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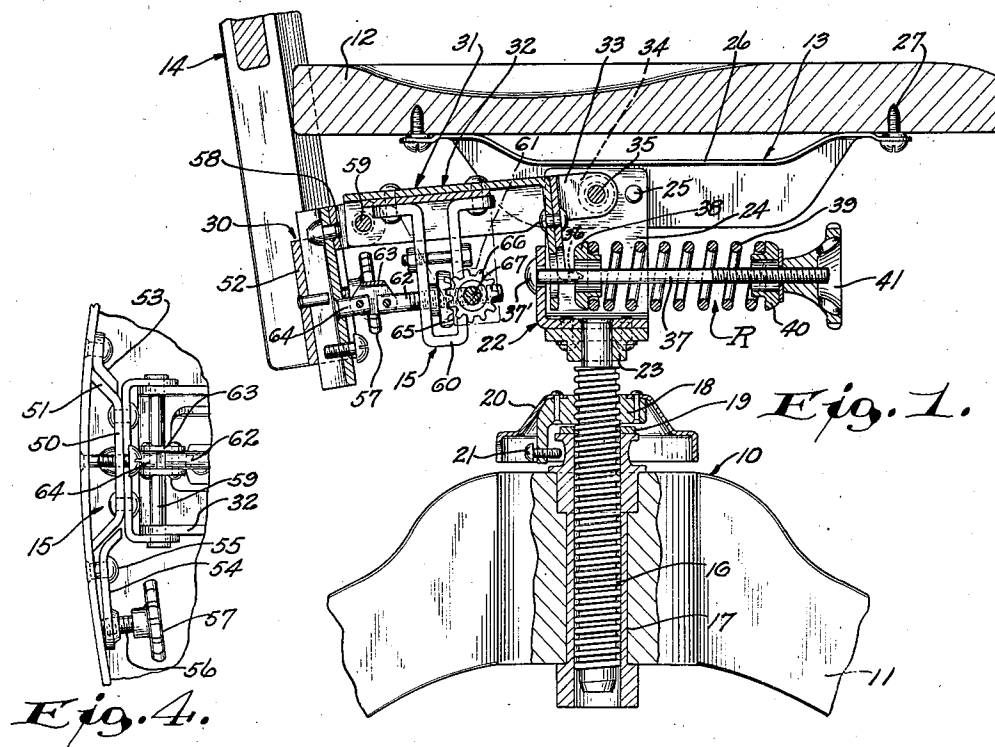
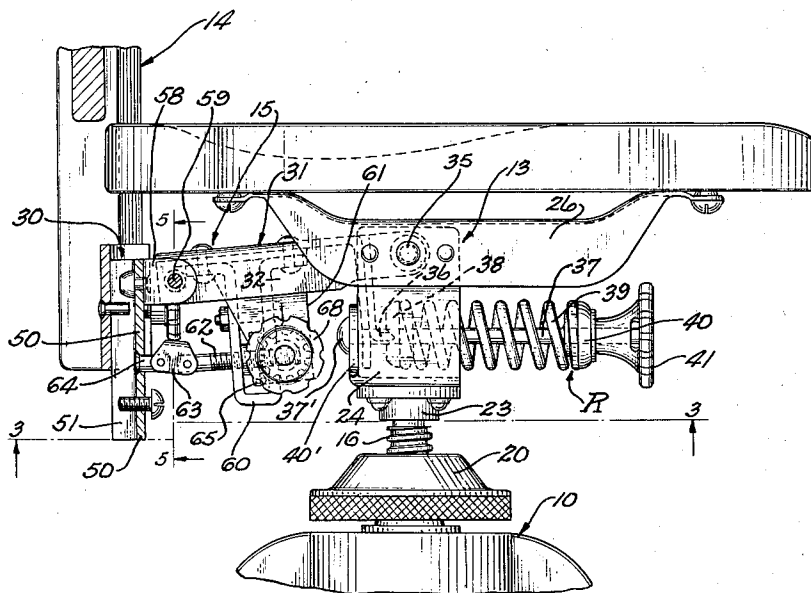
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2,211,090

CHAIR IRON

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2 Sheets-Sheet 1



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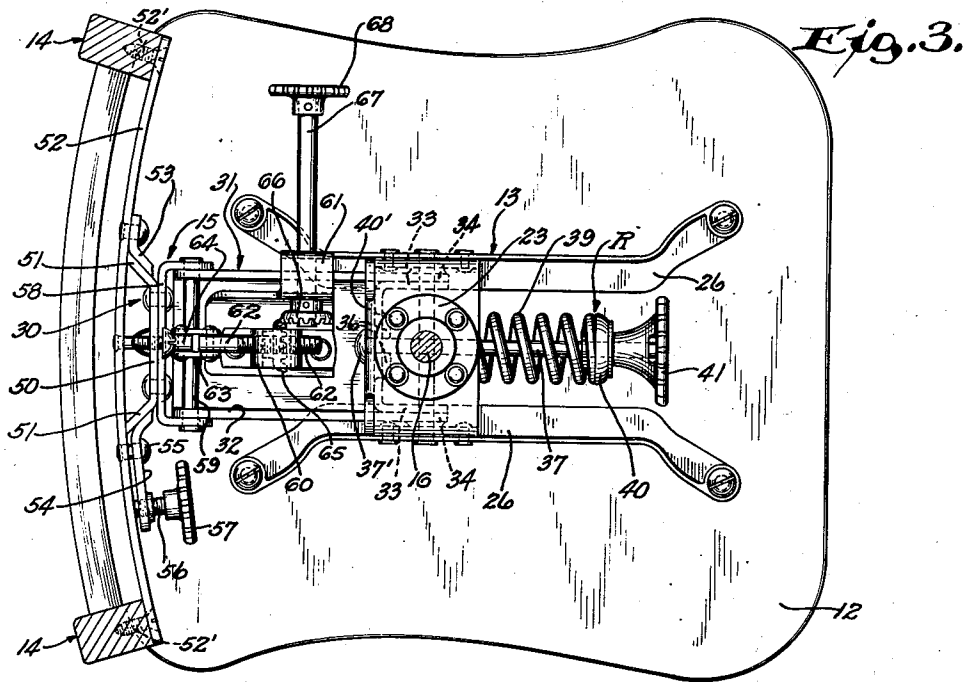
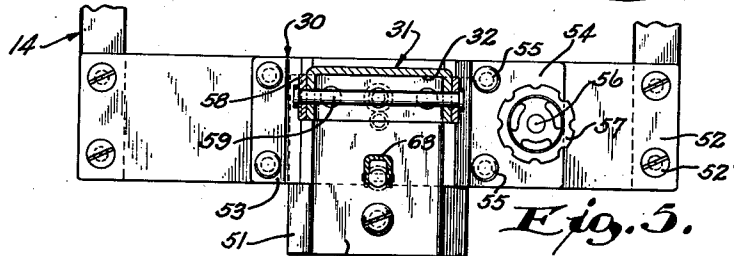
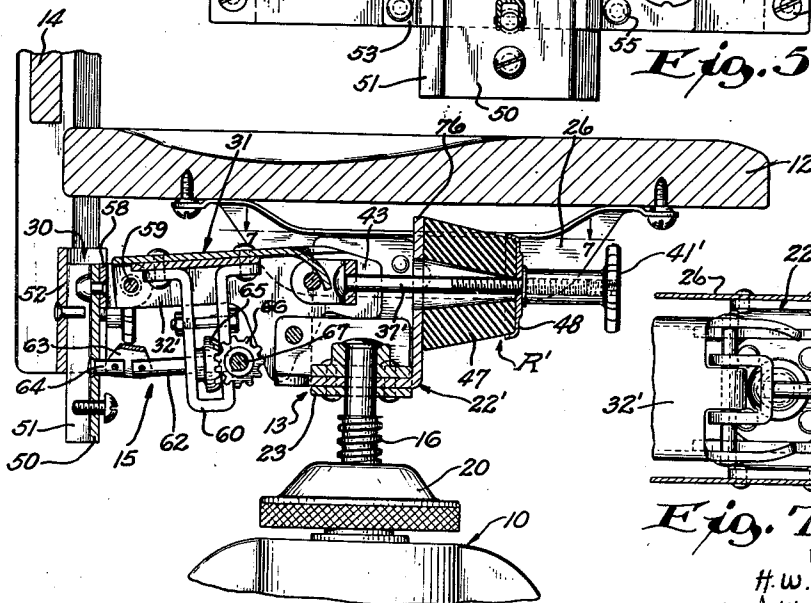
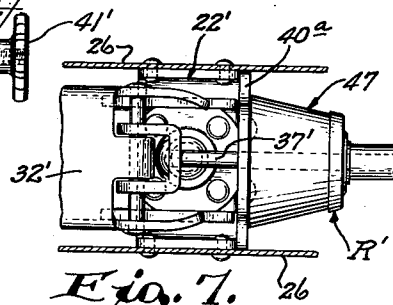


Fig. 6.

Fig. 7.

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2,211,090

CHAIR IRON

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5 Claims. (Cl. 155—157)

This invention relates to an improvement in chairs with tilting backs, that is, chairs of the so-called "posture-type," in which the back thereof may be positioned or disposed to snugly fit and support the back of the user of the chair, and in an appropriately resilient or yieldable fashion. Chairs of this type are commonly used by stenographers or typists.

The object of the present invention is to provide a chair of this character, in which the adjustment of the back is very much facilitated, and yet the back is held securely at any adjustment.

Another object of the invention is to facilitate the adjustment of the tension or resilient resistance which the structure presents to tilting of the back.

A further object of the invention is to provide a chair of this character having these advantages, and which is simple and compact in its construction, reliable and comfortable in use, and easy and comparatively inexpensive to manufacture.

Other objects and advantages reside in certain novel features of the construction, arrangement, and combination of parts, which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings forming a part of this specification, and in which:

Figure 1 is a fragmentary view, partly in side elevation and partly in longitudinal section, illustrating one embodiment of the invention.

Figure 2 is a view similar to Figure 1, but showing most of the parts in side elevation, the view illustrating, however, a different vertical adjustment of the back from that shown in Figure 1.

Figure 3 is a view in horizontal cross section taken on the line 3—3 of Figure 2, and looking in the direction of the arrows.

Figure 4 is a fragmentary view in top plan of means providing for the vertical adjustment of the back and also showing some of the associated structure.

Figure 5 is a view in vertical cross section, taken on line 5—5 of Figure 2.

Figure 6 is a view partly in side elevation and partly in longitudinal vertical cross section, illustrating a slightly different embodiment of the invention; and

Figure 7 is a view in horizontal cross section taken on line 6—6 of Figure 6.

Referring to the drawings, it will be seen that

in both embodiments of the invention the chair comprises generally a base 10 having legs 11, only fragments of which are shown. The seat 12 of the chair is supported on the base 10 by means of a chair iron, designated generally at 13. The chair is provided with a tiltable back, designated generally at 14, and the mechanism for mounting, tilting, and adjusting the back is designated generally at 15.

A vertical spindle 16 is disposed in a bushing 17 which lines the vertical opening in the chair base. A nut 18 is threaded on the spindle and engages the upper end of a ball bearing or an anti-friction washer or similar device 19 provided between the nut and the upper end of the bushing. The nut 18 may be equipped with the usual knurled cap 20 riveted to the nut 18 and releasably retained in axial position by a screw 21.

In both embodiments of the invention a head is fixed to the upper end of the spindle 16, the head being designated at 22 in Figures 1 to 5, and at 22' in Figures 6 and 7. In fact, the two embodiments of the invention illustrated differ from each other only in the details of construction of the heads 22 and 22' and in the type of adjustable resilient or tension means designated at R and R' employed in the two structures for yieldably or resiliently resisting backward tilting movement of the chair back 14.

In both structures the head 22 or 22', as the case may be, is constituted of a generally U-shaped piece of heavy sheet metal fixed to and supported on the upper end of the spindle 16. The body portion of the sheet metal head rests on and is riveted or otherwise suitably secured to a flanged collar 23 fixed in any suitable way to the unthreaded upper end of the spindle 16. In both constructions the upper ends of the legs of the U-shaped head are riveted as at 25 to the arms 26 of the spider of the chair. These arms are of annular cross section, and have their ends engaged flush with and fastened by means of screws 27 to the seat 12 of the chair. In this way, the seat, although vertically adjustable, is fixed against any rocking or tilting, this action being left to the back of the chair.

The adjustable tilting mounting 15 for the chair back is largely identical in both constructions, and comprises generally two main sections designated at 30 and 31, the section 30 being combined with the back 14 of the chair, and the section 31 being supported in one instance on the head 22, and in the other on the head 22' of the chair iron. The sections 30 and

31 are interconnected for angular adjustment relative to each other, and are releasably retained in any selected angular adjustment. They are pivotally mounted at their forward ends as a unit on the head 22, or 22', as the case may be, as will be hereinafter more fully described.

The section 31 comprises an inverted channel 32, the forward end of which, in the embodiment shown in Figures 1 to 5, has a mounting bracket 33 riveted thereto. The arms 34 of the bracket 33 are pivotally connected by means of a pivot pin 35 to the legs of the head 22. The body portion of this bracket has laterally extending projections or bearing points 36, which are disposed on the opposite sides of a tension rod 37, and engage or bear against a spring abutment 38 loosely encircling the rod and engaged with one end of a tension spring 39. The spring 39 is confined between this abutment 38 and an adjustable abutment 40, also loosely encircling the tension bar and controlled as to its position by means of a hand nut 41. The end of the rod opposite the hand nut 40 is headed as at 37', and bears against the margin of an opening 42 provided in the transverse member 40' of the head 22, and through which the rod extends.

In the form of the invention shown in Figures 6 and 7, the adjustable tilting mounting also has its section 31 constituted of an inverted channel designated as 32', and similar to the channel 32 except that its forward end is slightly different in construction to adapt it for use with the different type of cushion R' employed in this form.

The forward ends of the side flanges of the channel 32' have integral enlarged extensions 43 provided with transversely aligned apertures to receive the pivot pin 35' corresponding to pivot pin 35, but supported on a separate bracket 24' rather than on the stamping 24 itself. The bracket 24' is disposed within the lateral confines of the stamping 24, but rearwardly therefrom, and is secured to the flanged collar 23 by the same rivets which secure the stamping 24 thereto. The mounting bracket 33 is omitted in this construction. The forward end of the body portion of the inverted channel 32' is formed with an integral hook-like extension 44 which hooks about a pivot pin 44' having its ends fixed in openings in the extensions 43, and having intermediate portions passing through transversely aligned openings of a yoke 45 straddling the hook-like extension 44 and fastened to the rearward end of a tension rod 37' corresponding to the tension rod 37 and passing through an opening in a transverse member 40a of the head 22'. The transverse member 40a of head 22' is integral therewith and corresponds to the transverse member 40' of the head 22, although disposed at the opposite end of the head and of a size somewhat larger than that of the member 40' in order to serve as an abutment for a rubber cushion block 47 which replaces in this embodiment the tension spring 39. The tension rod 37' passes loosely through an opening in this rubber block 47, and also through a cap 48 fitted over the small end of the rubber block. A threaded portion of the rod 37' is interthreaded with a hand nut 41, corresponding to the hand nut 41, and is adjustable to control the tension of the rubber block.

In the remaining features of their constructions the adjustable tilting mountings 15 are identical, and one description will apply to both.

The section 30 of each mounting 15 is con-

stituted to provide for vertical adjustment of the back, and is combined with the section 31 to provide for tilting or angular adjustment thereof. For these purposes this section 30 includes an adjustable body plate 50 having rearwardly bent margins or flanges 51 which slide against a fixed back supporting plate 52 fastened by screws or similar devices 52' to the chair back. The adjustable body plate 50 slides in guides or ways 53 and 54, the way 53 being riveted or fixed to the supporting plate 52, and the way 53 being adjustably secured thereto so as to provide for vertical adjustment of the member body plate 50 and its clamping in any adjustment. For this latter purpose the way 54 is loosely mounted on rivets 55, the rivets having shanks slightly greater in length than the thickness of the plate constituting the way or guide 54, so that they provide in effect fulcrums for the way 54 on supporting plate 52. A clamping screw 56 equipped with a hand-wheel 57 is threaded through the way 54 and bears against the supporting plate 52 to tilt the way 54 about its rivets 55 to cause it to clamp or release the plate 51.

A U-shaped supporting bracket 58 is riveted to the body plate 50, and its legs overlap the rear ends of the side flanges of the channel 32, or 32', as the case may be, and are pivotally interconnected therewith by means of a pivot pin 59.

Means is provided for adjusting the section 30 angularly with respect to the section 31 about their pivotal connection 59, and this means includes two supporting brackets, designated at 60 and 61, riveted or otherwise suitably secured to and depending from the channel 32, or 32', as the case may be. The attaching portions of the brackets are disposed flatly against one another and are secured to their channels by common rivets. The bracket 60 is formed with aligned bearing openings, through which an adjusting screw 62 extends. The screw 62 is connected by means of a double or channel-shaped link 63 to a short shaft 64 fixed to the plate 52, the ends of the link 63 being pivoted to the screw and shaft, respectively. A beveled gear 65 is disposed between the parallel members of its supporting bracket 60 and has an internally threaded hub threadedly engaged with the screw 62, and its teeth mesh with a similar beveled gear 66 fixed to a cross shaft 67 supported in the bracket 61 and rotated by means of a hand-wheel 68.

The bracket 61 also has parallel supporting members formed with aligned bearing openings for its shaft 67. The gear 66 is pinned to its shaft 67, and due to the rotative engagement of its hub with bracket 61, and its mesh with gear 65, maintains the shaft 67 against axial movement.

The beveled gears 65 and 66 can be conveniently constructed of stampings, and by turning the hand-wheel 65 they are effective to transmit tilting movement to the chair back 14 through the link connection 63 between the screw shaft 62 and the short shaft 64. Such adjustment may be conveniently accomplished by the user of the chair while occupying the same.

With this construction the three adjustments incorporated in the chair may very readily and easily be made by the user of the chair, and without any difficulty the back may be moved up and down with ease, and then firmly clamped in the desired adjustment. It may be tilted back and forth to the proper angle of adjustment, and the tension or resistance presented to backward tilting of the chair back may be readily controlled. These advantages are accomplished in

a construction which is simple, closely organized or compact, and yet strong and durable.

While I have shown and described several constructions in which my invention may be advantageously embodied, it is to be understood that these structures have been selected for purposes of illustrations and example, and that various changes in the size, shape, and arrangement of parts may be resorted to, as will be understood by those skilled in the art, without departing from the spirit of the invention and the scope of the subjoined claims.

We claim:

1. A posture chair of the type including a base, a seat, and a tiltable back, and comprising a spindle mounted on the base, a head fixed to the upper end of the spindle, a spider fixed to the head and to the under side of the seat, and an adjustable tiltable mounting for the chair back comprising a pair of pivotally interconnected sections, means connecting one of said sections to the chair back, means pivotally connecting the other of said sections to the head, adjustable resilient means combined with the head and with the mounting to resist tilting movement of the mounting relative to the head, and means for angularly adjusting the sections of the mounting with respect to each other and including a short shaft connected to one of said sections, a screw mounted on the other of said sections, a link interconnecting the screw and the short shaft, and hand-operated means for turning the screw.

2. A posture chair of the type including a base, a seat, and a tiltable back, and comprising a spindle mounted on the base, a head fixed to the upper end of the spindle, a spider fixed to the head and to the under side of the seat, and an adjustable tiltable mounting for the chair back comprising a pair of pivotally interconnected sections, means connecting one of said sections to the chair back, means pivotally connecting the other of said sections to the head, adjustable resilient means combined with the head and with the mounting to resist tilting movement of the mounting about its pivot to the head, and means for angularly adjusting the sections of the mounting with respect to each other and including a short shaft connected to one of said sections, a U-shaped bracket supported on the other of said sections and having aligned openings in its legs, a screw extending through the openings of the bracket, a link interconnecting the screw and the short shaft, a beveled gear disposed between the legs of the bracket and having an internally threaded hub with which the screw meshes, a second bracket mounted adjacent the first bracket, a shaft mounted on said second bracket, a beveled gear fixed to the shaft and meshed with said first named beveled gear, and a hand wheel fixed to said last-named shaft and acting when manipulated to turn the beveled gears and axially adjust the screw.

3. A posture chair of the type including a base, a seat, and a tiltable back, and comprising a spindle mounted on the base, a head fixed to the upper end of the spindle, a spider fixed to the head and to the under side of the seat, a tiltable

mounting for the chair back including a pair of sections, means interconnecting the sections for angular adjustment and for maintaining them in any selected adjustment, means pivotally mounting the forward section on the head, resilient means combined with the head and the mounting to resist tilting movement of the mounting about its pivotal connection with the head, means adjustably connecting the chair back to the rear section of the mounting and including an adjustable body plate fixed to the rear section and having angled margins, a supporting plate fixed to the chair back and having a pair of angled ways engageable with the angled margins of the body plate, one of said ways being fulcrummed on the supporting plate so as to be clamped or released from its margin of the body plate, and manually operable means for adjusting the fulcrummed way and securing it in clamping position.

4. A posture chair of the type including a base, a seat, and a tiltable back, and comprising a spindle mounted on the base, a head fixed to the upper end of the spindle, a spider fixed to the head and to the under side of the seat, a tiltable mounting for the chair back including a pair of sections, means interconnecting the sections for angular adjustment and for maintaining them in any selected adjustment, means pivotally mounting the forward section on the head, resilient means combined with the head and the mounting to resist tilting movement of the mounting about its pivotal connection with the head, means adjustably connecting the chair back to the rear section of the mounting and including the adjustable body plate fixed to the rear section, ways mounted upon the chair back, one of said ways being fixed, the other of said ways being rockable into and out of clamping engagement with the adjustable body plate, and manually operable means for rocking said adjustable way.

5. A posture chair of the type including a base, a seat, and a tiltable back, and comprising a spindle mounted on the base, a head fixed to the upper end of the spindle, a spider fixed to the head and to the under side of the seat, a tiltable mounting for the chair back including a pair of sections, means interconnecting the sections for angular adjustment and for maintaining them in any selected adjustment, means pivotally mounting the forward section on the head, resilient means combined with the head and the mounting to resist tilting movement of the mounting about its pivotal connection with the head, means adjustably connecting the chair back to the rear section of the mounting and including an adjustable body plate fixed to the rear section, ways mounted on the chair back in which portions of the body plate slide, one of said ways being fixed to the chair back, rivets rockably mounting the other way on the chair back, a hand-operated screw threaded through said rockable way and engageable with the chair back to bring the associated way into and out of clamping engagement with the adjustable supporting plate.

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