Jan. 2, 1940. E. T. PAUL ET AL 2,185,923

CHAIR

Filed June 18, 1938 2 Sheets-Sheet 1

Fig. 3

Fig. 1

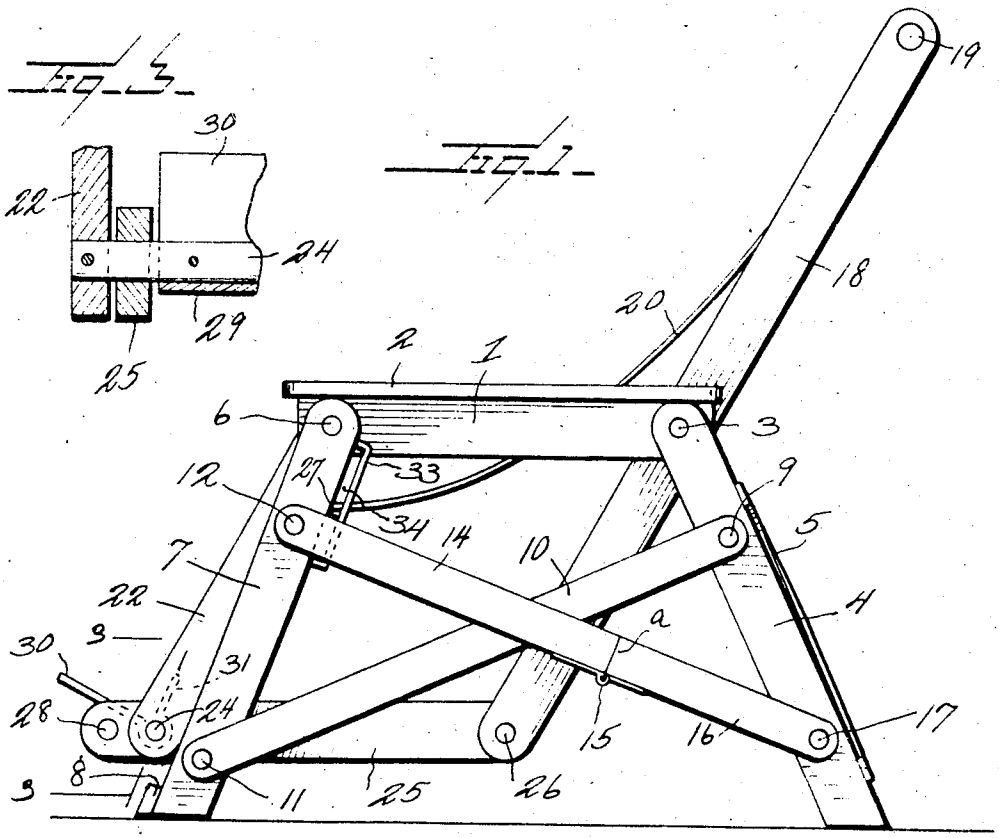


Fig. 2

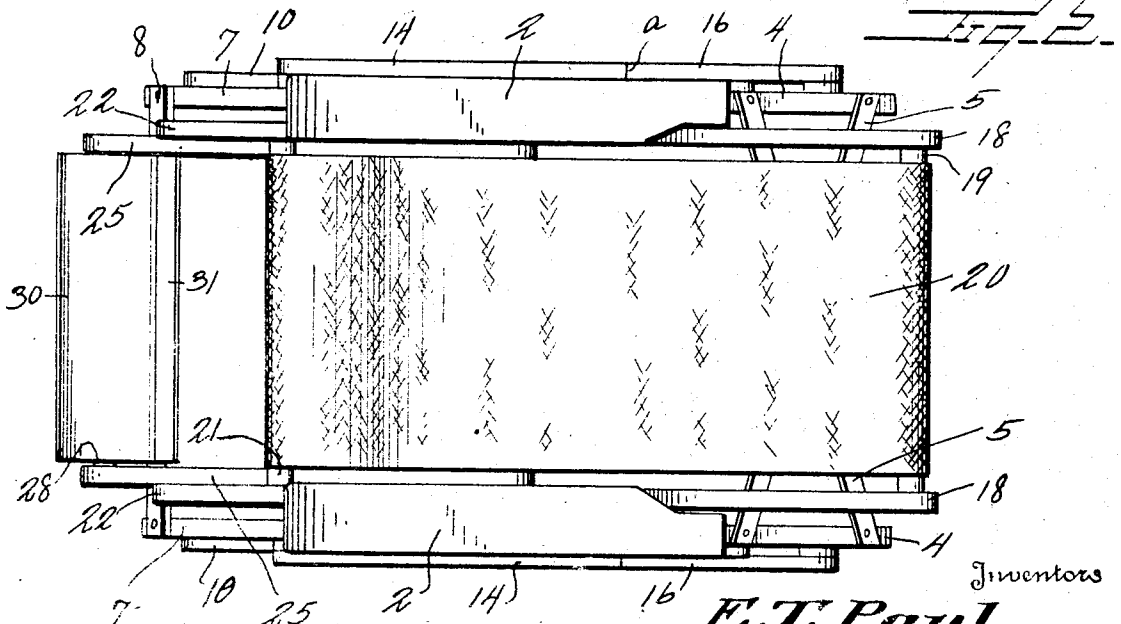
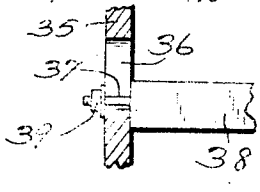


Fig. 4



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CHAIR

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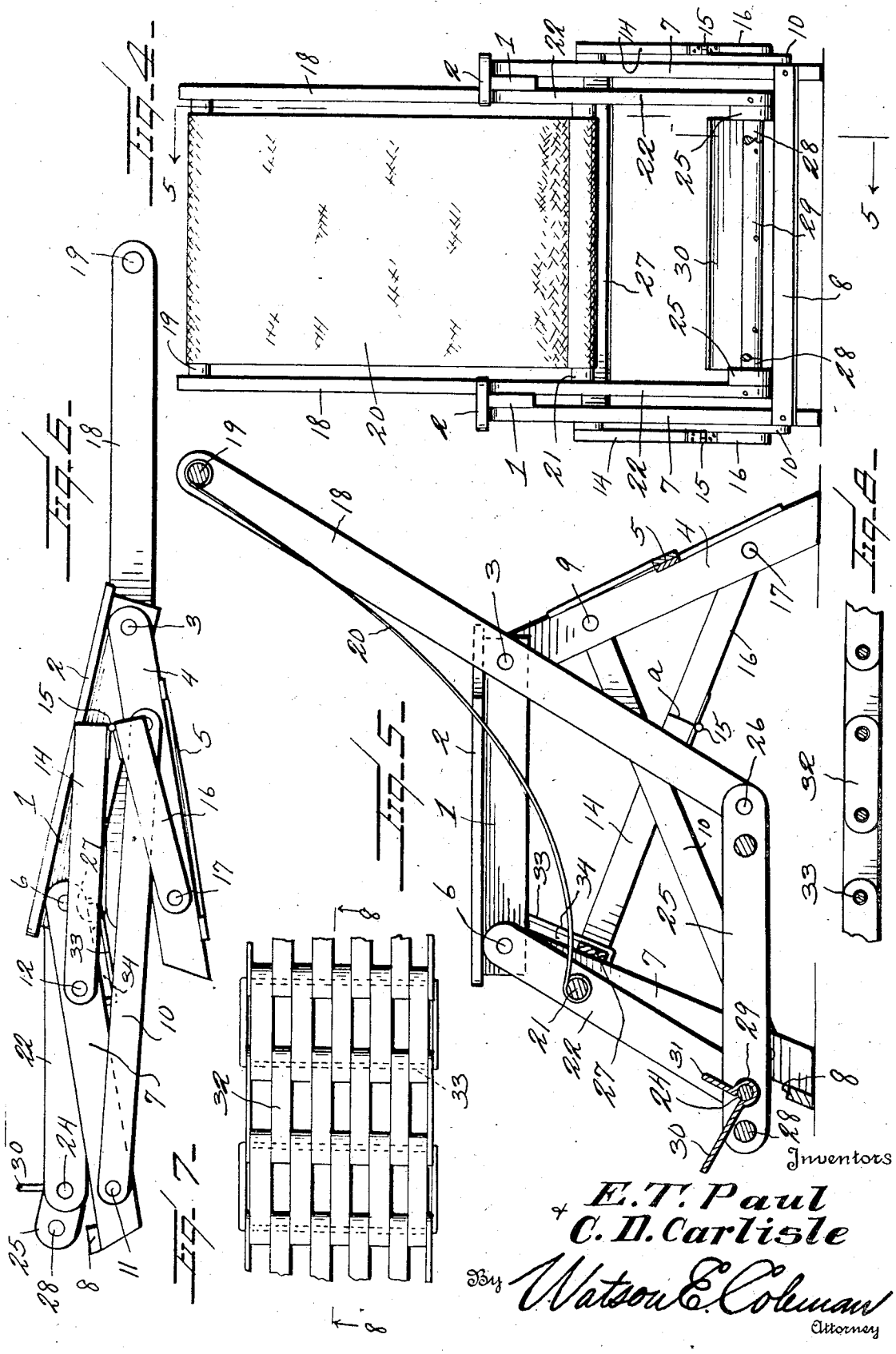

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Patented Jan. 2, 1940 2,185,923

UNITED STATES PATENT OFFICE

2,185,923

CHAIR

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Application June 18, 1938, Serial No. 214,542

2 Claims. (Cl. 155—106)

This invention relates to a chair, and it is an object of the invention to provide a chair of this kind of a reclining type and which can be readily folded or compacted.

It is also an object of the invention to provide a chair wherein the movable parts thereof are in balance and which is so constructed and assembled that the movable parts of the chair may be readily adjusted into different positions by the mere movement of the head of a person occupying the chair.

Another object of the invention is to provide a chair of this kind so constructed that the moving parts remain in any position in which it may be adjusted.

The invention consists in the details of construction and in the combination and arrangement of the several parts of our improved chair whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of our invention will hereinafter be definitely claimed.

In order that our invention may be the better understood, we will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in side elevation of a chair constructed in accordance with an embodiment of our invention;

Figure 2 is a view in top plan of the chair as illustrated in Figure 1;

Figure 3 is an enlarged fragmentary detailed sectional view taken substantially on the line 3—3 of Figure 1;

Figure 4 is a view in front elevation of the chair as herein comprised;

Figure 5 is a sectional view taken substantially on the line 5—5 of Figure 4;

Figure 6 is a view in side elevation showing the chair folded or compacted;

Figure 7 is a fragmentary view in plan of a seat and back strip constructed in accordance with another embodiment of the invention;

Figure 8 is a sectional view taken substantially on the line 8—8 of Figure 7;

Figure 9 is a fragmentary view partly in section and partly in elevation illustrating a modified detail of construction.

As disclosed in the accompanying drawings, our improved chair comprises a pair of side or arm members 1 of desired length and each of which is provided along its upper marginal portion with an arm rest 2. Pivotally connected, as at 3, with the rear end portion of each of the arm members 1 is an extremity of a rear leg 4 of desired length and which, when extended for use, is disposed downwardly and rearwardly with respect to the arm rest 2. The rear supporting legs 4 are connected by the crossed brace members 5 whereby the legs 4 have unitary swinging movement and in the same direction upon either folding or extending the chair.

Pivotally connected, as at 6, with the forward end portion of each of the side or arm members 1 is an extremity of a front supporting leg 7 which, when extended for use, is disposed on a downward and forward incline. These legs 7 are connected by the transverse member 8 suitably secured to the legs 7 closely adjacent to their outer or free end portions.

Pivotally connected, as at 9, to each of the rear legs 4 at a point spaced from the pivotal mounting 3 and preferably inwardly of the longitudinal center of the leg 4, is an end portion of an elongated bar 10. The opposite end portion of this bar 10 is pivotally connected, as at 11, to the front leg 7 at the same side of the chair and at a point closely adjacent to the outer or free end of said leg 7. The upper portion of each of the front legs 7 at a point spaced from the pivotal mounting 6 has pivotally connected thereto, as at 12, an end portion of a straight bar 14. The opposite or outer extremity of this bar 14 is hingedly connected, as at 15, with an end portion of a second bar 16 which has its opposite end portion pivotally connnected, as at 17, to the lower end portion of a rear leg 4. The adjacent ends of these bars 14 and 16 are square, as at *a*, and the hinge 15 is engaged with the lower edge portions thereof so that said square ends *a* will contact when the bars 14 and 16 are in alignment. The bar 14, as herein disclosed, is approximately twice as long as the bar 16 to facilitate the folding or compacting of the chair. It will be particularly noted that the character of the hinge 15 and its location is such that the joint will break upwardly. It is also to be stated that the lengths of the bars 14 and 16 are such as to assure said bars remaining substantially below the top or outer surface of the arm rest 2 when the chair is folded.

The pivot members 3 also provide a pivotal mounting for the side bars 18 of the back structure. As herein disclosed, this pivotal mounting for the bars 18 is so positioned that when the chair is folded or compacted the lower extremities of the bars 18 will be in close proximity to

the forward ends of the adjacent side or arm members 1.

The upper end portions of the side bars 18 are connected by a cross rod 19 to which is secured an end portion of a fabric seat and back strip 20. The opposite end portion of this strip 20 is suitably connected to a cross rod 21 interposed between and carried by the rigid hangers or bars 22. Each of these bars 22 is also pivotally connected, as at 6, to the front end portion of a side or arm member 1 and the lower extremity of said hanger bar 22 is pivotally connected by a rod 24 to the forward end portion of a side brace bar 25. This brace bar 25 extends rearwardly and is pivotally connected, as at 26, with the lower end portion of the adjacent side member 18 of the back structure. The pivots as afforded by the rod 24 and the pivotal connection 26 are spaced apart the same distance as the space between the pivotal connections 3 and 6 so that the hanger bar 22 and the lower portion of the associated side member 18 are at all times in parallelism whereby the desired folding or compacting of the chair is facilitated.

The rod 24 is common to both sets of hanger bars 22 and side bars 25.

The bars 25 extend a distance in advance of the rod 24 and said extended portions of the bars 25 are connected by an interposed rod 28. Rigidly secured, as at 29, to the rod 24 between the side bars 25 is an outstanding foot rest 30 which is preferably at right angles to the hanger bars 22 at all times. This relative positioning is assured by having the cross rod 24 fixedly connected to the hanger bars 22 but freely directed through the side bars 25. The foot rest 30, as herein disclosed, is formed and constructed as to provide the rearwardly arranged and upstanding back foot rest 31 substantially at right angles to the foot rest 30. This supplemental rest 31 is effective when the chair is in a material reclining position and also provides means to limit the rearward movement of the feet of the occupant of the chair.

The strip 20 hereinbefore referred to may be of stout canvas or other desired woven material although this seat and back strip may be of a type as illustrated in Figures 7 and 8. In this particular construction the strip comprises the transverse series of link members 32 of desired material and dimensions with the links of one transverse series lapping the links of the adjacent transverse series and pivotally connected by the pintles 33. A fabric of this kind is extremely flexible and thus affords all of the advantages of a fabric strip with the further advantage of added strength. A back strip such as illustrated in Figures 7 and 8 is also of advantage in that the chair can be occupied with considerable comfort due to the fact that such a strip will not cling around the person as is the tendency of a fabric strip.

Carried by the rear edges of the front legs 7 and extending from a point closely adjacent to the tops thereof to a point below the rod 21 are the brackets 33 each providing a slot 34 in which is freely received an end portion of a rod 27. This rod 27 provides a stop to be engaged by the bars 25 to limit the extent of reclining adjustment of the bars 18. When the chair is extended for use the rod 27 will be at the bottom of each of the slots 34 and will be held against endwise displacement by the bars 14. While in this position the bar 27 will interfere with the desired folding of the chair. However, when the rod 27 is at its limit of movement toward the top of the slots 34 the chair structure may be readily folded to the position shown in Figure 6.

It is to be pointed out at this time that the chair will recline almost to a horizontal position and when fully reclined will not turn over.

In Figure 9 is disclosed the feature of having each of the front legs 35 provided with a longitudinally disposed slot 36 of desired length through which is directed an elongated member or shank 37 carried by a cross rod 38 interposed between the front legs. This member or shank 37 outwardly of its associated front leg 35 carries a holding member 39 whereby the rod 38 is held in position. The slots 36 and the coacting member 37 permit the rod 38 to have movement lengthwise of the front legs in substantially the same manner and for the same purpose as hereinbefore mentioned with respect to the brackets 33.

It is believed to be readily apparent that the movable parts of our improved chair as herein disclosed are in substantially perfect balance at all times and that they will readily remain in their various selected adjustments. It has been found in practice that the balance of the movable parts of the chair is such that in order to obtain an adjustment while the chair is occupied a rearward adjustment can easily be effected by the mere moving by the occupant of his head rearwardly, or a forward adjustment by the forward movement of the head.

From the foregoing description it is thought to be obvious that a chair constructed in accordance with our invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that our invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason we do no wish to be understood as limiting ourselves to the precise arrangement and formation of the several parts herein shown in carrying out our invention in practice except as hereinafter claimed.

We claim:

1. A chair comprising side arm members, supporting legs pivotally engaged with the front and rear end portions of said side arm members, bars pivotally engaged with the lower end portions of the front legs and with the upper end portions of the rear legs, bars pivotally engaged with the upper portions of the front legs, bars pivotally connected with the lower portions of the rear legs, the last named bars being of a length approximately one-half the length of the second named bars, means for hingedly connecting said two last named bars, said hinge connections breaking in a general direction toward the side arm members to allow the front and rear supporting legs to swing forwardly when collapsing the chair, means for connecting the front legs for unitary swinging movement, means for connecting the rear legs for unitary swinging movement, hanger bars pivotally engaged with the forward end portions of the side arm members, elongated back bars pivotally engaged intermediate their ends with the rear end portions of the side arm members, bars pivotally engaged with the lower extremities of the hanger bars and the lower extremities of the back bars, the lower portions of the back bars and the hanger bars being substantially in parallelism at all times, a combined seat and back flexible strip operatively engaged with the upper portions of the back bars and with the hanger bars, the hanger bars and

the lower portions of the back bars also swinging forwardly when the chair is collapsed, a rod bridging the space between the front supporting legs, means for holding said rod to said front supporting legs, said means being so constructed and arranged to allow said rod to be bodily shifted along said front supporting legs toward or from the side arm members, said rod when in a position away from the side arm members providing a stop to be contacted by the lower portions of the back bars to limit the reclining position of said back bars, said rod when bodily shifted toward the side arm members permitting the lower portions of the back bars to be swung closer to the side arm members when the chair is collapsed.

2. A chair comprising side arm members, supporting legs pivotally engaged with the front and rear end portions of said side arm members, bars pivotally engaged with the lower end portions of the front legs and with the upper end portions of the rear legs, bars pivotally engaged with the upper portions of the front legs, bars pivotally connected with the lower portions of the rear legs, the last named bars being of a length approximately one-half the length of the second named bars, means for hingedly connecting said two last named bars, said hinge connections breaking in a general direction toward the side arm members to allow the front and rear supporting legs to swing forwardly when collapsing the chair, means for connecting the front legs for unitary swinging movement, means for connecting the rear legs for unitary swinging movement, hanger bars pivotally engaged with the forward end portions of the side arm members, elongated back bars pivotally engaged intermediate their ends with the rear end portions of the side arm members, bars pivotally engaged with the lower extremities of the hanger bars and the lower extremities of the back bars, the lower portions of the back bars and the hanger bars being substantially in parallelism at all times, a combined seat and back flexible strip operatively engaged with the upper portions of the back bars and with the hanger bars, the hanger bars and the lower portions of the back bars also swinging forwardly when the chair is collapsed, a rod bridging the space between the front supporting legs, means for holding said rod to said front supporting legs, said means being so constructed and arranged to allow said rod to be bodily shifted along said front supporting legs toward or from the side arm members, said rod when in a position away from the side arm members providing a stop to be contacted by the lower portions of the back bars to limit the reclining position of said back bars, said rod when bodily shifted toward the side arm members permitting the lower portions of the back bars to be swung closer to the side arm members when the chair is collapsed, the swinging movement of the front supporting legs and the hanger bars being about a common axis, the swinging movement of the back bars and the rear supporting legs being also about a common axis.

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