May 27, 1969 H. W. CRAMER 3,446,532

CHAIR

Filed March 13, 1967

Fig.5.

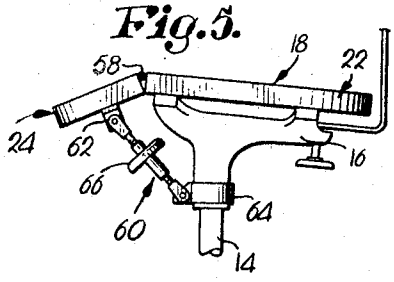


Fig.1.

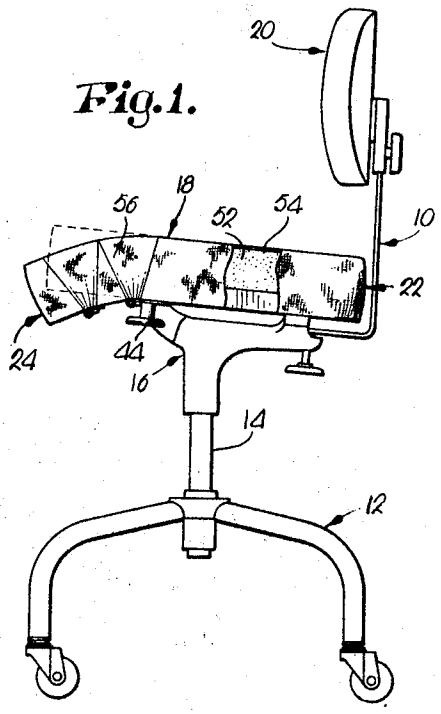


Fig.6.

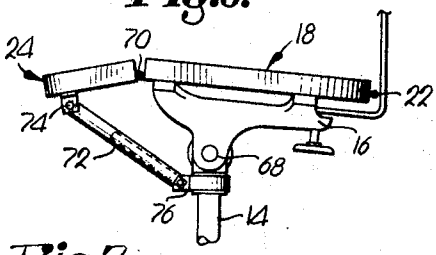


Fig.7.

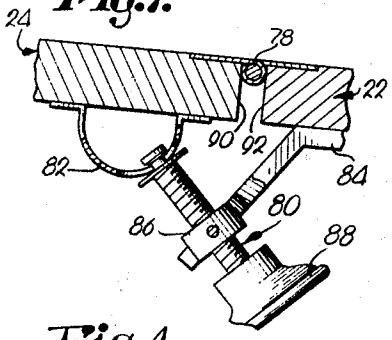


Fig.2.

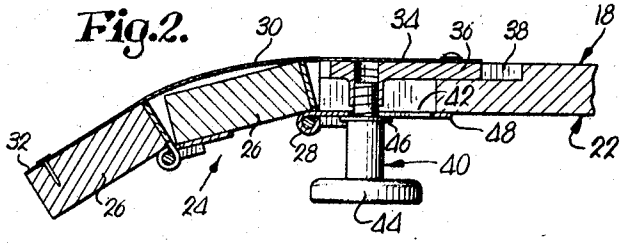


Fig.4.

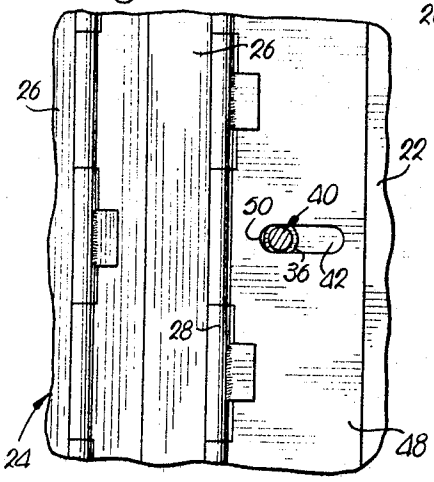
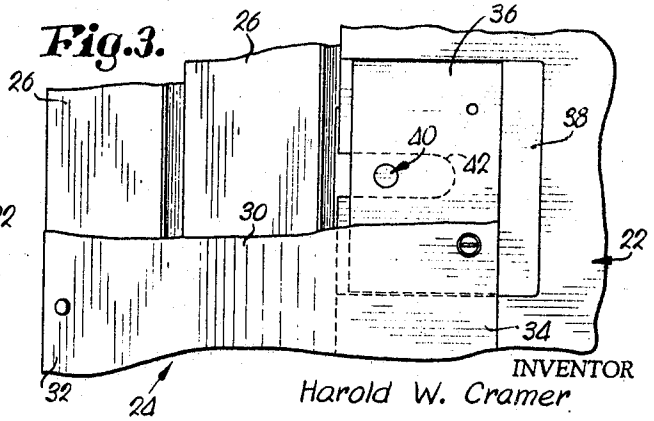


Fig.3.



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CHAIR

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U.S. Cl. 297—312 7 Claims

ABSTRACT OF THE DISCLOSURE

A chair seat for office chairs which are adjustable in height, the seat having a rear portion and a front portion, the two portions being hingedly interconnected to permit swinging of the front portion from an initial position where the front portion and rear portion are in a common, substantially horizontal plane to a second position where the front portion extends angularly downwardly from the rear portion; there being means for adjusting the extent of swinging movement of the front portion into its downwardly extending position, such adjusting means taking several forms, such as a slide block having an operating member to secure the same in a selected position; a turnbuckle interconnecting the front portion of the chair seat with the standard of the chair; a linkage of fixed length to swing the front portion downwardly when the rear portion is tilted rearwardly; and adjusting means in the form of a screw interconnecting the front portion and the rear portion.

This invention relates to chair seats for office chairs, which office chairs are normally adjustable in height so that the user thereof can be positioned in the most comfortable position relative to the work surface. In many instances, the work surface is of unusual height, thereby necessitating elevation of the chair seat to a point where a person of shorter stature cannot comfortably place his feet on the floor. In attempting to meet this problem some chairs have been provided with rungs adjacent the base thereof or other equivalent structure upon which the user of the chair, when it is elevated to an extraordinary height, may rest his feet.

However, such a solution has not been universally satisfactory and it is, therefore, the primary object of this invention to provide, in an office chair or the like, a chair seat having a rear portion and a front portion, the front portion being swingable relative to the rear portion so that, when the chair seat is necessarily elevated to a height where the user thereof cannot comfortably place his feet on the floor, the said front portion may be swung angularly downwardly with respect to the rear portion. Hinge means interconnect said portions to allow said front portion to swing downwardly from the substantially horizontal plane in which it is initially positioned, thus permitting the user of the chair to rest his feet on the floor in a comfortable manner, the downward inclination of the front portion of the chair relieving pressure on the underside of the legs of the user thereof as would be exerted if the entire chair seat were maintained in a horizontal plane when the chair was elevated to an unusually high position.

It is a further important object of this invention to provide means for adjusting the extent of downward swinging movement of the front portion of the chair seat to the end that the user thereof may particularly adjust the angle of inclination of said front portion to this personal comfort.

Yet another object of this invention is to provide various adjusting means as will hereinafter be described, certain of said means being adapted for use in connection with a chair seat wherein the rear portion of the seat remains in a substantially horizontal plane, other of said adjusting means being adapted for use with a chair wherein the rear portion of the seat is tiltable rearwardly.

Other objects include details of construction which will become apparent from the following specification and accompanying drawing, wherein:

FIGURE 1 is a side elevational view of an entire chair showing the chair seat with one form of adjusting means;

FIG. 2 is a fragmentary, sectional view showing in greater detail the adjusting means of the chair seat as illustrated in FIG. 1;

FIG. 3 is a fragmentary, top plan view thereof;

FIG. 4 is an enlarged, fragmentary bottom plan view thereof;

FIG. 5 is a fragmentary, side elevational view showing another form of adjusting means;

FIG. 6 is a fragmentary, side elevational view showing a form of adjusting means wherein the rear portion of the chair seat is tiltable; and

FIG. 7 is an enlarged, fragmentary view showing yet another form of adjusting means.

The typical office chair **10** includes a base **12** made up of a plurality of legs, rollers normally being provided at the lowermost end of said legs to facilitate movement of the chair; a standard **14** carried by said base **12**; a spider **16** carried at the upper end of said standard; a chair seat **18** supported by said standard; and a back **20** for the chair **10**. It will be appreciated that standard **14** is normally carried by base **12** in such a manner that the overall height of the chair may be adjusted to accommodate comfortably a user thereof.

When the height of the chair **10** is adjusted to a point where the user can comfortably work on a given surface, said surface is many times of such height that the user of the chair **10** cannot comfortably place his feet upon the floor which supports chair **10**. If an attempt is made by the user to place his feet upon the floor, the conventional chair seat, which remains in a horizontal plane, will exert an undesirable upward pressure on the thighs of a person sitting in the chair, resulting in substantial discomfort and adverse working conditions.

In the present invention, a chair seat **18** is provided, which seat has a rear portion **22** and a front portion **24**, the front portion being swingable relative to the rear portion whereby said front portion may be inclined angularly downwardly with respect to the rear portion to thereby lessen the upward pressure on the legs of a user of such chair **10** and permit a more comfortable working posture.

While portions **22** and **24** are of the same width, rear portion **22** is of greater depth and, therefore, comprises the major area of the chair seat **18**, front portion **24** comprising a minor area thereof in the nature of one-third of the total area of the overall surface of chair seat **18**. The spider **16** is connected only to rear portion **22**, fixedly supporting the same but permitting controlled swinging movement of the front portion **24** in a downward direction as will be hereinafter described.

In the preferred embodiment of the invention illustrated in FIGS. 1–4, the front portion **24** is articulated, consisting of at least a pair of hingedly interconnected sections **26**, one of said sections being connected to the rear portion **22** as by a hinge **28** whereby the front portion may be swung downwardly to the position shown in FIG. 2 of the drawing for instance.

To permit such swinging movement of the front portion **24**, a plate **30** is disposed in overlying relationship to the articulated sections **26**, one end **32** of the plate being connected to the outermost of sections **26**, the inner end **34** of plate **30** being movably connected to a block **36**, which block **36** is disposed within a recess **38** provided in the upper surface of rear portion **22** of seat **18**.

An operating member **40** is carried by block **36** and ex-

tends downwardly therefrom through a slot **42** provided in rear portion **22**, slot **42** being in communication with recess **38**. Operating member **40** is in the nature of a threaded stud having an operating handle **44** at the free end thereof, said free end and, therefore, operating handle **44**, normally being disposed beneath the chair seat **18** as clearly shown in FIGS. 1 and 2 of the drawing. When operating handle **44** is rotated in one direction it causes an annular ring **46** to be brought into engagement with the lower face of a strip **48** secured to the bottom of rear portion **22**, thereby locking the block **36** in a desired position against movement.

When it is desired to swing front portion **24**, operating handle **44** is rotated in the opposite direction, thereby releasing ring **46** and permitting movement of block **36** within recess **38**. The user can then press downwardly on plate **30** causing the front portion **24** to swing downwardly with respect to rear portion **22**, which rear portion maintains its substantially horizontal position. When the desired position of adjustment of front portion **24** is reached, operating handle **44** can then be rotated to again lock ring **46** and therefore block **36** against movement, thereby securing the front portion in a selected position with respect to rear portion **22**. It will be noted that a portion of the hinge **28** embraces slot **42** whereby to define an edge **50** which serves as a stop for the threaded stem of operating member **40**, thus limiting the possible extent of downward swinging movement of front portion **24**.

It is contemplated that the chair seat **18** will support a cushion **52** substantially conventional in construction, and that cushion **52** will be provided with a cover **54**, which cover **54** will, in turn, be provided with gussets such as **56** therein to thereby permit cushion **52** and cover **54** to accommodate themselves to the configuration of the overall chair seat when front portion **24** is swung to its downwardly inclined position with respect to rear portion **22**. A similar cushion and cover assembly is contemplated for the remaining forms of the invention hereinafter described, it only being important that the cushion be of a material, such as sponge rubber or the like, and the cover be provided with gussets so that the cover and the cushion may cooperate in accommodating themselves to the upper surface of the chair seat **18** as the same is varied through the swinging of front portion **24**.

In the form of the invention illustrated in FIG. 5, the front portion **24** takes the form of a single length of material, said length of material being connected with the rear portion **22** of the seat **18** by a hinge **58**, whereby said front portion **24** may be swung relative to said rear portion **22**. The structure shown in FIG. 5 of the drawing includes a turnbuckle **60** which has one end thereof connected to front portion **24** as by a bracket **62**, the other end of the turnbuckle **60** being connected with the spider **16** as by a clamp **64** whereby, upon actuation of an operation knob **66**, the overall length of turnbuckle **60** can be decreased, thereby causing front portion **24** to swing from its initial position wherein it and rear portion **22** are in a common, substantially horizontal plane to a position wherein said front portion **24** is disposed in a position extending angularly downwardly with respect to said rear portion **22**. Here again, a cushion and cover will be provided for the chair seat **18** which will be of such a construction to accommodate themselves to the portions **22** and **24** of the seat when it is in the position shown in FIG. 5 of the drawing. As can be appreciated, the user of the chair may, by convenient actuation of operating knob **66**, create the desired extent of angular inclination of front portion **24**.

The form of the invention illustrated in FIG. 6 is particularly designed for chairs wherein the seat **18** is tiltable rearwardly about a horizontal axis such as **68**, spider **16** being interconnected with standard **14** in such a manner as to permit rearward tilting of the chair seat **18** and, most particularly, rear portion **22** thereof.

Front portion **24** is secured to rear portion **22** as by a hinge **70**. A linkage **72** of fixed length interconnects front portion **24** with the standard **14**, said linkage being connected to front portion **24** as by a bracket **74**, and to standard **14** as by a clamp **76**, whereby, when rear portion **22** is tilted rearwardly about axis **68**, the front portion **24** will, as a result of being held against tilting movement by linkage **72**, assume a position extending angularly downwardly from said rear portion **22**. The extent of downward inclination of front portion **24** can be predetermined by the length of linkage **72**, said length remaining fixed during the tilting of rear portion **22**.

In the embodiment of the invention illustrated in FIG. 7, front portion **24** is connected to rear portion **22** by a hinge **78**, said portions being additionally adjustably interconnected by a screw **80**, screw **80** having one end coupled to the front portion **24** as by a U-shaped bracket **82** which receives the free end of screw **80**, there being a bracket **84** rigidly secured to the underside of rear portion **22** and carrying a bearing **86** to rotatably support the screw **80** intermediate the ends of the latter. An operating knob **88** is provided at the other end of screw **80**, which knob is positioned to be conveniently operated by the user of the chair. Upon rotation of screw **80** in one direction, the front portion **24** is caused to swing downwardly about hinge **78** so that said front portion **24** is inclined angularly downwardly with respect to rear portion **22**. Upon rotation of the screw **80** in the opposite direction, said front portion **24** can be repositioned in the same, substantially horizontal plane in which rear portion **22** remains. As is apparent from FIG. 7, the downward swinging movement of front portion **24** is limited in that the rear edge **90** thereof will, after a predetermined angularity has been achieved, be brought into abutting engagement with the front edge **92** of rear portion **22**, the meeting of said edges serving to stop or limit the relative downward inclination of front portion **24** with respect to rear portion **22**. The same is true with the structure shown in FIG. 5 of the drawing.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In combination with a chair having a base, a standard carried by said base and a back, a chair seat supported by said standard and having a rear portion and a front portion, said front portion being swingable relative to said rear portion; hinge means interconnecting said front portion and said rear portion, said portions initially lying in a common, substantially horizontal plane, said front portion being swingable into a plane extending angularly downwardly from said horizontal plane; and means for adjusting the extent of swinging movement of said front portion relative to said rear portion, said front portion being articulated and consisting of at least a pair of hingedly interconnected sections, there being a plate overlying said sections, one end of said plate being connected to the outermost of said sections, the other end of said plate being movably connected with said rear portion of the chair seat.

2. The invention as set forth in claim **1**, said adjusting means being in the form of an operating member coupled to said inner end of the plate and movable therewith, said member being releasable to permit shifting of said front portion and lockable to secure said front portion in a selected position with respect to said rear portion.

3. The invention as set forth in claim **2**, there being a block secured to said other end of the plate, the rear portion of said seat having a recess formed therein, said block being movably disposed within said recess, said operating member being carried by said block and depending therefrom, said rear portion having a slot formed therein for receiving said operating member.

4. In combination with a chair having a base, a standard carried by the base and a back, a chair seat supported by said standard, said seat having a front portion and a rear portion, each of said portions having an upper surface and a lower surface; hinge means joining the ad-

jacent lower surfaces of said portions whereby said portions may be shifted from an initial position in a common, substantially horizontal plane to a position with said front portion being angularly disposed with respect to said rear portion and with said upper surfaces of said portions being spaced apart above said hinge means; and means for limiting the extent of shifting movement of said front portion.

5. The invention as set forth in claim **4**, said limiting means including a plate overlying the upper surfaces of said portions, said plate being connected to each of said portions in such a manner as to permit limited relative shifting movement thereof.

6. The invention as set forth in claim **5**, said plate being disposed in opposed relation to said hinge means.

7. The invention as set forth in claim **6**, said front portion consisting of at least a pair of hingedly interconnected sections.

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