

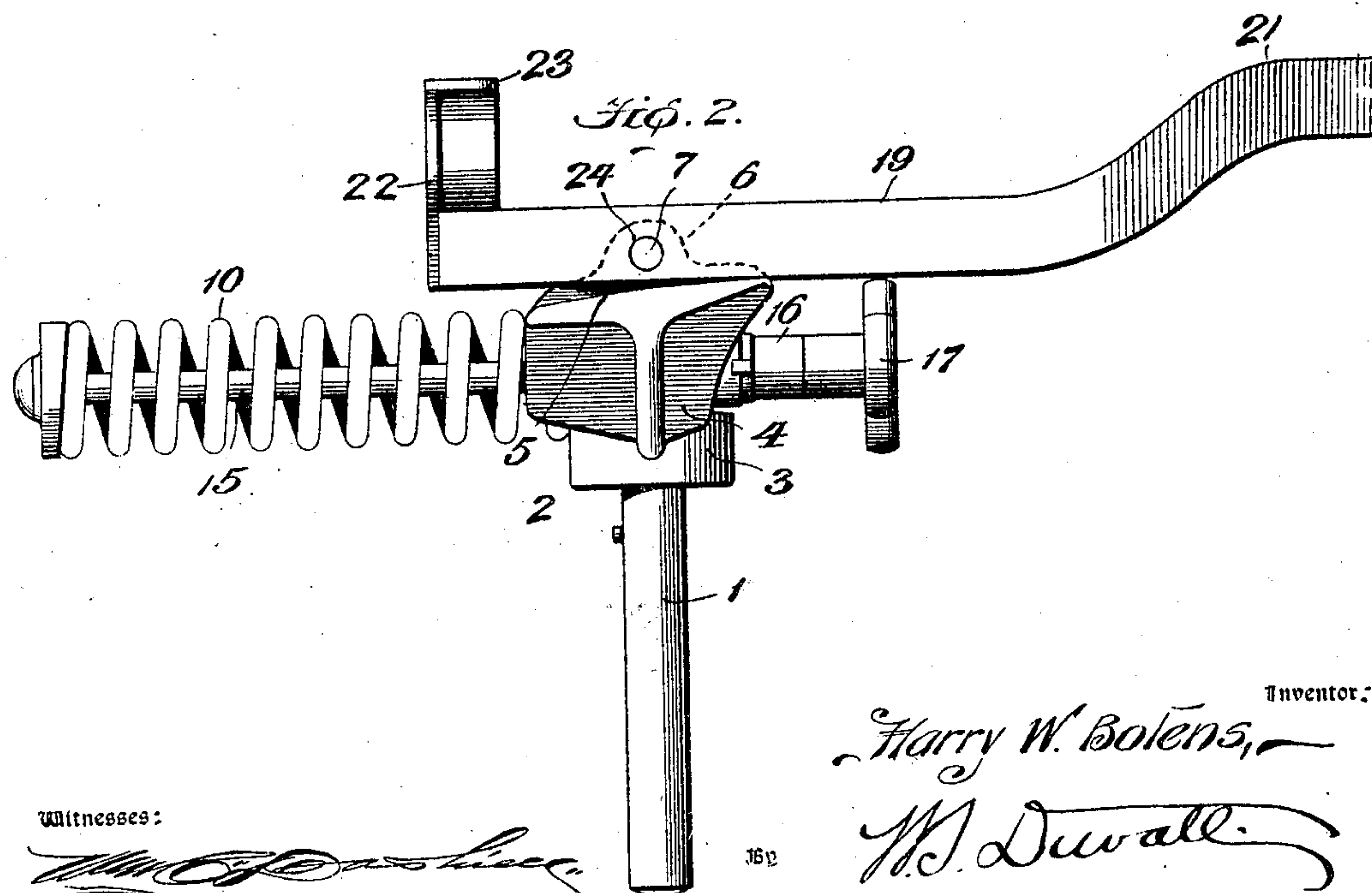
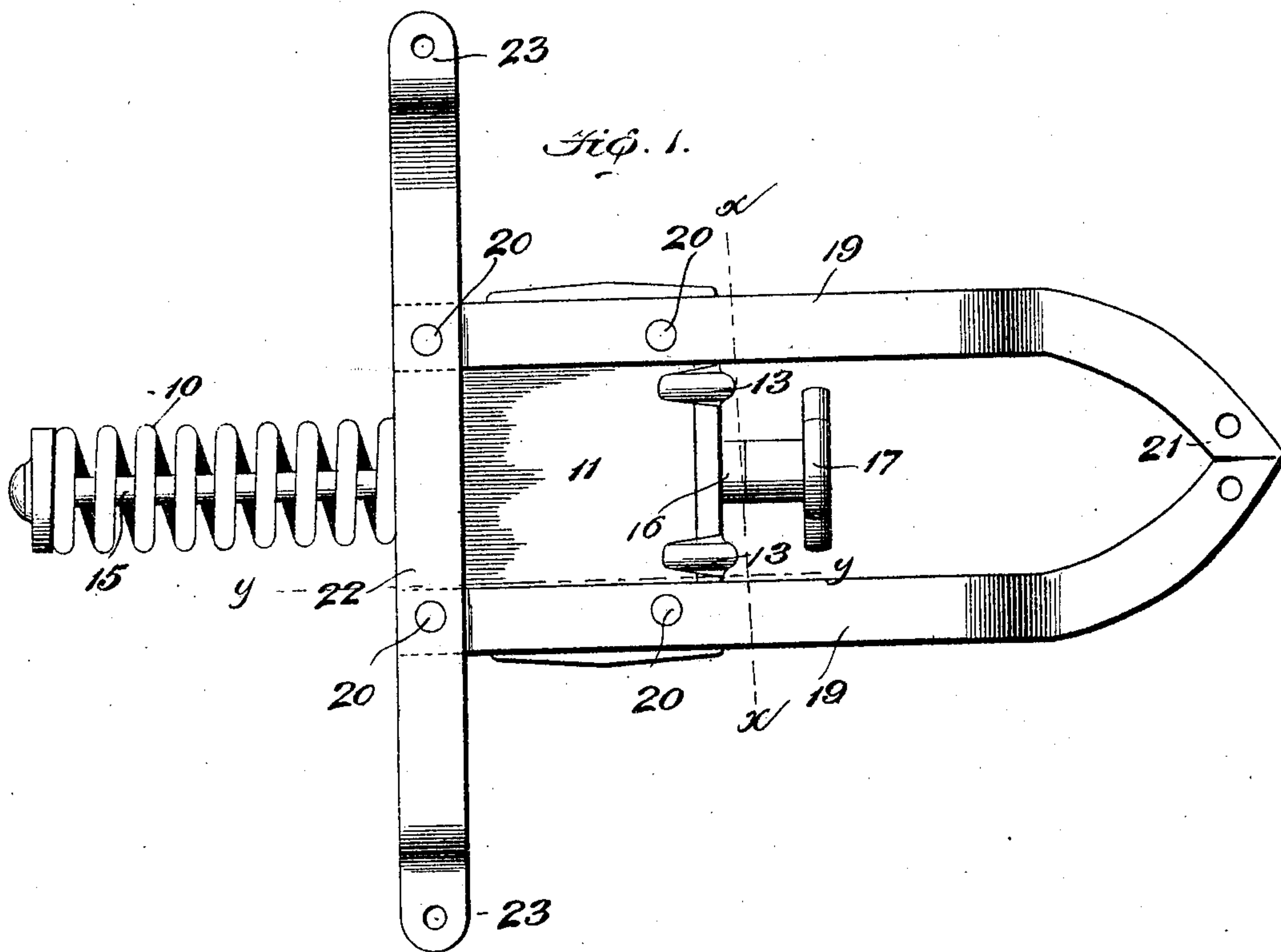
No. 802,963.

PATENTED OCT. 31, 1905.

H. W. BOLENS.  
CHAIR IRON.

APPLICATION FILED DEC. 10, 1904

2 SHEETS—SHEET 1.



**Witnesses:**

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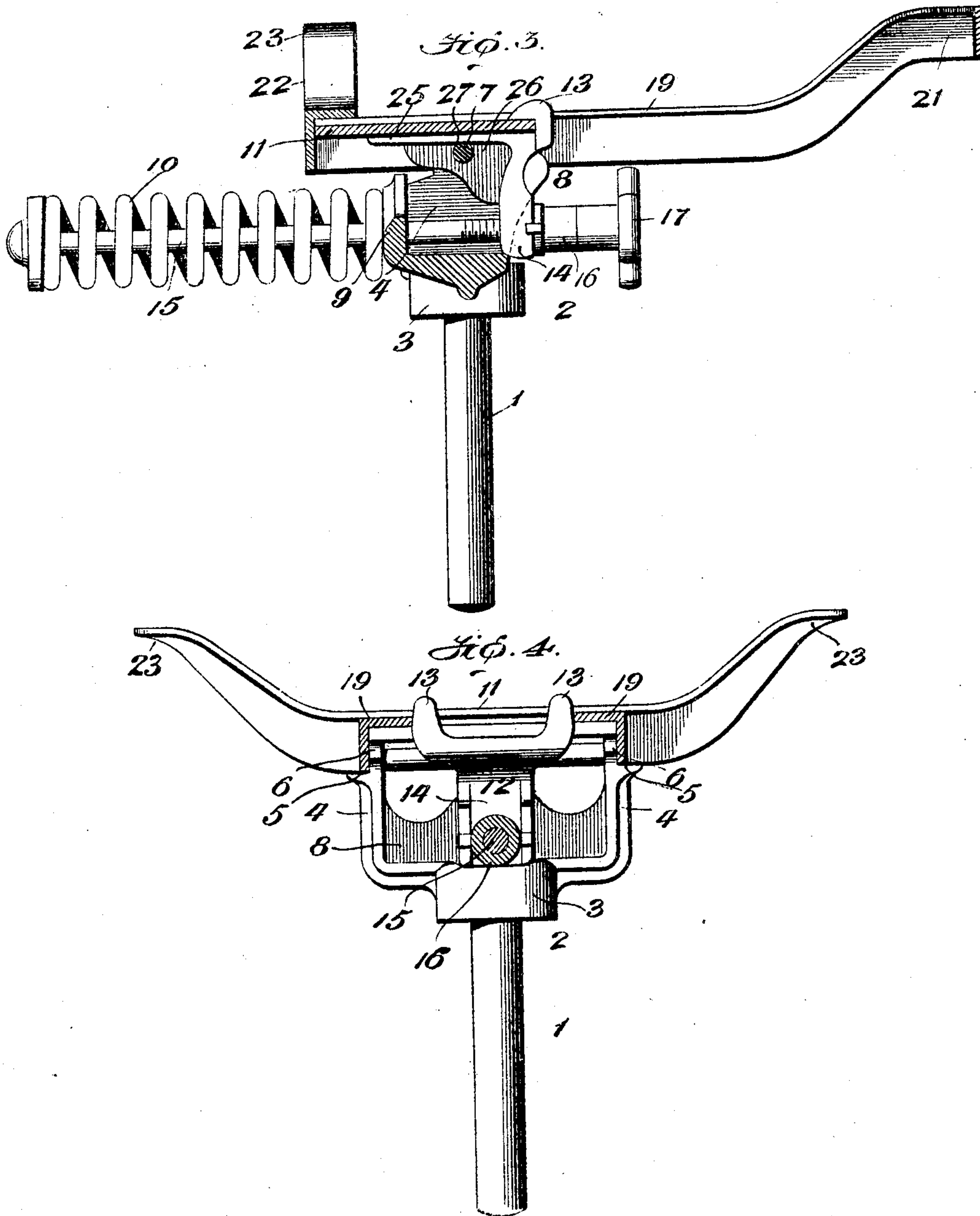
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Inventor:

Harry W. Bolens,

Witnesses:

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# UNITED STATES PATENT OFFICE.

HARRY W. BOLENS, OF PORT WASHINGTON, WISCONSIN.

## CHAIR-IRON.

No. 802,963.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed December 10, 1904. Serial No. 236,287.

*To all whom it may concern:*

Be it known that I, HARRY W. BOLENS, a citizen of the United States, residing at Port Washington, in the county of Ozaukee and State of Wisconsin, have invented a Chair-Iron, of which the following is a specification.

This invention relates to improvements in chair-irons or spiders employed in tilting and revolving chairs, the general objects in view being to strengthen, cheapen, and minimize the number of parts comprising the same.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a top plan view of a chair-iron or spider embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal vertical sectional view on the line *xx* of Fig. 1. Fig. 4 is a transverse vertical sectional view on the line *yy* of Fig. 1.

Like numerals of reference indicate like parts throughout the drawings.

The spindle 1 may be mounted upon any suitable form or style of vertical adjustment, and the spindle supports at its upper end a yoke 2, preferably formed of cast metal. This yoke is of general U shape, comprising the central boss or hub 3, which receives the spindle and the upwardly-disposed sides or arms 4 for supporting the spreader-plate. At their upper ends the sides or arms 4 are recessed transversely at their outer sides for a portion of their length to form stop-shoulders 5, which preferably decline from their front toward their rear ends. The unrecessed portions of the upper ends of the sides or arms 4 constitute bearing-standards 6, the same having alining perforations designed to accommodate a transverse pintle 7 for pivotally supporting the spreader-plate, as will hereinafter appear. At their rear the sides or arms 4 may be connected and strengthened by a transverse integral web 8, at the center of which is formed a hub 9, constituting the bearing for the inner end of the tension-spring 10. Of course should it be desired to employ duplicate tension-springs the web would be formed accordingly.

The horizontal spreader-plate 11 is preferably rectangular in shape and formed of sheet metal, said plate substantially agreeing in width with the yoke 2. Depending from the front edge of the spreader-plate is a cast-metal bridge-piece 12, the same preferably

having its upper end widened and bifurcated to form spreader-plate-engaging arms or fingers 13. As will be understood, these engaging arms or fingers are angular at their inner sides, so as to conform to the front edge of the spreader-plate and overlap the same at each side of the center. The bridge-piece further comprises a front depending notched and bifurcated apron 14, through which and the bearing-hub 9 and tension-spring 10 passes the usual tension screw or rod 15. Upon the front end of the rod is the usual nut and adjusting-wheel 16 and 17, respectively.

Any well-known style of spider-arms may be mounted upon and secured to the spreader-plate; but I prefer the "three-contact" style herein shown. The two longitudinal or forwardly-projecting arms 19 are preferably formed integral and of angle-steel, the angular flanges of the arms fitting neatly over the opposite sides or edges of the spreader-plate at each side of the engaging fingers 13 and being connected to said plate by rivets 20. In constructing the spider-arm frame I prefer to take a blank of angle-steel of suitable length and sever on converging lines—one at each side of the center—the upper or horizontal flange forming a V-shaped or angular notch. The two terminals thus formed are then bent inwardly or toward each other and in parallelism for the major portion of their length, whereby the edges of the V-shaped or angular notch are brought substantially in contact and the notch substantially closed. The bent or front end of the frame is slightly upwardly disposed, as at 21, to form a contact-point, and also provided with suitable screw-holes. Of course this operation is merely a suggestion and may or may not be followed. So, also, may the contour of the spider-arm frame be varied from the exact form herein shown. The rear ends of the arms 19 are flush with the rear edge of the spreader-plate, and surmounting the arms and the plate at the rear edge of the latter is the rear transverse spider-arm 22. This transverse arm is also preferably formed of angle-steel, and the rivets 20 employed at the rear ends of the arms 19 also pass through the arm 22, whereby the latter is secured to position. The opposite terminals of this rear arm are raised to the same plane as the front portion of the arms 19, so as to form the remaining two contact ends 23, which are perforated for the usual screws. The outer or vertical flanges of the opposite arms 19 are



formed with bearing-openings 24 in transverse alinement and receive the outer ends of the pintle 7, whereby the spreader becomes pivotally mounted upon the yoke. The parts  
 5 are so proportioned and arranged that the lower edges of the vertical flanges of the two arms 19 contact with the front ends of the opposite stop-shoulders 5 when the chair is horizontal or in its normal position and under  
 10 the spring-tension, so that these stop-shoulders arrest the further forward movement of the spreader, and, on the other hand, when the chair is tilted or rocked to the rear the stop-shoulders being inclined will permit of  
 15 all reasonable and desirable tilt of the chair against the tension of the spring and until such movement is arrested by the said flanges of the arms 19 coming in contact with the rear portions of the inclined stop-shoulders 5.

20 In order to render the bridge-piece exceedingly strong and reduce the chance of breakage to a minimum, I may strengthen this much-strained part by securely bracing the same by means of a rearwardly-disposed integral plate 25, which takes under the  
 25 spreader-plate 11 and is connected to the apron 14 of the bridge-piece by an intermediate integral web 26. The latter is preferably provided with a perforation 27 for the passage  
 30 of the pintle 7, so that the latter aids in retaining the bridge-piece upon the spreader-plate.

It will be observed that I have produced a most compact and exceedingly strong chair-  
 35 iron or spider, the same being formed of very few parts of a combination of cast-iron and sheet metal, the whole structure being rigid and exceedingly simple, while lending a maximum amount of comfort.

40 In constructing the spider-arm frame 19 I prefer to take a blank of angle-iron of suitable length and sever on converging lines, one at each side of the center, the upper or horizontal flange forming a V-shaped notch.  
 45 The two terminals or spider-arms are then brought toward each other and the meeting edges made to substantially contact. This constitutes a convenient mode of bending.

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

1. The combination, in a chair-iron, of a spreader-plate, a pivotal supporting means therefor, a substantially U-shaped spider-arm frame formed of angle-iron having its  
 55 central portion shaped to form a point of contact and perforated to receive attaching-screws, and its opposite terminals constituting spider-arms secured upon the spreader-plate, and a rear transverse spider-arm mounted  
 60 on the terminals of the U-shaped spider-arm frame and the spreader-plate and having its ends shaped to form opposite contacts and perforated to receive attaching-screws.

65 2. The combination, in a chair-iron, of a

spreader-plate, a pivotal support therefor, a substantially U-shaped spider-arm frame formed of angle-iron having its central portion upwardly disposed to form a contact-point and perforated and its opposite terminals forming spider-arms and embracing the  
 70 opposite edges of the spreader-plate, a rear transverse spider-arm formed of angle-iron and mounted upon the terminals of the spider-arm frame and the rear end of the  
 75 spreader-plate, and rivets passing through the arms and plates.

3. The combination, in a chair-iron, of a spreader-plate, opposite spider-arms formed of angle-iron embracing the opposite side  
 80 edges of said spreader-plate, a rear transverse spider-arm formed of angle-iron and embracing the rear edge of the spreader-plate and surmounting the rear terminals of the spider-arms, and rivets passed through the  
 85 two sets of spider-arms and the spreader-plate.

4. The combination, in a chair-iron, of a yoke having opposite stop-shoulders, a spreader-plate pivotally mounted on the  
 90 yoke, and spider-arms formed of angle-iron mounted on the spreader-plate and embracing the same, whereby the lower edges of the spider-arms are adapted to contact with said stop-shoulders and limit the pivotal move-  
 95 ment of the spreader-plate.

5. The combination, in a chair-iron, of a yoke, a spreader-plate pivotally supported therein, a bridge-piece engaging the front of  
 100 the spreader-plate and extending between the yoke-terminals and out of contact therewith, and a tension device carried by the bridge-piece.

6. The combination, in a chair-iron, of a yoke, a spreader-plate pivotally mounted  
 105 therein, a bridge-piece depending from the front edge of the spreader-plate and having an extension passed under and braced against the spreader-plate, and a tension device carried by the bridge-piece.  
 110

7. The combination, in a chair-iron, of a yoke, a sheet-metal spreader pivotally supported in the upper end thereof, a bridge-piece formed independent of the spreader  
 115 and comprising an upper widened engaging end taking over the edge of the spreader-plate, a depending apron out of contact with the yoke, a brace extending rearwardly and contacting with the spreader-plate and a tension device carried by the apron.  
 120

8. The combination, in a chair-iron, of a yoke, a spreader-plate pivotally mounted therein, a bridge-piece comprising a widened bifurcated upper end terminating in spreader-plate-engaging fingers, a depending apron, a  
 125 rearwardly-disposed plate passing under the spreader-plate, a bracing-web between the apron and plate, and a tension device carried by the apron.

9. The combination, in a chair-iron, of a 130



yoke, a spreader - plate pivotally mounted therein, a bridge-piece comprising a widened bifurcated upper end terminating in spreader-plate-engaging fingers, a depending apron, a rearwardly-disposed plate passing under and braced against the spreader-plate, and a tension device carried by the apron.

10. The combination, in a chair-iron, of a spreader - plate, means for supporting the same, and a spider-arm frame formed of angle-iron, said frame having a V-notch formed in its upper horizontal flange and its edges brought substantially in contact to form a point of contact, the terminals of the frame being secured to said spreader-plate.

11. In a chair-iron, the combination, with a spreader-plate and a yoke for supporting the same, of an apron bearing at its front end

against the front edge of the spreader plate and having its rear portion extended under and bearing against the spreader-plate, and a tension device carried by said apron.

12. In a chair-iron, the combination, with a spreader and a yoke for supporting the same, of an apron connected at its front end to the front of the spreader and having its rear portion extended under and bearing against the under side of the spreader, and a tension device carried by said apron.

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

HARRY W. BOLENS.

Witnesses:

W. S. DUVALL,  
H. S. BEALL.