Aug. 1, 1944. A. R. BOERNER 2,354,736

CHAIR IRON

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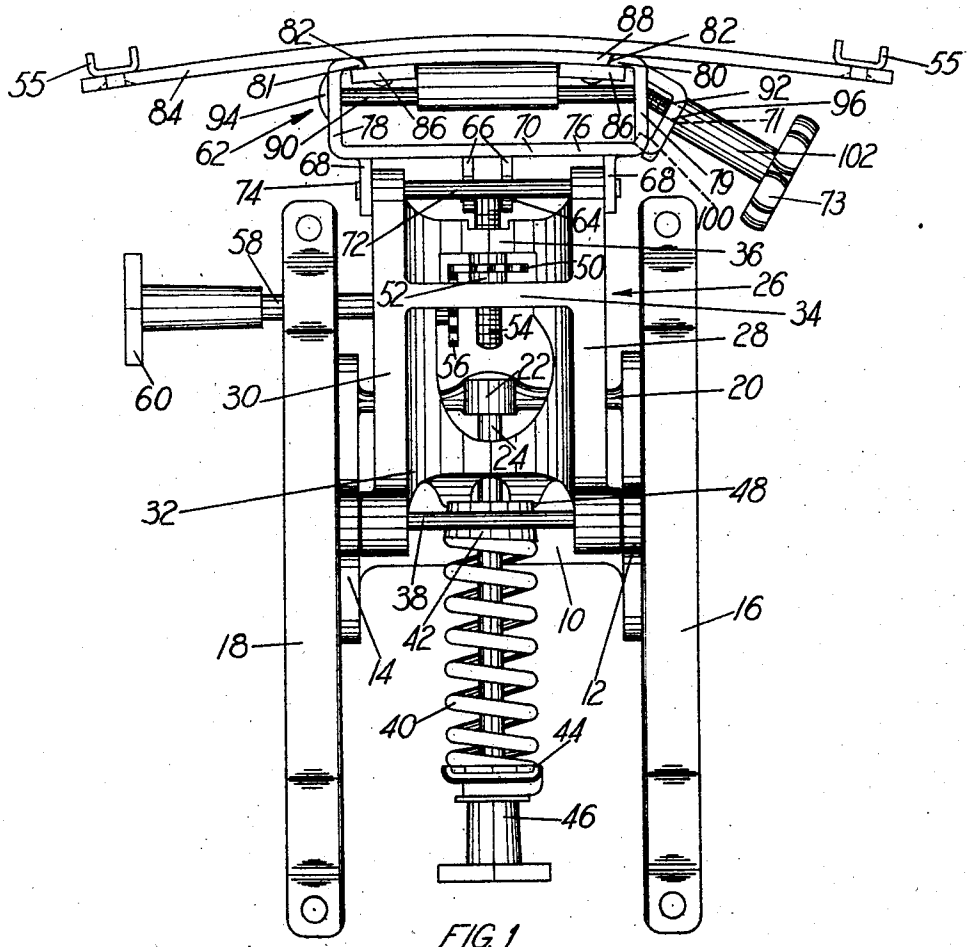


FIG. 1

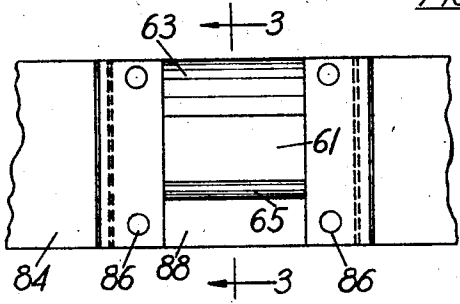


FIG. 2

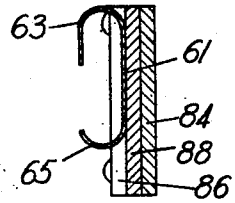


FIG. 3

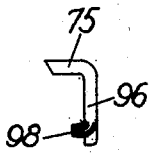


FIG. 4

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FIG. 5.

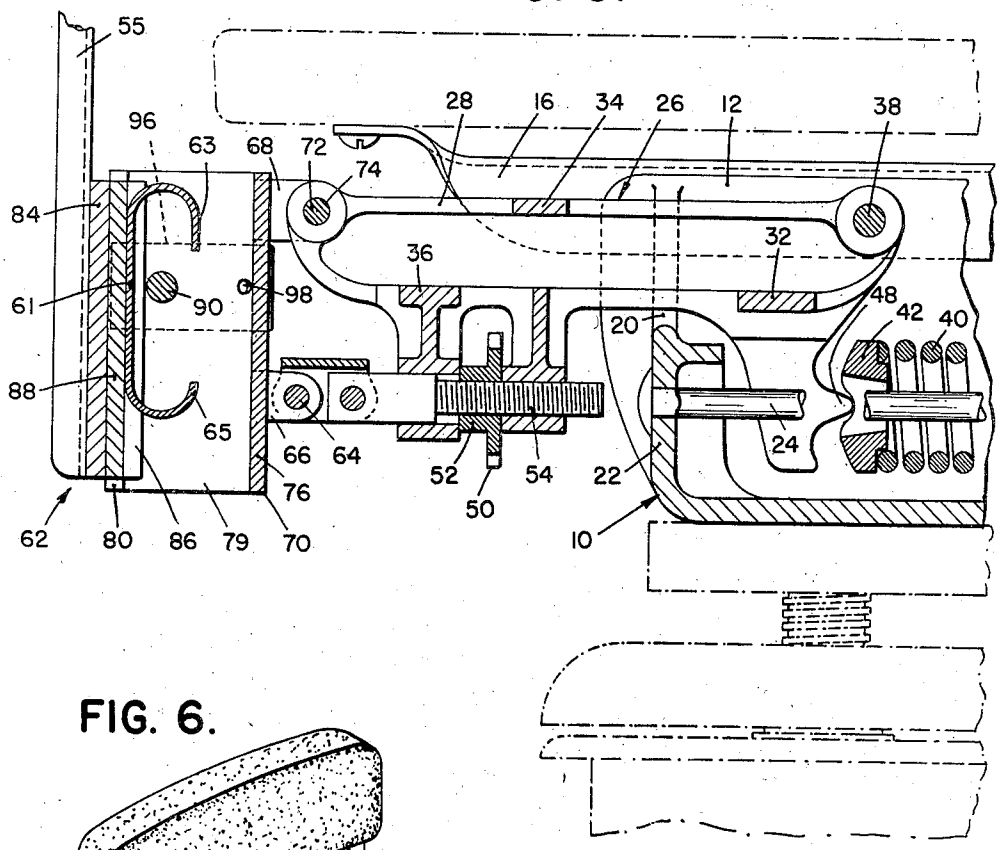


FIG. 6.

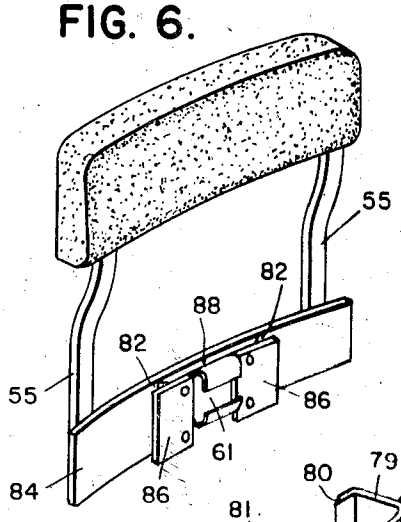
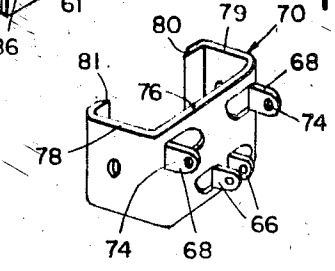


FIG. 7.



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CHAIR IRON

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Application January 24, 1942, Serial No. 428,067

5 Claims. (Cl. 155—157)

This invention relates in general to chair irons and more particularly to chair irons for office chairs having an adjustable back adaptable to the occupant of the chair with which the iron is associated.

It is an important object of the invention to provide a suitable clamping device to hold the back in vertically adjusted position.

A further object of the device of this invention lies in the provision of an adjustment for chair backs which permits manipulation by any person even the infirm.

A still further object of this invention lies in the provision of an adjustable back which may be adjusted suitable to the needs of the occupant of a chair while the occupant remains seated.

Other objects and advantages of this invention reside in certain novel features of the construction, and combination of parts hereinafter more fully described in the specification and claims.

Figure 1 is a top plan view of a chair iron into which the device of this invention has been incorporated.

Figure 2 illustrates one of the members of this invention removed from the device with which it is associated for purposes of clarity.

Figure 3 is a cross sectional view of the member shown in Figure 2 taken on the line 3—3 in the direction indicated by arrows.

Figure 4 is a view of one element of the structure.

Figure 5 is a fragmentary longitudinal sectional view taken substantially on the longitudinal axis of Figure 1 to further illustrate the relation of the back adjusting portion of the iron with the seat adjusting portion thereof.

Figure 6 is a perspective view of a chair back with the portions of the back adjusting iron permanently secured to the frame supporting the back; and

Figure 7 is a perspective view of the pivoting frame of the back adjusting assembly to show the relation of the frame to the channels formed between the back plate and the back strips and showing the several pivoting tabs and the toggle ears struck therefrom.

Referring to the drawings, the invention may be embodied in a chair iron for office chairs such as the iron shown in Figure 1. The numeral 10 indicates a head or bracket member having side walls 12 and 14 to which the seat supporting members or spider 16 and 18 respectively are fixed in any suitable manner such as welding or riveting. A rear wall 20 integral with the side walls 12 and 14 is expanded at 22 and formed for the reception of a tension bolt 24. The bottom of the bracket 10 is adapted to cooperate with a spindle, indicated in dotted line in Figure 5, of the type used on all conventional swivel chairs.

The floatable member 26 having arms 28 and 30 connected integrally by the transverse members 32, 34 and 36 is rotatably associated with the side walls 12 and 14 by passing a pin 38 through said arms and side walls in the manner shown. The pin 38 carries the floatable member 26 and has bearings in the side walls 12 and 14 to form a hinge connection between the member 26 and said side walls. A spring 40 encircles the bolt 24 and abuts the bearing elements 42 and 44 at its extremities. A tubular nut 46 threadedly engages the bolt 24 and is adapted to compress the spring 40 against the bearing 42 which cooperates with the wedge portion 48 of the end member 32. The spring and its assembly is provided to maintain suitable adjustable tension against the tiltable back. A gear wheel 50 is disposed between the transverse members 34 and 36 and has a hub 52 which threadedly interengages the screw 54. The gear 50 meshes with the gear 56 which is keyed to the shaft 58 and which shaft is rotated by means of a handle 60 pressed onto said shaft 58. The screw 54 is supported by bearings in the members 34 and 36. The shaft 58 is carried by a bearing which is integrally related to the arm 30. The screw 54 is hingedly connected to the adjustable back assembly 62 by a pin 64 which passes through the screw 54 and struck out portions 66. A second pair of struck out side portions or tabs 68 integral with the C shaped element or pivotal member 70 are drilled at 74 for the reception of a pin 72 which engages one end of the arms 28 and 30 and passes through the openings 74 in the tabs provided therefor. This pin 72 rotatably connects the adjustable back assembly 62 to the main seat iron assembly.

The pivotal member 70 comprises a back portion 76, end portions 78 and 79 and inturned portions 80 and 81. The inturned portions 80 are slidable in the grooves 82 formed by the back plate member 84, abutment plate 88 and the strips 86. The abutment plate 88 is adapted for frictional engagement with the inturned portions 80 and 81 of the second pivotal member when said inturned portions are urged toward each other as will be hereinafter more fully described. These laminations 84, 88 and 86 form a guide assembly or frictional engaging means for the inturned portions 80 and 81. The end portions 78 and 79 are provided with openings through

which the bolt 90 passes with its threaded end 92 angularly related to the unthreaded portion 90. The head 94 of the bolt 90 engages the end portion 78. The L shaped element or member 96 has a projection 98, which engages the openings 100 of the pivotal member 70, to constrain it from movement when the tubular nut 102, which may be adjusted on the threaded portion 92 and which threaded portion passes through an opening 71 in said L shaped element, is screwed down tightly against the member 96. When the hand wheel 73, which is integrally related to the tubular nut 102 is turned to urge the nut against the member 96 the leg 75, which contacts the free end of the end portion 79, to which the inturned portion 80 is fixed, forces the inturned portion into frictional engagement with the abutment member 88 which holds the plate 84 in its desired position. The threaded end of the bolt 92, which is associated with the hand wheel 73, is displaced from the back plate member 84 to enable an occupant of the chair to freely grasp said hand wheel. The head 94 of the bolt 90 which engages the free end of the end portion 78 forces the free end inwardly which causes the inturned portion 81 to frictionally engage the center or abutment member 88. Hence turning the hand wheel 73 onto the threaded portion 92 will bring the free ends of the pivotal member 70 together whereby the member 88 which is intermedial the introverted members 80 and 81 will be securely clamped into any vertically adjusted position. A stop member 61 having a downturned portion 63 and an upturned portion 65 is securely fixed to the abutment plate 88 in some suitable manner such as welding or riveting. Uprights 55 associated with the back plate member 84 may be provided for supporting a chair back, not shown.

Having described my invention, I claim:

1. In combination with a chair iron, an adjustable back assembly comprising: a pivotal member having struck outside portions integral therewith and adapted for pivotal engagement with the chair iron; end portions having openings therein, inturned portions associated with said end portions, said end portions and inturned portions integrally related to the body of said pivotal member; guide way assembly adapted to engage said inturned portions and including a back plate member, abutment plate and strips; a headed bolt connecting said end portions and having its threaded end bent away from its main body portion; an L shaped member cooperating with said bolt and adapted to engage an end portion of said pivotal member to constrain its movement; a tubular nut associated with said threaded portion of said bolt; a hand wheel integrally related to said tubular nut for adjustment of said nut.

2. In combination with a chair iron, an adjustable back assembly comprising: a pivotal member having struck out side portions integral therewith and adapted for pivotal engagement with the chair iron; end portions having openings therein; inturned portions associated with said end portions, said end portions and inturned portions integrally related to the body of said pivotal member; guide way assembly adapted to engage siad inturned portions; a headed bolt connecting said end portions and having its threaded end displaced angularly from its main body portion; an L shaped member having an opening therein for the reception of said bolt and adapted to engage an end portion of said pivotal member to constrain said L shaped member; a tubular nut associated with the threaded portion of said bolt; a hand wheel integrally related to said tubular nut for adjustment of said nut.

3. In combination with a chair iron, an adjustable back assembly comprising: a pivotal member hingedly connected to said chair iron; a guide way assembly slidably engaging said pivotal member; a bolt interrelated with said pivotal member and having its threaded end displaced angularly from its unthreaded portion; a tubular nut adapted to engage the threaded end of said bolt; an L shaped element interposed between said tubular nut and said pivotal member to clamp said pivoted member against said guideway assembly.

4. In combination with a chair iron, an adjustable back assembly comprising: a pivotal member hingedly connected to said chair iron; a guide way assembly slidably engaging said pivotal member; a bolt interrelated with said pivotal member and having its threaded end displaced angularly from its unthreaded portion; means for applying tension to the bolt angularly with respect to the unthreaded portion to clamp said pivoted member against said guideway assembly; a stop for limiting the vertical movement of said guide way assembly.

5. In an adjustable back assembly of the character described, a C shaped element having openings in either end, and side portions integral therewith and adapted to swivelly connect said C-shaped element to a main chair assembly, a pair of struck out portions integrally related to said C-shaped element and adapted to provide a means for angular adjustment of said back assembly, means cooperating with said C shaped element to urge the free ends of said element toward each other, an abutment member limiting the movement of said free ends toward each other, means associated with said abutment member to form a guide assembly for the free ends of said C shaped element, a stop to limit the vertical travel of said guide assembly.

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