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H. DEGEN

3,253,858

SWIVEL CHAIRS

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Fig. 1

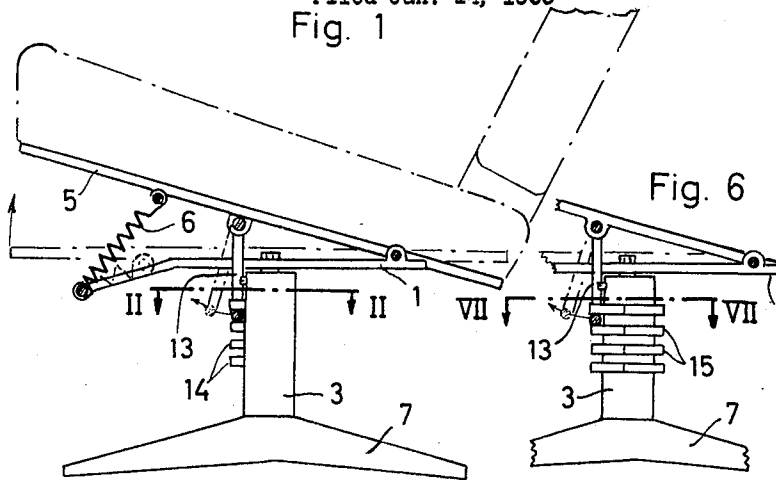


Fig. 6

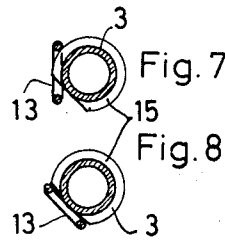
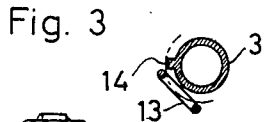
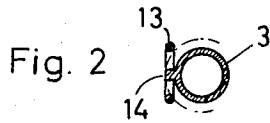


Fig. 8

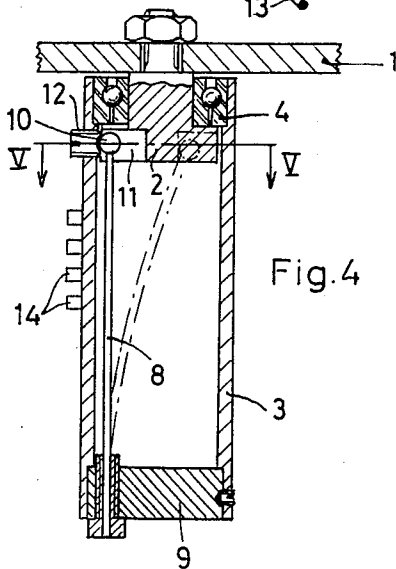


Fig. 4

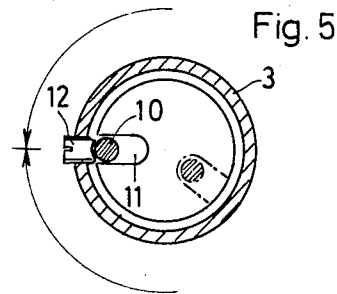


Fig. 5

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3,253,858

SWIVEL CHAIRS

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6 Claims. (Cl. 297—328)

The present invention relates to a swivel chair with an upper portion comprising a seat and a back rest and adapted to be returned into a given position by a restoring spring when swivelled out of this position in either direction about its swivel axis.

In known swivel chairs of the description the upper portion of the chair cannot be rotated through a complete revolution but the swivel action is confined to within a given angle in either direction from which the swivelling portion is then restored to its normal position in the opposite direction by the restoring spring. These known swivel chairs are therefore of limited rotatability, which necessitates the provision of special stops to prevent the chair from being rotated through too great an angle and the restoring mechanism damaged.

Contrary to this known type of chair, the present invention provides a swivel chair with an upper portion that can be rotated in either direction through any angle and that will then be restored by the restoring spring to its normal position in that direction of rotation which returns it to its normal position through the shortest arc.

This swivel chair, which comprises an upper portion mounted on a horizontal carrier member which in turn is mounted in a pivot bearing at the upper end of a hollow pedestal column standing upright on a base, is characterised in that said restoring spring is a spring rod inside the hollow column, located in a position offset from the column axis and anchored at its bottom end, whereas its upper end loosely engages the rotating pivot member.

When the upper portion of the chair and its pivot member are rotated, the spring rod forming the restoring spring is flexed. The bending moment of the spring rod thus increases from zero to a maximum which it reaches when the angle of rotation is 180°. From this position the upper portion of the chair can return into its former position in either direction of rotation and the bending moment of the spring thus reduced to zero. However, from any intermediate position the upper portion of the chair will be returned to its former position contrary to the direction of rotation whereby the chair moved to this intermediate position.

Two embodiments of swivel chairs will now be described, by way of example, with reference to the accompanying drawing, in which

FIGURE 1 is a side elevation of a first embodiment of the swivel chair, the upper portion, comprising the seat and back rest, being shown in chain lines,

FIGURE 2 is a horizontal section taken on the line II—II in FIGURE 1,

FIGURE 3 is a similar section showing the parts in a different position,

FIGURE 4 is a vertical section, on an enlarged scale, of part of the swivel chair according to FIGURE 1,

FIGURE 5 is a horizontal section taken on the line V—V in FIGURE 4,

FIGURE 6 is a side elevation of a modified form of the swivel chair shown in FIGURE 1,

FIGURE 7 is a horizontal section taken on the line VII—VII in FIGURE 6, and

FIGURE 8 is a similar section, showing the parts in a different position.

The swivel chair shown in FIGURE 1 comprises a horizontal carrier 1 with a pivot member 2 (FIGURE 4)

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rotatable in the upper end of a hollow pedestal column 3. The pivot member 2 works in a roller bearing 4 in the end of the tubular pedestal column as indicated in FIGURE 4.

Hingeably attached to the rear end of the horizontal carrier 1 is the seating frame 5 of the upper portion comprising the seat and back rest of the chair. The forward end of the horizontal carrier 1 is slightly downwardly offset. A tension spring 6 connects the seating frame 5 to the forward extremity of this offset portion. The foot of the hollow column 3 stands in a baseplate 7. Inside the hollow column 3, though to one side of its axis which coincides with the swivel axis of the chair, is a restoring spring in the form of a rod 8 for instance of spring steel. The bottom end of this spring rod is anchored in a plate 9 secured inside the foot end of the hollow column 3. The upper end of the spring rod 8 has a ball head 10 which loosely engages a radial recess 11 in the underside of the pivot member 2.

As will at once be understood, any swivel motion of the upper portion of the chair also rotates the pivot member 2 in the upper end of the hollow column 3. The spring rod 8 is thereby deflected and, according to the angle of the swivel motion, the rod may be carried for instance into a position such as that shown in chain lines in FIGURES 4 and 5. From this position the spring reaction of the rod will urge the upper portion of the chair back again into its original position, rotating it contrary to the direction of its original swivel deflection. In order to prevent the upper portion of the chair from oscillating about its normal position, a screw 12 is provided in the pedestal column 3 at a point which corresponds to the position of the ball head 10 of the spring rod 8 when the latter is in its undeflected state. The front end of the screw is formed with a spherical socket which seeks to intercept and retain the ball head 10 of the spring rod.

As will be gathered from FIGURE 1 a safety hoop 13 is hingeably affixed to the underside of the seating frame 5. The hoop cooperates with a row of teeth 14 located on the same side of the pedestal column 3, that is to say on that side of the column which faces away from the tilting axis of the seat of the chair. Engagement of the cross bar of the hoop 13 between two neighbouring teeth 14 locks the chair in the corresponding position of tilt (cf. FIGURE 2). For releasing the hoop 13 the chair need merely be slightly swivelled out of its normal position (cf. FIGURE 3). The seat can then be tilted as required into a different angle, either contrary to or yielding to the pull of tension spring 6. When the seat is then restored by the spring rod 8 into its normal position, the hoop 13 will automatically reengage between two different teeth 14. From the above explanations it will be understood that the engagement and disengagement of the safety hoop 13 is quite automatic and that it can be controlled by swivelling the seat to and fro, flexing and relaxing the spring rod 8.

In the modification shown in FIGURE 6 the teeth 14 for cooperation with the safety hoop 13 are replaced by a series of peripheral ribs 15 surrounding the pedestal column 3 in tiers, said ribs having a tangential flat on one side of the median plane of the chair perpendicular to its tilting axis. This can be seen in FIGURE 7. In order to release the safety hoop 13 from engagement with the ribs, as in FIGURE 7, the seat must be swivelled until the cross bar of the hoop is parallel with the tangential flat, as in FIGURE 8, in which position it can ride up and down the peripheral ribs for the selection of a different angle of tilt of the seat. When spring 8 which has been flexed by the swivel motion restores the chair into its former position, the cross bar of the safety hoop 13

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will automatically slide into a corresponding gap between two different neighbouring peripheral ribs 15.

What I claim:

1. A swivel chair comprising a base, a hollow pedestal column vertically mounted on the base, a rotatable pivot member at the upper end of said column, a horizontal carrier member secured to said pivot member, seat and back rest portions mounted on said carrier member, and restoring spring means for returning said carrier member to a former position when swivelled in either direction from said position, said restoring spring means comprising a spring rod provided inside said hollow column in a position offset from the column axis and anchored at its bottom end with its upper end loosely engaging said rotatable pivot member so that the latter may perform an unlimited number of revolutions.

2. A swivel chair according to claim 1, in which said pivot member has a radial recess in its underside for engagement by a ball-headed upper end of the spring rod.

3. A swivel chair according to claim 2, comprising a screw passing through the column wall at a point in the column corresponding to the position of said ball head when undeflected, said screw having at its forward end a spherical recess which seeks to intercept said ball head when the spring rod restores the carrier member to its normal position of rest.

4. A chair according to claim 1 wherein said seat and backrest portions are mounted on said carrier member by means of a frame tiltably attached to the rear of the carrier member, a safety hoop hingeably attached to the

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underside of said frame and comprising a cross bar, and arresting means on said column adapted to engage said cross bar.

5. A swivel chair according to claim 4, in which said arresting means comprises a row of teeth located on that side of the column which faces away from the tilting axis of said frame.

6. A swivel chair according to claim 4, in which said arresting means comprises a plurality of peripheral ribs encircling the column in closely spaced tiers and provided with a tangential flat on one side of the column angularly offset from the vertical median plane of the chair in its normal position of rest.

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