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PATENTED MAR. 19, 1907.

H. W. BOLENS.  
CHAIR IRON,  
APPLICATION FILED NOV. 16, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

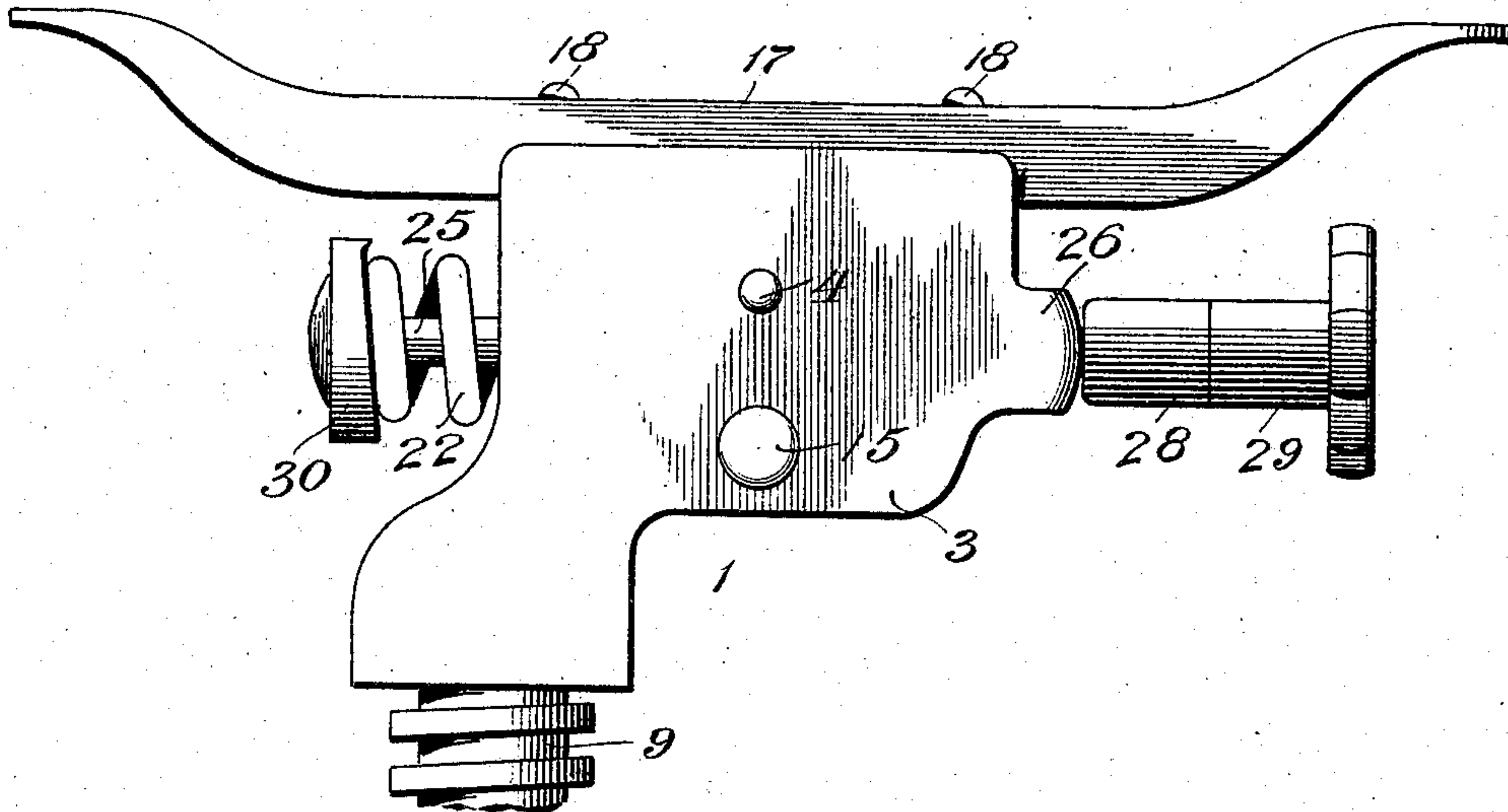
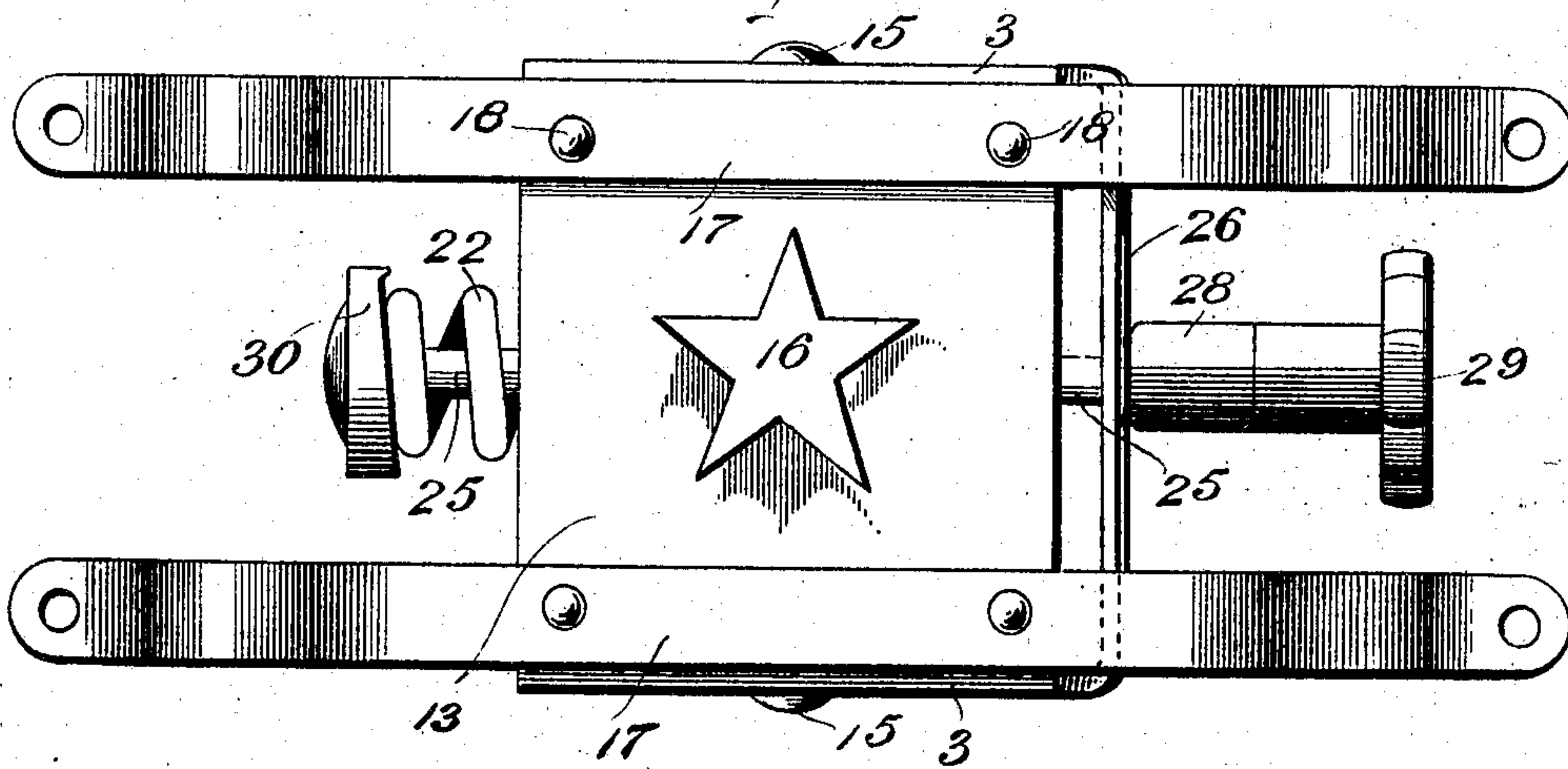


Fig. 2.



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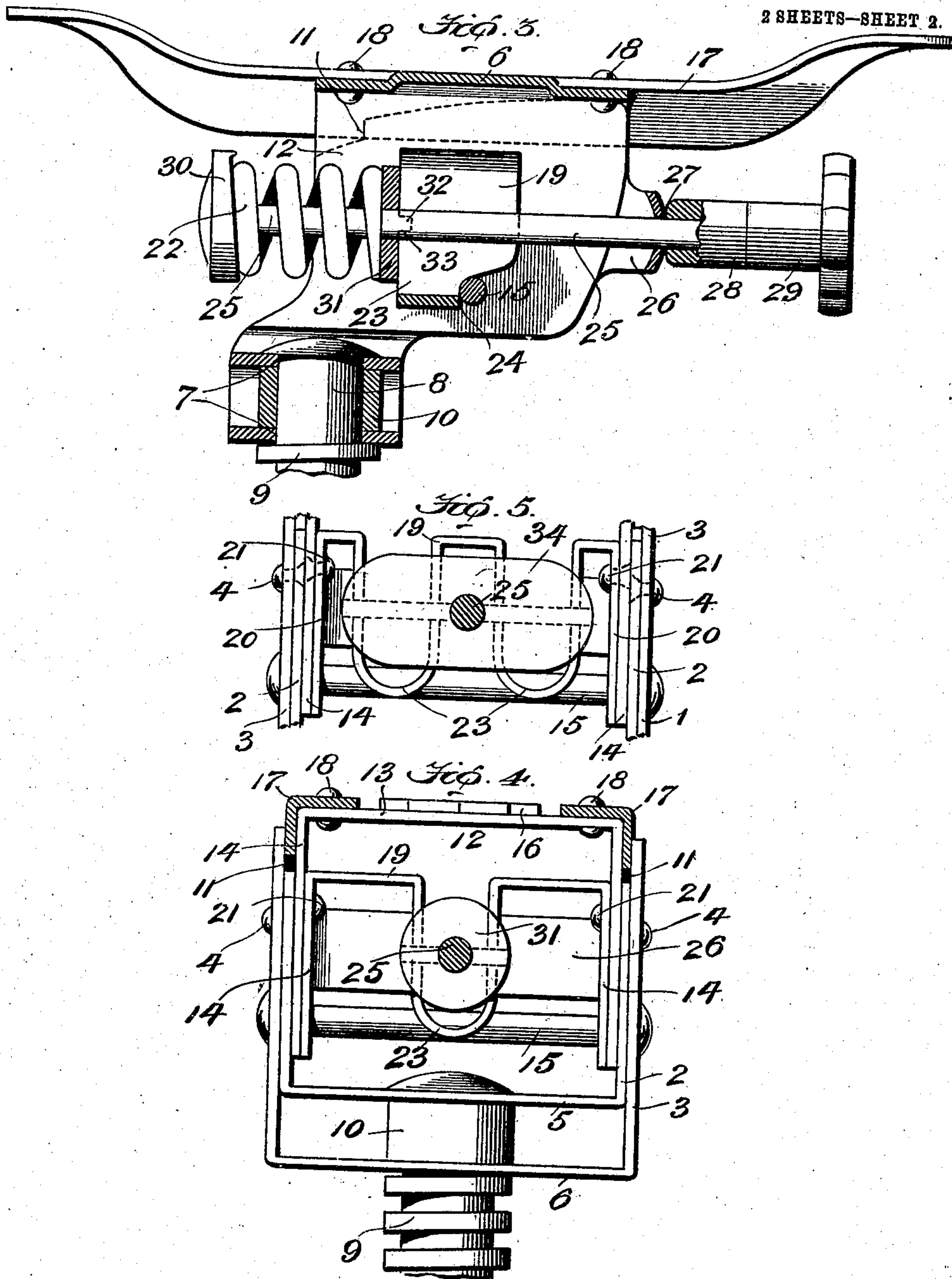
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2 SHEETS—SHEET 2.



Witnesses.

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# UNITED STATES PATENT OFFICE.

HARRY W. BOLENS, OF PORT WASHINGTON, WISCONSIN.

## CHAIR-IRON.

No. 847,979.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed November 15, 1905. Serial No. 287,442.

*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 certain Improvements in Chair-Irons, of which the following is a specification.

This invention relates to improvements in chair-irons, the principal objects in view being to construct a chair-iron of sheet metal or stamped steel, thereby securing lightness, and at the same time to embody in such construction such an arrangement and disposition of the parts as to secure extreme rigidity, strength, and durability.

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

Referring to the drawings, Figure 1 is a side elevation of a chair-iron embodying my invention. Fig. 2 is a top plan view of the same. Fig. 3 is a central longitudinal section of the improved chair-iron; Fig. 4, a rear elevation of the same, the spider-arms being shown in cross-section. Fig. 5 is a view of a portion of the chair-iron, similar to Fig. 4, but illustrating the same in connection with a pressure-plate designed for a double-spring arrangement.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I construct the yoke 1 of U shape and of sheet metal, and in order to do so I preferably employ an inner yoke-frame 2 and an outer yoke-frame 3, the latter inclosing the former and being riveted thereto, as at 4, near their upper ends. The lower horizontal cross-piece 5 of the inner yoke-frame 2 is spaced above the corresponding cross-piece 6 of the yoke-frame 3, and these two cross-pieces 5 and 6 are formed with vertically-alining openings 7, designed to receive the upper headed end 8 of the usual adjusting-screw or supporting-spindle 9. I may also employ in this connection a cylindrical spacing-collar 10, the same encircling the upper end of said screw or spindle and interposed between the cross-pieces 5 and 6 of the yoke-frames 2 and 3. The upper end of the inner yoke-frame 2 may occur below the corresponding end of the outer yoke-frame 3, and the edge of the former is preferably inclined from front to rear, as indicated in Fig. 3 by dotted lines, so as to produce a stop-shoulder 11, operating in a manner herein-

after described. Spacing the distance between the yoke thus formed is the spreader 12, which comprises the sheet-metal spreader plate 13 and the integral depending sides or ears 14, which take between the aforesaid yoke 1 and at their lower ends are pivoted to said yoke by means of a transverse pintle 15, whereby there is produced what is commonly known as a "low-fulcrum chair-iron." In order to stiffen the aforesaid spreader, I may stamp within the horizontal portion of the same a star-shaped or other figure 16, whereby I am enabled to employ reasonably light material in the construction.

Mounted upon the described spreader are the opposite spider-arms 17, which are preferably made of angle-iron, so as to coincide with the angular corners of the spider. These spider-arms may be given any disposition desired and in the present instance are upwardly disposed and perforated to produce the usual attaching ends. I prefer to secure the spider-arms in position by means of rivets 18, which extend down through the horizontal flanges of the arms and the spreader-plate, the rear rivets being in such position as enables them to abut against the stop-shoulders 11 when the spreader is tilted upon the pintle.

The bridge-piece for aiding in the support of the tension device, and which I have indicated as 19, is formed of a strip of sheet metal of any desired width and is provided with downturned ends 20, which may be riveted to the ears 14 of the spreader, as at 21, and through the lower portions of said downturned ends the pintle 15 also passes, so that the latter serves as an additional means for securing the bridge-piece in position. If the style of chair-iron is that embodying but a single tension-spring 22, as shown in Figs. 1, 2, 3, and 4, then the aforesaid bridge-piece is at its middle provided with a single depending loop or depression 23; but if the style of chair-iron embodies the twin arrangement of tension-springs then similar depressions or loops 23 (see Fig. 5) are employed, the loops being arranged at opposite sides of the center. In either instance, however, I prefer to cut away the lower front corners of the looped or depressed portions of the bridge-piece, as indicated by 24, so as to embrace partially and rest upon the transverse pintle 15, whereby, as will be obvious from Fig. 3, the said pintle forms a support for the lower end of the bridge-piece and intermediate its points of



connection with the spreader, which point, as will be well known, is subjected to the greatest strain from the compression-springs.

As a support for the front end of the tension-rod 25 I may form integral or otherwise with preferably the yoke-frame 3 an offset cross-piece 26, the same having an opening 27 for the reception of the aforesaid tension-rod. This rod of course will be provided with the usual bearing-collar 28 and hand-wheel 29 at its front end, the two compression-plates 30 and 31, and the spring or springs 22. The inner compression-plate 31 may be provided with the usual transverse rib 32, (see dotted lines, Fig. 3,) which engage with notches 33, formed in the rear edges of the bridge-piece 19. As seen in Fig. 5, where the chair-iron is adapted for the double-spring tension, the inner compression-plate 34 is elongated and may be supported at any desired number of points. As will also be seen by said figure, in such instance the tension-rod 25 instead of passing through the loop 23 passes between the same. The result, however, is the same and the two constructions very similar, inasmuch as one is a mere duplication of the parts of the other.

The operation of the invention will be readily understood from the foregoing detailed description and need not be particularly referred to. Furthermore, the advantages arising from a chair-iron constructed wholly of sheet metal or stamped steel will be at once appreciated, as will also the strength of the completed article when the disposition of the various parts and their arrangement relative to each other is considered.

Various changes of a minor character may be made without departing from the spirit of my invention, and it will be obvious that such changes as will adapt the chair-iron to the high-fulcrum style in lieu of the low-fulcrum style herein illustrated will readily suggest themselves to those skilled in this class of inventions.

Having thus described my invention, I claim—

1. The combination, in a chair-iron, comprising a spreader, of a yoke for supporting the same, said yoke comprising a pair of U-shaped sheet-metal yoke-frames arranged one within the other and with their lower cross-bars spaced apart and having alining holes, and a spacing-sleeve intermediate the cross-bars and surrounding said holes.

2. The combination, in a chair-iron, comprising a spreader, of a yoke for pivotally supporting the same, the yoke comprising two U-shaped sheet-metal yoke-frames, the upper terminals of the inner frame being inclined to form stops against which projections on the spreader are adapted to abut.

3. The combination, in a chair-iron, of a yoke, comprising two substantially U-shaped

yoke-frames of different lengths arranged the shorter within the longer and having their lower transverse portions spaced apart and adapted to receive the upper end of the supporting-post and their vertical portions riveted together, the upper ends of said inner yoke-frame terminating short of those of the outer frame and constituting stops, and a spreader pivoted between the terminals of the yoke and extending above the stops and adapted when tilted to abut against the same.

4. The combination, in a chair-iron, of a spreader, projections upon its sides, a pair of U-shaped sheet-metal yoke-frames mounted one within the other to form a yoke, one of said frames provided at the upper edges with shoulders to coact with said projections, whereby the tilting of the spreader is limited, and a pivoting means between the yoke and spreader.

5. The combination, in a chair-iron, of a sheet-metal spreader-plate having depending sides, a U-shaped sheet-metal yoke comprising two U-shaped yoke-frames, said yoke embracing the depending sides of the spreader-plate, the upper ends of the terminals of the inner yoke-frame being inclined to form stop-shoulders, a pintle passing through the two yoke-frames and depending sides of the spreader, and angular spider-arms mounted on the spreader and having their vertical flanges adapted to abut against said stop-shoulders.

6. The combination, in a chair-iron, of a spreader, a supporting-yoke, a pintle connecting the two, and a tension-support bearing against the pintle whereby it is braced.

7. The combination, in a chair-iron, of a spreader, a supporting-yoke, a pintle connecting the two, and a tension-support having an intermediate depending portion bearing against and supported by the pintle.

8. The combination, in a chair-iron, of a spreader, a supporting-yoke, a pintle connecting the two, and a tension-support having a depending intermediate portion cut away at its lower end to receive and bear against said pintle.

9. The combination, in a chair-iron, of a transverse sheet-metal tension-support supported within the iron and provided with an intermediate bent portion, the compression-plate of the tension device bearing against the edges thereof, and the tension-rod passing through said bent portion of said support.

10. The combination, in a chair-iron, of an inverted-U-shaped spreader, a U-shaped yoke embracing the same and having at one side a support for one end of the tension device, a transverse sheet-metal tension-support having its ends riveted to the depending sides of the spreader, and between its ends shaped to receive the tension-rod and form a support for the compression-plate thereof.



11. The combination, in a chair-iron, of a U-shaped yoke having the front cross-piece connecting its terminals, a U-shaped spreader pivotally mounted between said terminals, 5 the transverse tension-support having its terminals bent and secured to the opposite depending sides of the spreader and between its ends depressed, as at 23, and notched, and the tension device having its rod passed 10 through said tension-support and cross-piece and its inner compression-plate ribbed and engaging the notches of the transverse tension-support.

12. The combination, in a chair-iron, of a 15 front cross-piece supported by the yoke, a

rear transverse tension-support supported by the spreader and having a pair of depending loops, a tension device of the two-spring variety having its tension-rod supported by the cross-piece and passed between 20 the loops, and its inner compression-plate bearing against the rear edges of the loops and supported thereby.

In testimony whereof I have signed my name to this specification in the presence of 25 two subscribing witnesses.

HARRY W. BOLENS.

Witnesses:

AUG. BOERGER,

EDWARD BARELMAN.