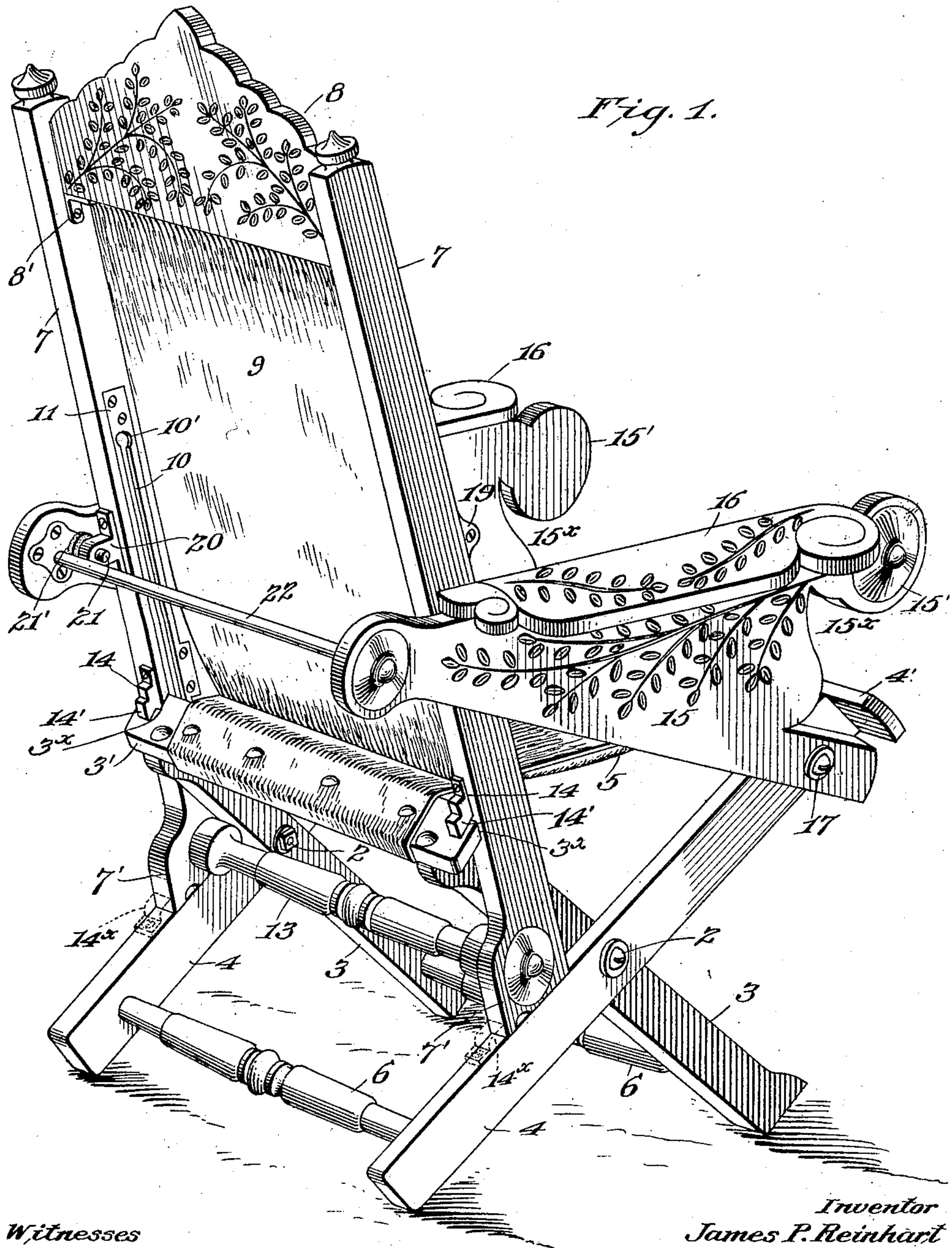


J. P. REINHART.
FOLDING CHAIR.
APPLICATION FILED SEPT. 24, 1908.

917,150.

Patented Apr. 6, 1909.

4 SHEETS—SHEET 1.



Witnesses

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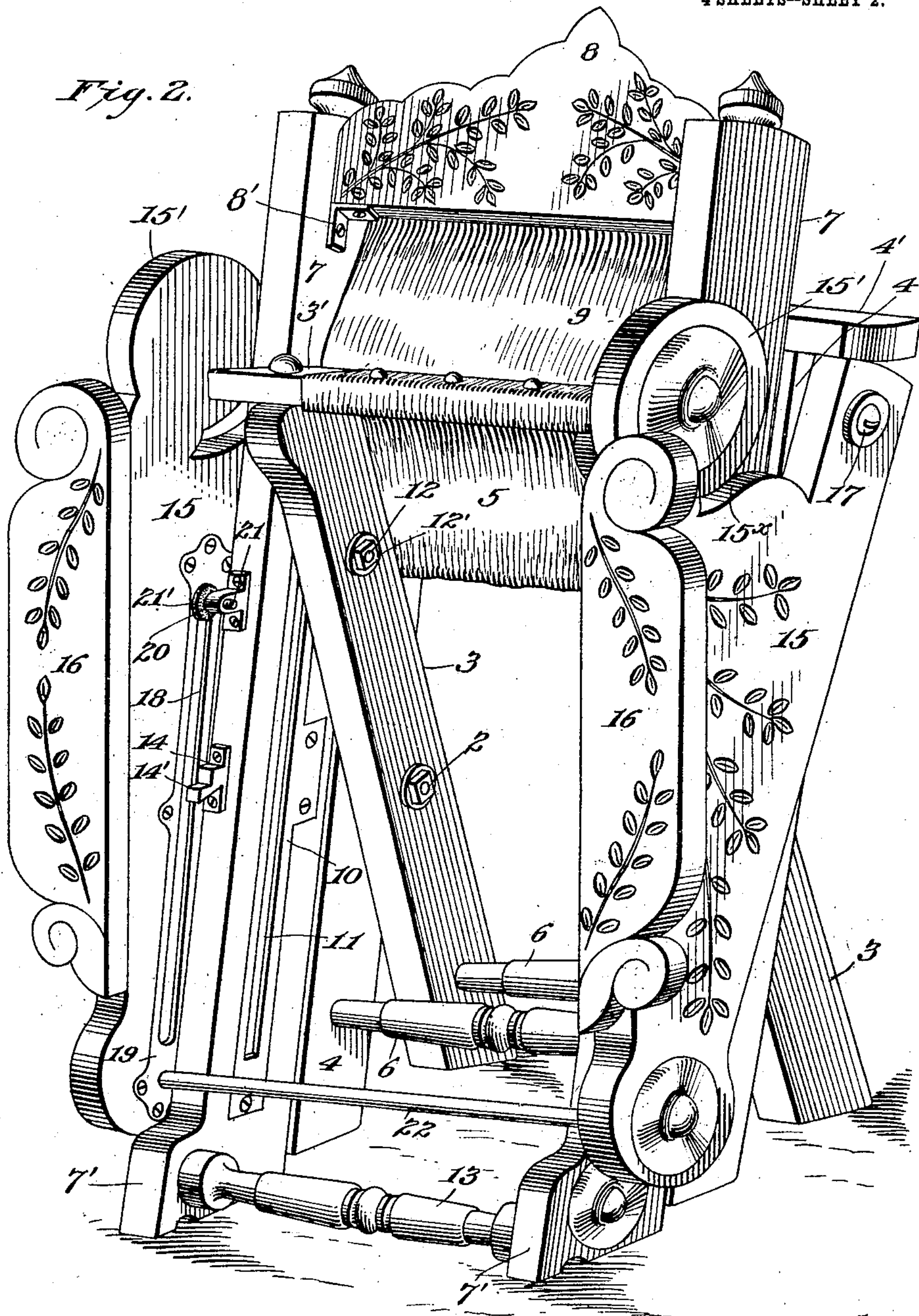
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4 SHEETS—SHEET 2.



Witnesses

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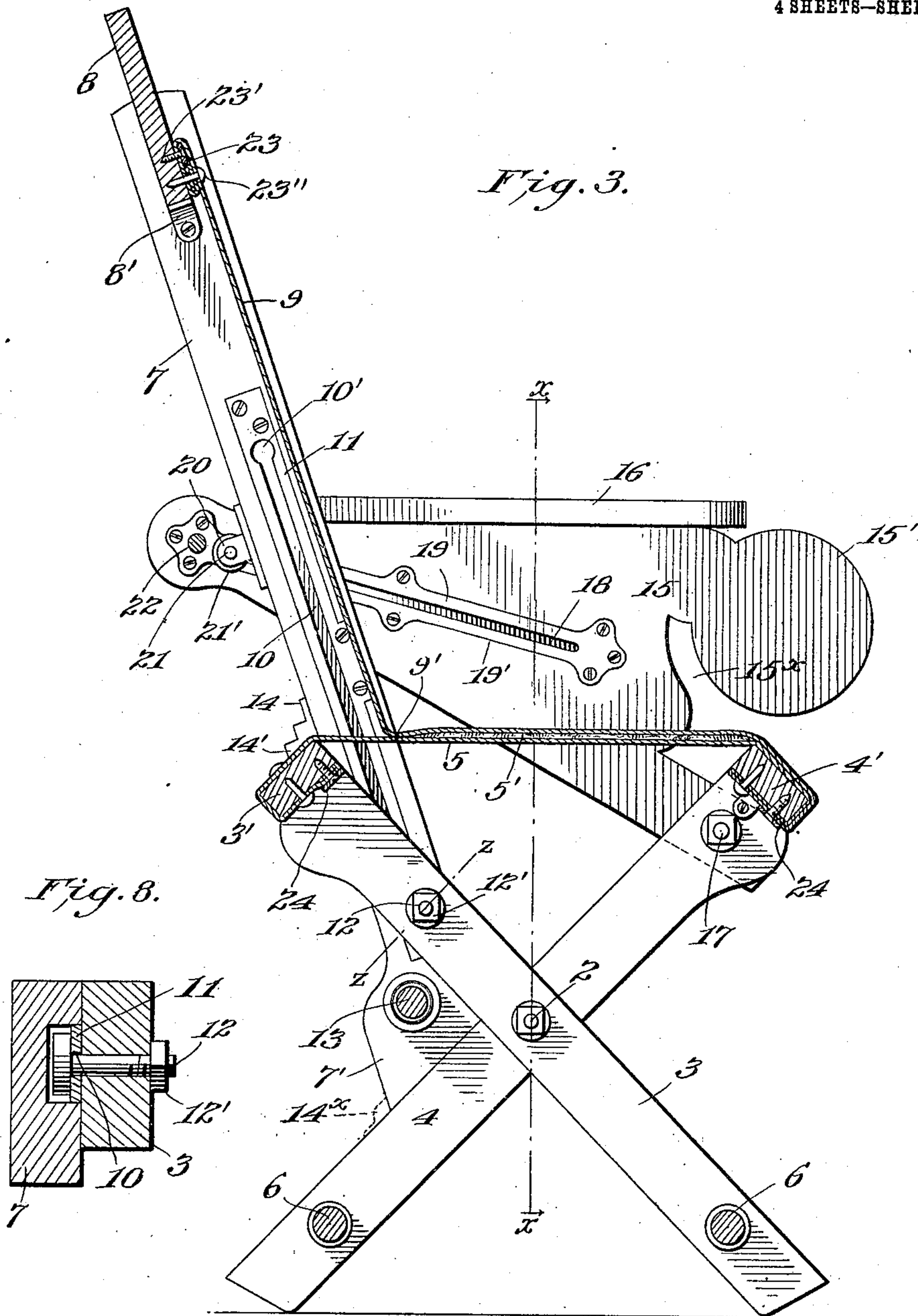
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4 SHEETS—SHEET 3.



Witnesses

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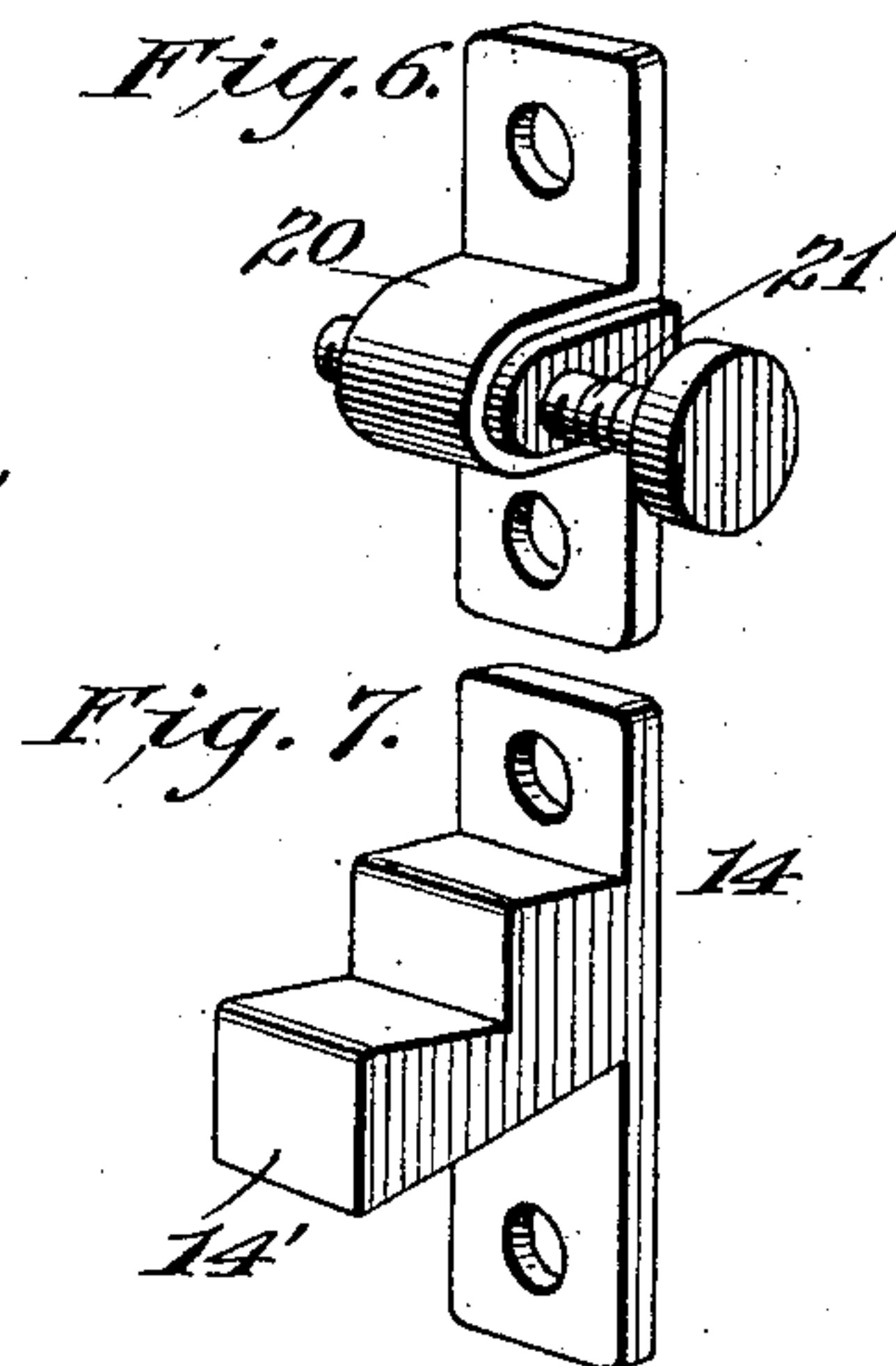
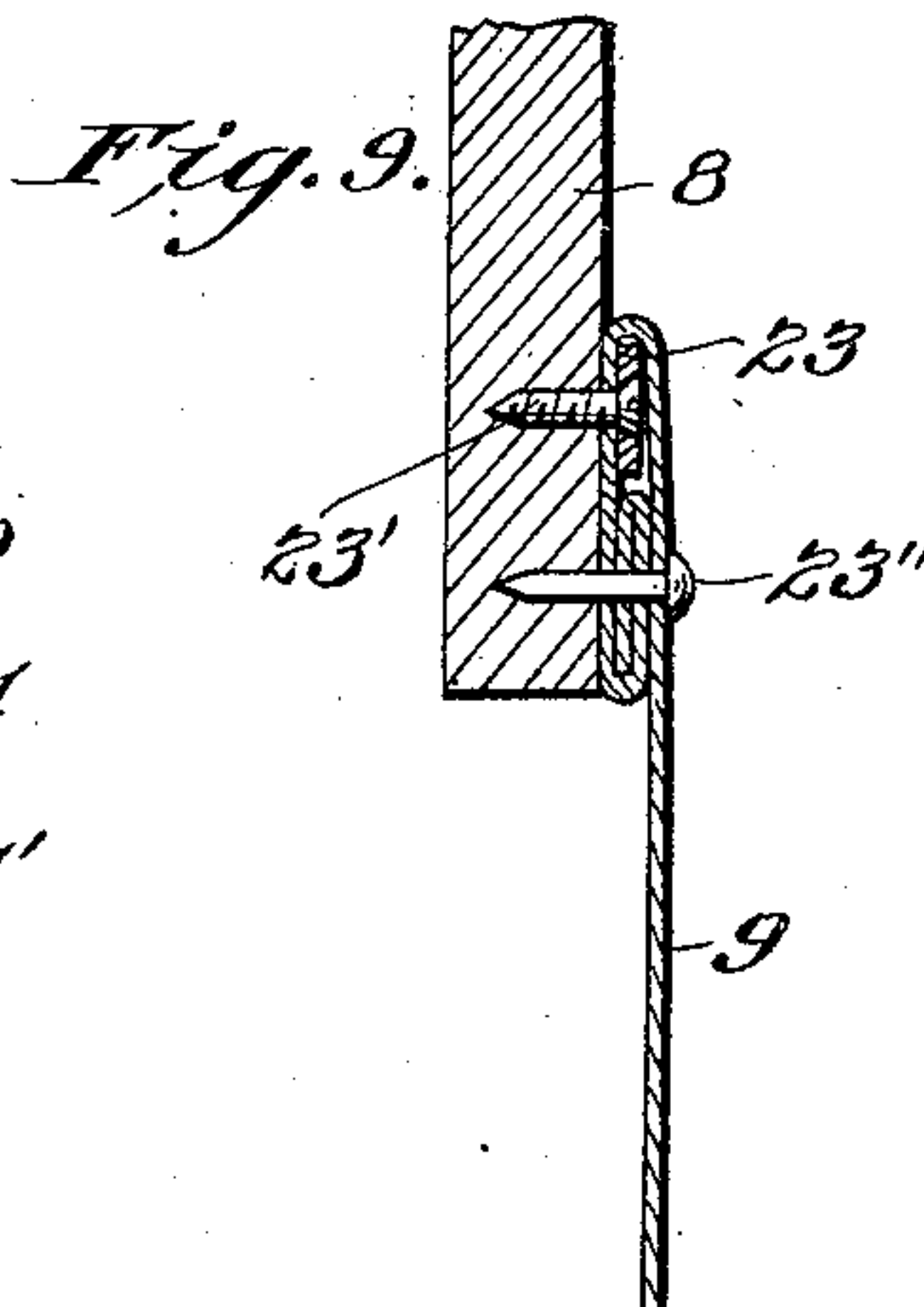
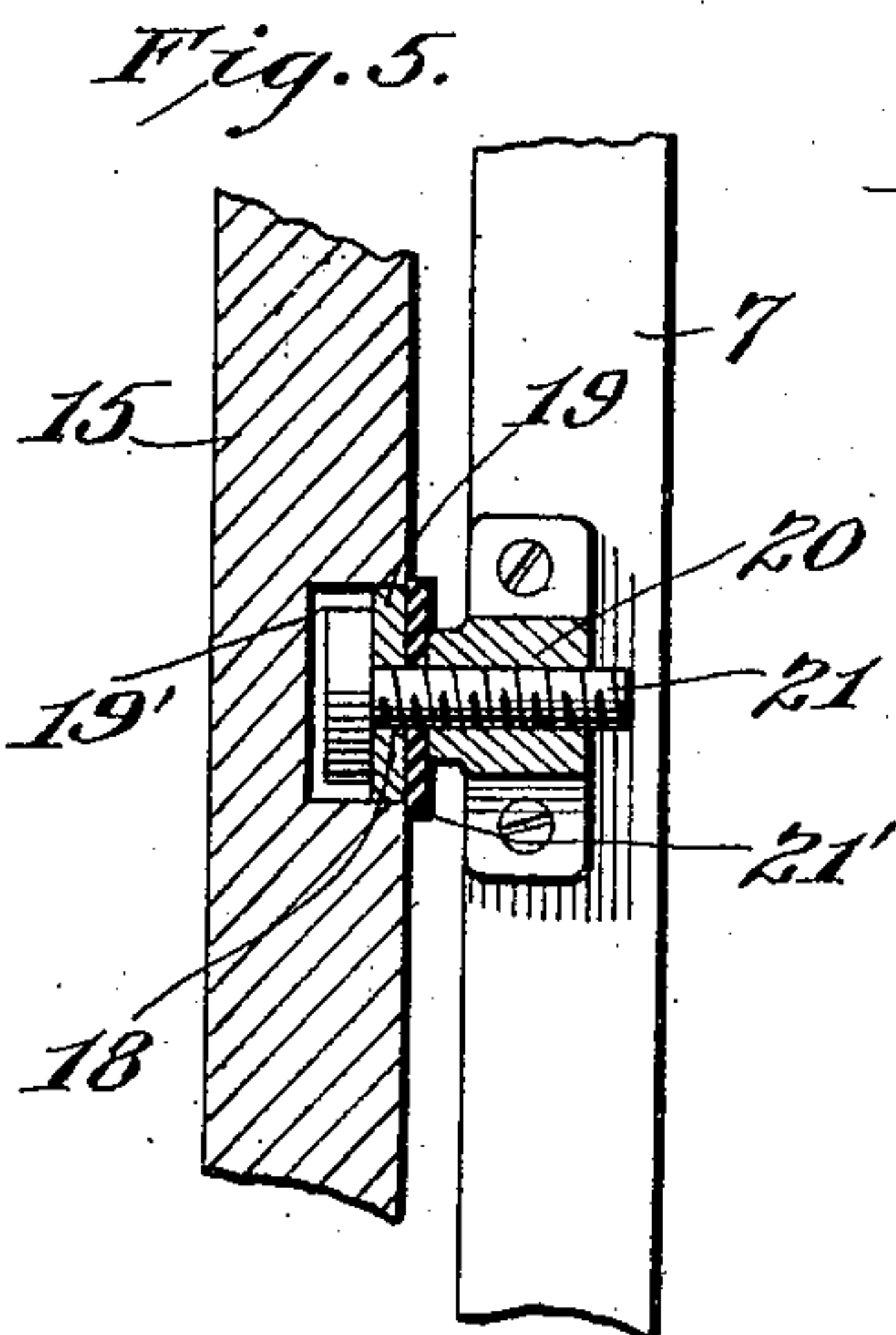
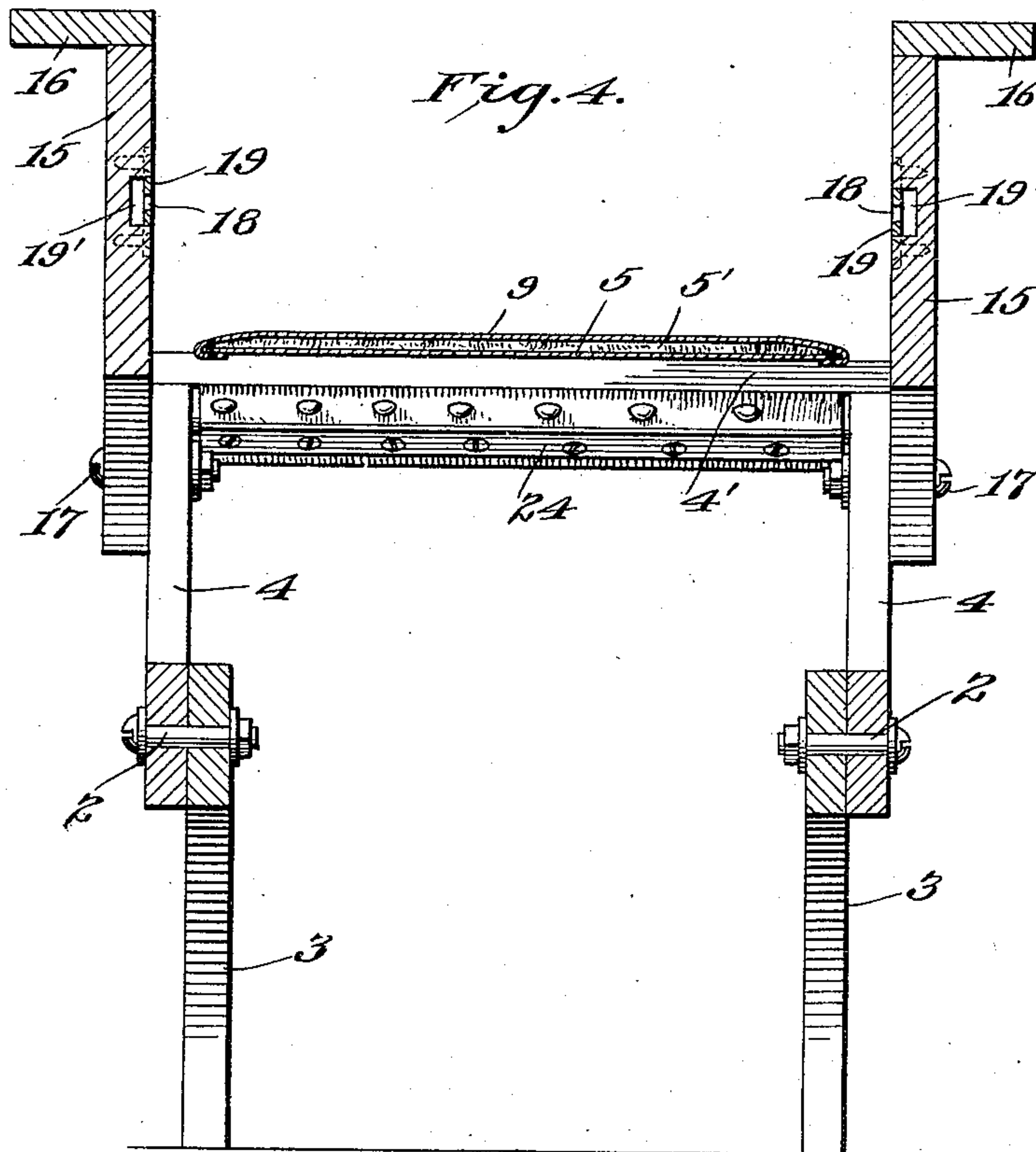
Attorney

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4 SHEETS—SHEET 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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FOLDING CHAIR.

No. 917,150.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed September 24, 1908. Serial No. 454,575.

To all whom it may concern:

Be it known that I, JAMES P. REINHART, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Folding Chairs, of which the following is a specification.

My invention relates to folding chairs, and its main object is to provide a chair of this nature which shall not only be foldable, but which can stand alone when folded without any necessity of the chair being leaned back against the wall or other support.

Another object is to provide a chair which when folded shall be decreased in height as well as in depth.

Another object is to provide a folding chair with arms which when the chair is collapsed shall have a vertical position in line with the other elements of the chair.

A still further object is to so construct such a folding chair that it shall have a maximum of rigidity when unfolded and that the parts shall be locked in this unfolded position in such manner that the greater the strain placed upon the chair the better its several parts are supported and bound together.

A still further object is to distribute more equally the strain upon the seat and back webbing, and to permit both the seat and back to be made of one piece of material.

These objects are attained by giving the back frame of the chair a sliding and pivotal engagement with the legs; by giving the arms a sliding and pivotal engagement with the back frame; by so constructing the back frame that when the chair is collapsed the frame shall move downward until its lower end rests upon the floor; thus providing an additional pair of legs to support the chair and an extended base; and by the arrangement of parts and details of construction set forth in the following specification, illustrated in the accompanying drawings and specifically stated in the claims appended.

In the drawings Figure 1, is a perspective rear view of the chair opened. Fig. 2, is a perspective rear view of the chair folded. Fig. 3, is a vertical section of the chair in a plane from front to rear. Fig. 4, is a transverse section on line $x-x$ Fig. 3. Fig. 5, is a detail, partly sectional showing the connection between the arm and the side piece of the chair back. Fig. 6, is a detail perspective of the guide pin and bracket. Fig. 7, is

a detail perspective of one of the stops. Fig. 8, is a detail section on line $z-z$ of Fig. 3, and Fig. 9, is a detail section showing the manner in which the back web is attached to the back cross piece.

Like reference characters throughout the several views designate like parts.

3—3 designates one pair of legs, and 4—4 designates the other pair of legs. These are crossed and pivoted to each other at their intersection by the pivot bolts 2 after the manner of the usual folding chair or stool. The upper end of each pair of legs is connected by the cross bars 3', 4', which are attached rigidly to the upper ends of the pairs of legs and project out on each side beyond the legs. To these cross bars 3', 4' the canvas or webbing 5 forming the under side of the seat is attached in a manner which will be later described. Each pair of legs is also connected at their lower ends by braces 6—6 as usual in chairs.

The back frame consists of the two longitudinal side bars 7—7 and the upper and lower cross bars 8 and 13, the cross bars 8 being additionally supported by brackets 8'. This frame is of the same width as the pair of legs 4 and is therefore wider than the pair of legs 3. To the cross bar 8 the back canvas or web 9 is attached. It is to be noted that at its lower end it is attached to the web 5, and that it is not attached directly to the rear cross bar 4' as usual in these constructions.

In order to connect the back frame with the legs, I form the inside faces of the two side bars 7 with longitudinal guide slots 10 formed in a guide plate 11 set in the recess in the inside face of each side bar flush with the face of the side bar as shown in the section Fig. 8.

The enlarged head of a bolt 12 enters this guide slot 10, the body of the bolt passing through the upper end of the leg 3 and carrying the nut 12'. This construction is of course the same for both legs and both side bars. The guide slots 10 extend from the lower end of the side bars 7 upward about two-thirds the length of said bars. One end of the slot 10 may be enlarged as at 10' to form a key opening through which the head of the bolt 12 may be inserted when the parts are assembled.

The lower ends of the side bars 7 are widened as at 7', and the bottom edge of each bar instead of being cut squarely across

is upwardly and inwardly inclined so as to fit against the edge of the adjacent leg 4 when the chair is open and to have a good bearing on said leg. The ends of the side bars might
5 be provided with rubber pads if desired to protect the legs from wear. The enlarged end also somewhat extends the base of the chair when it is folded, and thus provides for a steadier support upon the floor. A
10 brace or transverse rail 13 connects the lower ends of the side bars, holding them together and preventing their spreading.

Attached to the rear edges of the side bars 7 are stops 14 one on each side bar. These
15 are shown in detail in Fig. 7. These are formed of castings and comprise a base adapted to be attached to the bar 7 by screws and a downwardly and outwardly projecting hook-like lug 14' having a flat
20 under face adapted to engage over the edge of the cross bar 3' when the chair is open. In the position shown in Figs. 1 and 3, the face of the cross bar is inclined and hence the necessity of downwardly inclining the
25 lugs 14'. The stops 14 not only largely support the back frame, but by reason of their peculiar shape lock the back and prevent it from being thrown forward or accidentally moved forward unless the back is lifted so
30 that the lugs 14' may escape the cross bar 3'. In addition, by virtue of the wedge like action of the lug 14' against the cross bar, the greater the weight placed upon the seat of the chair and the pressure exerted upon
35 the back, the more solidly will the lugs engage with the cross bar and the more firmly will the elements of the chair be held or bound together. Further, the hook-like form of the stops in conjunction with the
40 side bars and the arms, acts to prevent further spreading of the legs 3 and 4 and to take strain from the canvas seat. As an additional means of preventing any slipping of the parts when the chair is opened, I may
45 provide the stops 14^x shown in dotted lines against which the lower ends of the back frame bear and are supported. It is also to be noted that the rear edge of the cross bar 3' is cut away at its ends as at 3^x to form end
50 scarfs into which the side pieces of the back frame fit. By this means the side bars of the back frame are held against inward strain and rigidly braced apart.

In order to permit the chair to be folded up
55 into the smallest compass, it is necessary that the arms shall fold into parallelism with the legs, and to this end I pivot the forward ends of each arm to the upper end of its respective leg 4 and provide means whereby the
60 rear end shall have sliding engagement with the side bars 7. In detail the arms consist of triangularly shaped pieces 15, the wide ends of which are toward the front so that while pivoted to the upper ends of the legs 4
65 and connected to the bars 7 above the upper

ends of the legs 3, yet the upper edge of the arms 15 shall be practically horizontal. The upper edges of the arms 15 are preferably provided with the arm rests 16 attached thereto in any desired way. These provide
70 a wider supporting face than would be provided by the edges of the arms 15 alone, the arms 15 being pivoted to the legs 4 below the projecting ends of the cross pieces 4', it is
75 necessary to cut out the forward end of each arm as at 15^x, thus providing in addition the ornamental finial 15'. Bolts 17 form the pivotal connection of the arms 15 to the legs 4. The inside face of each arm is longitudinally
80 slotted as at 18, this slot being midway between the upper and lower edge of the arm. Preferably the slot is formed in a guide plate 19 set in a recess 19' in the inner face of the arm, and held therein by screws in the same
85 manner as the guide plate 11.

Attached to the rear edges of the side bars 7 are the brackets 20. Into these brackets are screwed the headed screws 21 whose heads are of course larger than the slot 18 and
90 move in the space behind the plate 19, the shank of the screw projecting out through the slot and into the bracket.

21' designates a rubber washer between the face of the plate 19 and the bracket 20. The extreme rear ends of the arms 15 are con-
95 nected by a tie rod 22 which is attached at its ends to the guide plate 19 whereby the rear ends of the arms are tied rigidly together.

Referring again to the webbing 5 and the webbing 9 which together form the seat and
100 back, it will be seen from Fig. 3 that the webbing 5 extends from the cross bar 3' to the cross bar 4', and that the webbing 9 extends from the cross bar 8 downwardly and slightly forward to the webbing 5, is sewed
105 thereto at 9' and then extends forward and is attached to the cross bar 4'. The two webs 5 and 9 are stitched together along their side edges and the interspace filled with padding 5', thus not only is the strength of the seat
110 greater and the strain more evenly distributed by reason of the two webs, but the chair is rendered much more comfortable. While for convenience I refer to 5 and 9 as two separate webs, they are really only one single
115 length of material, which is attached at one end to the rear cross bar 3', then brought forward and attached to the front cross bar 4', then returned on itself to the point 9' when it is carried upward and attached to the cross
120 bar 8.

The webbing 9 at its upper end is preferably attached to the face of the cross bar 8 by a concealed metal bar 23 over which the
125 upper end of the webbing is folded. This bar is held to the cross bar 8 by screws 23' which pass through the bar and the inner fold of the webbing. The webbing is brought down over the face of the bar 23 and is preferably glued closely to the wood or held
130

neatly thereto by the small nails 23". In order to hold the canvas to the cross bars 3', 4' the canvas is folded around said bars and held to the underside thereof by metal strips or bars 24 which are attached to the cross bars by screws.

The operation of my device is as follows. From its closed position shown in Fig. 2 the chair may be opened by drawing apart the upper ends of the legs 3 and 4 and then lifting the back upward, at the same time turning it on its pivotal connections 12 until the stops 14 engage over the crossbar 3'. In this position the weight of the back and part of the weight of the body is supported by the stops 14, and by the bearing which the lower ends of the side bars of the back frame have on the legs 4. This arrangement has a further and very important advantage in that the greater the weight on the chair seat the more closely and firmly are the elements of the chair held together. So perfect is the manner in which the elements of my chair coact that it is entirely firm under all usual strains and cannot fold up under the weight of an occupant. In order to fold the chair it is only necessary to lift the back until the stops 14 are free from engagement with the rear cross bar, whereupon the back may be moved downward, and the legs at the same time collapsed to the position shown in Fig. 1. This downward movement of the back frame of course moves the pins 21 downward in the slots 18, thus turning the arms upon their pivotal attachment to the upper ends of the legs 4 and bringing the rear ends of the arm downward in the position shown in Fig. 1. Under these circumstances the chair will stand without the necessity of leaning it against the wall. It is perfectly firm, compact and can be easily opened out or closed by the movements described above.

While I have shown what I deem to be the preferable features of my construction, I do not wish to be limited thereto, as it is obvious that the chair may be changed in detail in many different ways without departing in any manner from the spirit of my invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A folding chair having crossed pairs of legs pivoted to each other at their intersection, and a back having a sliding and pivotal engagement with the legs which extend upward from front to rear, a cross bar secured to the upper ends of said last mentioned legs, lugs on the back supporting the back on said cross bar, means for preventing any forward movement of the lower end of the back, and a rigid connection pivoted to the forward upwardly extending legs at their upper ends and connected to said back.

2. A folding chair having crossed pairs of

legs pivoted to each other at their intersection, the legs which extend downward from the rear to the front being located within the other pair of legs, a cross bar connected to the upper ends of said inner pair of legs, a back having a sliding and pivotal engagement with said inner pair of legs, lugs on the back supporting said back on said cross bar, the lower ends of said back being adapted to rest against and be supported on the rearwardly and downwardly inclined faces of the outer legs.

3. A folding chair having crossed pairs of legs pivoted to each other at their intersection, the upper ends of each pair of legs being connected by cross pieces, the legs which extend downwardly from the rear to the front being arranged within the other pair of legs, a back frame having two side pieces having sliding and pivotal engagement with said inner pair of legs, the back being provided with stop lugs on its rear faces adapted to engage over the cross pieces of the inner pair of legs when the chair is open, said side pieces of the back adapted to contact at their lower ends with and be supported on the rearwardly and downwardly inclined faces of the outer legs when the chair is open.

4. A folding chair having crossed pairs of legs pivoted to each other at their intersection, the upper ends of each pair of legs being connected by cross pieces, the legs which extend downwardly from the rear to the front being arranged within the other pair of legs, a back frame having two side pieces in the same plane as the two outer legs and having a sliding and pivotal engagement with said inner pair of legs, said back frame being provided with stop lugs adapted to engage over the cross pieces of the inner legs when the chair is open, the side pieces of said back frame being adapted to rest at their lower ends on the rearwardly and downwardly inclined faces of the outer legs when the chair is open, and to engage with the floor when the chair is closed.

5. A folding chair having crossed pairs of legs pivoted to each other at their intersection, the upper ends of each pair of legs being connected by cross pieces, the legs which extend downwardly from the rear to the front being arranged within the other pair of legs, a back frame having two side pieces longitudinally slotted on their inside faces, a pin connected to said inner pair of legs projecting into the slots of the side pieces, and stop lugs on the back frame adapted to engage over the cross bar of the inner pair of legs when the back is raised, the lower ends of the said side pieces being adapted to engage with the upper faces of the legs when the chair is open, and to bear against the floor when the chair is closed.

6. A folding chair having crossed pairs of legs pivoted to each other at their intersec-

tion, the upper ends of which are connected by cross pieces, the legs which extend downwardly from the rear to the front being located within the other pair of legs, a back frame having two side pieces having a sliding and pivotal engagement with said inner pair of legs, stop lugs projecting therefrom and adapted to engage over the cross pieces of the inner pair of legs when the chair is open, the lower ends of said frame adapted to have engagement with the inclined outer legs, webbing connecting the back frame with the front cross piece, and arms pivoted to the upper ends of the outer legs, said arms being longitudinally slotted and pins mounted on the side pieces of the back frame projecting into said slots.

7. A folding chair having crossed pairs of legs pivoted to each other at their intersection, the upper ends of each pair of legs being connected by cross pieces, the legs which extend downward from the rear to the front being located within the other pair of legs, a back frame having two side pieces and upper and lower cross pieces, said side pieces being longitudinally recessed, longitudinally slotted guide plates secured over said recesses, bolts projecting through the inner legs into said recesses and sliding therein, outwardly and downwardly projecting stop lugs mounted on the side pieces of the back frame adapted to engage over the cross pieces of the inner legs when the back is raised, webbing connecting the two cross pieces, webbing extending downward from the upper cross piece of the back frame to the front cross piece, arms pivoted at their forward ends to the upper ends of the outer legs, said arms being longitudinally recessed, slotted guide

plates secured in said recesses, laterally projecting pins mounted on the side pieces of the back frame and projecting into said slots, and a tie bar connecting the rear ends of said arms, the side pieces of the back frame being adapted when the chair is folded to rest upon the floor and when the back frame is raised to rest against the upper edges of the outer legs.

8. A folding chair having crossed pairs of legs pivoted to each other at their intersection, the upper ends of each pair of legs being connected by cross pieces, the legs which extend downward from the rear to the front being located within the other pair of legs, a back frame having two side pieces which are in the same plane as the two outer legs, said side pieces having a sliding and pivotal engagement with the inner pair of legs, stop lugs projecting from the side pieces about midway of their length and adapted to engage over the cross bar of the inner pair of legs when the chair is open, and arms having pivotal engagement with the upper ends of the outer pairs of legs and pivotal sliding engagement with the side pieces of the back frame, said side pieces being extended downward and widened to form feet, these feet having an inclined bottom edge adapted to engage with the inclined upper edge of the outer legs when the chair is open and to contact with the floor when the chair is closed.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES P. REINHART.

Witnesses:

W. S. BOGART,

R. H. KRENKEL.