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ADJUSTABLE AUDIENCE SEAT

Filed Sept. 4, 1931

2 Sheets-Sheet 1

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2 Sheets-Sheet 2

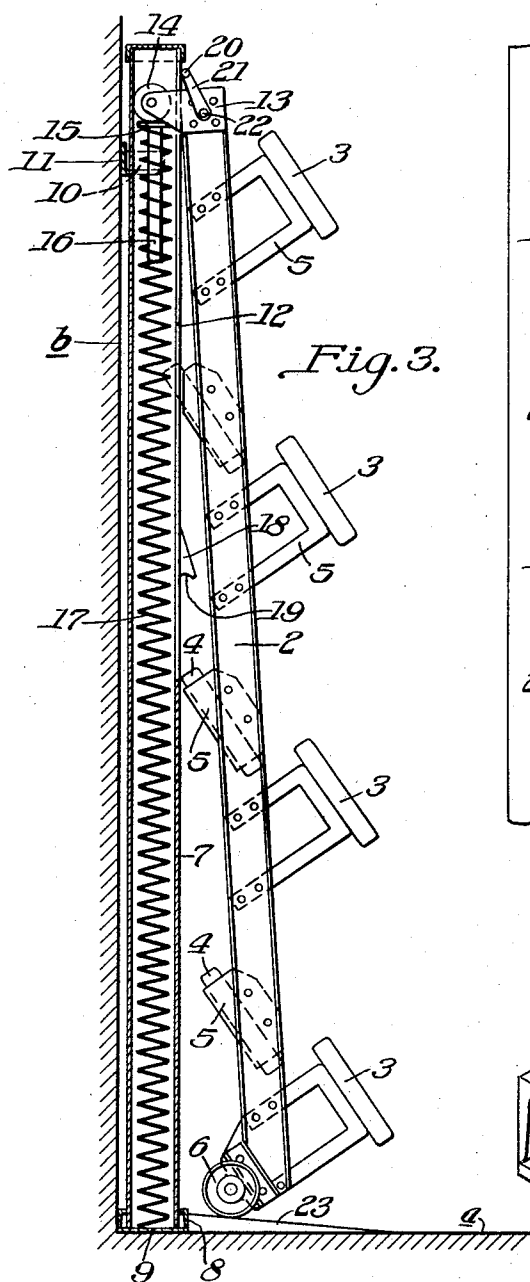


Fig. 3.

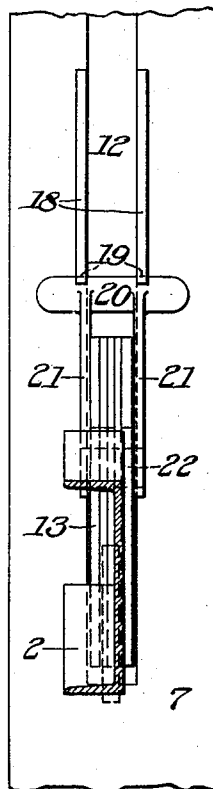
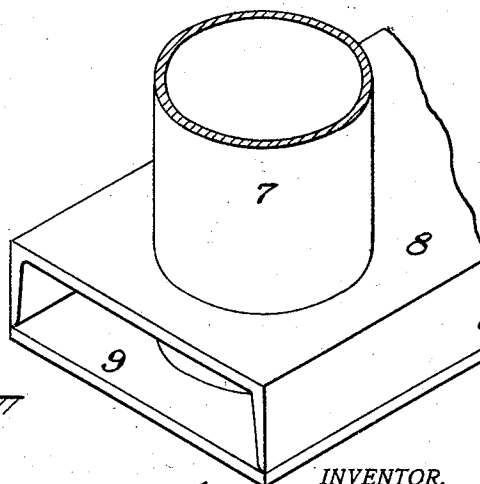


Fig. 4.

Fig. 5.



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ADJUSTABLE AUDIENCE SEAT

Application filed September 4, 1931. Serial No. 561,195.

My invention refers to an improvement in the class of audience seats of the type known as "bleachers". It has for its object to provide an adjustable seat frame adapted to be located in extended inclined operative position for use in front of a wall or other boundary surface, and to be thrust backwardly for vertical storage when not in use.

The improvement consists of a suitable rectangular framing having a series of transverse seat members, provided at its lower edge portion with supporting rollers, the upper edge portion being mounted for vertical guiding movement in a plurality of cushioning columns. Such columns, which are preferably tubular and vertically slotted are each provided with an elongated coiled spring, and the construction is so arranged and adjusted as to maintain a spring resistance increasing approximately at the same rate as the increasing gravitating pressure in one direction, decreasing in the same proportion in the other direction, in extending or collapsing the structure.

The present invention is related to that of my prior application filed January 21, 1930, Serial No. 422,309.

One preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a view in front elevation of the device in extended operative position;

Fig. 2 is an enlarged end view thereof showing one of the columns in vertical section;

Fig. 3 is a view similar to Fig. 2 showing the device in approximately vertical position as stored away when not in use;

Fig. 4 is a further enlarged sectional detail view on the line IV—IV of Fig. 2, illustrating the locking latch;

Fig. 5 is a partial view in perspective showing the mounting of one of the tubular columns.

The framework of the seats is generally rectangular in form composed of purlin-like members 2 of structural shape, as angles or channels, across which extend a series of seats 3 and foot boards 4 carried by brackets

5 of suitable construction and strongly bracing the entire framework, and maintaining it in shape.

Any suitable arrangement of such cross members may be adopted, or of other bracing construction, maintaining the frame members 2 in their desired relationship to the guiding columns and the floor surface.

At its lower end the framework is provided with rollers 6, suitably located to ensure easy running movement across the surface of the floor *a* outwardly from and backwardly towards the series of guiding and supporting columns 7. Such columns, which may be of piping or other tubular construction, are erected, usually against or in front of any wall surface, and are mounted in suitable bases 8 which may conveniently be of channel form having openings therein through which the columns extend against a bottom plate 9.

At their upper portions columns 7 are connected, as by suitable clamping brackets 10, with a transverse bar 11 secured against the wall surface *b*, as in Figs. 1 and 3. The tops of the columns are also preferably capped as shown.

The upper portions of columns 7 are vertically slotted, as at 12, for guiding engagement with terminal brackets 13, secured to the upper ends of members 2 and extending inwardly through slot 12. Between the cheeks of brackets 13 is a pivotally mounted roller, or other suitable bearing terminal 14. Such terminal rests on the disk-like top 15 of a stem 16, which extends downwardly within the upper portion of a long coiled spring 17.

Such spring extends continuously from the base plate 9 upwardly through the interior of column 7, the lower portion of which is continuously closed, below the slot 12. Such slot is of sufficient length to allow for the entire range of movement of the upper portion of the frame, and brackets 13 corresponding to the extent of movement involved in adjusting the device from its outermost to innermost position, as in Figs. 2 and 3.

When the frame is lowered to operative

position as in Fig. 2, the pressure of its inner end constantly increases in proportion to the increasing angle between its upper portion and the vertical line of the guiding columns

7. On the other hand, in collapsing the device by moving its inner portion toward the column, the effective gravitating pressure gradually decreases as the upper end rises and as the lower end moves inwardly, decreasing such angle. Under such conditions the reacting pressure of spring 17 is greatest under the greatest load and least under the lightest load.

Spring 17 is of such strength and range of resiliency as to be under slight or minimum compression when the frame is thrust backwardly as in Fig. 3, and under greatest compression and resilient reaction, when the frame is lowered as in Fig. 2. The advantage of such construction and arrangement is that when the seats are empty, a single operator may, with comparatively slight effort, either lower the frame by his own weight applied to the upper portion, as the top seat or foot board, and may also push the lower portion of the frame backwardly, assisted by the reaction of the spring. The conditions also are under continuous balance quite sufficient to maintain the frame in either lowered or raised position, its gravity when extended overcoming lifting power of the springs, and when collapsed, being insufficient to effect their compression without such manual assistance.

For the purpose of positively holding the frame in lowered usable position I provide a holding latch or lock, such as shown.

In the form illustrated I provide a pair of outwardly extending lugs 18 at each side of slot 12, which may be conveniently welded or otherwise secured to the inner edges of the column, having recessed sockets 19, for engagement of a cross bar 20. The latter, which may extend at either side for grasping, is carried by the swinging arms 21 pivoted at 22 in bracket 13, and is thus capable of being swung outwardly or inwardly for unlocking or locking engagement with the lugs or brackets 18. By concaving their under sides as shown the bar 20 is capable of making a secure holding engagement, especially under the reacting pressure of the spring.

The lower end of a slot 12 preferably extends slightly below the lower edge of bracket 13, so that the weight of the operator is sufficient to effect additional slight downward movement to effect unlocking. Thereafter, the frame being released it may be pushed backwardly and will maintain its position due to the continuous slight upward pressure of the not entirely expanded spring.

For the purpose of insuring initial easy outward movement of the lower portion of the frame the floor *a* is provided with a

slight upward terminal track 23 for each roller, thereby facilitating its outward initial movement in lowering.

The construction and operation of the invention will be readily understood and appreciated from the foregoing description.

The bleacher seats when lowered are in the desirable position for use, restrained and limited from further movement under the load of occupation, by the resting of the brackets 13 on the solid wall of the columns 7 at the lower end of the slots. Upon removal of such occupation and relief from such additional load, the normal weight of the entire frame, counterbalanced by the springs, enables it to be easily manipulated and stored away in the manner described, leaving practically the entire lateral floor surface open and free, except only the narrow portion occupied by the columns and the projecting thickness of the frame.

It will be understood that the seating framework may be made in sections of suitable length for individual location and adjustment around the walls of a room or according to the space to be used. Also that various changes or modifications may be made by the skilled mechanic in detail construction or otherwise, but that all such changes are to be considered as within the scope of the following claims.

What I claim is:

1. An adjustable audience seat comprising a supporting frame having a lower inwardly and outwardly movable and upper guiding terminals, a plurality of tubular slotted columns, and a spring in one of said columns resiliently engaging one of the upper terminals under continuous variable pressure proportioned to the gravitating pressure of the upper terminal thereon.

2. An adjustable audience seat comprising a supporting frame having a lower inwardly and outwardly movable roller-supported portion and upper guiding terminals, a plurality of tubular slotted columns, and a spring in one of said columns resiliently engaging one of the upper terminals under continuous variable pressure proportioned to the gravitating pressure of the upper terminal thereon.

3. An adjustable audience seat comprising a supporting frame having a lower inwardly and outwardly movable roller-supported portion and upper guiding terminals, a plurality of tubular slotted columns, a spring in one of said columns resiliently engaging one of the upper terminals under continuous variable pressure proportioned to the gravitating pressure of the upper terminal thereon, and means for locking one of the upper terminals in lowered position.

4. An adjustable audience seat comprising a supporting frame having a lower inwardly and outwardly movable roller-sup-

ported portion and upper guiding terminals, a plurality of tubular columns slotted at their upper portions, a spring in each of said columns resiliently engaging the upper terminals under continuous variable pressure proportioned to the gravitating pressure of the terminals thereon, and a locking device on one of the upper terminals adapted to engage its column when the frame is in lowered position.

5. In combination with a floor surface and a series of vertical guiding columns, one of said columns being tubular and having an upper slotted portion and a lower portion containing a spring, a supporting frame as described having a lower rolling portion traversible over the floor and upper portions engaging the columns, one of said portions having a terminal extending through the slotted portion and supported on the contained springs.

6. In combination with a floor surface and a series of vertical tubular columns each having an upper slotted portion and a lower portion containing a spring, a supporting frame as described having a lower rolling portion traversible over the floor and an upper portion having terminals extending through the slotted portion and supported on the contained springs and provided with a locking device.

7. In combination with a floor surface having an inner incline and a series of vertical tubular columns adjacent said incline each having an upper slotted portion and a lower portion containing a spring, a supporting frame having seats and a lower terminal provided with rollers traversible over the floor and its incline and an upper portion having terminals extending through the slotted portion of the columns and supported on the contained springs.

In testimony whereof I hereunto affix my signature.

WALTER C. URLING.