21** secured to opposite sides of the seat **15** as by means of rivets **22**, extend rearwardly of the seat and are provided on their upper sides with stops **23** of rawhide or the like adapted to contact the underside of the upper rear tie-rod **19** to silently stop the lowering movement of the seat when it reaches its lowered use position. Other stops **24** of rubber or the like are secured to the under sides of the rearward ends of the seat stiles **21** and are adapted to contact the rear side of the lower front tie-rod **17** to silently stop the raising movement of the seat when it reaches its fully raised non-use position. Stops **23** and **24** are desirably secured to the seat stiles **21** by common fastening means and as shown in Figure 2 these means comprise an internally threaded hollow rivet **25** passing downwardly through a stop **23** and stile **21**, and a screw **26** passing upwardly through a stop **24** and threaded into the rivet **25**.

A pair of arms **27** are pivotally connected as by means of rivets or pins **28** to the rear legs **13** and extend forwardly therefrom over the upper front tie-rod **16** and thence forwardly-downwardly, and terminating at points beneath the seat **15** when the seat is in its lowered position. A pair of links **29** have their forward ends pivotally connected to the upper front tie-rod **16** and have their rearward ends pivotally connected at **30** to the adjacent arms **27** at points thereon between the adjacent front and rear legs.

An operating rod **31** connects the forward ends of arms **27** beneath the seat **15**. It will readily be seen that when the various parts of the chair are in their unfolded use positions seen in full lines in Figure 1, lifting movement of the operating rod **31** transmitted through arms **27** and links **29** will swing the rear legs **13** to folded positions alongside the front legs **10**. During the latter part of this lifting movement of the operating rod **31** it directly contacts the underside of seat **15**, moving the seat to its fully folded position between the front legs of the chair. The chair is shown partly folded in Figure 4 and fully folded in Figure 5. When the operating rod **31** is lowered to again unfold the chair, the front legs and rear legs are spread apart and the seat is again permitted to occupy its position shown in full lines in Figure 1.

Figures 7, 8, and 9 illustrate a slightly modified linkage for coordinating the movements of the various parts of the chair during the folding and unfolding thereof. In this modified form of chair, arms **127** are pivotally

mounted on the upper front tie-rod 116, extending both forwardly and rearwardly from this pivotal mounting. An operating rod 131 connects the forward ends of arms 127 beneath the chair seat 115. Links 129 have their rearward ends pivotally connected to the rear legs 113 by means of rivets or pins 128 and have their forward ends pivotally connected at 130 to the arms 127 at points between the front legs 110 and the rear legs 113. Rearward extensions 127*a* of the arms 127 are adapted to contact the upper rear tie-rod 119 to limit unfolding movement of the chair. The seat is silently stopped when it reaches its limit of raising movement by contact of stops 124 with the lower front tie-rod 117, and is silently stopped when it reaches its limit of lowering movement by contact of stops 123 with the forward upper edges of the arms 127. Stops 123 and 124 may be straps of rawhide or the like secured to the seat's side flanges by means of rivets 123*a* and 124*a* respectively. It will readily be seen that lifting of the operating rod 131 as indicated by the short arrow in Figure 8 will fold the rear and front legs together and will also raise the seat to folded position between the front legs, whereas lowering movement of the operating rod 131 will unfold the chair and permit the seat to be freely swung between its raised and lowered positions as indicated by the long, double pointed arrow in Figure 8.

Either of the forms of folding chair hereinbefore shown and described is adapted for coupling to one or more like chairs to form a section of chairs as illustrated in Figures 7–9 wherein two chairs are secured together in side-by-side relation. Upper front clamps 132 and lower front clamps 133 secure the adjacent front legs 110 of adjoining chairs together, and rear clamps 134 connect the adjacent rear legs 113 of the adjoining chairs. A connecting pin 135 has its opposite ends rearwardly bent and flattened and secured to the adjacent arms 127 of the adjoining chairs as by means of screws 136. By this means the two chairs may be folded simultaneously by lifting the connecting pin 135 and, after folding, the connecting pin 135 serves as a handle by means of which the connected chairs can be carried.

It will thus be seen that the invention provides an efficient folding chair in which the seat is independently movable between a lowered use position and a raised non-use position and in which the raising and lowering movements of the seat are quietly stopped when they reach their limits, and that the invention provides novel means for coupling together two or more chairs to form a section of chairs.

While but several specific embodiments of the invention have been herein shown and described it will be understood that numerous details may be altered or omitted with departing from the spirit of the invention as the same is defined by the following claims.

We claim:

1. In a folding chair: a pair of spaced front legs; a pair of spaced rear legs having their upper ends hingedly connected to the front legs; a seat pivotally mounted between the front legs for swinging movement between a lowered position of use and a raised position of non-use; a pair of links pivotally connected to one pair of legs and extending toward the other pair; a pair of arms pivotally connected to said links and pivotally mounted on the other pair of legs, said arms extending forwardly beyond the seat's pivotal connections with the front legs and terminating at points beneath the seat in the latter's lowered position; and an operating rod connecting the forward ends of said arms, whereby lifting movement of the operating rod swings the rear legs to folded positions alongside the front legs and swings the seat upwardly to a folded non-use position, and whereby lowering movement of the operating rod unfolds the chair legs and permits swinging movement of the seat between its raised non-use position and its lowered use position.

2. A pair of folding chairs according to claim 1 secured together in side-by-side relation, and a handle

connecting the forward ends of the adjacent arms of the two chairs whereby the chairs may be folded and unfolded simultaneously and by means of which handle the connected chairs may be carried when folded.

3. A folding chair according to claim 1 characterized by having the links pivotally connected to the rear legs and extending toward the front legs and by having the arms pivotally connected to the forward ends of the links and pivotally mounted on the front legs.

4. In a folding chair: a pair of spaced front legs; a pair of spaced rear legs having their upper ends hingedly connected to the front legs; a front tie-rod connecting the front legs and a rear tie-rod connecting the rear legs, both of said tie-rods being located at the approximate seat level of the chair; a pair of arms pivotally mounted on the front tie-rod and extending both forwardly and rearwardly therefrom; a pair of links having their rearward ends pivotally connected to the rear legs below the rear tie-rod and having their forward ends pivotally connected to the rearward ends of said arms; an operating rod connecting the forward ends of said arms, whereby lifting movement of the operating rod swings the rear legs to folded positions alongside the front legs, and whereby lowering movement of the operating rod spreads the front and rear legs to unfolded, use position; stops on the rearward ends of the arms adapted to contact the rear tie-rod to limit the unfolding of the chair to its use position; and a seat pivotally mounted on the front tie-rod for swinging movement independent of said arms between a raised position of non-use and a lowered position of use wherein its front portion rests on the operating rod, and the seat being movable with the operating rod to its raised position of non-use when the chair is folded.

5. In a folding chair: a pair of spaced front legs; a pair of spaced rear legs having their upper ends hingedly connected to the front legs; an upper front tie-rod connecting the front legs at the approximate seat level of the chair; a lower front tie-rod connecting the front legs below the upper front tie-rod; a rear tie-rod connecting the rear legs at the approximate seat level of the chair; a pair of arms pivotally mounted on the upper front tie-rod and extending both forwardly and rearwardly therefrom; a pair of links having their rearward ends pivotally connected to the rear legs below the rear tie-rod and having their forward ends pivotally connected to the rearward ends of said arms; an operating rod connecting the forward ends of said arms, whereby lifting movement of the operating rod swings the rear legs to folded positions alongside the front legs, and whereby lowering movement of the operating rod spreads the front and rear legs to unfolded, use position; stops on the rearward ends of the arms adapted to contact the rear tie-rod to limit the unfolding of the chair to its use position; a seat pivotally mounted on the upper front tie-rod for swinging movement independent of said arms between a raised position of non-use and a lowered position of use wherein its front portion rests on the operating rod, the seat being movable with the operating rod to its raised position of non-use when the chair is folded; bumpers on the forward portion of the seat adapted to contact the operating rod to silence lowering movement of the seat to its use position; and other bumpers on the rearward portion of the seat adapted to contact the lower front tie-rod to silence raising movement of the seat to its non-use position.

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