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ADJUSTABLE SEAT

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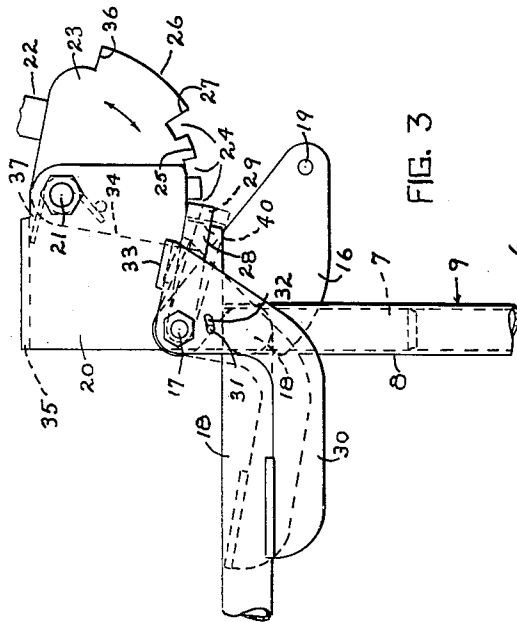


FIG. 3

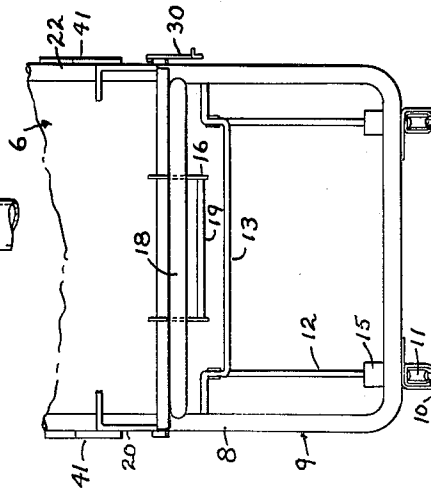


FIG. 2

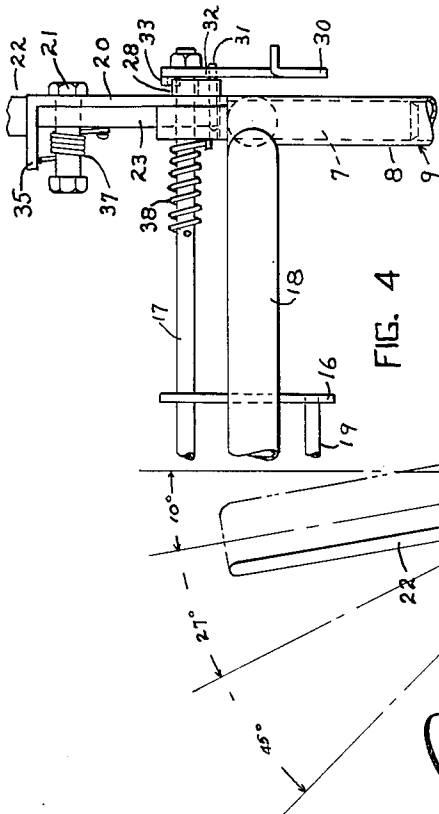


FIG. 4

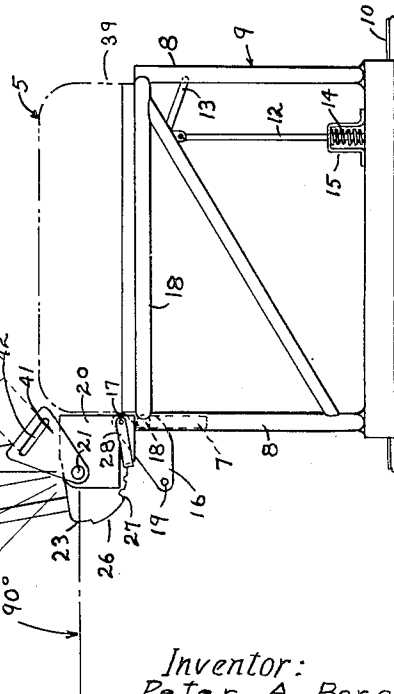


FIG. 1

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ADJUSTABLE SEAT

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This invention relates to a seat especially designed for use in airplanes, but, of course, suitable wherever a seat with a reclinable, removable and reversible back is needed.

For airplane use, the adjustable seat of my invention fills a long-felt demand as the back provides four forward facing, four aft facing, and eight side facing positions in its four different mountings, the back being easily adjustable to different angles and quickly removable and replaceable. In the lowermost position of the seat back, the unit can be used as part of a cot or as part of a chaise longue. Where two backs are available, they may be used on opposite sides of one base to make a separate cot or stretcher base. The base itself can be used as a hassock when the seat back is removed, and the seat cushion is preferably hinged at one side to swing up out of the way for access to a cooler or toilet in the base. When a seat belt is provided, as is usually the case, it is assembled onto the back and therefore reverses with it.

The invention is illustrated in the accompanying drawing, in which—

FIG. 1 is a side view of my improved adjustable seat indicating the four different positions of reclining adjustment of the seat back;

FIG. 2 is a front view with the upper portion of the seat back broken away, and

FIGS. 3 and 4 are fragmentary detail views on a larger scale taken at right angles to one another, showing the safety catch and the latch mechanism for the seat back.

The same reference numerals are applied to corresponding parts throughout the views.

The seat comprises a square hassock 5 with a removable back section 6, the latter having two pegs 7 insertable in the corner posts 8 of the square base 9 on either of the four sides thereof to face forwardly or rearwardly or to either side. The base 9 is shown as slidable on tracks 10 on rollers 11, and as lockable in adjusted position by pins 12 operable by a handle 13 against the resistance of springs 14 housed in the cages 15, the pins 12, of course, entering holes provided therefor in spaced relation in the tracks 10. To prevent accidental displacement of the back section 6 or unintentional lifting off, there are two hook-shaped catches 16 pivoted on a horizontal cross-rod 17 on the lower portion of the back section and arranged to swing by gravity toward the base 9 to hook under whichever one of the horizontal top rails 18 is adjacent the same. The catches 16 are interconnected by a cross-rod 19 which serves as a convenient handle for releasing the catches 16 by an upward pull on this rod as the back section is lifted. With the back section 6 removed, the hassock 5 may be used by itself in various ways to great advantage in an airplane to accommodate the ever-varying needs of different passengers, especially in a private plane or company-owned plane. The base 9 may house a cooler, a toilet, a storage receptacle, or anything else.

The cross-rod 17 previously mentioned is carried on two pegs 7 and two brackets 20 from which the pegs 7 extend downwardly into the corners of the base 9, and these brackets also have bolts 21 mounted thereon on which the frame 22 for the back section 6 is pivotally adjustably mounted by means of the segmental shaped plates 23. Three spaced notches 24 are provided in the arcuate periphery 25 of the plates 23 that is struck from bolts 21 as a center on a radius slightly smaller than the arcuate portion 26, whereby to define radial stop shoulders

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27 for a purpose that will soon appear. Two latches 28 that are rigidly interconnected by the cross-rod 17 to swing together have teeth 29 on their free end portions engageable in the notches 24 to lock the seat back releasably in either of three reclining positions, as indicated in FIG. 1 by the 10°, 27° and 45° lines angularly disposed with respect to the vertical line through bolts 21 as the axis of pivotal adjustment. A latch operating handle 30 is pivotally mounted on one end of the rod 17 for limited pivotal movement, predetermined by a pin 31 extending laterally from the upper end of the adjacent peg 7 through a hole in the bracket 20 and engaged in an arcuate slot 32 provided in the handle 30 and struck on an arc with the rod 17 as a center. In FIG. 3 the handle 30 is shown in full lines in its normal position to which it gravitates with pin 31 at one end of slot 32 and in dotted lines as raised to its other limit position when pin 31 is at the other end of slot 32. In this latter position, a lug 33 projecting laterally from the pivoted end portion of the handle 30 over the adjacent latch 28 serves to swing the latches 28 downwardly to the dotted line position indicated in FIG. 3 to release the seat back for adjustment in either direction to a position of smaller or larger angle of recline in relation to a given position. It is in this operation that the stop shoulders 27 previously mentioned are important, because they prevent the seat back from being moved back unintentionally beyond the 45° position indicated in FIG. 1. Then, if the operator wants to lower the seat back to a horizontal position it is a simple matter to take hold of either one of the latches 28 and depress the latches independently of handle 30 far enough for the teeth 29 to clear the shoulders 27 so as to allow the seat back to be lowered to the horizontal or 90° position indicated by the line in FIG. 1, in which the front edges 34 of the plates 23 strike the bottom of the flanges 35 on the brackets 20, the teeth 29 on the latches 28 being at the same time engaged behind the shoulders 36 on the plates 23 to lock the seat back in the horizontal position against accidental upward displacement. Grasshopper type torsion springs 37 are provided on the bolts 21 having one end bearing against the brackets 20 and the other end against the plates 23 tending normally to swing the seat back upwardly to the 10° or nearly upright limit position. Another torsion spring 38 is provided on the cross-rod 17, as seen in FIG. 4, having one end attached to the rod and the other end attached to the adjacent peg 7 tending normally to turn the rod in a counterclockwise direction, as it is viewed in FIG. 3, so that the latches 28 are normally urged toward engagement in notches 24 in plates 23.

In operation, the back section 6 can be used on the back of the hassock 5, as shown in FIG. 1, or removed and placed on the front, or, for that matter, on either side, inasmuch as the pegs 7 are spaced the same as the corner posts 8 of the base 9. The seat cushion 39 is preferably hinged on one side with respect to the base 9 to swing out of the way inasmuch as the base may contain a cooler, a toilet, or a storage receptacle. When the back section 6 is assembled on the base there is no danger of its being accidentally displaced upwardly, because the gravity actuated catches 16 hooking under the cross-rail 18 on the base lock the back section securely in place until such time as the cross-rod 19 that interconnects the catches is raised. The frame 22 of the back section, urged by springs 37 to turn in a counterclockwise direction, as viewed in FIG. 3, cannot swing farther forward than the 10° position indicated in FIG. 1, because the radial shoulders 40 on plates 23 strike the teeth 29 on latches 28 even when the latches 28 are swung downwardly to the released position indicated in dotted lines in FIG. 3. Shoulders 40, in other words, act in the same way as shoulders 27 which co-

operate with the latches 28 to prevent accidental lowering of the seat back to horizontal position when the handle 30 is raised for increased tilting of the seat back. The pin 31 and slot 32 limit the movement of handle 30 so that the latches 28 cannot be moved too far. However, when it is desired to lower the seat back to the horizontal position it is a simple matter to do so because it is only necessary to depress one of the latches 28 independently of the handle 39, the two latches being interconnected by the rod 17 to move in unison. When the seat back reaches the horizontal position the edges 34 on plates 23 strike flanges 35 to limit movement and accordingly provide support for the seat back in the horizontal position, and at the same time the teeth 29 on latches 28 engage behind shoulders 36 on plates 23 to lock the seat back in the lowered position. With the seat back in that position the unit can be made into a chaise longue when used with the rear seat, or if two seat backs are used on one base in lowered position, a separate cot or stretcher base is formed. Triangular plates 41, which are preferably pivotally connected at their apex portions to plates 20 on the bolts 21, have slots 42 in the base portions thereof to receive the halves of a seat belt 43 of the conventional type. In that way the seat belt is part of the same assembly with the back section 6 and goes with it when the back section is moved from one position on the hassock to another. The pivoting of the plates 41 enables the seat belt to adjust its position to suit all requirements whether the seat back is in a fully reclined position or in an upright position or lowered to a horizontal position.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. In an adjustable seat construction, a fixed support member with respect to which a seat back member is pivoted on a substantially horizontal axis for reclining adjustment, one of said members having a segmental shaped plate rigid therewith the arcuate periphery of which includes one portion that is notched and is struck on a radius with the pivotal axis of said member as the center, and another portion that is struck on a larger radius from the same center, the portion of larger radius defining a radial stop shoulder at one end of said notched portion, a latch pivoted on the other of said members and having means normally urging it to swing toward locking engagement in the notched periphery of said plate to support the seat back member in a given position of reclining adjustment, and a manually operable handle pivoted on the same one of said members with said latch for a limited oscillatory movement relative to said latch having a latch engaging projection which when the handle is swung to one extreme position disengages the latch from the notch in which it is engaged, whereby to permit a range of adjustment of the seat back member limited by abutment of said stop shoulder with said latch, said latch being accessible for manual operation independently of said handle through a greater angle than is possible with said handle, whereby to clear said stop shoulder and permit adjustment of the seat back member to a horizontal position.

2. An adjustable seat construction as set forth in claim 1 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in unison, the second latch cooperating with another segmental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment, either of said latches being operable manually independ-

ently of said handle to move both latches far enough to clear the stop shoulder when the seat back member is to be swung down to horizontal position.

3. An adjustable seat construction as set forth in claim 1 wherein that portion of the segmental-shaped plate that is of larger radius defines a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the horizontal position of the seat back member, the construction including spring means normally urging the seat back member upwardly and forwardly toward a position of minimum recline.

4. An adjustable seat construction as set forth in claim 1 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in unison, the second latch cooperating with another segmental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment, either of said latches being operable manually independently of said handle to move both latches far enough to clear the stop shoulder when the seat back member is to be swung down to horizontal position, both segmental-shaped plates having that portion of larger radius defining a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the horizontal position of the seat back member, the said construction including spring means normally urging the seat back member upwardly and forwardly toward a position of minimum recline.

5. An adjustable seat construction as set forth in claim 1 wherein that portion of the segmental-shaped plate that is of larger radius defines a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the horizontal position of the seat back member.

6. An adjustable seat construction as set forth in claim 1 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in unison, the second latch cooperating with another segmental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment, either of said latches being operable manually independently of said handle to move both latches far enough to clear the stop shoulder when the seat back member is to be swung down to horizontal position, both segmental-shaped plates having that portion of larger radius defining a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the horizontal position of the seat back member.

7. An adjustable seat construction as set forth in claim 1 wherein that portion of the segmental-shaped plate that is of larger radius defines a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the upright position of the seat back member, the construction including spring means normally urging the seat back member upwardly and forwardly toward a position of minimum recline.

8. An adjustable seat construction as set forth in claim 1 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in unison, the second latch cooperating with another seg-

mental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment, either of said latches being operable manually independently of said handle to move both latches far enough to clear the stop shoulder when the seat back member is to be swung down to horizontal position, both segmental-shaped plates having that portion of larger radius defining a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the upright position of the seat back member, the said construction including spring means normally urging the seat back member upwardly and forwardly toward a position of minimum recline.

9. In an adjustable seat construction, a fixed support member with respect to which a seat back member is pivoted on a substantially horizontal axis for reclining adjustment, one of said members having a segmental shaped plate rigid therewith the arcuate periphery of which includes a portion that is notched and is struck on a radius with the pivotal axis of said seat back as the center, a latch pivoted on said the other of said members and having means normally urging it to swing toward locking engagement in the notched periphery of said plate to support the seat back member in a given position of reclining adjustment, and a manually operable handle pivoted on the same one of said members with said latch for oscillatory movement relative to said latch and having means independent of said latch for positively limiting said handle's oscillatory movement and also having a latch engaging projection which when the handle is swung to one extreme position disengages the latch from the notch in which it is engaged, whereby to permit adjustment of the seat back member so long as the latch is thusly held disengaged.

10. An adjustable seat construction as set forth in claim 9 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in unison, the second latch cooperating with another segmental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment.

11. An adjustable seat construction as set forth in claim 9, including spring means normally urging the seat back member upwardly and forwardly toward a position of minimum reclining.

12. An adjustable seat construction as set forth in claim 1 wherein that portion of the segmental-shaped plate that is of larger radius defines a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the horizontal position of the seat back member, the construction including spring means normally urging the seat back member in one direction toward a limit position.

13. An adjustable seat construction as set forth in claim 1 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in

unison, the second latch cooperating with another segmental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment, either of said latches being operable manually independently of said handle to move both latches far enough to clear the stop shoulder when the seat back member is to be swung down to horizontal position, both segmental-shaped plates having that portion of larger radius defining a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the horizontal position of the seat back member, the said construction including spring means normally urging the seat back in one direction toward a limit position.

14. An adjustable seat construction as set forth in claim 1 wherein that portion of the segmental-shaped plate that is of larger radius defines a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the upright position of the seat back member, the construction including spring means normally urging the seat back member in one direction toward a limit position.

15. An adjustable seat construction as set forth in claim 1 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in unison, the second latch cooperating with another segmental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment, either of said latches being operable manually independently of said handle to move both latches far enough to clear the stop shoulder when the seat back member is to be swung down to horizontal position, both segmental-shaped plates having that portion of larger radius defining a second radial stop shoulder in angular relationship to the first stop shoulder for abutment with the latch in the upright position of the seat back member, the said construction including spring means normally urging the seat back in one direction toward a limit position.

16. An adjustable seat construction as set forth in claim 1 wherein said latch is provided on one side of a seat cooperating with the handle and the rest of the construction described provided on the same side of the seat, there being a second latch on the other side of the seat connected with the first mentioned latch by means of a cross-rod, so that the two latches are swingable in unison, the second latch cooperating with another segmental-shaped plate constructed the same as the first mentioned segmental-shaped plate to support the seat back member in a given position of reclining adjustment.

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