O. ELTON.

CHAIR IRON.

APPLICATION FILED JUNE 6, 1919.

1,335,883.

Patented Apr. 6, 1920.

3 SHEETS—SHEET 1.

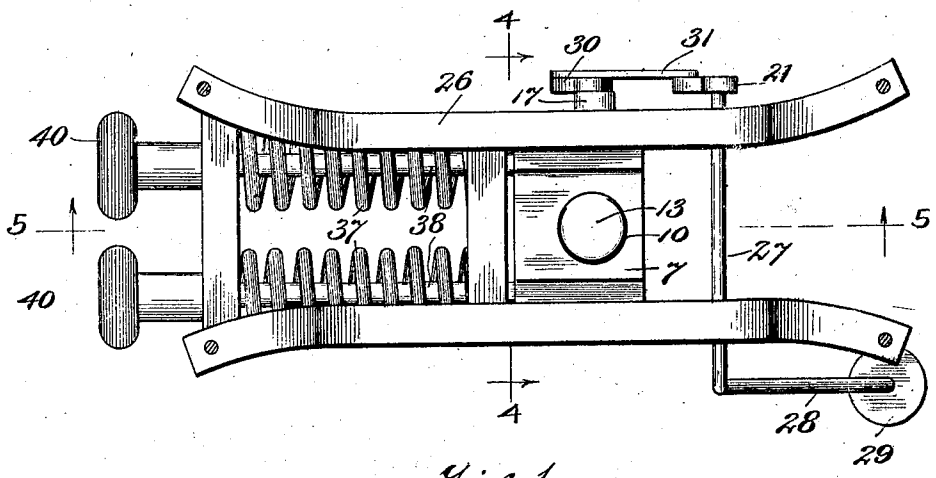


Fig. 1.

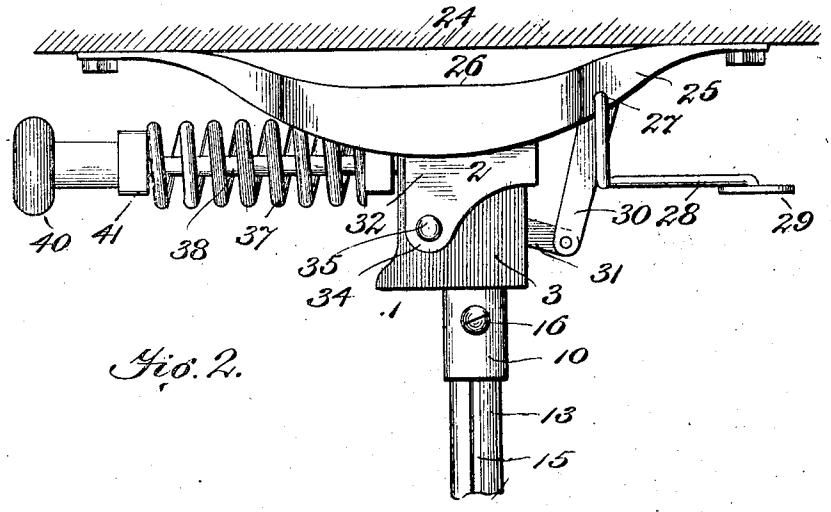


Fig. 2.

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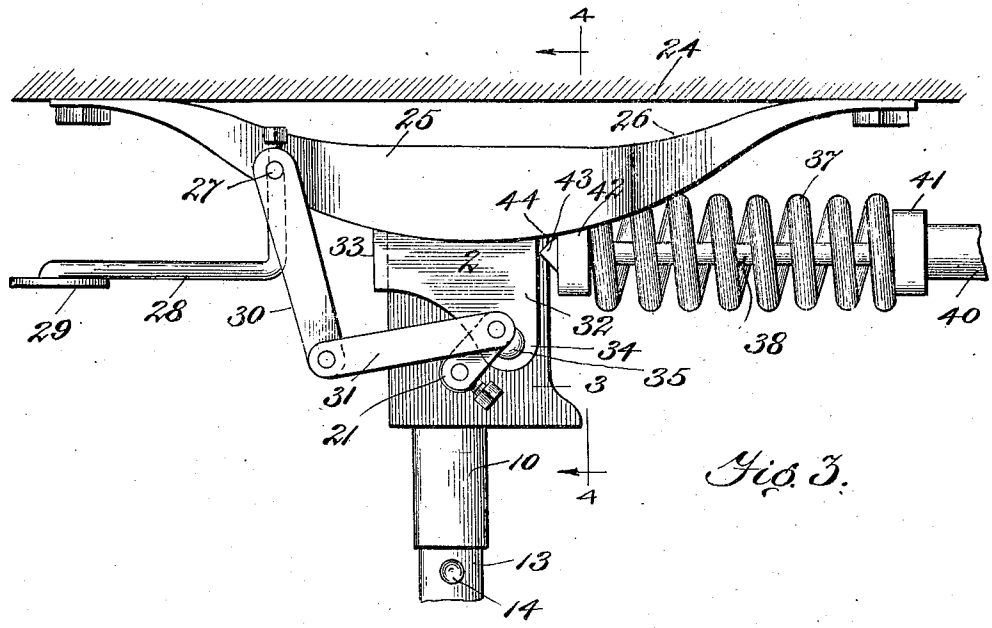
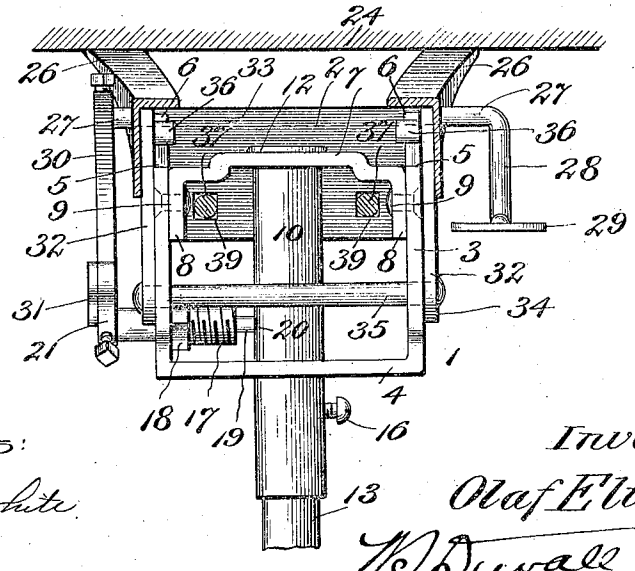


Fig. 3.

Fig. 4.



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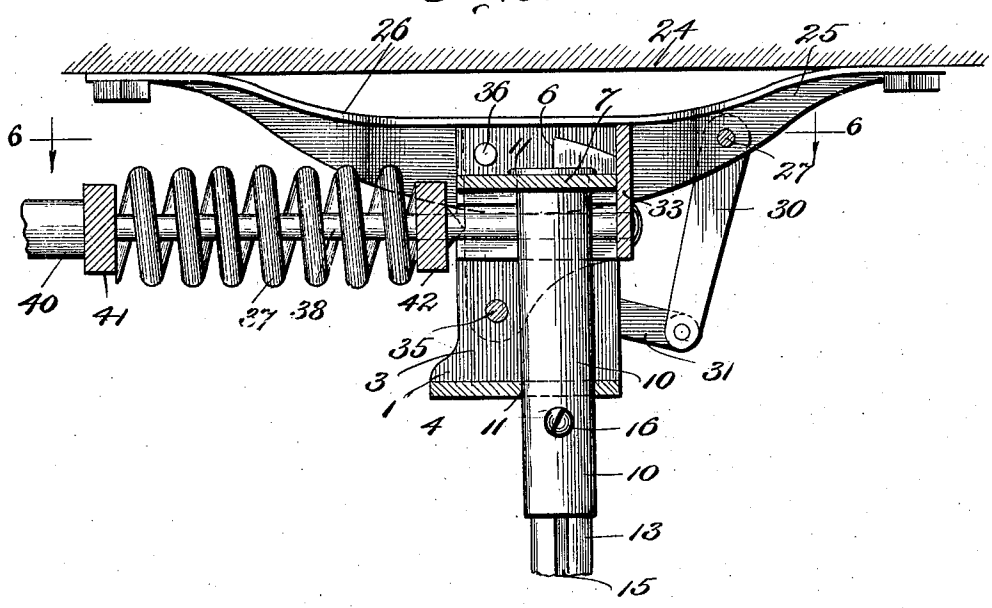
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3 SHEETS—SHEET 3.

Fig. 5.



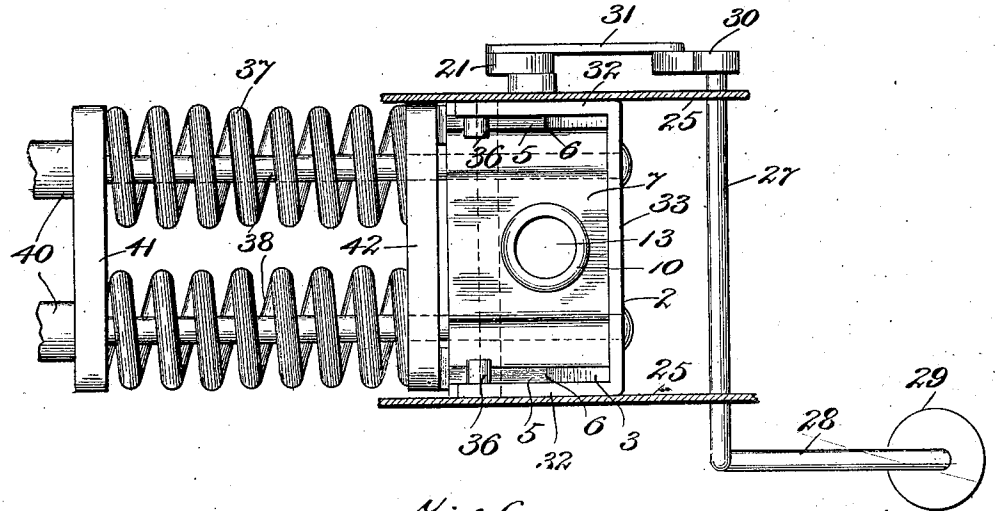


Fig. 6.

Witnesses
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UNITED STATES PATENT OFFICE.

OLAF ELTON, OF PORT WASHINGTON, WISCONSIN.

CHAIR-IRON.

1,335,883. Specification of Letters Patent. Patented Apr. 6, 1920.

Application filed June 6, 1919. Serial No. 302,182.

To all whom it may concern:

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

My invention relates to improvements in chair-irons employed in revolving and tilting chairs, and has special reference to that class of such irons as are constructed of sheet-metal and particularly designed for use in connection with a novel seat adjusting means disclosed in a companion application now pending (application filed June 6, 1919, Serial No. 302,183).

The principal objects of the invention is the construction of a chair-iron of simple light construction capable of being readily struck from sheet-metal, that consists of but comparatively few parts, is extremely rigid by reason, in part, of the novel manner of bracing, wherein the bracing is utilized to support the upper end of the adjusting-standard receiving sleeve and adapt the same to better withstand the lateral strain to which it is subjected in use, and wherein the pivotal movement of the chair-seat is positively limited.

Other minor objects 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 top plan view of a chair-iron embodying my invention;

Fig. 2 is a side elevation of the same.

Fig. 3 is a view similar to Fig. 2 but showing the opposite side of the chair-iron;

Fig. 4 is a vertical transverse sectional view taken on the dotted line 4—4 of Fig. 1 and Fig. 3.

Fig. 5 is a vertical longitudinal sectional view taken on the dotted line 5—5 of Fig. 1; and

Fig. 6 is a horizontal sectional view taken on the dotted line 6—6 of Fig. 5.

Similar numerals of reference indicate similar parts in all the figures of the drawings.

The iron comprises two principal parts, namely, the fixed or stationary yoke 1, and the swinging or pivotal yoke 2, the latter being arranged at an angle to the former and mounted pivotally upon the same, all as will hereinafter appear in the detail description.

The yoke 1 is vertically disposed, has a general U-shape, and consists of the opposite vertical side-walls 3, and the lower transverse connecting-wall 4, this form of yoke being readily struck up from sheet-metal. The upper front corner of the two opposite side-walls 3 are recessed, as at 5, portions of the metal being permitted to remain at the rear corners of the walls, thus forming vertical stop-shoulders 6, the function of which will hereinafter appear.

Connecting the side-walls 3 of the stationary yoke 1, and disposed flush with the bottoms of the recesses 5 thereof, is a transverse brace-plate 7, the ends of which are preferably downwardly bent, as at 8, and interposed between the said side-walls 3, being riveted to the latter as at 9, so that the yoke, in effect, is rectangular, and therefore capable of withstanding any stress to which it may be subjected in actual use.

Inasmuch as the transverse brace-plate 7 is located at the upper ends of the side-walls 3, it is positioned some considerable distance from the bottom-wall 4 of the yoke, a feature particularly desirable and of prime importance in the event the iron is to be used in connection with the adjusting-means described and claimed in the companion application heretofore referred to, in that the vertical sleeve 10, which is let through vertically alining openings, 11, formed in the brace-plate and bottom-wall 4 of the yoke, is supported at two widely distant points, and hence, its rigidity is assured.

The upper end of this sleeve may be swaged above the brace-plate 7, and its lower end may occur at any point desired, but preferably considerably below the bottom-wall 4 of the yoke 1. In order to still further increase the distance between the openings 11 that receive the sleeve 10, the transverse brace-plate may be and preferably is somewhat arched at its middle, as at 12.

The sleeve 10 is designed to receive the upper end of an adjusting-standard, as, for instance, of the style of that shown at 13, wherein at one side, a vertical series of cavities 14, are formed, and at the opposite side a longitudinal groove 15, is formed. A screw 16, is located in the sleeve, and at its inner end engages the groove 15 of the

standard, whereby, as will be obvious the chair-iron and standard are so connected as to cause them to turn together, it being understood that the standard is swiveled in the chair-base in the usual manner.

Any arrangement for locking the chair-iron at points of elevation on the standard may be employed. I have illustrated one simple and very effective arrangement which I shall proceed to describe, but it will be understood that the invention is not to be understood as being limited in this respect, or, in fact, to the inclusion of the sleeve or any locking means whatever, for, as will be obvious, the ordinary threaded adjusting-standard commonly used may be substituted for the sleeve 10.

However, in the present instance, I form in one of the side-walls 3 of the stationary yoke a short distance above the lower end thereof, a threaded orifice, and locate therein a horizontally disposed exteriorly threaded tube or sleeve 17, clamping the same in position by a jam-nut 18. In this sleeve is mounted a reciprocating rocking-bolt 19, the inner end of which is designed to pass through an opening 20, formed in the vertical sleeve 10 and engage with one of the cavities 14 thereof.

The bolt extends somewhat beyond the outer end of the sleeve in which it is mounted, and has secured thereon a rock-arm 21, the function of the bolt, when rotated, being to engage or disengage with the adjusting-post 13, in accordance with the direction of rotation of the bolt. This locking mechanism forms no part of my present invention, and hence requires no further detail description, it forming the subject-matter of the copending application heretofore referred to.

Journaled at any suitable point, but preferably under the chair-seat 24, as for instance, in the vertical webs 25, of the spider-arms 26, mounted as hereinafter described, is a transverse rock-shaft 27, one end of the shaft beyond the bearings preferably being cranked, as at 28, and provided at its free end with a head 29, which also serves as a weight and is located adjacent the edge of the chair-seat and slightly below the same, whereby it is within easy reaching distance of the hand of the chair-user. The opposite end of the operating rock-shaft 27 carries a rock-arm 30, and the lower free end thereof is loosely connected by a connecting-link 31, to the free end of the shorter rock-arm 21 of the bolt. The operation is obvious and for detail reference is had to the companion application heretofore referred to.

The pivotal or swinging yoke 2, of the chair-iron, heretofore briefly referred to, like the stationary yoke, is of U-shape, and comprises the opposite side-walls 32, and the rear transverse vertical connecting-wall 33, the former walls being dropped below the plane of the latter wall, to form ears or extensions 34. The side-walls 32 and their ears 34, embrace the side-walls 3 of the stationary yoke, the upper edge of the rear vertical connecting-wall 33 being but slightly above the corresponding walls of the latter walls, and through the ears 34 and the side walls 3 at a point below the brace plate 12 is passed a transverse pintle 35, whereby the horizontal yoke becomes pivoted upon the stationary yoke at a point below the upper end of the standard 13 and its sleeve 10.

When in its normal position, that is, elevated, the transverse vertical wall 33 of the movable or swinging yoke will abut against the rear edges of the side-walls 3 of the stationary yoke 1, the rearward swinging movement of the yoke 2 being limited, in this instance, by stop-pins 36, that project from the inner faces of the side-walls 32, coming in contact with the stop-shoulders 6, heretofore mentioned. The movable yoke, therefore, has a swinging or pivotal movement between the two stops mentioned, the stops being positive and strong and fully capable of arresting any sudden impact.

The spider-arms 26, may be of the conventional or any other form desired, and are mounted upon the upper ends of the side-walls 32 and adjacent edge of the transverse vertical wall 33 of the movable yoke, being riveted or otherwise secured in position.

The tension-device illustrated in connection with my invention is of the double spring variety, comprising the companion helical springs 37, mounted on the adjusting-rods 38, which latter are supported at their rear ends in openings 39, formed in the wall 33 of the movable yoke at each side of the sleeve 10 and below the brace-plate 12. At their outer ends the rods 38 are threaded and carry adjusting-nuts or wheels 40, and between the latter and the stationary yoke are mounted the front and rear compression-plates 41 and 42, respectively, between which are arranged the helical springs. The rear compression-plate 42 is mounted upon the stationary yoke in such manner as will permit of the plate, and, consequently, the tension-device, to rock, such movement being necessary when the swinging yoke moves on its pivot as caused by the tilting of the chair-seat. This I provide for by providing the rear tension-plate upon its rear face with angular or knife-edge bearing-lugs 43, the same entering and engaging in V-shaped bearing-notches 44, formed in the front edges of the vertical side-walls of the stationary yoke.

This completes the description of the construction of my improved chair-iron, and it

will be seen that it carries out the objects of the invention set forth heretofore, in that the same comprises but few and very simply formed parts of rigid construction substantially connected and fully capable of withstanding the stress of actual use.

Having described my invention, what I claim, is:

1. In a chair-iron, the combination with a yoke comprising opposite vertical side-walls and a transverse connecting-wall, a transverse brace-plate connecting the side-walls above and spaced from the connecting-wall, said brace-plate and transverse connecting-wall being provided with alining openings, and a supporting-element located in said openings, of a yoke pivoted on the side-walls of the first-mentioned yoke at a point below the transverse brace-plate, and a tension-device for said pivoted yoke.

2. In a chair-iron, the combination with a yoke comprising opposite vertical side-walls and a transverse connecting-wall, a transverse brace-plate connecting the side-walls above and spaced from the connecting-wall, said brace-plate and transverse connecting-wall being provided with alining openings, and a supporting-element located in said openings, of a yoke pivoted on the side-walls of the first-mentioned yoke at a point below the transverse brace-plate, and a tension-device connected to the pivotal yoke at a point below said brace-plate.

3. In a chair-iron, the combination with a yoke comprising opposite vertical side-walls and a transverse connecting-wall, a transverse brace-plate connecting the side-walls above and spaced from the connecting-wall, said brace-plate and transverse connecting-wall being provided with alining openings, and a supporting-element located in said openings, of a U-shaped horizontally disposed yoke embracing the side-walls of the first-mentioned yoke and having its ends pivoted thereto at points below the transverse brace-plate and having its transverse portion provided with openings at each side of the said supporting-element, and a tension-device comprising opposite tension-rods engaging said openings and positioned at each side of the said supporting-element.

4. In a chair-iron, the combination with a stationary yoke having opposite vertical side-walls recessed at one of their upper corners to provide stop-shoulders at one end of the recesses, of a pivotal yoke having opposite forwardly disposed side-walls and a rear connecting-wall, the latter wall abutting against the vertical edges of the side-walls of the stationary yoke and the side-walls embracing the side-walls of said latter yoke, stops extending from the pivotal yoke opposite the recesses in the side-walls of the stationary yoke and adapted to abut against the stops formed at the ends of the recesses, and a tension-device for normally retaining the transverse connecting-wall of the pivotal yoke in contact with the adjacent edges of the stationary yoke.

5. In a chair-iron, the combination with a stationary yoke having opposite vertical side-walls recessed at their upper front corners and forming rear stop-shoulders, of a movable yoke having forwardly disposed side-walls embracing the side-walls of the stationary yoke and a rear transverse vertical connecting-wall normally abutting against the rear edges of the side-walls of the stationary yoke, stops extending inwardly from the side-walls of the movable yoke and adapted to abut against the stop shoulders of the side-walls of the stationary yoke, a tension-device for normally retaining the transverse wall of the movable yoke against the rear edges of the side-walls of the stationary yoke, and a pintle passing through the side-walls of the two yokes.

6. In a chair-iron, the combination with the U-shaped stationary yoke, the upper ends of the side-walls of which are recessed at their upper front corners to form rear stop-shoulders, of a movable yoke U-shaped and having its side-walls embracing and pivoted to the side-walls of the stationary yoke, and its rear transverse connecting-wall normally abutting against the rear edges of the side-walls of the stationary yoke and provided with openings, stops extending inwardly from the side-walls of the movable yoke and adapted to abut against the stop-shoulders of the side-walls of the stationary yoke, a pair of tension-rods mounted in the openings of the movable yoke and projecting forwardly beyond the yoke, a compression-plate perforated to correspond with the movable yoke and mounted to rock on the front vertical edges of the stationary yoke, an outer perforated compression-plate, helical springs mounted on the rods between the two compression-plates, and hand-wheels threaded on the outer ends of said rod.

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

OLAF ELTON.

Witnesses:
T. A. Boerner,
A. H. Erlwig.