ABSTRACT OF THE DISCLOSURE

A seat frame with a seat member thereon supported by crossed folding supporting legs and a backrest supported pivotally from the seat frame by a backrest frame with lock means provided for locking the backrest in an upstanding position from the plane of the seat frame. The backrest is pivotally supported from the backrest frame for rotatable movement about substantially a horizontal axis located centrally of the backrest for positioning in vertical and horizontal positions to enable the assembly to be used as a chair or as a desk. The supporting leg assembly is detachable and a bumper is provided at the forward edge of the seat frame for connection with a bleacher plank or seat.

This invention generally pertains to improvements in chair constructions and more particularly relates to a novel folding chair, which is so constructed that it can be used as a conventional chair for seating purposes, as a combined seat and table top, thus constituting a desk, or as a seat for attachment to a bleacher plank. Another important object of the present invention is to provide a chair assembly which is readily and easily convertible from an extended or opened body supporting position to a collapsed or folded carrying position and which is constructed in such a compact, simple and sturdy manner so that it can be easily folded and unfolded and which, when in a horizontal extension position will support the body of a person, irrespective of the weight of the person's body, and when in a folded or collapsed position will be so compact and lightweight that it can be easily carried in one hand.

Another important object of the present invention is to provide a chair assembly which includes a seat assembly and a leg assembly, with the leg assembly being pivotally attached to the seat assembly so as to be disposed in extended supporting relationship therewith and in collapsed folding relationship therewith and the leg assembly being completely removable, in a simple and easy manner from the seat assembly, with the seat assembly having means for securing it to a bleacher plank or the like, so that the chair, with the leg assembly removed therefrom, can be used as a seat and backrest in conjunction with a bleacher plank or similar structure. Another important object of the present invention is to provide a chair assembly, which includes a seat frame on which a seat member is mounted and a back frame which supports a backrest, the backrest being positionable in a vertical position so as to support the back of a person seated on the seat member and being positionable in a horizontal position, parallel to the seat member, so as to constitute a table top, whereby the chair can be converted into a desk. A further important object of the present invention is to provide a chair assembly wherein the backrest frame is pivotally carried by the seat frame and is movable from a collapsed folded position into an upright position, perpendicular to the seat frame and a seat member mounted on the seat frame, with simple but reliable latching means being provided for locking the backrest frame in a vertical position.
fixedly superimposed on the front end edge 28 of the seat assembly so as to protect the seat assembly against damage if the front end is accidentally struck against an object, when in open position, as shown in FIGURE 1, and particularly, when the chair assembly is in a folded or collapsed position, as shown in FIGURE 2.

The seat assembly 12 further includes, apart from the seat 18 which is composed of the cushion 20, the covering 22, a seat frame 34, on which the seat member is mounted. The seat frame 34 comprises a generally U-shaped, tubular rod 36, which is formed from lightweight metal or alloys, such as aluminum alloy, includes a bight or web portion 38 and opposing legs portions 40 and 42. The underside or bottom face of the rigid member 18 of the seat member is formed with channel members 44 and 46. The legs 40 and 42 of the U-shaped seat frame 36 are fixed in the channels by fasteners 45, which extend through the side walls or flanges 46 of the channels and pass transversely through the legs, intermediate the connected and free end portions thereof, as shown in FIGURE 2. The web or bight portion 38 of the U-shaped frame member 36 is disposed adjacent the front end portion 24 of the seat member, while the legs extend rearwardly therefrom and are spaced laterally apart and extend in parallelism along and inwardly of the opposing sides of the seat member, as shown in FIGURES 2 and 3.

The legs 40 and 42 terminate in upstanding, free end portions 48 and 50, such end portions being integral prolongations of the legs and being vertically disposed, when the seat is in an open position for occupancy, as shown in FIGURES 1 and 4, and being connected integrally with the leg portions by arcuate or curved juncure portions 52.

The vertical end portions 48 and 50 terminate in flattened distal ends 54 and 56 which are spaced laterally apart and are positioned slightly above the seat cushion, as shown in FIGURE 4. The ends 54 and 56 pivotally support a frame 58 for the back assembly 16. The frame 58 for the back assembly includes a U-shaped, one piece tubular rod 60, which includes laterally spaced, parallel substantially straight terminal leg portions 62 and 64, between which a backrest 66 is disposed and to which the backrest 66 is attached for pivotal movement, as will be described.

The bight or web portion 68 of the rod is disposed inwardly of the leg portions 62 and 64 and is connected thereto by outwardly curved juncure or connecting integral portions 70 and 72. The outermost ends of the bight portion 68 are disposed between the flattened ends 54 and 56 and are pivotally or swingingly attached thereto by a transverse rod 74 which extends through suitable apertures in the flattened ends 54 and 56 and through suitable, aligned apertures in the bight portion 68, as shown in FIGURES 1 and 3, with the rod being held in position by a locking nut 76.

Means is provided for positioning the back assembly 16 in a vertical position, so that the frame 58 is vertically orientated with respect to the horizontally disposed seat assembly 12, when the chair is in an open position, as shown in FIGURE 1. Such means includes a rod 80, which extends transversely between the leg portions 48 and 50 downwardly and inwardly from the flattened distal ends 54 and 56 and against the outer side of which the bight portion 68 of the backrest frame 58 is adapted to abut, with the bight portion 68 carrying a pivotal latch hook 82 adapted to hook over the rod 78, as shown in FIGURE 1. The latch hook 80 is pivotally carried by the inner leg portion of the bight or web portion 68 by a pivot pin 69 and is movable in a slot 82. The latch finger 80 has its shank portion moveable in the slot 82 and the inner end of the shank portion is pivoted, at 69 (FIG. 3), so that the latch finger may be moved upwardly and downwardly and is adapted to drop downwardly by gravity so that its outer hook end 84 fits over the rod 78, whereby the rod 78 and the latch finger 80 cooperate to structurally sustain the framework 58 in a vertical position.

The backrest 66, as shown in FIGURES 3, 5 and 6, includes a rigid plate-like member 88, which may be of any cross-sectional configuration but which is shown as substantially square or rectangular and which has opposing side edges 90 with the backrest being interposed between the legs 82 and rigid member 90, which may be formed from wood, plastic or any material, as in the instance of the member 18 of the seat assembly. The face 94 is normally the inner face, when the backrest 66 is disposed vertically, in FIGURE 12 and then with the seat assembly, as shown in FIGURE 1, for supporting the back of a person seated on the chair. A covering 95 encloses the cushion 92 and has its edges turned and attached, by staples, tacks or the like (not shown) to the normally outer face or side 98 of the member 88.

The opposing sides 90a of the member 88 are secured by pivot pins 100 to the flattened distal ends or free ends 102 of the outer leg portions 62 and 64 of the frame 58. Means is provided for disposing and retaining the backrest 66 in a vertical position, wherein the cushion 92 supports the back of an occupant of the chair and for positioning the backrest in a horizontal position, as shown in FIGURE 5, wherein the face or side 98 of the rigid member 88 may be utilized as a table or desk top, so that the chair can be converted into a structure simulative of a desk. As shown in FIGURES 5 and 6, a rigid strap 104 is provided which has an upper end portion 106 provided with an aperture to receive a pivot pin 108 whereby it is pivotally attached to one side 90a of the rigid member 90 of the backrest. The adjoining leg portion 64 of the frame 58 is formed of its inner face, below the pivot 100 with a slightly inwardly projecting pin 110. The strap 104 is formed with an elongated, axial slot 112 and the upper end portion 114 of the strap is formed with a lateral offset end 116 of the slot, the lateral offset dot 116 constituting a locking means, in conjunction with the pin 100, for securely positioning the backrest in a horizontal position, as shown in FIGURE 5. In such position, the face or side 98 of the rigid member 88 may be utilized as a desk top with a person sitting on the seat member and utilizing the thusly defined and constituted desk top as a supporting surface upon which to position writing or reading material.

When the strap 104 is moved inwardly and upwardly so as to remove the lateral extension 116 of the axial slot 112 from locking engagement with the pin 106, the strap 104 moves downwardly on the pin, with the pin traveling in the axial slot 112 up to its upper end, as shown in FIGURE 6 and the pin, in such position in the upper end of the slot 112, locking the backrest 66 in a vertical position, the backrest being orientated vertically between and parallel with the leg portions 62 and 64 of the frame 58, as shown in FIGURES 1 and 6.

The leg assembly 14 includes a front leg structure 118 and a rear leg structure 120. The front leg structure 118 is composed of a single supporting rod 122, having a cross rod 124 provided on its lower end, with the opposing ends of the cross rod 124 having resilient cups 126 fitted thereon and constituting supporting means for the bottom or foot rod 124. The upper end of the single supporting rod 122 terminates in a cross rod 128, which has its opposing ends slidable disposed in channel guides 130 and 132. The guides 130 and 132 are formed, adjacent the rear end portion 26 of the seat assembly, with closed ends 134, which constitute stop or abutment means so as to locate or dispose the rod 122 in its proper extended and depending supporting position relative to the seat assembly. The cross rod 124 have their upper flanges 136 suitably fixed to the underside of the seat member 18, inwardly of parallel or with the leg portions 40 and 42 of the seat frame rod 36 and
the channel guides are open towards each other or in facing relation to receive the opposing ends of the rod 128 transversely provided on the upper end of the vertical supporting rod 122 of the front leg structure 118. The front ends 130 of the guides are open, as shown particularly in FIGURES 2 and 3, so that the rod 128 can be removed therefrom, when the leg assembly 120 is detached from the underside of the seat assembly 12, as will be described.

The rear leg structure 120 of the leg assembly 114 is composed of a pair of parallel rods 140 and 142, which are spaced laterally apart a sufficient distance to receive the cross rod 122 and which are disposed in parallel relationship. The rods 140 and 142 of the rear leg structure 120 receive therebetween the rod 122 of the front leg structure 118 and are pivoted thereto by a pivot pin 144, the pivot pin pivotally interconnecting the leg structures, intermediate the upper and lower ends of the rod 122 and the rods 140 and 142, as shown in FIGURES 2 and 3. The lower ends of the companion rods 140 and 142 are provided with a transverse rod 146, which has opposing ends on which resilient cups 148 are disposed for engagement with the floor surface in cooperation with the positioning of the foot rod 124 and engagement of the floor surface by the resilient ends 126 of the rod 124.

Means is provided for pivotingly attaching the upper ends of the rods 140 and 142 to the eight portion 28 of the seat frame. Such means, as shown in FIGURES 2 through 4, comprises a pair of ears 150, which are carried by and project rearwardly from the eight portion 28 and are disposed in spaced apart relation. The ears are formed with axial slots 152 which are adapted to receive a transverse pin 154, which is fixed between the upper ends of the rods 140 and 142 of the rear leg structure 120.

As shown in FIGURES 3 and 4, the pin 154 is held within the slots 152 and pivotally disposed thereby within the ears 150 by a resilient latch strap 156. The resilient latch strap 156 has a rearward end portion 158 which is fixed by fasteners 160, such as rivets or the like, to the underside of the rigid member 18 of the seat member and has a free hook-like end portion 162, which extends towards the front end portion 24 of the seat assembly 18 and which is adapted to grip and retain the pin 154 in position within the ears 150 so that the pin 154 in its held and sustained position can serve as a pivot for the rear leg structure 120.

When the leg structures 120 and 122 are in their extended positions, as shown in FIGURES 3 and 4, the front leg structure 122 is fully extended and the ends of the upper cross-bar 128 are in abutting engagement with the closed ends 134 of the guide rails or channels and the rear leg structure 120 is pivoted downwardly about the pivot pin 154, which is held captive by the resilient latch means 156. A locking means is provided, so as to hold the front and rear leg structures 122 and 130 in such depending, crossed relationship and the locking means includes a resilient catch or latch 164, which is shown more particularly in FIGURE 4. The resilient latch 154 comprises a fixed end portion 166, which is secured by fasteners 168 to the underside of the member 18 of the seat assembly and which has a free resilient end portion 170 that is adapted to engage in front of the crossbar 128 on the upper end of the rod 122, as shown in FIGURE 4.

To fold the legs, it is only necessary to disengage the latch means 164, specifically the free latching end 170 from engagement with the cross rod or bar 128, whereupon the cross rod is free to slide forwardly in the guide channels 130 and 132, while the rear leg structure 120 pivots about the ears 150 by virtue of its rotateably anchored pivot pin 154. The legs collapse toward the rear end portion 26 of the seat assembly, with the rear leg structure 120 swinging upwardly and rearwardly about the ears 150 and the front leg structure 120 swinging forwardly and rotating rearwardly by virtue of the engagement of the ends of the cross rod 126 in the guide channel 130 and 132. Thus, the leg structures are disposed in a folded or collapsed position, with their bottom cross rods or feet 124 and 146 in adjoining relationship and with the rod 122 interposed between the rods 140 and 142, the associated rods pivoting about their connecting pivot 144. Such collapsed position is shown in FIGURE 2 and it can be appreciated that the foot or cross rods 124 and 146 can be used as handle means in carrying the folded chair.

Means is provided for locking the leg structures in such folded relationship and includes a resilient button 172, which is fixed on the underside of the member 18 adjacent the rear end portion of the member 18 of the seat assembly and is centrally disposed and is positioned so as to receive the stud 174 carried on the rear face of the rod 122 below the pivot pin 144. The study 174 is adapted to be releasably inserted into and held by the resilient button 172 so as to lock the folded leg structures in their folded relationship, which is shown in FIGURE 2.

The entire leg assembly 14 is adapted to be removed from the seat assembly 12 and this is easily effected by pushing the free latching end 162 of the resilient latch member 156 inwardly so as to release the pin 154, whereupon the upper end of the rear leg structure, namely, the upper ends of the rods 140 and 142 can be removed from the ears 150. The cross rod 128 on the upper end of the rod 122 of the front leg structure 118 can then be removed through the open front ends 138 of the guide channels 130 and 132.

When the leg assembly 14 is removed entirely from the seat assembly, the chair 10 can then be used in connection with some other form of supporting means.

For example, as shown in FIGURE 7, the seat assembly 12, with its structurally associated seat frame 34 can be mounted on the plank 176 of a bleacher so that the seat assembly and its associated backrest 16 can be used as a seat in structural and functional association with the bleacher plank 176. In this regard, means is provided for detachably affixing the seat assembly 12 to the bleacher plank 176. Such means includes a U-shaped hook 178, which has a leg portion 180 that is rotatably anchored to a supporting plate 182 provided on the underside of the member 18 at the front end portion 24 of the seat assembly, as shown in FIGURE 2.

The leg portion 180 is attached to the plate 182 by U-shaped wire staples or attaching elements 184 which tightly engage the leg portion 180 so as to normally retain the hook in an inoperative position, with the free leg portion 186 flat against the face of the plate 182. However, by grasping the free leg portion 186, the hook can be swung to a depending position, as shown in FIGURE 7, and, in such position, the free leg portion 186 can be hooked over the front edge of the bleacher plank 176 so as to securely affix the seat assembly 12 and its associated backrest 16 to the bleacher plank 176. Thus, the chair serves as a very comfortable support for the body of a person in occupying a position on the bleacher plank 176.

It can be seen that the chair 10 is very versatile in that it can be used as a combined chair and writing table or desk and that the same is very compact in that the leg assembly 14 and the backrest assembly 16 can be folded into collapsed relationship with the underside and top of the seat assembly 12, as shown in FIGURE 2, whereby the collapsed or folded chair can be removed with the foot rods 124 and 146 serving as handles for this purpose, as shown in FIGURE 2.

Also, the chair is extremely versatile, in that the leg assembly 14 can be completely removed, in a very easy manner and without the use of any tools or the like, so that the chair can be used in conjunction with a bleacher plank 176 or some other similar structure, whereby some other means may be substituted for the removed leg assembly 14 so as to support the seat assembly and its
associated backrest assembly 16 for occupancy by a person.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A combination folding chair and desk comprising a seat frame, a seat member mounted on the frame, a folding leg assembly carried by and supporting the seat frame, a back frame carried by the seat frame and upstanding therefrom, a backrest member carried by the back frame, means pivotally mounting the backrest for selective rotatable positioning in a vertical position perpendicular to the seat member so as to function as a backrest in cooperation with the seat member and in a horizontal position parallel to the seat member for use as a desk top in cooperation with the seat member and means connected with the backrest in spaced relation to the pivotal axis thereof for locking the backrest in vertical and horizontal position.

2. The invention of claim 1, wherein said back frame includes laterally spaced apart, parallel arms and said mounting means includes means pivotally mounting the backrest to the arms in a position within the arms.

3. The invention of claim 2, wherein said backrest has opposing sides and said mounting means pivotally connects the sides to the arms and means pivotally interconnected between the arms and one of the sides of the backrest for selectively locking the backrest in a horizontal position for use as a desk top and in a vertical position for use as a backrest for the chair.

4. The invention of claim 2, wherein said arms are pivotally connected to the seat frame and means is provided for locking the arms in a position perpendicular to the horizontal seat frame.

5. The invention of claim 1, wherein means for positively positioning the leg assembly in an extended position depends from and supports the seat member in a horizontal position and means for locking the leg assembly in a collapsed folded position.

6. A folding chair arrangement comprising a seat assembly including a seat frame and a seat member mounted on the seat frame, a folding leg assembly carried by and supporting the seat assembly, means for positively positioning the leg assembly in an extended position depending from and supporting the seat assembly in a horizontal position, means for locking the leg assembly in a collapsed folded position, a back frame pivotally mounted on the seat assembly, means for locking the back frame in a raised position perpendicular to the seat member and a backrest carried by the back frame, said back frame includes a pair of laterally spaced arms, means pivotally attaching the arms to the seat frame, said backrest being disposed between and attached to the arms, and said locking means for the back frame including cooperative latching means carried by one of the arms and the seat frame in spaced relation to the axis of pivotal movement of the back frame.

7. The invention of claim 6, wherein said last means includes a latch finger carried by one of the arms and a fixed element on the seat frame engaged by the latch finger.

8. The invention of claim 6, wherein means is provided for releasably attaching the leg assembly to the seat frame so that the leg assembly can be removed from the seat frame.

9. The invention of claim 6, wherein means is provided for releasably attaching the leg assembly to the seat frame so that the leg assembly can be removed from the seat frame, and means carried by the seat for mounting it on a bleacher plank or the like when the leg assembly is removed from the seat frame.

10. The invention of claim 9, wherein said last named means includes a hook means pivotally carried by the seat frame and adapted to hook over and engage an edge portion of a bleacher plank or the like.

11. The invention of claim 6, wherein said seat assembly has a front and rear end portion and said leg assembly includes a front and back leg structure, said leg structures being arranged in pivotally connected crossed relationship intermediate their upper and lower ends, said upper end of the rear leg structure being pivotally attached to the seat frame adjacent the front and rear portion thereof for upward and downward swinging movement and means slidably mounting the upper end of the front leg structure on the seat assembly for movement toward and away from the pivoted upper end of the rear leg structure so that the leg structures can be collapsed and said locking means includes a releasable catch assembly between the front leg structure and the underside of the seat member adjacent the rear end portion thereof.

12. The invention of claim 11, wherein means is provided for pivotally mounting the upper end of the rear leg structure to the frame and includes a pair of slotted ears, a pin carried by the upper end of the rear leg structure and rotatably mounted in the ears and releasable latch means retaining the pin in pivotal position in and association with the ears.

13. The invention of claim 12, wherein said means releasably attaching the leg assembly to the seat assembly includes resilient catch means on the underside of the seat member at the front and rear end portions thereof, said catch means functioning as the means for positively positioning the leg assembly in an extended position, said catch means being operatively related with the pivotal arrangement of the upper end of the rear leg structure constituting a resilient latch to retain said pin in pivotal arrangement and assembled operative disposition in the ears and said latch means upon actuation thereof enabling said upper end of the rear assembly to be detached from the seat frame whereupon said upper end of the front leg structure can be slidably removed entirely from the slidable mounting means.

References Cited

UNITED STATES PATENTS

2,360,231 10/1944 Horton 297—51 X
7,756,365 2/1956 Hines 297—183
7,779,394 1/1957 Case ------- 297—51 X
7,792,875 5/1957 Piritone ------- 297—183 X
8,205,049 1/1938 Moreland ------- 297—183 X
9,259,209 11/1960 Lamkin ------- 297—124
3,066,980 12/1962 Cluett ------- 297—252
4,220,765 11/1965 Hoffman ------- 297—124

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