Dec. 31, 1963 D. BETHOON ET AL 3,116,091

STADIUM SEAT

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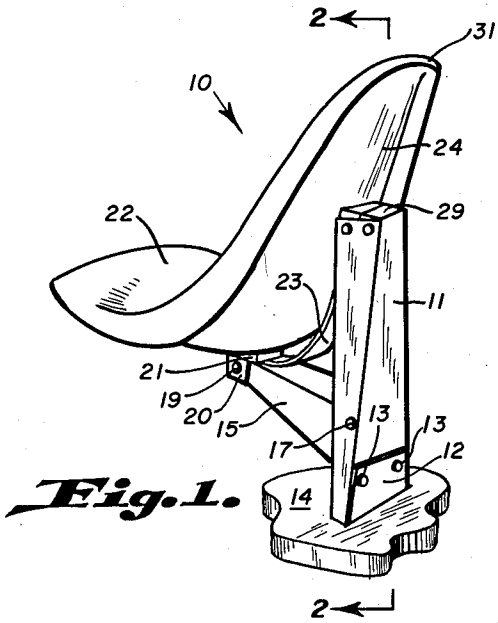


Fig. 1.

Fig. 2.

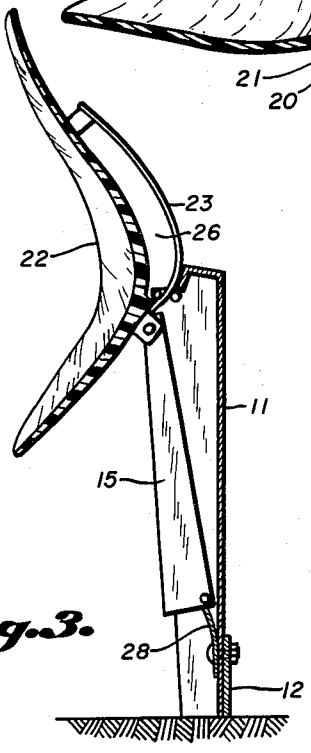


Fig. 3.

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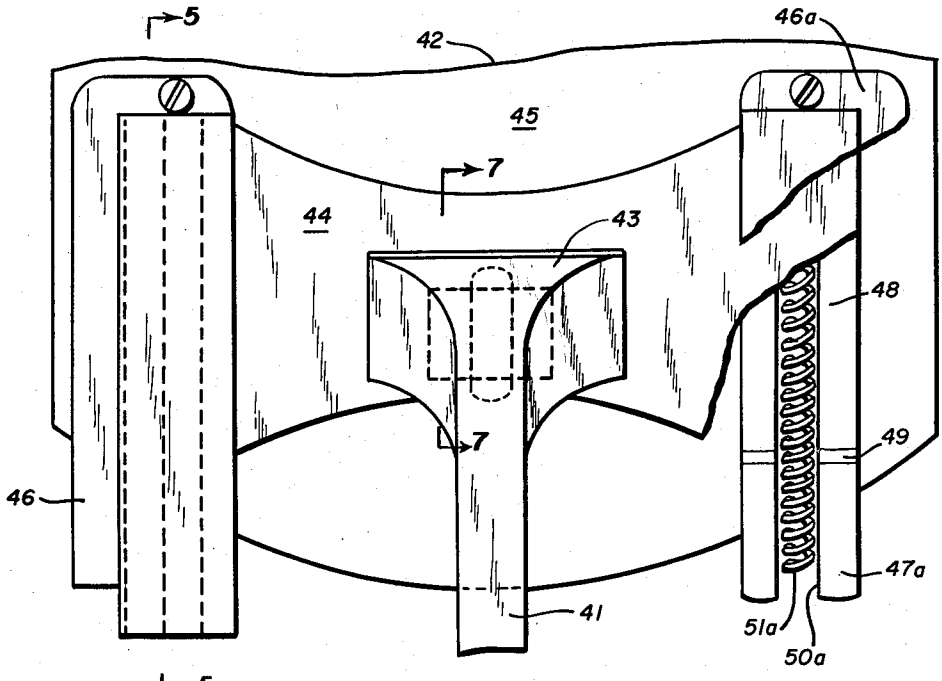


Fig. 4.

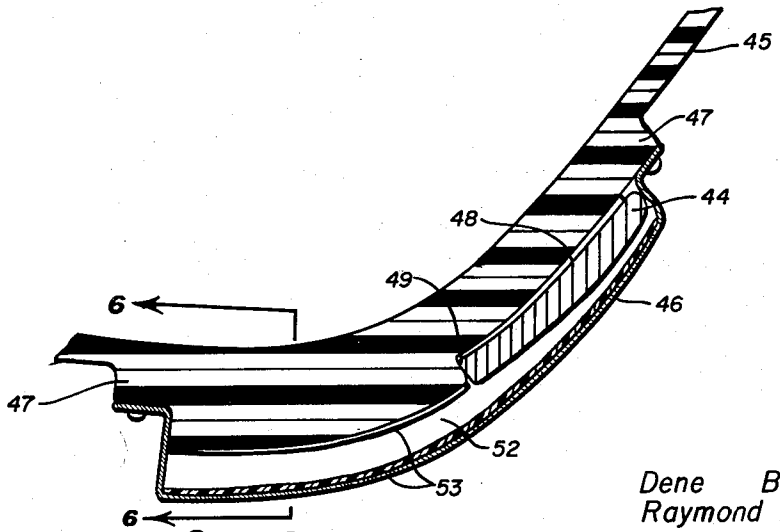


Fig. 5.

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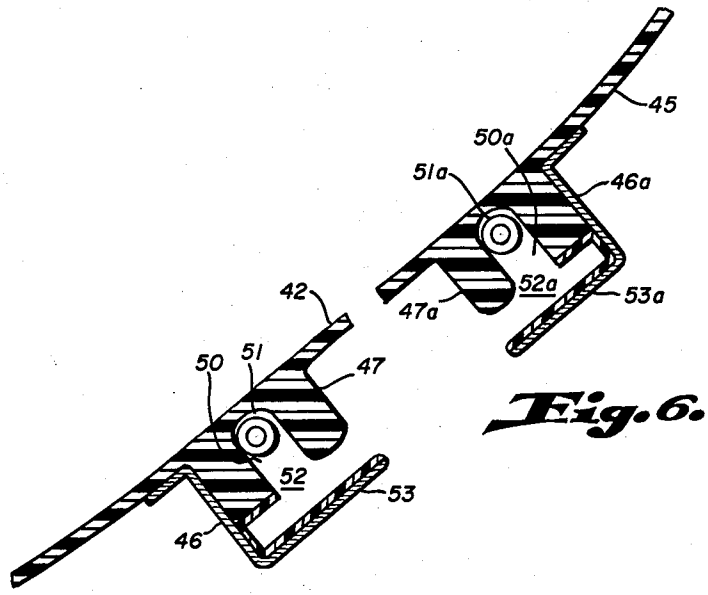


Fig. 6.

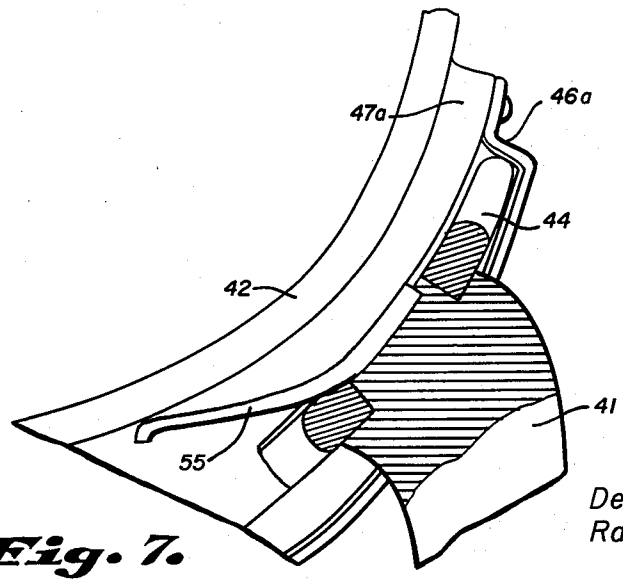


Fig. 7.

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3,116,091
STADIUM SEAT

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6 Claims. (Cl. 297—325)

This invention relates generally to seating apparatus and more particularly to chairs which are adaptable for mass spectator use in such places as auditoriums, stadiums or the like.

Prior art seating apparatus which has traditionally been used in auditoriums and stadiums has for the most part consisted of either benches or folding type chairs. The folding type spectator seats are usually not adaptable for outdoor use and are somewhat fragile.

The spectator seating apparatus in the form of benches is for the most part exceedingly uncomfortable. Such benches are spaced so close together as to eliminate virtually all room for spectators to pass in front of those spectators already in place whether they be seated or whether they stand and also gather dust, dirt, rain, snow and other foreign matter.

Accordingly, it is an object of the present invention to provide a chair which is adaptable for interior or exterior use in spectator seating and which is simple, rugged and inexpensive to manufacture.

It is another object of the present invention to provide a chair which is usable for spectator seating, which is comfortable, which provides access room for spectators, and which prevents gathering of foreign matter during non-use of the chair when it is mounted for use in outdoor areas.

It is another object of the present invention to provide a chair which is usable in spectator seating and which is constructed of a unitary seat member that may be easily moved to a tilted position by the user thereof.

Other objects and advantages of the present invention both as to its organization and operation will become apparent from a consideration of the following description taken in conjunction with the accompanying drawings which are presented by way of example only and are not intended as a limitation upon the scope of the present invention and in which:

FIG. 1 is a perspective side view of one embodiment of a seating apparatus in accordance with the present invention;

FIG. 2 is a side elevation partly in cross-section taken about the lines 2—2 of FIG. 1;

FIG. 3 is a cross-sectional side view of the apparatus of FIG. 1 in its tilted position;

FIG. 4 is a fragmentary rear elevational view of an alternative embodiment of a seating apparatus in accordance with the present invention;

FIG. 5 is a side elevational view in cross-section of the apparatus of FIG. 4 taken about the line 5—5 thereof;

FIG. 6 is a cross-sectional view of the apparatus of FIG. 5 taken about the line 6—6 thereof, and

FIG. 7 is a cross-sectional view of the apparatus of FIG. 4 taken about the line 7—7 thereof.

In accordance with one aspect of the chair of the present invention there is provided a unitary seat member having a back surface thereon. Affixed to the back surface of the seat member is at least one elongated member which defines a space between the back surface of the seat and the elongated member. Support means is provided for the chair and has a part thereof guide means disposed within the space. The guide means and the elongated member cooperate to permit the unitary seat member to be moved between first and second positions, the first position permitting a spectator to be seated and the second position permitting the chair to be tilted upwardly and backwardly to provide additional space between rows of such chairs to facilitate passage of spectators.

Referring now to the drawings and more particularly to FIGS. 1 through 3 there is illustrated one embodiment of a seating apparatus in accordance with the present invention. As is therein shown, the seating apparatus in accordance with the present invention is illustrated generally at 10. Support means such as a standard 11 is affixed to a mounting bracket 12 by way of bolts 13. The mounting bracket 12 may be embedded or attached to a floor or other supporting surface 14 which for example, may be a concrete ramp in a stadium. The standard 11 is preferably constructed of a channel shaped steel member and may be attached to a stand or base if such is desired. A support beam 15 having a channel shape is pivotally connected at one end 16 thereof to the standard 11 by means of a pin 17 which is journalled between the arms of the standard 11. The opposite end 18 of the support beam 15 is pivotally connected by way of pin 19 to a substantially U shaped mounting clip 20 which is affixed to a protrusion 21 molded integrally with the lower portion of the seat 22. A strap member 23 is attached to the back surface 24 of the chair 22 and extends from the seat portion of the chair upwardly and around the back portion thereof.

As is more clearly seen in FIG. 2 the strap member 23 is attached at one end to a support unit 25 which is affixed to the back surface of the chair by way of bolts, screws or the like or may be molded integrally with the chair if such is desired. The other end of the strap member 23 is attached to the protrusion 21 at the seat of the chair 22 in like manner. The strap member 23 defines a space 26 between the back surface 24 of the chair and the strap member 23. The standard 11 has a guide means such as a pair of roller 27 pivotally affixed to the upper portion thereof by way of being journalled between the arms thereof.

If such is desired, a spring means which may take the form of a leaf spring 28 is affixed to the bolt 13 which holds the standard 11 to the bracket 12. In this manner the leaf spring 28 urges the beam 15 upwardly and toward the standard 11 as will be more fully explained below. A cap 29 may be formed and inserted within the top portion of the standard 11 to close it or in turn may be formed as an integral part of the back surface of the beam 11 and folded into place as is illustrated in FIG. 2. The cap 29 operates to remove the interior portions of the standard from view and at the same time is an abutting member for the support unit 25 when it is in the down position as illustrated in FIG. 2.

In the operation of a seating apparatus in accordance with the presently preferred embodiment of the present invention as above described, a spectator, after rising to permit someone to pass in front of him, grasps the upper portion 31 (FIG. 1) of the chair 22 and directs an upward force thereon. The upward force is necessarily only very light since the leaf spring 28 is already urging the chair in an upward direction. Alternatively the leaf spring 28 may exert sufficient force to cause the chair 22 to automatically move to its tilted position during the time it is unoccupied. As the spectator urges the seat 22 upwardly the strap 23 moves between the rollers 27 which guide the movement of the chair in a predetermined desired path. The beam 15 being pivoted about pins 17 and 19 causes the lower portion of the chair 22 to move upwardly and backwardly toward the standard 11. As the chair approaches the standard 11, the protrusion 21 thereof comes into contact with the front of the standard 11 and the front roller and thereby the travel of the chair 22 in a backward direction is limited. The beam 15 also

limits the upward travel of the chair 22 so that when fully raised into its tilted position the chair occupies a position as illustrated in FIG. 3.

In order for the spectator to take his seat he need only place a gentle force downwardly upon the upper portion 31 of the chair 22 and the strap 23 follows between the rollers 27 in the reverse manner from that above-described until the chair occupies the position as illustrated in FIGS. 1 and 2. Alternatively the spectator may merely sit down into the chair when it is in the position as illustrated in FIG. 3 and his weight causes the chair to traverse downwardly and forwardly to the normal position as illustrated in FIG. 2.

It will therefore be seen that the seating apparatus in accordance with the present invention as illustrated in FIGS. 1 through 3 provides a chair which is readily and easily tiltable to a position which aids in providing clearance for a spectator in order to in turn permit additional spectators to pass in front of the spectator who normally would be in a seated position. It will also become obvious from the illustrations in the drawings that a chair which is much more comfortable than those presently being utilized for stadiums and auditoriums may be used in accordance with the apparatus of the present invention.

It will also readily be seen that when the chair in accordance with the present invention as above-described is in the tilted position as illustrated in FIG. 3, rain, snow, dirt or the like will not adhere to surface of the seat normally occupied by a spectator.

Referring now more particularly to FIG. 4 there is illustrated an alternative embodiment of a seating apparatus in accordance with the present invention. As is therein shown a standard 41 supports a chair 42. The standard 41 rises from a base such as concrete as above described. Since the chair structure is preferably the same as above-described and the mounting details may vary with any desired application, only the structure of the guide and strap means is shown and described in detail. Affixed as by welding, brazing or the like, to the upper portion 43 of the standard 41 is an elongated plate like member 44 which serves the functions of a guide means and along with the standard 41 of supporting the chair and the occupant thereof.

Affixed by screws or the like to the rear surface 45 of the chair 42 are strap members 46—46*a*. Strap member 46*a* is broken away as is the end portion of the plate member 44 to more clearly illustrate the remainder of the structure. As is illustrated thereby, and further seen in FIG. 5, a protrusion or boss 47 is preferably integrally molded with the chair 42 and extends from the rear surface 45 thereof. The boss 47 is provided with a recessed portion 48 which in turn provides a locking ledge 49 which will be more fully described below. Molded into the boss 47 is a groove 50 which extends substantially the entire distance thereof. Spring means such as a coil spring 51 is disposed within the groove 50 and is affixed at one end to the top of the plate member 44 and at the opposite end to the rear surface 45 of the chair 42.

As is more clearly seen in FIG. 5, the strap member 46 defines a space 52 between the rear surface of the chair 42 and the strap member 46. If desired, the inner surfaces of the boss 47 and strap member 46 may be lined with a plastic material 53 such as Delrin to provide an effectively lubricated surface which facilitates the operation described below. The particular relationship of the strap members 46—46*a* to the chair may be seen by reference to FIG. 6.

In operation of the seating apparatus as illustrated in FIGS. 4–6, the occupant of the chair, after rising merely grasps the front edge of the chair and lifts slightly. The lifting action releases the plate member 44 from its locking engagement with ledge 49. Upon release the springs 51—51*a* impart relative movement between the chair 42 and the plate member 44 thereby causing the plate member to effectively follow the space 52 until it rests against the lower portion of strap members 46—46*a*. In such position the chair 42 is tilted upwardly and backwardly with the same results as above described.

In returning the chair to a seating position, the occupant merely presses down on the top of the chair causing the plate member 44 to move upwardly relatively to the chair. The plate member 44 continues to move until it becomes locked in place as shown in FIG. 5.

In some applications it becomes desirable to have a seating apparatus which automatically assumes a tilted position when not being occupied. Such a structure in accordance with the present embodiment of the present invention is shown in FIG. 7. As is therein illustrated spring means such as a leaf spring 55 is affixed to the standard 11 and plate member 44 between the strap members 46—46*a*. The spring 55 is arranged to exert an outward and upward force against the chair 42 by an amount sufficient to permit the plate member 44 to engage the locking ledge 49 only when the chair 42 is occupied. In this manner the chair remains in the tilted position only when occupied.

There has thus been disclosed two embodiments of a spectator seating apparatus which is simple, rugged, inexpensive and which permits the tilting thereof either manually or automatically.

Although various features and concepts of the present invention have been set forth in the foregoing illustrative embodiment, the present invention is not to be limited in accordance therewith but is to be constructed in accordance with the claims set forth below.

What is claimed is:

1. Seating apparatus movable between a seating and a forwardly tilting position comprising: a rigid chair member having a back surface; a pair of elongated straps affixed to the back surface of said rigid chair member, said strap members and the back surface of said chair member defining a space therebetween; support means: guide means including a plate member affixed to and protruding from each side of said support means and disposed within said space for guiding said chair member in an upward and then backward motion as it is moved from a seating to a tilted position, said straps enclosing end portions of said plate member; and a protrusion having a depressed portion therein extending from the back surface of said chair member, said depressed portion receiving said plate member to thereby lock said chair member in a downward position.

2. Seating apparatus in accordance with claim 1 in which said protrusions each define a groove therein extending longitudinally thereof; spring means seated within said grooves and affixed between said plate member and said chair member thereby to urge said chair member to its tilted position when said plate member is not seated within said depression.

3. Seating apparatus in accordance with claim 2 in which additional spring means is affixed to said support means and bears against the back surface of said chair member to dislodge said plate member from said depression during the time said chair member is unoccupied.

4. Seating apparatus for use by spectators which is movable between a seating position and a forwardly tilted position, said seating apparatus comprising: a chair member including a rigid seat and a rigid back disposed longitudinally of each other, whereby a spectator may sit in said seat and support his back against said back of said chair member; strap means rigidly affixed to the rear of said chair member and extending longitudinally along a substantial portion of said chair member and spaced therefrom; a unitary standard adapted for rigid attachment at its lower end to an installing member in a fixed vertical position to support said seating apparatus; and guide means positioned at the upper end of said standard, said strap means being received within said guide means

and cooperating therewith to guide the seat of said chair through a continuous upward and then backward motion as it is moved from its seating position to its forwardly tilted position thereby placing the seat of said chair adjacent the standard in the latter position.

5. Seating apparatus for use by spectators which is movable between a seating position and a forwardly tilted position, said seating apparatus comprising: a chair member including a rigid seat and a rigid back disposed longitudinally of each other, whereby a spectator may sit in said seat and support his back against said back of said chair; a single strap rigidly affixed at one end to the rear of said seat and at the other end to the rear of said back and extending longitudinally along a substantially portion of said chair member and spaced therefrom and centrally located thereon; a unitary standard adapted for rigid attachment at its lower end to an installing member in a fixed vertical position to support said seating apparatus; and guide means positioned at the upper end of said standard, said single strap being received within said guide means and cooperating therewith to guide the seat of said chair through a continuous upward and then backward motion as it is moved from its seating position to its forwardly tilted position thereby placing the seat of said chair adjacent the standard in the latter position; and a rigid support beam pivotally attached at one end of the lower portion of said standard and at the other end to the rear surface of said seat and movable with said chair member without detachment therefrom.

6. Seating apparatus for use by spectators which is movable between a seating position and a forwardly tilted position, said seating apparatus comprising: a chair member including a rigid seat and a rigid back disposed longitudinally of each other, whereby a spectator may sit in said seat and support his back against said back of said chair member; a single strap rigidly affixed at one end to the rear of said seat and at the other end to the rear

of said back and extending longitudinally along a substantial portion of said chair member and spaced therefrom and centrally located thereon; a unitary hollow standard having a wide base for rigid attachment to an installing member in a fixed vertical position to support said seating apparatus; guide means including a pair of spaced apart rollers journaled within the hollow standard at the upper end thereof, said single strap being received within said rollers and cooperating therewith to guide the seat of said chair through a continuous upward and then backward motion as it is moved from its seating position to its forwardly tilted position thereby placing the seat of said chair adjacent the standard in the latter position; a rigid support beam pivotally attached at one end to the lower portion of said standard and at the other end to the rear surface of said seat and movable with said chair member without detachment therefrom; and spring means rigidly affixed to said standard adjacent the lower end thereof and bearing against the lower surface of said support beam to continuously urge the chair toward its tilted position, said spring being incapable of initiating movement of said chair from the seating position thereof.

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