

Aug. 17, 1948.

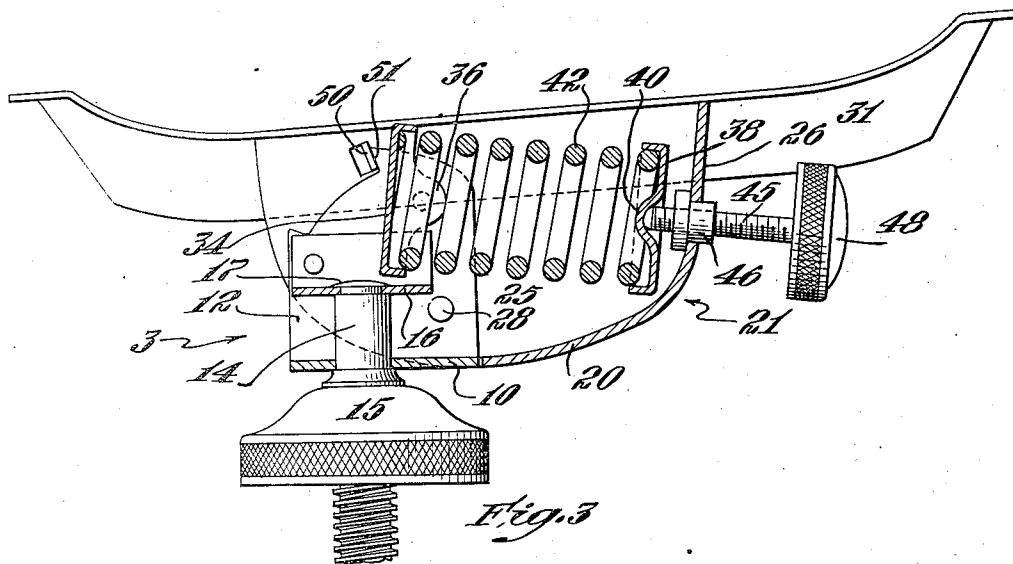
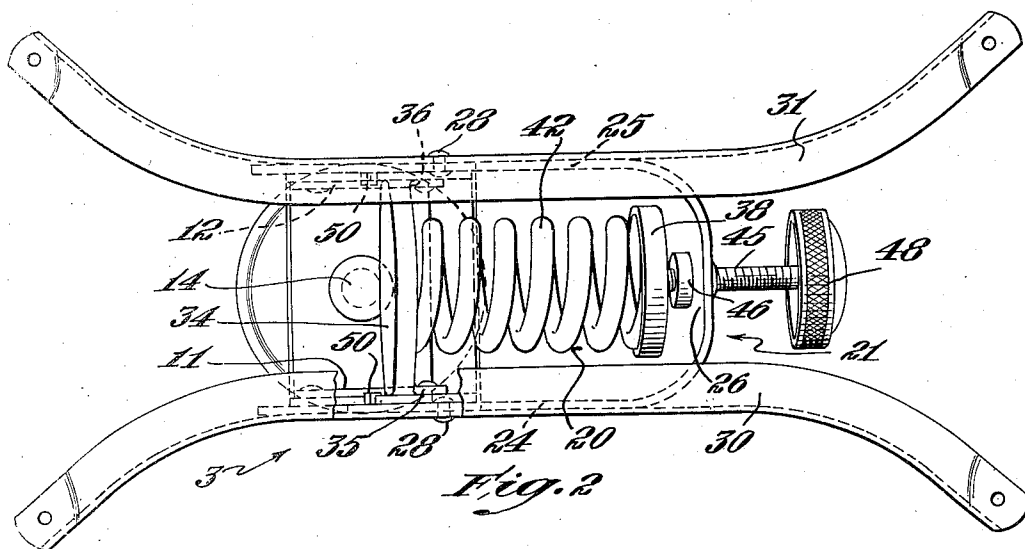
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2,447,283

CHAIR IRON FOR TILTING CHAIRS

Filed June 7, 1945

2 Sheets-Sheet 1



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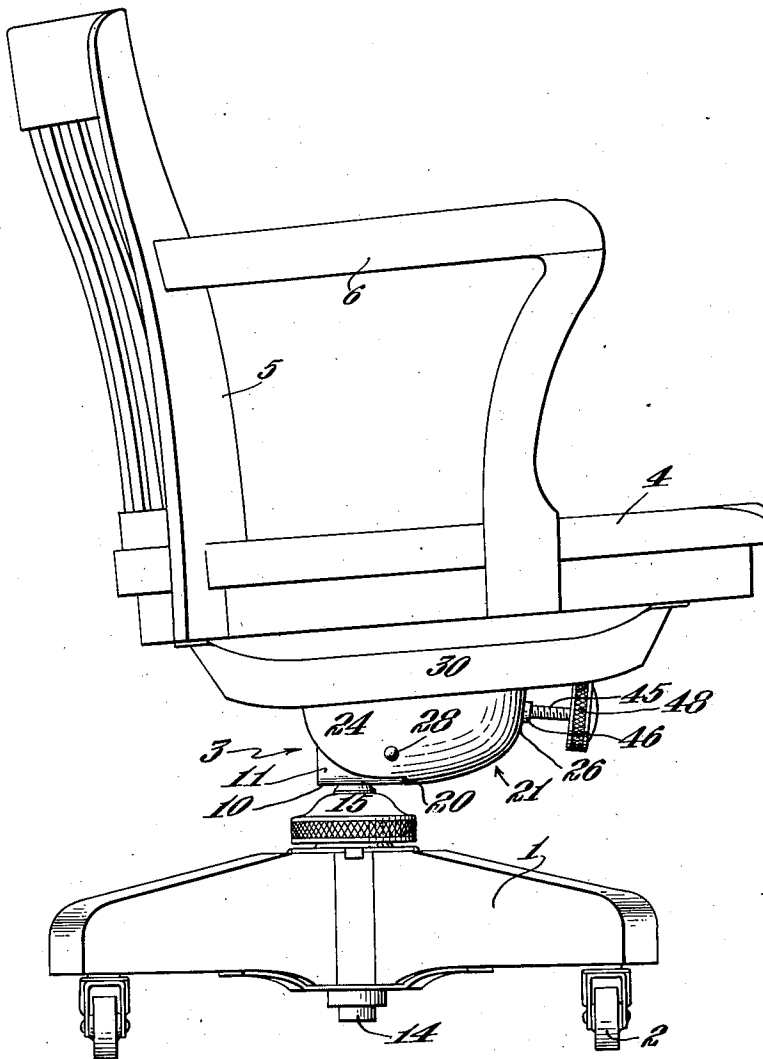


Fig. 1

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UNITED STATES PATENT OFFICE

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CHAIR IRON FOR TILTING CHAIRS

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9 Claims. (Cl. 155-77)

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This invention relates to chairs of the type having a seat pivotally mounted on a base or pedestal such, for example, as office chairs and the like, and more particularly to an improved chair iron for pivotally supporting the seat.

In chairs of the above type, it is customary to provide a chair iron having one or more springs for yieldingly restraining tipping movement of the seat and/or back, associated with a screw by means of which the force exerted by the spring or springs in opposing tipping movement may be adjusted to suit the occupant. These parts are usually exposed to view and not only detract from the appearance of the chair, but also provide dirt and dust-collecting surfaces which, due to the many reentrant portions and irregularities, are difficult to clean.

The principal objects of the present invention are to provide a chair iron which is of simple design, but of strong and durable construction, having a minimum number of parts, and which is reliable in operation, insuring a smooth and comfortable tilting action; and to provide a chair iron in which certain of the operating parts constitute a housing for the other parts, thus presenting an improved appearance and a structure substantially free from projecting parts and dirt-collecting irregularities, and which permits the exposed surfaces of the chair iron to be easily cleaned.

Further objects relate to various features of construction and will be apparent from a consideration of the following description and the accompanying drawings, wherein:

Fig. 1 is a side elevation of a chair having a chair iron constructed in accordance with the present invention;

Fig. 2 is a top plan view of the chair iron; and

Fig. 3 is a longitudinal section through the chair iron.

In accordance with the present invention, I provide a chair comprising a base member or pedestal which may be of any conventional design or construction, seat and back members which may also be of conventional design and construction, and a chair iron or supporting mechanism carried by the pedestal and supporting the seat for tipping movement which may be easily controlled by adjustment of a conveniently located screw, thereby securing a smooth and comfortable tilting action.

The chair iron comprises a seat-supporting member having depending parts providing spaced side walls and an end wall, these parts

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preferably constituting a streamline housing substantially free from reentrant portions and dirt-collecting irregularities. The usual post projects upwardly from the pedestal and rigidly supports a stationary member having a pair of upstanding arms, preferably extending through an opening or recess in the bottom wall of the housing and disposed adjacent to the inner faces of the side walls, so as to provide a pivotal support for the seat-supporting member.

Tilting movement of the seat-supporting member is yieldingly opposed by resilient means such as a coil compression spring, one end of which acts against a rocker interposed between and pivotally supported by the upstanding arms of the stationary member and its opposite end acts against the end wall or a cap juxtaposed thereto, the construction and arrangement of parts being such that the spring is disposed within the confines of the side and end walls and approximately parallel to the seat-supporting member, thus making it possible to keep the size of the enclosing body or housing small and giving the whole mechanism a streamlined effect. A screw may be provided so as to vary the position of the cap relative to the rocker, thereby permitting adjustment of the action of the spring in opposing tilting movement, and interengaging parts carried by the arms and side walls are provided to oppose forward tilting movement of the seat-supporting mechanism.

Referring to the accompanying drawings which show what is now considered a preferred embodiment, a conventional base or pedestal 1 is supported on castors 2 and a chair iron 3 carried by the base supports seat and back members 4 and 5. The seat 4 may be provided with arm rests 6 which, as here shown, are rigidly secured to the seat and back.

The chair iron 3 comprises a stationary member of generally U-shaped cross section defining a bottom wall 10 (Fig. 3) and a pair of spaced upstanding arms 11 and 12. The bottom wall 10 is rigidly secured to the upper end portion of a post 14 threaded into and supported by a cap 15, mounted on the top of the pedestal, and a plate 16 (Fig. 3) rigidly secured to the upstanding arms 11 and 12, is formed with an opening to receive the reduced end of the post 14 which is peened over the margin of the opening, as indicated at 17, to provide a strong and rigid connection between the chair iron and post.

The arms 11 and 12 project through an opening or recess in the bottom wall 20 of a housing

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21 which provides a pair of depending side walls 24 and 25 and an end wall 26, all of which merge with the bottom wall 20 to form a smooth continuous surface presenting a streamline effect. The forward lower ends of the arms 11 and 12 are pivotally connected by rivets or the like 28 to the lower side walls 24 and 25 respectively, the design of the parts being such that the bottom wall 10 of the stationary member provides, in effect, a continuation of the bottom wall 20 of the housing 21, as shown in Figs. 1 and 3.

The upper end of the side walls 24 and 25 are riveted or otherwise secured to a seat-supporting member consisting of a pair of spider arms 30 and 31, the outwardly bent ends of which are screwed or otherwise secured to the under-surface of the seat 4, as shown in Fig. 1. With this construction and arrangement, the seat-supporting member and seat and back carried thereby are normally supported at a slight angle of inclination as shown in Fig. 1, and may be tilted or rocked rearwardly about the pivots 28.

Rearward tilting movement of the seat is yieldingly restrained by an arrangement including a rocker 34, consisting of a cap or dished plate, interposed between the arms 11 and 12 and formed with upstanding fingers 35 and 36 which are pivotally secured to the upper ends of the arms 11 and 12, above and slightly rearwardly of the pivots 28, as shown in Fig. 3. A similarly shaped cap 38, having a central inwardly extending depression 40, is juxtaposed to the inner face of the end wall 26, and one end of a coiled compression spring 42 acts against the cap 38 and its other end against the rocker 34 so as to be compressed by counterclockwise rocking movement of housing 21 and thus yieldingly oppose rearward tilting movement of the seat. It will be noted that the rocker 34, although carried by the stationary arms, pivots in response to tilting movement of the seat so as always to remain in substantial coaxial position with spring 42. The construction and arrangement of parts are such that the spring 42 is disposed entirely within the confines of the housing 21 and lies between and approximately parallel to the spider arms 30, 31, thus permitting a housing of minimum size.

The force exerted by the spring 42 in opposing rearward tilting movement may be varied by a screw 45 which passes through a threaded bushing 46 in the end wall 26 with its inner rounded end engaging the depression 40 of cap 38. The diameter of the depression 40 is somewhat larger than that of the inner end of the screw 45 so that an approximate point contact is obtained between the screw and cap which makes the adjustment very easy as compared to former constructions where the bearing between the corresponding parts covers a considerably larger area around the screw because the adjusting member is in the form of a nut. The outer end of the screw 45 carries a hand wheel 48 by means of which the screw may be rotated to vary the position of the cap 38, relative to the rocker 34, and thus adjust the action of the spring 42 in opposing rearward tilting movement of the seat.

Forward tilting movement of the seat is opposed or limited by a pair of inwardly projecting lugs constituting stops 50 struck out from the side walls 24 and 25 of the housing, which stops engage the recessed upper ends 51 of the arms 11 and 12, as shown in Fig. 3.

It will be noted that the construction and arrangement of parts are such that the spring 42 and associated parts are concealed by the housing

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21 which is so designed as to cooperate with the bottom wall 10 of the stationary member to provide a streamlined effect even when the seat is tilted, thus presenting an improved appearance, as well as an economical construction, having exposed surfaces which are much more easily kept free from dust and dirt on the outside than previous constructions. Moreover, the construction of the adjusting mechanism is such that it is conveniently accessible for manipulation to insure a smooth and comfortable tilting action.

While I have shown and described one desirable embodiment of the invention, it is to be understood that this disclosure is for the purpose of illustration, and that various changes and modifications may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A chair iron comprising a seat-supporting member having spaced depending side members and a depending end member adjoining the side members so as to provide a housing, a stationary member having a pair of upstanding arms extending into said housing and pivotally connected with said side members to provide a pivotal support for said seat-supporting member, a rocker within said housing and interposed between and pivotally supported by said arms, and a spring member within said housing acting against said rocker and depending end member so as yieldingly to oppose tilting movement of said seat-supporting member.

2. A chair iron comprising a seat-supporting member having spaced depending side members and a depending end member adjoining the side members so as to provide a housing, a stationary member having a pair of upstanding arms extending into said housing and pivotally connected with said side members to provide a pivotal support for said seat-supporting member, a rocker within said housing and interposed between and pivotally supported by said arms, a spring member within said housing acting against said rocker and depending end member so as yieldingly to oppose rearward tilting movement of said seat-supporting member, and interengageable parts carried by said arms and side members for opposing forward tilting movement of said seat-supporting member.

3. A chair iron comprising a seat-supporting member having spaced depending side members and a depending end member adjoining the side members so as to provide a housing, a stationary member having a pair of upstanding arms extending into said housing and pivotally connected with said side members to provide a pivotal support for said seat-supporting member, a rocker within said housing and interposed between and pivotally supported by said arms, and a coiled compression spring disposed within said housing with one end seated on said rocker and its other end acting against said end member so as yieldingly to oppose tilting movement of said seat-supporting member, and means for varying the action of said spring in opposing tilting movement of said seat-supporting member.

4. A chair iron comprising a seat-supporting member having spaced depending side members and a depending end member, a stationary member having a pair of upstanding arms pivotally connected with said side members to provide a pivotal support for said seat-supporting member, a rocker interposed between and pivotally supported by said arms, a screw projecting through

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said end member, a cap engageable with the inner end of said screw, said screw having a threaded connection with said end member so that the position of said cap may be adjusted relative to said rocker, and a spring member acting against said rocker and cap so as yieldingly to oppose tilting movement of said seat-supporting member.

5. A chair iron comprising a seat-supporting member having spaced depending side members and a depending end member, a stationary member having a pair of upstanding arms pivotally connected with said side members to provide a pivotal support for said seat-supporting member, a rocker interposed between and pivotally supported by said arms, a cap juxtaposed to the inner side of said end member, said cap having a central inwardly-extending depression, a screw projecting through said end member and having an inner end smaller than the diameter of said depression, said end being engageable with the depression in said cap to provide an approximate point contact therewith, said screw having a threaded connection with said end member so that the position of said cap relative to said rocker may be adjusted, and a coiled compression spring having one end acting against said cap and its other end acting against said rocker so as yieldingly to oppose tilting movement of said seat-supporting member.

6. A chair iron comprising a seat-supporting member having spaced depending side members and a depending end member, a stationary member having a pair of upstanding arms pivotally connected with said side members to provide a pivotal support for said seat-supporting member, a rocker interposed between and pivotally supported by said arms, a cap juxtaposed to the inner side of said end member, a screw projecting through said end member with its inner end engageable with said cap, said screw having a threaded connection with said end member so that the position of said cap relative to said rocker may be adjusted, a coiled compression spring having one end acting against said cap and its other end acting against said rocker so as yieldingly to oppose rearward tilting movement of said seat-supporting member, and interengageable parts carried by said arms and side members for opposing forward tilting movement of said seat-supporting member.

7. A chair iron comprising a seat-supporting member, a depending housing secured to said seat-supporting member and providing a pair of side walls and an end wall, a stationary member having a pair of arms projecting upwardly along the inner faces of said side walls and pivotally connected thereto so as to provide a pivotal support for said seat-supporting member, a rocker within said housing and interposed between and pivotally supported by said arms, and

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a spring member within said housing acting against said rocker and end wall so as yieldingly to oppose tilting movement of said seat-supporting member.

8. A chair iron comprising a seat-supporting member, a depending housing secured to said seat-supporting member and providing a pair of side walls and an end wall, a stationary member having a pair of arms projecting upwardly along the inner faces of said side walls and pivotally connected thereto so as to provide a pivotal support for said seat-supporting member, a rocker within said housing and interposed between and pivotally supported by said arms, a coiled compression spring disposed within said housing with one end acting against said rocker and its other end acting against said end wall so as yieldingly to oppose rearward tilting movement of said seat-supporting member, and interengageable parts carried by said side walls and arms for opposing forward tilting movement of said seat-supporting member.

9. A chair iron comprising a seat-supporting member, a depending housing secured to said seat-supporting member and providing a pair of side walls and an end wall, a stationary member having a pair of arms projecting upwardly along the inner faces of said side walls and pivotally connected thereto so as to provide a pivotal support for said seat-supporting member, a rocker interposed between and pivotally supported by said arms, a screw projecting through said end wall, a cap juxtaposed to the inner face of said end wall and engageable by the inner end of said screw, said screw having a threaded connection with said end wall so that the position of said cap relative to said rocker may be varied, a spring member acting against said cap and rocker so as yieldingly to oppose rearward tilting movement of said seat-supporting member, and interengageable parts carried by said side walls and arms for opposing forward tilting movement of said seat-supporting members.

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