

No. 770,852.

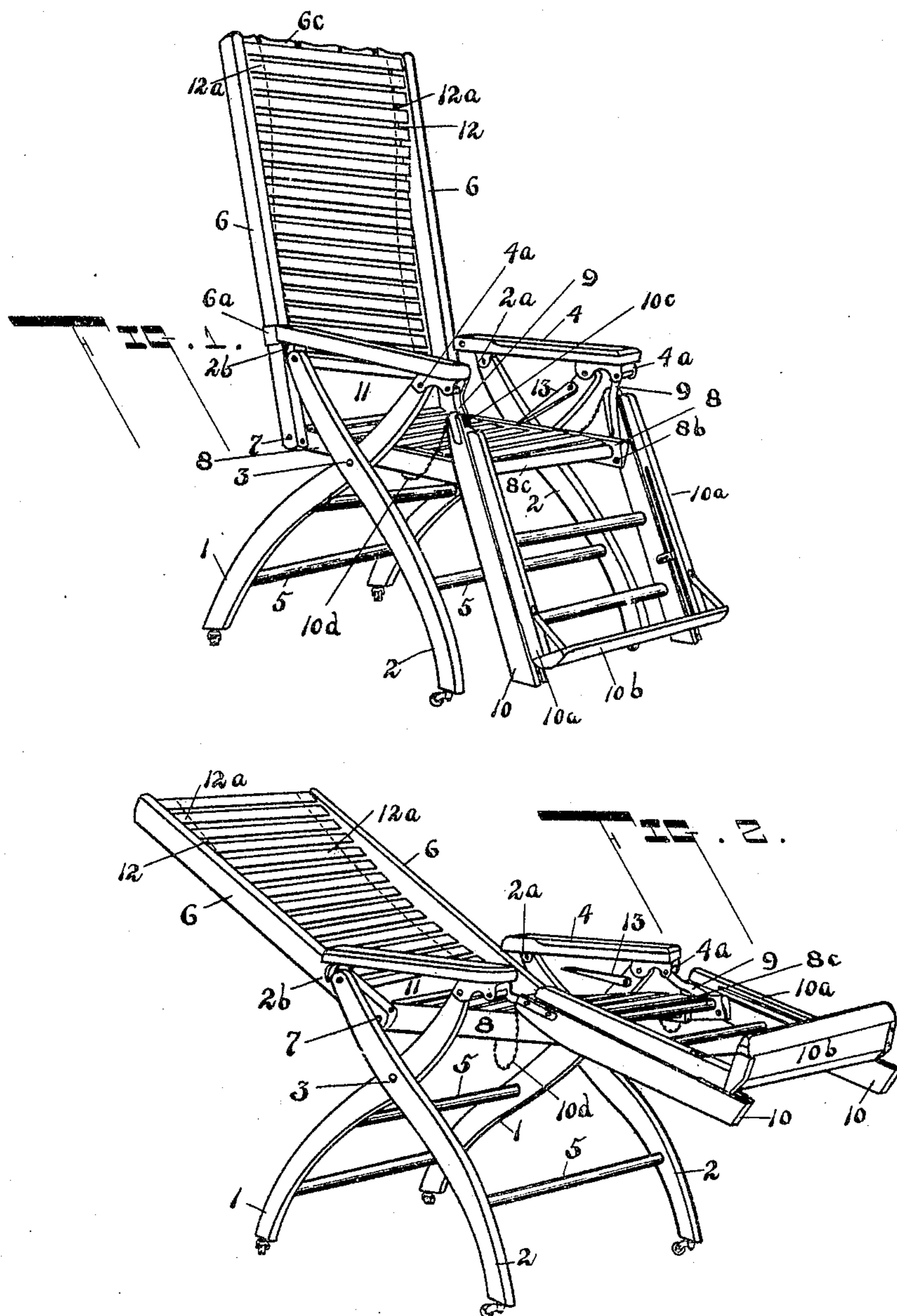
PATENTED SEPT. 27, 1904.

F. GROVER.  
RECLINING CHAIR.

APPLICATION FILED JAN. 11, 1904.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

W. J. Cathcart.

Frank Grover.

INVENTOR

BY

A. Q. Easterly.

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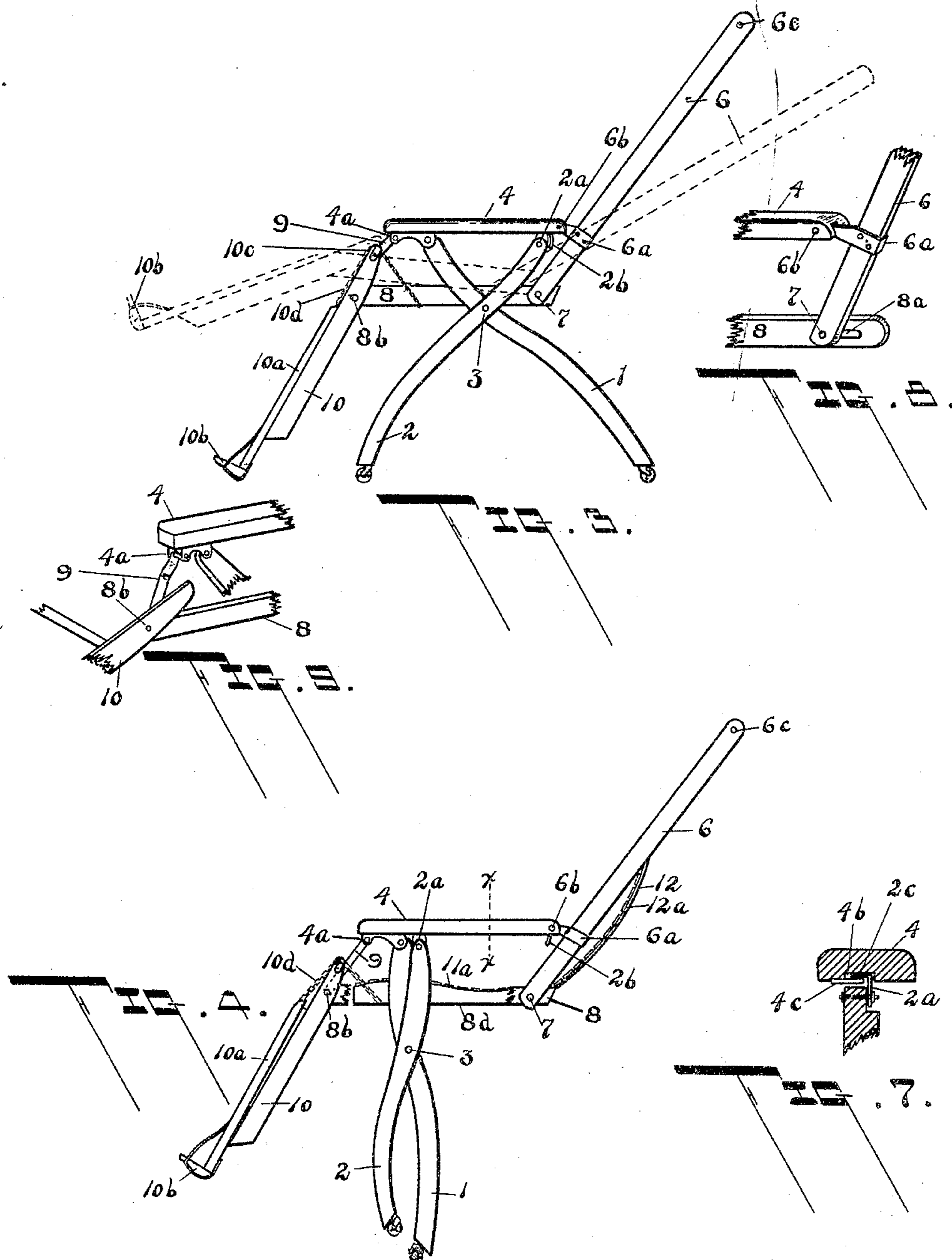
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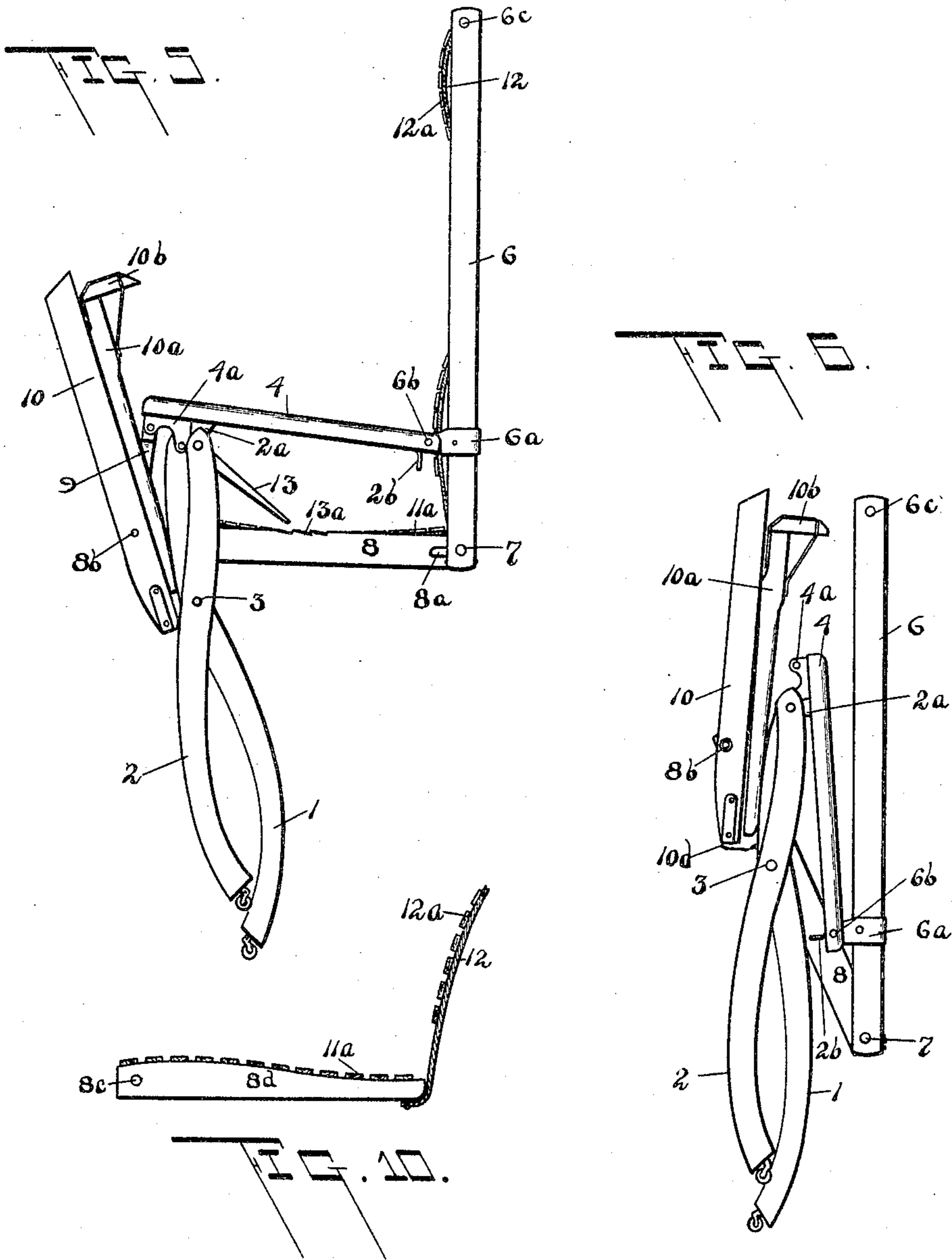
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3 SHEETS—SHEET 3.



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## UNITED STATES PATENT OFFICE.

FRANK GROVER, OF WATROUSVILLE, MICHIGAN.

## RECLINING-CHAIR.

SPECIFICATION forming part of Letters Patent No. 770,852, dated September 27, 1904.

Application filed January 11, 1904. Serial No. 188,595. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK GROVER, a citizen of the United States, residing at Watrousville, in the county of Tuscola and State of Michigan, have invented certain new and useful Improvements in Reclining-Chairs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention is a reclining-chair adapted to be folded into a small space when not in use.

The improvements consist in the parts, their combinations, and the equivalents thereof set forth in this specification and specifically pointed out in the claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the chair in its upright position. Fig. 2 is a perspective of the chair in the reclined position. Fig. 3 is a side view of the chair upright, the position of the parts when reclining being indicated by dotted lines. Fig. 4 is a side view broken away in parts, showing the legs of the chair folded together preparatory to folding the chair. Fig. 5 is a similar view showing the chair partly folded, and Fig. 6 is a side view showing it folded. Fig. 7 is an enlarged cross-section of one of the arms, taken on the line *xx* of Fig. 4. Fig. 8 is a perspective view of one of the brackets connecting the back rail to the arm. Fig. 9 is a perspective detail of the front part of the arm and the bracket secured thereto. Fig. 10 is a detail of the suspended side rails that carry the seat.

As is clearly shown in the drawings, each side of the chair consists in a pair of legs 1 and 2, crossed at about the height of the seat and pivotally connected by a bolt 3 or other suitable means. The arm 4 extends across the upper ends of the legs 1 and 2, being pivoted at its front end to the upper end of the leg 1 by a bracket 4<sup>a</sup>, secured to the arm 4. The leg 2 is pivotally mounted at its upper end in a sliding bracket 2<sup>a</sup>, adapted to slide lengthwise the arm 4, as indicated in Figs. 4, 5, and 6, but is normally held in place by a curved stop or hook 2<sup>b</sup>, secured to the rear end of the arm 4. When the chair is in use, the legs 1 and 2 occupy the position shown in Figs. 1,

2, and 3; but the legs may be folded together, as shown in Figs. 4 and 5, by sliding the bracket 2<sup>a</sup> along the arm 4 until it meets the bracket 4<sup>a</sup>, as shown in Fig. 4. The bracket 2<sup>a</sup> may be guided in any suitable manner along the arm 4; but I prefer to form a slot 4<sup>b</sup> lengthwise the arm 4 and secure to the under side of the arm a plate 4<sup>c</sup>, adapted to overlap the slot 4<sup>b</sup> and engage the flanged end 2<sup>c</sup> of the bracket 2<sup>a</sup>, as shown in Fig. 7.

The legs 1 and 2 are connected by suitable rails 5 and together with the arms 4 form a base or supporting member for the rest of the chair. The back is supported by side rails 6, which are pivotally secured to the rear ends of the arms 4 by means of brackets 6<sup>a</sup>, a pivot 6<sup>b</sup> in each bracket engaging the corresponding arm 4. At the lower end of each side rail 6 is secured an inwardly-projecting pivot 7, which engages a slot 8<sup>a</sup> in the rail 8 of the seat, and thereby supports it. The forward end of the seat-rail 8 has a pivot 8<sup>b</sup>, by which it is suspended from a swinging link 9, the upper end of which is pivoted to the bracket 4<sup>a</sup>.

It is seen that the link 9 and that part of the rail 6 which is below the bracket 6<sup>a</sup> together form a sling or linkage by which the seat-rails 8 are suspended, imparting to them a forward swinging motion substantially parallel to the arm 4 when the upper ends of the back rails 6 are tilted back, as shown in Figs. 3 and 4. Upon the pivot 8<sup>b</sup> is also mounted a side rail 10, forming one side of the foot-rest. The foot-rest has a back-and-forth swinging movement above the pivot 8<sup>b</sup>, as indicated in Figs. 3, 4, and 9. Slidably mounted on the rail 10 is a guide-rail 10<sup>a</sup>, which carries the foot-rest 10<sup>b</sup>. At the upper end of the rail 10 is a pulley 10<sup>c</sup>, over which a chain 10<sup>d</sup> passes. One end of the chain is secured to the side rail 8 and the other is fixed to the upper end of the slide 10<sup>a</sup>. The object of the chain and slide is to extend the foot-rest when the chair is tilted back into the reclining position. The upper end of the rail 10 is higher than the point of attachment of the chain 10<sup>d</sup> on the slide 10<sup>a</sup>, and consequently when the chair is reclined, so that the slide 10<sup>a</sup> is nearly parallel with the side rails 8, the foot-rest 10<sup>b</sup> may be extended to the full extent of the chain 10<sup>d</sup>, as is evident from inspection of Fig. 4. When

the chair is upright, the pulley 10<sup>c</sup> rises to the position shown in Figs. 3 and 4, thus shortening the chain 10<sup>d</sup> and pulling up the foot-rest. The two side rails 8 are connected together by  
5 a transverse rail 8<sup>c</sup>, to which is secured the front end of the seat 11.

The seat may be of any suitable construction; but I prefer in practice to form its bottom of a series of transverse slats 11<sup>a</sup>, having  
10 spaces between them and supported by side rails 8<sup>d</sup>. These side rails, Fig. 10, are pivoted at their front ends to the transverse rail 8<sup>c</sup>, between the rails 8 8, and are suspended by  
15 ropes 12, which extend up along the back rails 6 and are fastened to a transverse rail 6<sup>c</sup>, which connects them at their upper ends. Secured to the cords 12 are transverse slats 12<sup>a</sup>, forming a flexible yielding back conforming to the  
20 figure of the occupant.

In order to counteract any tendency of the chair to tilt back when set in any given position, I provide suitable locking means which preferably consists in a latch 13, pivoted at  
25 one end to one of the legs of the chair and adapted to engage notches 13<sup>a</sup> in the side rails 8.

The chair may be folded, as illustrated in Figs. 5 and 6, by first lifting the foot-rest into  
30 substantially a vertical position, then tilting the back of the chair forward, and folding the legs together, thus allowing the chair to fold together in the compact form shown in Fig. 6.

It is found necessary in order to permit the  
35 back and arms to fold together, as shown, to provide means for longitudinal play of the lower end of the rails 6 in the seat-rails 8. This is accomplished by the sliding pivot 7, operating in the slot 8<sup>a</sup> of the rails 8, as previously described.  
40

By the means above described I have produced a reclining-chair that is simple in construction, durable, and may be quickly adjusted to any desired reclining position and  
45 can be readily folded up for transportation or storage. The seat remains substantially horizontal regardless of the inclination of the back, and being supported at its front end by the transverse rails 8<sup>c</sup> and suspended by its rear  
50 end from the flexible back cords 12, independent of the side seat-rails 8, adjusts itself readily to the figure of the occupant, giving uniform support in the seat and back and adding to the occupant's ease and comfort.

55 Since the seat is not secured to the side rails 8, but is supported at one end by the transverse rail 8<sup>c</sup> (see Figs. 1 and 10) and at the other end by the flexible cords 12, the seat is capable of movement or adjustment to the  
60 figure of the occupant independent of the side rails 8, so that the back and seat adjust themselves like a hammock to the position of the occupant.

What I claim as my invention, and desire to  
65 secure by Letters Patent, is as follows:

1. In a chair having pairs of crossed and pivotally-connected legs and a straight normally horizontal arm for each pair, pivotally connected at its front end to the upper end of one leg, the upper end of the other leg being  
70 slidable along said arm; a pair of back rails each pivotally connected a short distance above its lower end to the rear end of one of said arms; a pair of side rails each pivotally connected by a slotted pivot-bearing at its rear  
75 end to the downwardly-projecting end of one of said back rails and below the pivotal connection of said arms and back rails; a pair of links, each pivotally secured at its upper end to the front end of one of said arms and pivoted at its lower end to the front end of one of said side rails; a transverse rail connecting said side rails; a seat capable of movement independent of said side rails and pivotally secured at its front end to said transverse rail;  
80 together with a back formed of flexible cords supported at their upper ends by the upper ends of the back rails and fixed at their lower ends to the rear end of the seat; substantially as described.  
85 90

2. In a chair having pairs of crossed and pivotally-connected legs and a straight normally horizontal arm for each pair, pivotally connected at its front end to the upper end of one leg, the upper end of the other leg being  
95 slidable along said arm; a pair of back rails each pivotally connected a short distance above its lower end to the rear end of one of said arms; a pair of side rails each pivotally connected by a slotted pivot-bearing at its rear  
100 end to the downwardly-projecting end of one of said back rails and below the pivotal connection of said arms and back rails; a pair of links, each pivotally secured at its upper end to the front end of one of said arms and pivoted at its lower end to the front end of one of said side rails; a transverse rail connecting said side rails; a seat capable of movement independent of said side rails and pivotally secured at its front end to said transverse rail;  
105 a back formed of flexible cords supported at their upper ends by the upper ends of the back rails and fixed at their lower ends to the rear end of the seat; together with a pair of guide-rails having their upper portions pivoted to the forward end of the side rails and having pulleys at their upper ends; a foot-rest slidably mounted on said guide-rails and a flexible chain fixed at one end to the upper end of said foot-rest, passing over one of said pulleys and secured at its other end to the side rails, substantially as described and for the purposes set forth.  
110 115 120

In testimony whereof I affix my signature in presence of two witnesses.

FRANK GROVER.

Witnesses:

A. A. EASTERLY,  
W. I. CATHCART.