

Sept. 13, 1932.

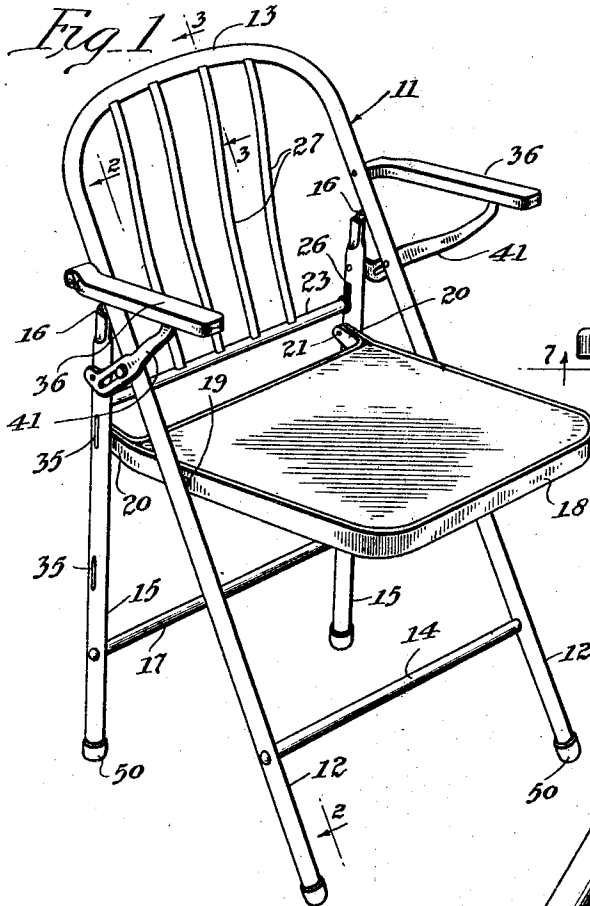
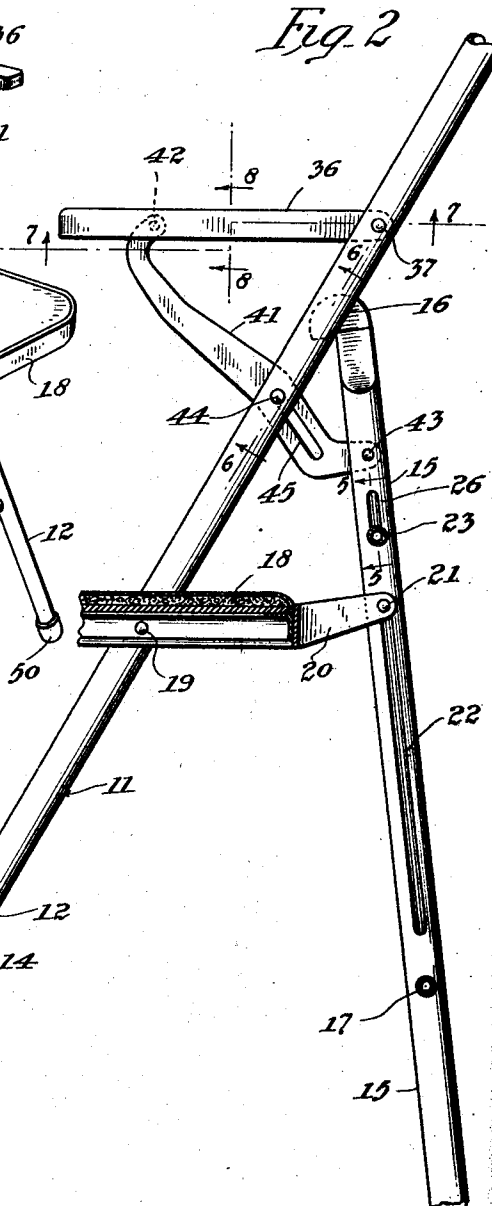
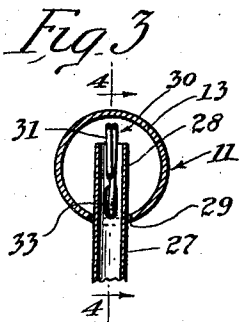
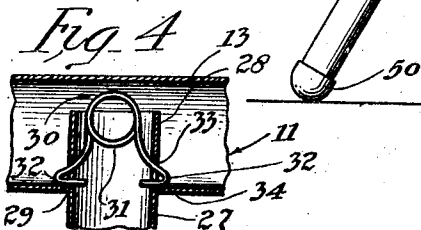
J. E. BALES

1,876,549

CHAIR

Filed Aug. 9, 1929

2 Sheets-Sheet 1



INVENTOR.

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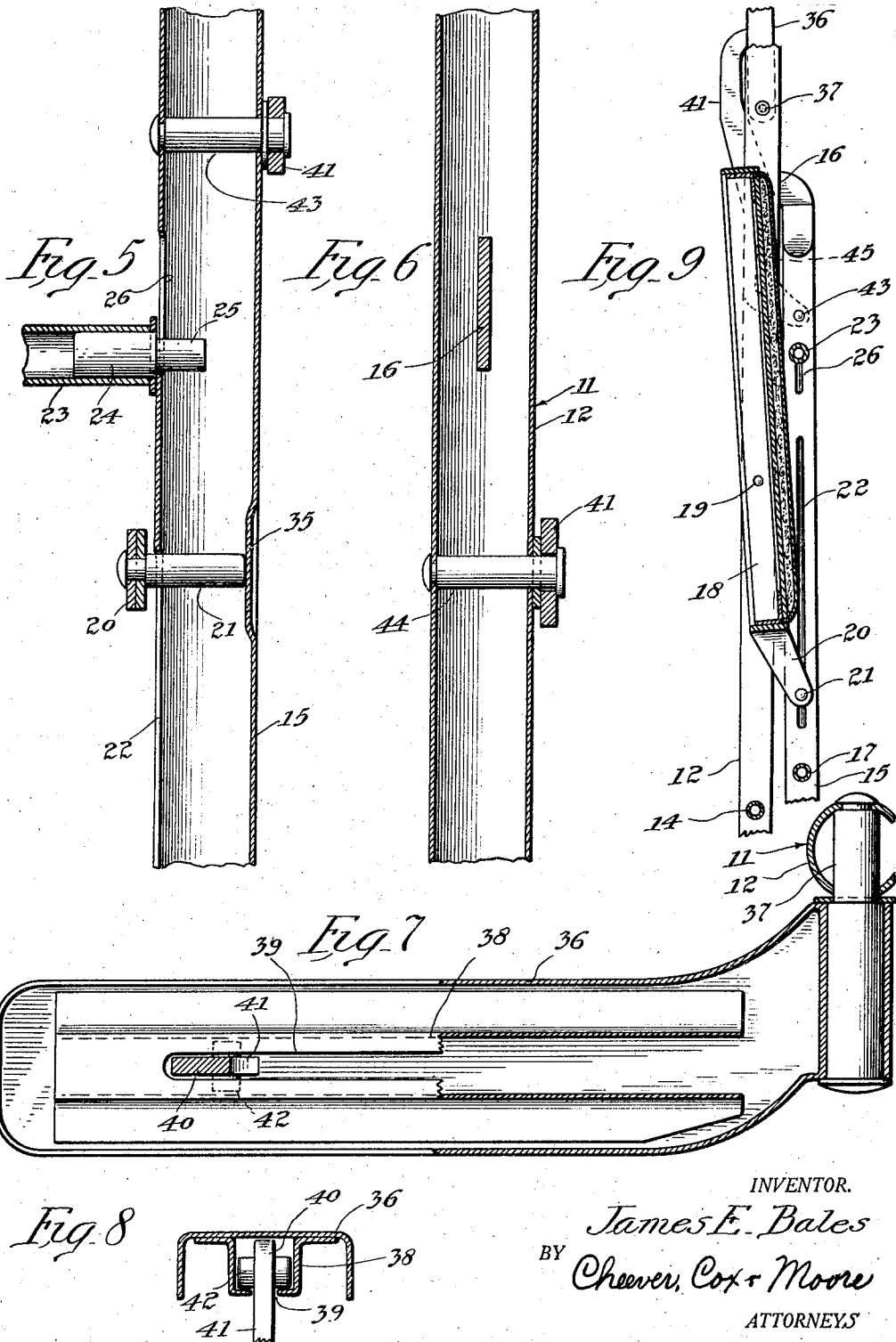
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UNITED STATES PATENT OFFICE

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CHAIR

Application filed August 9, 1929. Serial No. 384,583.

This invention relates to chairs in general and particularly to folding and collapsible chairs which are made of metal.

The object of the invention is to provide a new and improved chair which is rigid and durable, and which can be readily folded or collapsed to occupy a minimum amount of space.

Another object is to provide a metal chair of novel construction, which has a tubular main frame, and which is provided with means for collapsing the chair so that the parts will fold substantially in the normal plane of the main frame.

Another object is to provide a folding chair having an arm which swings into the normal plane of the chair when the chair is in folded position.

Another object is to provide a chair having a tubular main frame, the ends of which provide front legs for the chair, rear legs pivotally connected to the main frame, a seat pivoted to the main frame and having sliding engagement with the rear legs, an arm pivoted to the main frame, and a bracket pivoted to the main frame and the rear legs and slidably engaging the arm for causing the arm to swing upwardly into the normal plane of the main frame when the chair is in folded position.

Another object is to provide a chair having a back rest and arms which permit the chair to be folded in substantially the normal plane of the main frame.

Another object is to provide a chair having tubular legs and a folding seat, means being provided in the legs and operatively engaging a part of the seat for frictionally engaging said part when the seat is in folded or extended position.

Numerous other objects and advantages will appear throughout the progress of the specification.

The invention comprises in general a chair having a tubular main frame, the lower ends of which provide front legs for the chair. Rear legs are pivotally connected to the main frame at the sides thereof, and a seat which is pivoted to the main frame between its legs has sliding engagement with the

rear legs. A back rest is operatively connected to the top of the main frame and to the rear legs and has pivotal movement to permit the chair to be folded or collapsed in substantially the normal plane of the main frame. Brackets are pivoted to the rear legs and have sliding engagement with arms which are pivoted to the main frame. Slots are provided in these brackets and have sliding engagement with pins on the main frame. By merely bringing the front and rear legs together, or by tilting the seat upwardly, the entire chair is collapsed into substantially the normal plane of the main frame.

The accompanying drawings illustrate a selected embodiment of the invention, and the views therein are as follows:

Fig. 1 is a detail perspective view of the improved chair in extended position.

Fig. 2 is a detail longitudinal sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 1.

Fig. 4 is a detail sectional view on the line 4—4 of Fig. 3.

Fig. 5 is a longitudinal sectional view on the line 5—5 of Fig. 2.

Fig. 6 is a similar view on the line 6—6 of Fig. 2.

Fig. 7 is a detail bottom plan view of the arm on the line 7—7 of Fig. 2.

Fig. 8 is a transverse sectional view of the arm on the line 8—8 of Fig. 2.

Fig. 9 is a detail longitudinal sectional view of the chair in folded or collapsed position.

The folding chair illustrating the present invention comprises a main frame 11 formed of a tubular member which is bent substantially in the shape of an inverted U, the sides of the U providing chair legs 12 and the intermediate or connecting portion 13 providing a back support. The legs 12 are connected together near their lower ends by means of a tubular rod or rung 14. Rear legs 15 which may be formed of tubular material are pivoted to the frame member at 16, and may be connected together by means of a rung 17 also made of tubular material. A seat 18, pivotally connected to the main

frame 11 at 19, has rearwardly extending arms 20 which carry pins 21. These pins have sliding engagement with a slot 22 formed in each of the rear legs to permit the seat to be folded when the chair is in the collapsed or folded position shown in Fig. 6.

A tubular cross member 23 has fittings 24 secured to its ends, and pins 25, Fig. 5, on the fittings engage and have sliding engagement with oppositely aligned slots 26 which are formed in the rear legs 15. Back slats or rails 27 have their lower ends connected to the cross member 23, and their upper ends 28, Fig. 3, extending through slots 29 formed in the portion 13 of the main frame. A spring 30, Fig. 3, having a coiled portion 31 has its free ends bent to provide clips 32 which project through slots 33 formed in the upper ends 28 of the slats or rails 27. The springs 30 are arranged in the slats and then the upper ends of the slats are inserted in the slots or openings 33 in the main frame member. The bent ends of the spring which form the clips 32 are rounded or tapered at their upper ends to allow them to spring inwardly when the members 27 are placed in position. The lower ends of these clips are substantially straight to form shoulders 34 which spring outwardly and engage the inside of the frame at the sides of the slots when the members 27 are in place. These clips also prevent the members 27 from being withdrawn from the slots 33. The spring 30 is substantially as long as the diameter of the tubular frame and just touches the inside of the frame at its top and bottom edges to prevent the members 27 from rattling. The manner in which the slats or rails 27 are supported in the main frame securely keeps the rails in locked position and provides a pivotal connection between the rails and the frame. The cross members 23 and the slats 27, which are curved to conform with the contour of the body, provide a back rest of substantial proportion for the chair.

The specific construction of the back rest is claimed in a divisional application, Serial No. 384,584 filed concurrently herewith.

The metal of the legs 15 may be indented at 35, Fig. 5, for frictionally engaging the ends of the pins 21 when the seat 18 is in collapsed or extended position to frictionally hold the seat in those positions. Slight pressure on the seat, however, easily slides the pin over these indentures to permit the chair to be readily collapsed or extended.

Arms 36 have a pin 37, Fig. 7, provided at their inner ends which engage legs 12 of the main frame 11. Guides 38 which are connected to the bottom of the arms are provided with grooves 39, through which the ends 40 of the arm brackets 41 extend. Transverse members 42 are provided on the ends 40 of the brackets and engage the bot-

tom of the guides 38. The brackets 41 carry pins 43 which extend through the legs 15, Fig. 5, and permit pivotal movement of the brackets relative to the legs, when the arms are in raised or collapsed position. Pins 44 extend through the legs 12 and engage a slot 45 provided in the brackets 41. The brackets are pivoted at one end to the legs 15, have sliding engagement with the arms at their other end, and have restricted movement with the pins 44 sliding in the slots 45 at a point intermediate their ends. This construction permits the arms to be raised in substantially the same plane as the main frame member when the chair is collapsed.

In practice, the seat 18 is raised to collapse or fold the chair causing the rear legs to fold toward the main frame due to the pivotal and sliding engagement of the seat relative to the main frame and rear legs respectively. As the rear legs move to collapsed position the slot 45 in the brackets 41 will ride on the pins 44 and swing the upper end of the bracket toward the main frame. The sliding engagement of the bracket causes the arm to swing upwardly on its pivot point 37 to bring the arm in substantially the same plane as the main frame. The back rest also has movement relative to the main frame and the rear legs, thus permitting the entire structure to be folded into a compact relatively small space. While it is preferable to operate the seat to collapse or unfold the chair, it may be done by pulling the arms upwardly or by pulling the legs 15 toward the legs 12.

Rubber feet 50 may be inserted in the bottom of the tubular legs 12 and 15, if desired.

The invention provides a chair which is readily collapsible and occupies very little space when it is in folded position. The chair has a back rest and arms which are operatively connected to the chair proper, permitting the chair to be folded substantially in the normal plane of the main frame. The pivotal and sliding movement of the various parts permits the chair to be readily folded by swinging the rear legs toward the front legs or by tilting the seat or arms upwardly. The chair is rigid and durable, can be easily operated, and may be readily and economically manufactured and assembled.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. A folding chair comprising a frame member, legs pivoted to said frame member at their upper ends, an arm pivoted to said frame member, means pivoted to one of said legs and having sliding engagement with said arm, and a sliding pivotal connection between

said frame member and said means for permitting swinging movement of said arm during folding or unfolding movement of said chair.

2. A folding chair comprising a frame member, legs pivoted to said frame member, an arm pivoted to said frame member, means having one end pivoted to one of said legs and having sliding engagement with said arm, and a slot and pin connection between said means and said frame member for causing swinging movement of said arm during folding or unfolding movement of said chair.

3. A folding chair comprising a main frame, an arm pivotally connected to a part of said chair, rear legs having their upper ends pivoted to said main frame, means pivotally connected to the rear legs and slidably engaging the main frame, said means engageable with said arm and controlled by the movement of said legs for swinging said arm, on its pivot, and a seat pivoted to said main frame and having sliding engagement with said rear legs for moving said rear legs toward said main frame when the seat is tilted.

4. A folding chair comprising a main frame member, rear legs pivoted at their upper ends to said frame member, an arm pivoted to said frame member, a bracket having one end pivoted to one of said rear legs, and the other end slidably engaging said arm, and a sliding connection between said bracket and the main frame.

5. A folding chair comprising a frame member, rear legs pivoted to said frame member near their upper ends and extending rearwardly from said frame, arms pivoted to said frame member, and brackets pivoted to said frame and rear legs and slidably engaging said arms for moving said arms during movement of said rear legs.

6. A movable folding chair comprising a main frame and providing front legs, rear legs having their upper ends pivoted to said main frame and extending rearwardly therefrom, an arm pivoted to the main frame, a bracket pivoted to one of said rear legs and engageable with said arm for swinging said arm into and out of position during folding movement of the legs, said bracket having a slot therein, and a pin on said frame and engageable with said slot for limiting the movement of said bracket, said arm having a groove therein, and a pin on the bracket and engaging the groove in the arm.

7. A folding chair comprising a tubular one-piece metal main frame and providing legs, tubular metal rear legs pivoted to said main frame, and extending rearwardly therefrom, a seat pivoted to said main frame, a pin operatively connected to said seat at its rear end and having sliding engagement with said rear legs, said pin extending into a tubular rear leg, and means formed inside of said

leg and having frictional engagement with the end face of said pin for assisting in keeping the chair in either extended or collapsed position by the friction of the pin against said last named means.

8. A chair comprising a main frame and providing forwardly extending legs, rear legs extending rearwardly from said main frame and pivotally connected thereto, a seat pivoted to said main frame, said rear legs having longitudinal slots therein, pins on said seat and engaging said slots in said rear legs, said rear legs being indented at the opposite sides of said slots and frictionally engaging said pins when the chair is arranged in a predetermined position.

9. The combination with a chair having supporting members, said supporting members having slots therein, a seat having projections thereon and slidable in said slots, legs operatively connected to said members and to said seat, and means formed in said members opposite to said slots and engaged by said projections when the seat is in certain positions and holding said seat in said positions when engaged with said means.

In witness whereof, I have hereunto subscribed my name.

JAMES E. BALES.