Aug. 21, 1951 J. TEDERS, JR 2,565,408

REVOLVING FLAP-CHAIR

Filed Dec. 2, 1947 2 Sheets-Sheet 1

Fig. 1.

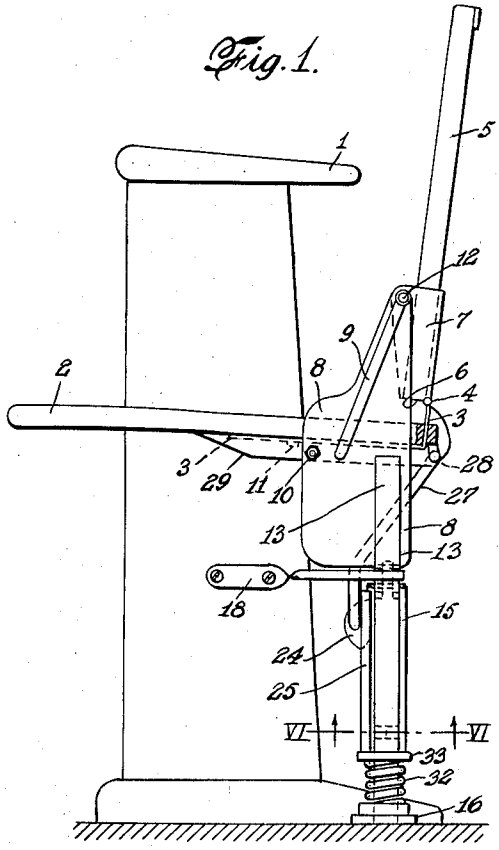


Fig. 3.

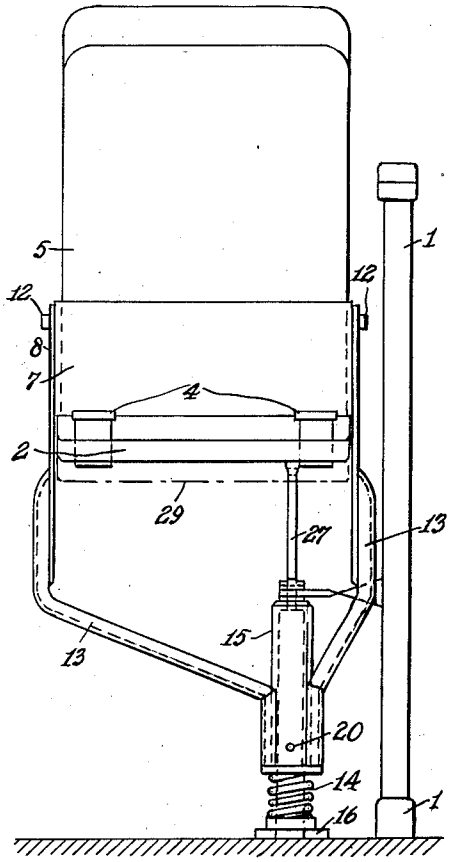


Fig. 2.

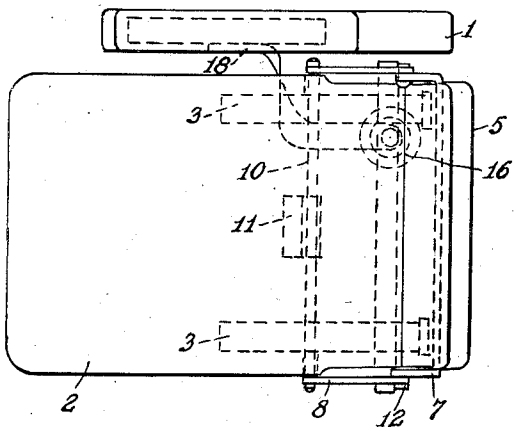
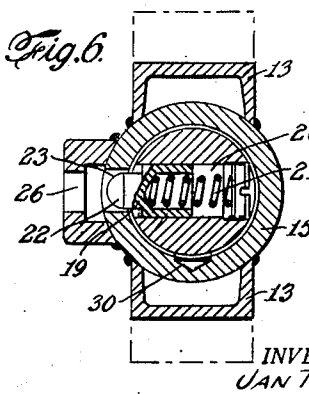


Fig. 6.



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Aug. 21, 1951 J. TEDERS, JR 2,565,408

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Filed Dec. 2, 1947 2 Sheets-Sheet 2

Fig. 4.

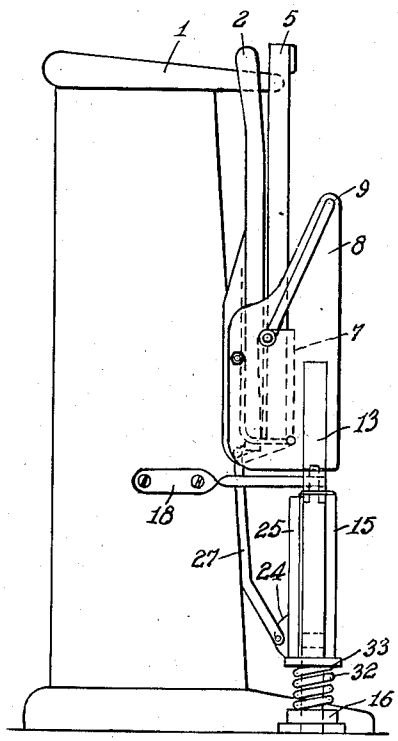


Fig. 7.

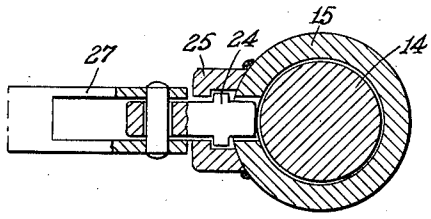


Fig. 8.

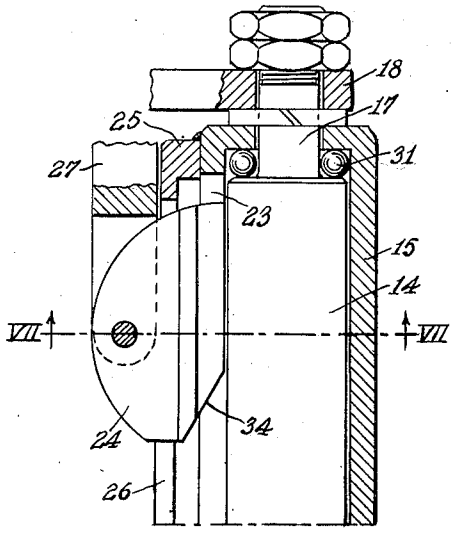
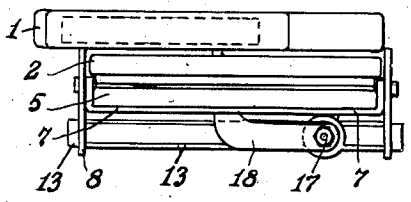


Fig. 5.



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REVOLVING FLAP-CHAIR

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Application December 2, 1947, Serial No. 789,281
In the Netherlands December 4, 1946

5 Claims. (Cl. 155—33)

1

The invention relates to a revolving flap-chair to be applied in particular in the gangways of cinemas and theatres at the end of the rows of chairs, beside the final partitions of the rows.

The placing of such flap-chairs and their construction has to conform to certain safety instructions relating to the breadth of the gangways which are to be kept clear, e. g. to clear the hall quickly in emergencies. Also the construction of these chairs must be simple and reliable and no manipulation at all must be necessary to fold or turn away the chairs, as this in case of emergencies could be easily forgotten.

The object of the invention is to provide for a revolving flap-chair which complies with these requirements and wherein the seat is automatically tipped up when the occupant of the chair rises and the folded seat and back as a whole are automatically turned away against the partitions to clear the passages.

In accordance with a preferred embodiment of the invention the seat is hinged to the back, which when the seat is tipped up is lowered in guides by its own weight, the guides being supported by a sleeve rotatable on a vertical pivot, a torsion spring being applied between said sleeve and said pivot for turning the chair.

Thus, the weight of seat and back are utilised to have the seat, when left, automatically turned away and the lowered seat and back also form practically no obstruction in the gangway.

A further object is to minimize the space taken up by the folded and turned-away chair by placing the supporting pivot eccentrically under the seat in its position for use, so that the folded back and seat can be turned to one side of the space taken in before, e. g. against the final partitions of the rows.

These and other features, which I consider as characteristic for my invention are set forth in particular in the appended claims.

The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments, when read in connection with the accompanying drawing.

Fig. 1 represents a side view and Fig. 2 a top view of the revolving flap chair when used;

Fig. 3 is a back view of the chair shown in Fig. 1.

Fig. 4 is a view of the chair shown in Figure 1, however with back and seat folded, although not yet turned over 90°.

Fig. 5 is a top view of the revolving flap-chair

2

according to the invention in its folded end-position.

Fig. 6 shows to a larger scale a cross-section taken on the line VI—VI of Fig. 1.

Fig. 7 is a cross-section taken on the line VII—VII of Fig. 8 and

Fig. 8 shows, on the same scale as that of Fig. 6, a detail, in longitudinal cross-section, of the top-side of the supporting pivot with fittings.

In the drawing, the revolving flap-chair according to the invention is supposed to be applied in a cinema, the final partitions 1 being used as termination of the normal rows of seats (not shown). In Fig. 3 e. g. a row of seats is placed to the right of the wooden final partition 1.

At 4, the seat 2 is hinged to the back bottom side of the back 5 by means of two L-shaped bent plate strips 3 fixedly connected with the seat (see Fig. 1). Sufficient space is left between the top of the seat 2 and the bottom 6 of the back 5 to allow the two parts to adjoin each other (see Fig. 4).

The lower part of the back 5 is embraced by a substantially U-shaped metal plate 7, which forms one body with the back 5. On either side of this plate, two supporting side-plates 8 of suitable shape are provided each of which contains a groove 9 and holes through which a supporting rod 10 for the seat is passed.

Around this rod 10 a spring is coiled which, with its free end 11 resting against the bottom of the seat 2, tends to tip up this seat. At the top sides of the U-shaped plate 7, two pins 12, projecting sideways, are provided which fit into the grooves 9 and so serve as guides for guiding the back 5 between supporting side-plates 8. These pins 12 form the only connection between the supporting side-plates 8 and the back 5. The side-plates 8 are each fixedly connected by means of supporting profile rods 13 to a sleeve 15 rotating round the supporting pivot 14 (see Fig. 3). In the embodiment shown in the figures, these profiled rods 13 are U-shaped in cross-section and they are welded both to the sleeve 15 and to the plates 8. The pivot 14 is screwed into a flange 16 which is again fixed to the floor by screw bolts. This pivot is placed eccentrically relatively to the centre of the seat, when in use so that it remains under the seat when this has been folded and turned round and does not form an obstacle for the passage to the rows of the fixed seats. It is at the top connected with its screw-thread-end 17 to the wooden end-partition 1 by means of a rod 18 (see e. g. Figs. 4 and 8). The sleeve 15 rotates with little play round the pivot 14.

The chair is fixed in its position for use (see Figs. 1–3) by a locking mechanism. In the embodiment shown, this locking mechanism (Fig. 6), located between pivot 14 and sleeve 15, consists of a cylindrical pawl 19, which is enclosed by a transverse bore hole 20 of the pivot 14 and controlled by a pressure spring 21. This pawl, owing to its shape, cannot project with its globular head 22 from the sleeve 15, but fits into a longitudinal groove 23 of that sleeve 15. In this groove, a flat cam piece 24 can slide (Figs. 7 and 8) which is kept within this groove as it is enclosed by a ledge 25 fixed, e. g., by welding to the sleeve 15 in the longitudinal direction of this sleeve, which ledge has a groove 26 closed at the top of the pivot. The cam piece 24 is hinged to a release rod 27 which is fork-shaped at its lower side and hinged at its top (at 28) to the hindmost portion of the lower side of the back of the seat 2 (see Fig. 1). In these figures, 29 indicates a protecting covering or upholstering of a suitable material which largely hides from view the hinge plates 3, the spring 11, the rod 10 and the hinges 28.

Returning to the Figures 6 and 8, a center bore 30 is provided at the inner side of the sleeve 15 on the level of bore hole 20 and pawl 19, which center bore lies at right angles to the longitudinal groove 23 of the sleeve 15. Fig. 8 shows a ball-bearing 31 provided between the top of the sleeve and the ring-shaped top surface of the supporting pivot 14, whereby, through sleeve 15, the weight of the occupant is largely transferred to the pivot 14. If the ball bearing is made with sufficient vertical play the weight is yieldingly opposed by a screw spring 32 of heavy construction and low compressibility lying around the lower end of the pivot 14, the top winding of which spring lies against a disc 33 which rests against the lower part of the sleeve, the lower winding pressing on the screw flange 16. This spring 32 will for preference be carried out as a torsion spring, for which purpose it is connected by a top winding to the sleeve 15 which it tends to turn in the direction required for turning away the chair.

The folding and turning away of the revolving flap-chair according to the invention from the position of Fig. 1 to that of Fig. 5 takes place as follows:

After the occupant has risen, the seat 2 will move upwards under the action of the spring 11. This disturbs the balance between seat 2 and back 5 and the latter moves downwards by its own weight, the pins 12 sliding through the guiding grooves 9 in the supporting side plates 8. When they have arrived at the lowest point of the grooves 9, the position of seat 2 and back 5 will be that shown in Fig. 4. During this combined movement, however, the rod 27 with its cam piece 24 will likewise move downward. The rod 27 is of such length, that at the end of the movement of seat 2 and back 5, the bevelled portion 34 of cam 24 presses the locking pawl 23 in the inward direction. Finally, the non-bevelled portion of the cam will lie against the pawl (see also Fig. 4). The sleeve 15 and with it the whole upper part of the chair is now released relatively to the pivot 14 and, by the action of the torsion spring 32, is turned around the pivot 14. The head of the pawl 23 glides along the inner surface of the sleeve until the bore 30 comes to lie opposite to the head 22 of the pawl 19, which snaps into it fixing the

position after a revolution of 90°. This position is shown in top view in Fig. 5.

I claim:

1. A revolving folding chair comprising a supporting pivot adapted to be fixed to a floor in an upright position, a sleeve mounted on said pivot for reciprocating turning movement, spring means acting on said sleeve tending to turn it one direction, a frame fixedly secured to said sleeve in an eccentric position above said pivot, a back slidably mounted in said frame for substantially vertical movement, a seat pivotally supported in said frame and articulated at its rear end to the lower end of said back, and spring means acting on said seat tending to turn it upwards against said back with a simultaneous downward sliding movement of said back.

2. A revolving folding chair comprising a supporting pivot adapted to be fixed to a floor in an upright position, a sleeve rotatably mounted on said pivot for reciprocating movement over an angle of 90° between two distinct positions corresponding to an operating and a rest position of the chair, spring means engaging said pivot and said sleeve tending to turn the latter from said operating to said rest position, a locking mechanism for locking said sleeve to said pivot in said operating position, a frame fixedly secured to said sleeve in an eccentric position above said pivot, said frame having two spaced side portions, a back pivotally and slidably mounted between said side portions for substantially vertical movement, a seat pivotally supported between said side portions and articulated at its rear end to the lower end of said back so as to form a movable combination therewith allowing an upward turning movement of the seat and a simultaneous downward sliding movement of the back until the seat and back are folded against one another in a substantially vertical position, second spring means acting on said movable seat and back combination tending to fold these parts together, and releasing means for said locking mechanism actuated by said seat and back combination upon the folding movement thereof in the operating position of the chair.

3. A revolving folding chair comprising a supporting pivot adapted to be fixed to a floor in an upright position, a sleeve rotatably mounted on said pivot for reciprocating movement over an angle of 90° between two distinct positions, locking means releasably retaining the sleeve in the one or the other of said position, a torsion spring about said pivot tending to turn said sleeve in one direction, a frame fixedly secured to said sleeve in an eccentric position above said pivot, said frame having two spaced vertical side portions provided with two parallel slightly rearwards inclining slots, a horizontal rod extending between said two side portions in front of the lower ends of said slots, a back having two oppositely sideways projecting pivot pins engaging and slidable in said slots, a seat pivotally supported by said rod, a hinge connection between the rear end of said seat and the lower end of said back, the pins of said back in the seating position of the chair abutting the upper ends of said slots and said hinge connection allowing the seat and back to be folded together to a substantially vertical position by an upward turning movement of the seat about said rod and a simultaneous downward sliding movement of the back in said slots, and a spring fixed to said rod and acting on said seat tending to turn the latter upwards.

4. A revolving folding chair comprising a sup-

porting pivot adapted to be fixed to a floor in an upright position, a sleeve rotatably mounted on said pivot, a frame fixedly secured to said sleeve in an eccentric position above said pivot, said frame having two spaced side portions, a back slidably mounted between said side portions for substantially vertical movement, a seat pivotally supported between said side portions, a hinge connection between the rear end of said seat and the lower end of said back allowing the folding together of the seat and back to a substantially vertical position by an upward turning movement of the seat and a simultaneous downward sliding movement of the back, spring means acting on said seat tending to turn it upwards, a slot provided in said sleeve, a resilient pawl mounted in said pivot and adapted to enter said slot to lock the sleeve in one position, a cam slidable in said slot and adapted to engage said pawl moving it out of said slot, coupling means between said seat and said cam moving said cam into engagement with said pawl when the seat is turned up, thereby to unlock the sleeve, a torsion spring about said pivot and acting on said sleeve, and blocking means holding the sleeve when turned by said torsion spring from said locking position at a right angle therewith.

5. A revolving folding chair comprising a supporting pivot adapted to be fixed to a floor in an upright position, a sleeve rotatably mounted on said pivot, a frame fixedly secured to said sleeve in an eccentric position above said pivot, said frame having two spaced side portions, a back slidably mounted between said side portions for substantially vertical movement, a seat pivotally supported between said side portions, a hinge connection between the rear end of said seat and the lower end of said back allowing the folding together of the seat and back to a substantially vertical position by an upward turning movement of the seat and a simultaneous downward sliding movement of the back, spring means acting on

said seat tending to turn it upwards, said rotatable sleeve being provided with a longitudinal slot and with a recess in its inner surface located at a 90° angle from said slot, a vertical guiding member fixed to the outside of said sleeve along said slot, said pivot having a radial bore located in a horizontal plane crossing said recess and the lower part of said slot, a pawl radially slidable in said bore and adapted to enter said slot thereby to lock said sleeve to said pivot in one position, said pawl having a rounded head adapted to engage said recess to releasably hold said sleeve in a second position, spring means in said bore pressing said pawl radially outwards, a cam vertically slidable in said guiding member and having a beveled portion inside said bore adapted to engage the head of said pawl pressing the latter inwards out of engagement with said slot, a coupling rod articulated at one end to the rear end of said seat and at its other end to said cam, said rod moving said cam downwards over said pawl to unlock the sleeve when the seat is turned upwards, and a torsion spring about said pivot and acting on said sleeve tending to turn the latter from said first locking position to said second holding position.

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