Nov. 15, 1932. P. J. McDERMOTT 1,888,136

SEAT RAISER AND VACANCY INDICATOR

Filed Dec. 5, 1929 2 Sheets-Sheet 1

Fig. 1.

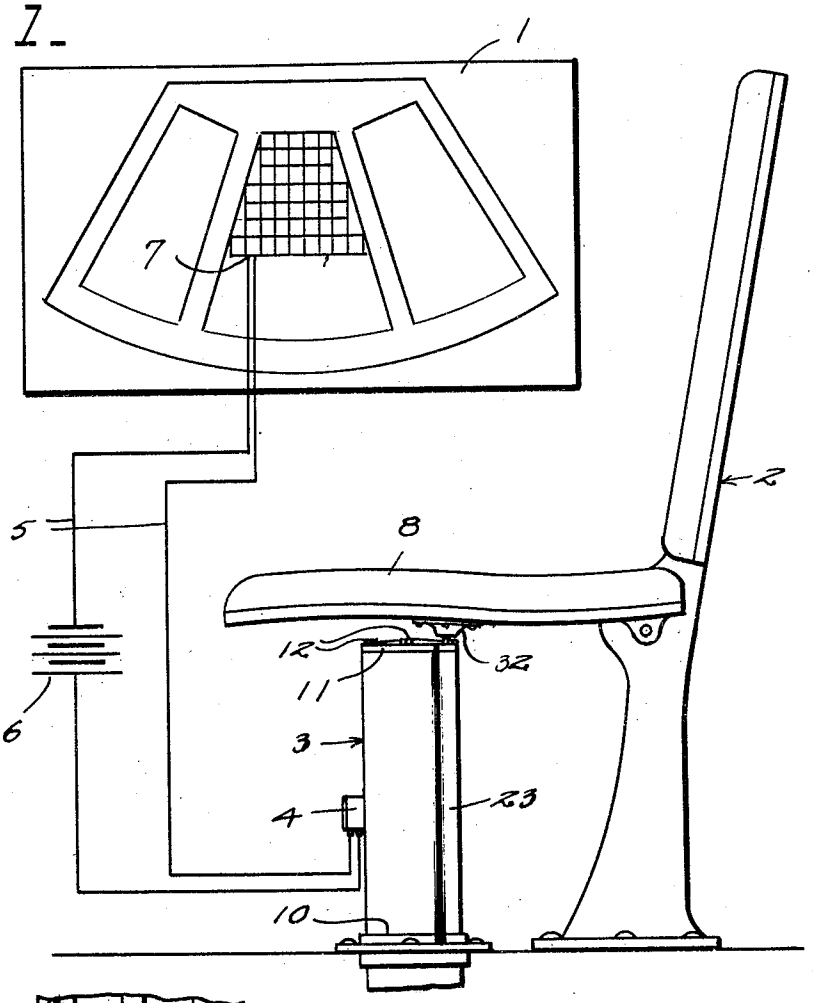
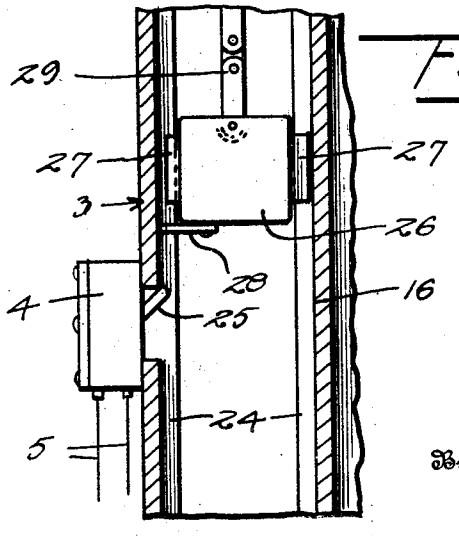


Fig. 5.



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Fig. 2.

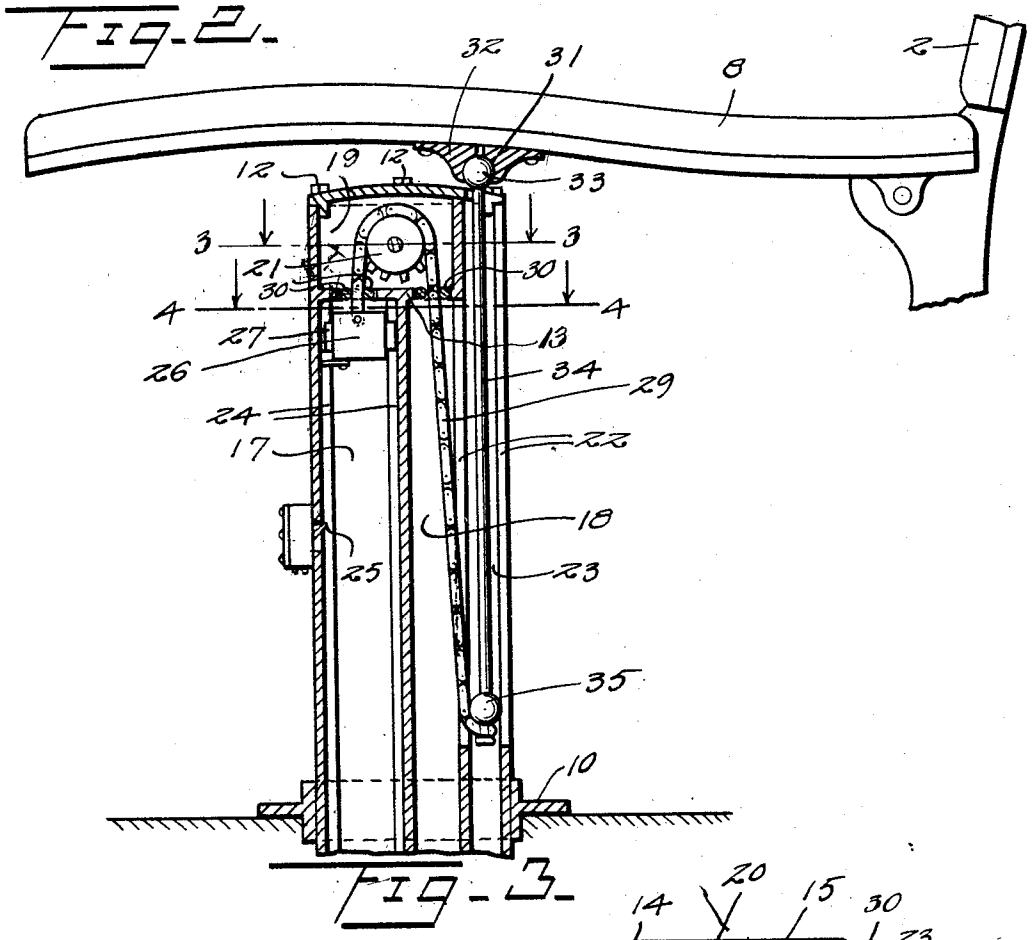


Fig. 3.

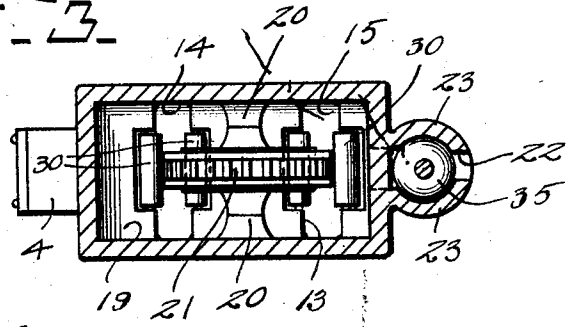
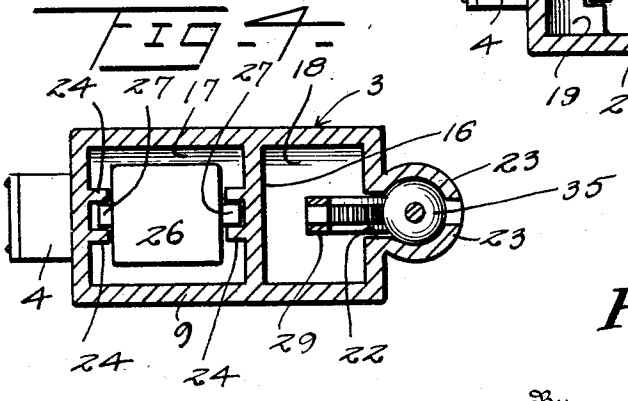


Fig. 4.



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UNITED STATES PATENT OFFICE

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SEAT RAISER AND VACANCY INDICATOR

Application filed December 5, 1929. Serial No. 411,953.

This invention relates to actuating devices for pivotally mounted seats of any type particularly theater seats.

The primary object of the present invention is to provide an improved means for controlling a seat of the pivoted type to maintain the same in raised position when unoccupied and at the same time to indicate upon a suitable chart or indicator board the fact that the seat is occupied or unoccupied.

Another object of the invention is to provide a seat actuating device which will operate smoothly and quietly to raise a seat as soon as the occupant thereof leaves it.

A still further object of the invention is to provide means whereby a switch may be actuated at a period during the raising or lowering movement of the seat to indicate upon a suitable chart associated therewith that the seat is occupied or unoccupied.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:—

Figure 1 shows the device embodying the present invention in elevation and in applied position showing the use of the same in connection with a theater seating diagram.

Figure 2 shows the device embodying the present invention in longitudinal section showing the same applied.

Figure 3 is a sectional view taken upon the line 3—3 of Figure 2.

Figure 4 is a sectional view taken upon the line 4—4 of Figure 2.

Figure 5 is a longitudinal section through a portion of the device in the vicinity of the switch.

Referring more particularly to the drawings wherein like numerals of reference indicate corresponding parts throughout the several views, Figure 1 shows diagrammatically the manner in which the seat controlling device embodying the present invention may be used in association with a theater seat to indicate upon a chart 1 showing the seating arrangement of the theater the location of any unoccupied seat in the theater.

The chart shown has associated therewith one seat only, this seat being indicated generally by the numeral 2 and the device embodying the present invention is indicated generally by the numeral 3, this device embodying as one of the elements thereof a switch mechanism 4 hereinafter more specifically described which is connected by a suitable electric circuit 5 having interposed therein a battery 6, with a lamp 7 on the seat diagram or chart 1 which indicates the position of the seat 2 in the latter. The present device is designed to maintain the light 7 on or illuminated while the seat is being occupied and to turn off the same as soon as the seat is vacated, the turning off of the light being effected through the action of the device raising the seat.

The device 3 which is directly connected to the seat bottom 8 to raise the same when it is unoccupied, comprises an upright metallic casing 9 which is disposed beneath the seat bottom preferably adjacent the front edge and at one side thereof. In order to accomplish the smooth actuation of the seat bottom the casing 9 is preferably extended slightly into the floor as shown so that it may be made of sufficient length to give the controlling weight, hereinafter described, a relatively long operating space, any suitable securing collar or base 10 being employed for fastening the casing in upright position in the floor.

While in actual practice the casing 9 probably would be formed in two longitudinal sections the same is here shown for clearness as being cast in a single unit. The bottom end of the casing may be closed if desired and the top end has removably secured thereover a cap 11 maintained in place by suitable bolts 12 which pass therethrough into the edge of the underlying wall.

The upper end of the casing 9 is divided

by a transverse partition 13 through which two spaced openings 14 and 15 are formed and extending longitudinally of the casing from the partition 13 downwardly is a central dividing wall 16 which divides the casing into a weight run-way 17 and a chain run 18, the upper end of the casing providing a sprocket wheel chamber 19.

Within the chamber 19 the opposite walls thereof are provided with suitable bearing bosses 20 between which is rotatably mounted a chain sprocket wheel 21, this wheel being as shown midway between the openings 14 and 15 in the partition 13. The back wall of the casing 9 is provided with a longitudinally extending slot 22 which opens outwardly into a guideway formed by a pair of longitudinally extending channeled or transversely arcuate guide members 23. The guides 23 arranged at opposite sides of the slot 22 and outside of the casing 9 as shown have their concave faces in opposed relation to receive therebetween a sliding element as hereinafter described.

Within the run-way 17 there is formed upon each of the opposed faces of the front and rear walls, or in other words upon the front wall of the casing and the longitudinal partition wall 16 therein, a pair of longitudinally extending guide ribs 24, the ribs upon the front wall of the casing and those upon the partition 16 being parallel as shown.

The switch 4 has an arm 25 which extends through the front wall of the casing into the guide channel formed by the front pair of ribs 24. Within the run-way 17 is located a relatively heavy weight 26 which has upon opposite sides the fingers 27 each of which is slidably positioned between a pair of runway guide ribs 24 in the manner shown.

The guide finger 27 which travels between the front pair of ribs 24 has attached thereto a resilient finger 28 which extends into the slot in the manner shown so as to engage the switch lever 25 which also extends slightly into the slot formed by the ribs 24, when the weight moves up and down in the slot.

Passing over the sprocket wheel 21 is a sprocket chain 29 one end of which passes down through the opening 14 to and is attached to the weight 26 while the other end passes down into the chamber 18 through the opening 15. As shown in Figure 3 each of the opposed edges of the openings 14 and 15 has mounted therein a roller 30 so that the passage of the chain through the opening will be smooth and noiseless.

Secured to the underside of the seat bottom 8 in a socket 31 formed between a pair of ball gripping clamps 32, is a ball 33 fixed to one end of a seat actuating rod 34. At its other end this rod has a body in the form of a ball 35 attached thereto as shown and this ball is positioned to slide between the arcuate guide flanges 23 forming a part of the casing 9. The other end of the sprocket chain 29 is attached to the ball 35.

It will be readily seen from the foregoing that when seat 8 is swung upwardly, the upper end of the rod 34 will follow the arc described by the portions of the seat where it is attached, while the lower end will move vertically in a straight line and therefore the rod will swing out of the outer recess or slot 22 and assume an inclined position.

From the foregoing description it will be readily apparent that the herein described device when attached to the usual pivotally mounted theater seat bottom or in any seat which is pivotally mounted, will operate smoothly as soon as the seat is vacated to swing the seat up into the usual unoccupied position. Simultaneously with this operation the switch device associated with the mechanism will be actuated to indicate upon the chart 1 the exact location of the seat which is unoccupied or which has just been vacated.

While the description of this invention has been confined to use in association with theater seats it is of course to be understood that I do not wish to be limited in this manner for it will be readily apparent that the device may be used in many other locations where pivotally mounted seats are employed for indicating whether or not the same are occupied.

Having thus described my invention, what I claim is:

1. A raising device for pivotally mounted seats, comprising an upright casing adapted to be disposed beneath a seat, said casing being longitudinally divided into a pair of chambers and transversely divided at its upper end to provide an upper chamber, a rotatable element within said upper chamber, a flexible element passing over the rotatable element and having each end disposed in a longitudinal chamber, a rigid lifting member connected at one end to one end of the flexible element and having pivotal connection at its other end with said seat, means for guiding the first mentioned end of the lifting member for travel in a vertical path, and a control weight attached to the other end of the flexible element and disposed in the other of the longitudinal chambers.

2. A raising device for pivotally mounted seats, comprising an upright casing adapted to be disposed beneath a seat, said casing being longitudinally divided into a pair of chambers and transversely divided at its upper end to provide an upper chamber, a rotatable element within said upper chamber, a flexible element passing over the rotatable element and having each end disposed in a longitudinal chamber, a rigid lifting member connected at one end to one end of the flexible element and having pivotal connection at

its other end with said seat, means for guiding the first mentioned end of the lifting member for travel in a vertical path, a control weight attached to the other end of the flexible element and disposed in the other of the longitudinal chambers, guide-ways in the said other one of the longitudinal chambers, and guide fingers on said weight slidably disposed in the guide-ways.

3. In a lifting device for pivotally mounted seats, a rigid lifting bar having pivotal connection at one end with the underside of the seat, a guide-way comprising a pair of channeled members arranged with their recessed faces in opposed relation, a body upon the other end of the bar slidably positioned in said guideway, a rotatable element adjacent the upper end of the guideway means connected with the guideway at its upper end for supporting the rotatable element, a flexible element passing over the rotatable element and attached at one end to the guide controlled end of the bar, and a weight suspended from the other end of the flexible element.

4. A lifting device for pivotally mounted seats, comprising an upright casing designed to be disposed beneath a seat and having a longitudinally extending slot through the rear wall thereof, spaced arcuate guide flanges disposed on opposite sides of said slot exteriorly of the casing, a lifting bar having a ball on one end slidably disposed between said flanges and having the other end pivotally secured to the underside of the seat, a sprocket wheel pivotally mounted in the upper end of the casing, a sprocket chain secured at one end to the ball end of said rod and passing over the wheel, and a weight reciprocably mounted in the casing and suspended from the other end of the sprocket chain.

5. A control device for pivotally mounted seats comprising an elongated casing adapted to be disposed vertically beneath the seat and having a longitudinal slot through the rear wall thereof, arcuate guide flanges arranged upon opposite sides of the slot exteriorly of the casing with their concave faces in opposed relation, a partition transversely of the upper part of the casing forming an upper chamber therein, a longitudinally extending partition beneath the upper partition forming a pair of longitudinal chambers each having communication with the upper chamber through an opening in the upper partition, a lifting bar having one end pivotally secured to the underside of an overlying seat, a ball upon the other end of the lifting bar slidably disposed between said guide flanges, a sprocket wheel mounted in said upper chamber, a sprocket chain passing over said sprocket wheel and having its ends extending through said upper partitions into said longitudinal chambers one end of the same being attached to said ball, a weight carried upon the other end of the chain and movable in the chamber receiving the same, and anti-friction elements disposed at opposite sides of each of the openings through the first mentioned partition.

6. A raising device for a pivotally mounted seat, comprising an elongated vertically disposed structure formed to provide a guideway open at its upper end and having a longitudinally extending slot in the wall thereof, a bar member having pivotal connection at one end with the under side of the seat, a ball carried at the other end of the bar and slidably positioned in said guideway, the bar upon the oscillation of the seat swinging through said slot, a rotatable member adjacent the upper end of said guideway, means connected with the guideway for supporting said rotatable member, a flexible element connected at one end with the lower end of said bar and passing over said rotatable member, and a weight member carried upon the other end of the flexible element.

In testimony whereof I hereunto affix my signature.

PETER J. McDERMOTT.