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CHAIR FOR MACHINE OPERATORS

Filed August 17, 1925

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By

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This invention provides a chair for machine and other operators having the adjustments necessary to enable each operator, whether very short, small, large, or very tall, to assume the most comfortable restful position for tedious work requiring such long continued attention in a fixed position as is necessary in repetition engraving operation and other work, for instance; and the objects and nature of the invention will be readily understood by those skilled in the light of the following explanations of the accompanying drawings that illustrate what I now believe to be the preferred mechanical expression or embodiment of my invention from among other forms, constructions, and arrangements within the spirit and scope thereof.

An object of the invention is to provide a seat or chair particularly adapted and intended for the use of machine operators, and embodying improved features whereby the chair can be variously adjusted with respect to peculiarities of the machine to be controlled or tended by the operator, as well as to the requirements of the operator by reason of his or her physical peculiarities or desires to enable the operator to assume the least tiring position or positions during hours of more or less continuous work.

With this and other objects in view, the invention consists in certain novel features of construction and in combinations and arrangements as more fully and particularly set forth and specified hereinafter.

Referring to the accompanying drawings, forming a part hereof:

Fig. 1 shows the chair in side elevation.
Fig. 2 is a rear elevation.
Fig. 3 is a vertical longitudinal section.
Fig. 4 is a cross-section on the line 4—4
Fig. 1.
Fig. 5 is an enlarged detail top plan of the seat collar.
Fig. 6 shows the base in top plan, the post and parts above the base being broken away.
Fig. 7 is a detail rear elevation of the seat support, a portion of the seat being shown, the seat arm and its upholding stop screw not being shown.

In the embodiment illustrated, the chair is carried by a wide or large diameter base embodying a central casting or hub 1, that is fixed to and rigidly unites several (such as four) uniformly spaced radiating elongated horizontal strong stiff (such as T-bar) arms 2, at their outer ends mounted on freely rotatable swivelled roller castors 3. Between the inner end portions of the two front diverging base spider arms 2, the center casting or hub 1 forms and provides a forwardly extending strong horizontal web or floor 4 in front of the hub, and, in the example illustrated, this floor is formed with several spaced top depressions 4", arranged in a row longitudinally of the floor between said front arms. These depressions are formed to receive the lower end of a stop or adjusting screw for certain upper works of the chair, as hereinafter explained.

The hub 1 forms a central vertical hub upstanding from the inner ends of the arms 2, and held by the arms with its lower end elevated a distance above the floor line. A central vertical bore 4', extends through this hub and opens through the upper and lower ends thereof.

The upper portion of the hub is vertically split, at 5" to form a split clamp provided with accessible transverse clamping bolt 6, by which the clamp can be contracted and allowed to open or expand.

The hub bore is formed to longitudinally receive the upstanding vertical column or post 8 of the chair.

The lower end of the column fits in the hub bore and is normally clamped thereto by the split clamp and thereby rigidly held in fixed position with respect to the base.

The column is slidably vertically in the hub, when the clamp is loosened, for vertical adjustment of the column and the upper works carried thereby.

In the example shown, the column or post 5 is composed of a strong stiff cylindrical metal bar of reduced diameter at its cylindrical upper end 6" to receive the seat supporting collar 6, and the seat support 7, and to form the annular shoulder 5" that upholds said collar and support on the column.

The seat supporting collar 6 is normally clamped to the column 5 by front radial set screw 8. The collar 6 is formed with a rigid front upstanding stop flange 6" usually longitudinally elongated and curved concentrically with the vertical bore of the collar, to limit the independent horizontal swing of the chair seat around the column as a center. The collar 6 is also formed with a rigid rearward radial projection formed with a vertical socket in which the upper end of vertical depending foot rest
supporting stud 9 is fixed or otherwise secured so as to depend parallel with and to the rear of the column 5.

The stud 9 is longitudinally threaded and at its lower portion longitudinally extends through the vertical bore of a vertically radial split clamp 10, forming a radial rearward extension of the vertical hub 10 of the foot rest support 10. In the example illustrated, the hub 10 is vertically split to form a split clamp and a transverse clamping bolt 11 is provided to simultaneously contract the hub 10 and clamp 10 and permit the same to expand or open. The main supporting post or column 5 extends through the hub 10 and under certain conditions or adjustments the foot rest support is slideable vertically on said column. The stud 9 is provided with stop nuts 9, adjustable vertically thereon and normally abutting the upper and lower end faces of the clamp 10 that forms a part of the foot rest support.

In the example shown, the foot rest support consists of a horizontally disposed spider-like metal bracket or casting 10 arranged to a major extent in front of the column 5 and having a series of spaced vertical depending studs or foot rest hangers 12, normally fixed thereto and usually spaced uniformly from the column 5. At their lower ends, these studs 12 are normally fixed to the foot rest 14 to rigidly uphold and support the same. The foot rest consists of a horizontal longitudinally elongated arcuate metal plate arranged forwardly from and preferably concentric with the column 5 with the lower ends of the supporting studs entering and secured to its rear edge portion. In the example shown, the foot rest extends through an arc of approximately 180°, although I do not wish to so limit my invention.

The foot rest is formed with a screw threaded vertical bolt hole at its central portion in front of the column 5 in advance of its supporting studs and above the floor 4. A foot rest adjusting screw 15 extends through this hole and meshes with the threads thereof for vertical adjustment with respect to the foot rest. This screw constitutes a foot rest stop, and is provided with an accessible top handle and the lower end of the screw abuts the top floor 4, and is formed to enter any one of the depressions 4 therein. The collar 6 is upheld by end seats on the column shoulders 5. The seat support 7 embodies a horizontally disposed plate 7a on which any suitable seat 19 rests and to which it is secured in any suitable manner or by any suitable means, preferably fixing the seat tightly to the support. The seat support and its plate 7a can consist of a single casting and, in the example shown, the seat support embodies a depending vertical tubular portion or hub receiving and freely rotatable on the reduced upper end 5c of the column, and at its lower edge seated and bearing on the upper surface of the collar 6.

The seat support casting is formed with a depending lug 7c extending rearwardly from and approximately horizontally with respect to the depending hub 7c of said support, and the rear of said lug 7c, said seat support is formed or provided with a rigid vertically elongated yoke or loop 7d depending from the plate 7c. A vertical set screw 16 is vertically adjustable through the bottom cross web or portion of this loop 7d.

An adjustable back rest is preferably provided for the chair, and in the example shown this rest consists of a back pad 18, and a strong stiff back rest arm 17, of an approximate J-shape with its vertically elongated major length extending upwardly with respect to and located rearwardly beyond the seat 15, and with its laterally bent lower end extending forwardly through the yoke 7c and resting on the upper end of set screw 16. The front extremity 17a, of the back rest arm preferably straddles the lug 7c, and is pivotally coupled thereto by cross pin or bolt 19. The arrangement is such that the back rest arm is swingable vertically on the pin 19 as an axis to move the back rest or pad 18 forwardly and rearwardly in an approximately horizontal path, and the position of the pad toward or from the occupant of the chair is determined by the vertical adjustment of the set screws 16, on which the arm 17 rests and by which it is upheld. The back rest or pad 18 is preferably vertically adjustable on and with respect to the vertical free upper end of the arm 17, and any suitable structure and arrangement can be provided for this purpose. For instance, the vertical upper portion of the arm 17 is formed with a longitudinal slot 17a and the pad 18 is fixed to a back plate 18 fitting the front edge of the slotted portion of arm 17, and interlocking therewith to slide vertically thereon, and normally clamped rigidly thereto by a suitable bolt having accessible clamping head or nut 20, exposed at the rear edge of the slotted portion of arm 17. The limit of the free horizontal rotation of the seat with its back on the column 5 as an axis is established by the vertical end edges of the flange 6a that stands in front of the hub 7 of the seat support. The seat is free to rotate horizontally through any suitable arc, say through 180° until the lug 7c engages the stop flange 6a. This is a feature of advantage in a machine operator's chair to enable the operator to swing under and from beneath projecting or overlapping parts of a machine, after seating himself in the chair or in preparing to leave the chair.

A substantial range of vertical adjustment.
is provided for the back rest to accommodate chair occupants of various sizes and having various position requirements, and the same is true of the forward and rearward back rest adjustment.

A range of vertical adjustment of substantial length is provided for the entire upper works of the chair with respect to the base, inasmuch as the post or column, carrying the seat with its back and the foot rest, is adjustable vertically in the base hub by loosening the base hub clamping bolt, and then adjusting the screw 15, vertically through the foot rest, to accurately attain the vertical adjustment desired. The base hub clamp is then tightened.

A substantial range of vertical adjustment of the foot rest with respect to the seat and base is also provided for, and this is accomplished by loosening the clamps 10, 10, so that the foot rest support can slide vertically with respect to the column and the stud 9, the stop nuts 8 having been first adjusted to permit the desired vertical movement of the foot rest support with respect to stud 9. When the clamps 10, 10, have been released and the nuts 8, if employed, properly shifted, the screw 15 is adjusted vertically to stop or support the foot rest at the desired vertical position. The clamps 10, 10, are then tightened and the stop nuts 8, if employed, are adjusted to engage the top and bottom ends of clamp 10.

The seat and foot rest are normally centrally arranged over the floor 4 of the base which is located in front of the axial line of the post or column 5, and between the two front diverging base arms 2. These front arms 2, usually, straddle the base of the machine to be operated or tended by the chair occupant, but it sometimes happens that machine constructions are such that the foot rest, when in normal relative position, will contact some part of the machine and prevent the desired positioning of the chair with respect to the machine. I hence have provided for horizontal rotary adjustment of the entire upper works, i.e. the foot rest and chair seat with respect to the base, on the longitudinal axis of post 5 as a center through an arc, say, of about fifty or sixty degrees or more or less. This can be accomplished by loosening the clamping bolt 11 to permit the post 5 to rotate in the base hub (the upper works and post being then sustained by the screw 15) and then lifting the upper works so that the lower end of screw 15 will clear the depressions 4, and horizontally rotating the upper works until the screw end will drop into the particular depression 4 with the foot rest and base in the desired relative positions. The clamping screw can then be tightened to lock the post to the base. The same adjustment can also be made by loosening the clamping bolt 11, and the set screw 8, so that the upper works can rotate on the post while the post remains clamped to the base.

It is evident that various changes, variations and modifications might be made and resorted to without departing from the spirit and scope of my invention, and hence I do not wish to limit the invention to the exact disclosures hereof.

What I claim is:

1. A chair comprising a base, an upstanding post carried thereby, said post being normally fixed with respect to the base, means whereby said post is rendered vertically adjustable with respect to the base, a foot rest normally fixed with respect to the post, said foot rest forming an enlarged horizontal platform located above the front portion of the base, said base and foot rest being relatively arranged to prevent forward tilting of the chair under the weight of the occupant of the foot rest, a seat mounted on the post, and means whereby said foot rest is supported independently of the seat and rendered vertically adjustable on the post independently of the seat and base and horizontally adjustable with respect to the base and on the post as a center.

2. A chair comprising a base embodying a vertical hub and radiating arms rigid therewith and mounted on castors, said hub embodying a clamp; an upstanding post vertically adjustable in said hub and normally fixedly clamped therein; a chair seat mounted and rotatable on said post; a foot rest normally fixed to said post independently of said rotary seat and above the front arms of said base, and means whereby the foot rest is rendered vertically adjustable with respect to the seat and horizontally adjustable on said post as a center and with respect to said base.

3. A chair comprising a base, an upstanding post carried by the base, a seat mounted on the post, a foot rest support independent of the seat and normally fixed to the post, a foot rest, means normally fixing said rest to said support, a vertically-adjustable stop between said base and foot rest, and means whereby said support and the foot rest can be adjusted toward and from the seat.

4. A chair comprising a base, a vertical post rising therefrom, a seat provided with a support having a socket loosely mounted on the upper end of the post, a seat collar normally fixed on the post and upholding said seat support, a clamp normally fixed on the post and adjustable rotatively and vertically thereon, a normally fixed spacing connection between said collar and said clamp to one side of the post and provided with means rendering said connection extensible to vary the spacing between the collar and clamp, and an elongated horizontal
arcuate front foot rest arranged above the base and carried by said clamp and adjustable vertically and horizontally therewith.

5. A chair comprising a base, an upstanding post carried thereby and provided with a seat for the occupant, an elongated horizontal arcuate front foot rest above the base and below the seat, a foot rest stop between the base and foot rest and vertically adjustable with respect to the foot rest, and a foot rest carrier normally fixed to said post and vertically adjustable with respect to the seat.

10. A chair comprising a post, a seat collar thereon having a stop flange, a seat support rotatable on said post and upheld by said collar, and having portions to engage said flange to limit seat rotation, a seat fixed on said seat support, a front horizontal arcuate foot rest below said seat, and a carrier for said rest supporting the same independently of said seat, said carrier normally fixed to said post and embodying means rendering the carrier and rest vertically adjustable with respect to said seat.

15. A chair comprising a base embodying radiating arms having swiveled roller castors and a center bore and clamping means, an upstanding post vertically and rotatively adjustable in said bore and normally fixed to the base by said clamp, a chair seat carried by said post, a clamp normally fixed on said post and adjustable vertically thereof, and a horizontal front arcuate foot rest fixed to and carried by said clamp and arranged above the base and below the seat, said seat having a horizontal swing on the post as a center limited approximately to the length of said foot rest, said foot rest and base having a limited relative horizontal adjustment on the longitudinal axis of said post as a center.

20. A chair comprising a base, an upstanding post carried by the base, a seat mounted on the post, a seat collar mounted on the foot rest support on the post and coupled to said stud, a foot rest carried by said support, the base and foot rest being relatively adjustable horizontally on the post as a center.

25. A chair comprising a base, a post carried by the base, a seat carried by the post, a foot rest provided with and carrying a stop member vertically adjustable with respect thereto and resting on the base, and means for supporting the foot rest from the post and rendering the same vertically adjustable with respect thereto.

30. A chair comprising a base having a floor, a post supported by the base, a seat mounted on the post, a foot rest, provided with and carrying a screw adjustable vertically therethrough and at its lower end resting on said floor, means supporting the foot rest from the post, and means whereby the foot rest is rotatably adjustable horizontally with respect to the base and said floor.

35. A chair comprising a base and upstanding post, a seat collar normally fixed to the post, a stud depending from the collar, a foot rest support having a clamp embracing the post and said stud whereby the support is normally clamped to said post and stud and is rendered vertically adjustable with respect to the post, a foot rest carried by said support, and a vertically adjustable screw carried by said rest and resting on said base.

40. A chair comprising a base, a post, a seat mounted on the post, an arcuate foot rest in front of the post, and a spider-like foot rest support and clamp on said post and provided with depending foot rest carrying studs fixed to the inner edge portion of the rest.

Signed at Cement, Oklahoma, this 24th day of July, 1925.

GEORGE GORTON.