No. 838,016. PATENTED DEC. 11, 1906.

J. G. FLUGAN, Sr.

OPERA CHAIR.

APPLICATION FILED JAN. 24, 1906.

2 SHEETS—SHEET 1.

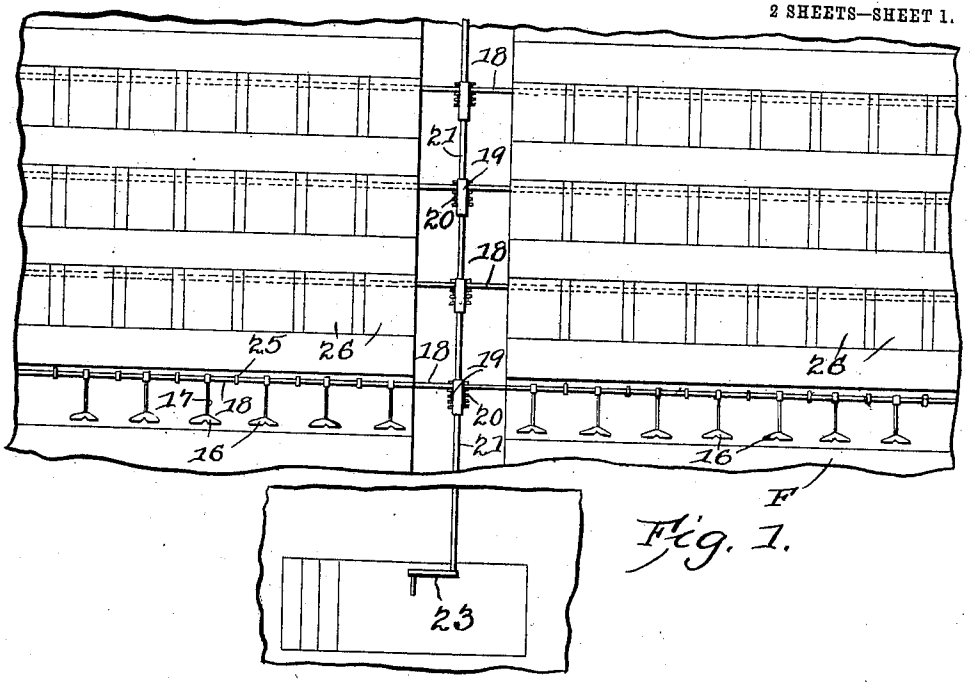


Fig. 1.

Fig. 6.

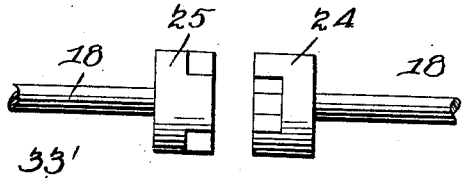


Fig. 8.

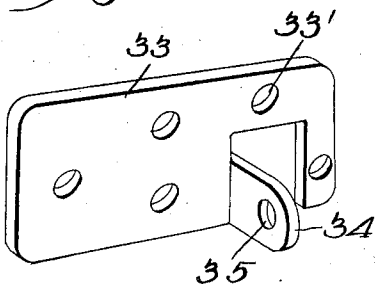


Fig. 7.

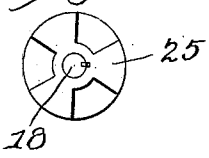
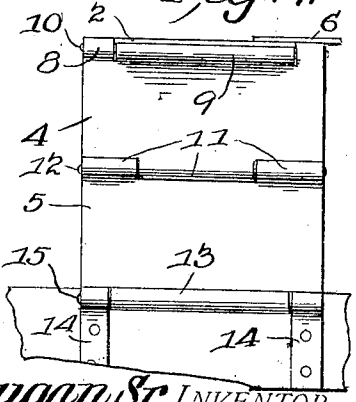


Fig. 9.



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2 SHEETS—SHEET 2.

Fig. 2.

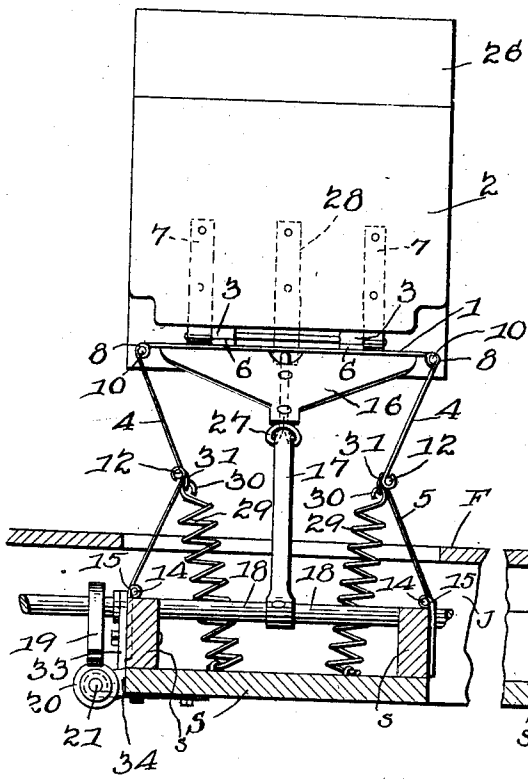


Fig. 3.

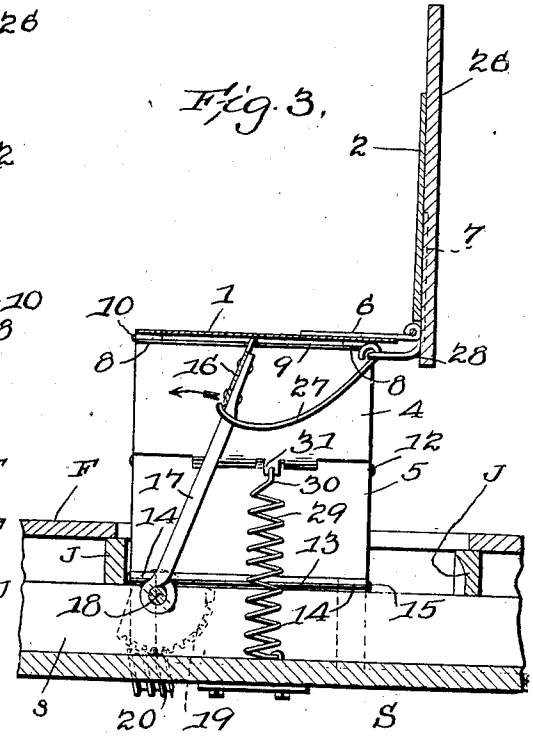


Fig. 4.

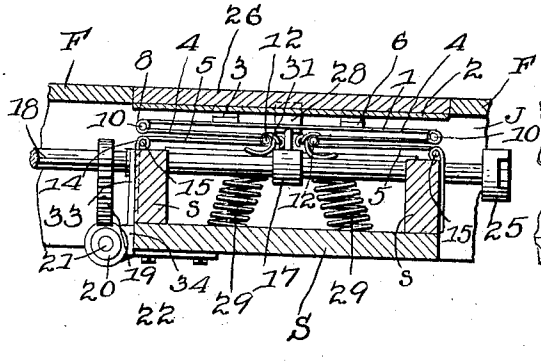
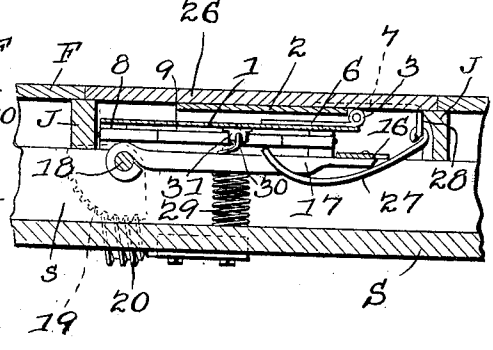


Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES G. FLUGAN, SR., OF LISBON, OHIO.

OPERA-CHAIR.

No. 838,016. Specification of Letters Patent. Patented Dec. 11, 1906.

Application filed January 24, 1906. Serial No. 297,619.

To all whom it may concern:

Be it known that I, JAMES G. FLUGAN, Sr., a citizen of the United States, residing at Lisbon, in the county of Columbiana and State of Ohio, have invented a new and useful Opera-Chair, of which the following is a specification.

This invention relates generally to opera-chairs, and more particularly to that class known as "disappearing chairs."

The object of the invention is in a novel and practical manner to bring any desired number of chairs to position for use and to cause them to disappear, whereby the floor of an opera-house, theater, or other place of assemblage may be rendered smooth and free from obstructions, thus to permit of its being rapidly emptied of the occupants in the case of fire or the like or to convert a hall that would be otherwise unsuited to the purpose into a dancing-pavilion.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a disappearing chair, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, Figure 1 is a view in plan exhibiting the manner in which a series of chairs are operated from a single point. Fig. 2 is a view in front elevation, partly in section, showing the chair raised. Fig. 3 is a view in side elevation, partly in section, showing the chair raised. Fig. 4 is a view in front elevation, partly in section, showing the chair lowered. Fig. 5 is a view in side elevation, partly in section, showing the chair lowered. Fig. 6 is a detail view of a portion of the operating mechanism. Fig. 7 is a view in end elevation of one of the elements shown in Fig. 6. Fig. 8 is a perspective detail view of a portion of the operating mechanism. Fig. 9 is a view in side elevation of the seat-supporting portion of the apparatus.

Referring to the drawings, F designates the flooring of a building in which the chairs are located, J the joists supporting the flooring, and S a sub flooring or support upon which a portion of the operating mechanism of the chair is mounted, the support being secured in any suitable manner to the joists. As herein shown, the support is a trough-like structure, and this will generally be its preferred construction; but any other form of support adapted for the purpose may be substituted for that shown and still be within the scope of the invention.

As shown in Fig. 1, the seats will be arranged in rows, as with ordinary opera-chairs, and as each is a counterpart of the other a description of one will serve for all. The chair comprises a seat 1, a back 2, hinged thereto at 3, and a pair of legs comprising jointed leaves 4 and 5, constituting toggle-levers. The seat, back, and legs are by preference made of sheet metal, thus to combine the maximum of strength and durability with the minimum of weight.

As shown in Fig. 2, the hinges 3, that connect the back and the seat, are of the ordinary strap type, two of the straps 6 being secured to the seat and the other two straps 7 being secured to the back of the seat.

The leg members 4 are secured to the side edges of the seat by providing the latter at each corner with a butt member 8 and the former with a butt member 9 to fit between the butt members 8, a pintle 10, passing through the series of butts, serving to hold the whole assembled. The members 4 and 5 are connected by ordinary butt-joints 11 and a pintle 12. The leg members 5 are secured to the side members *s* of the support S by providing the former with a butt member 13, that is engaged by a pintle 14, that passes through two straps 15, rigidly secured to the sides *s* of the support, as clearly shown in Fig. 9. While this method of connecting the parts has been found thoroughly efficient for the purpose designed, it is to be understood that the invention is not limited thereto, as other means may be devised that shall be equally adapted for the purpose and still be within the scope of the invention.

The means for raising the seat comprises a lifting element or bar embodying an approximately triangular head 16, that is secured to the upper end of an arm 17, the lower end of which is rigidly secured to a shaft 18, journaled in suitable bearings in the sides *s* of the support. As shown in Fig. 1, the shaft 18 is

of a length to extend entirely across one or two rows of seats, and by this arrangement when the shaft is actuated by mechanism presently to be described all the seats in a building may be raised or lowered by rows and simultaneously, as will be readily understood.

Rigidly secured upon the shaft is a toothed sector 19, that is engaged by a worm 20, carried by a shaft 21, supported in bearings 22, secured to the under side of the support S, it being understood that there will be a worm and sector for each row of seats, as clearly shown in Fig. 1. The shaft 21 will extend the entire length of a hall from the stage to the door and carries a crank 23, by which it may be operated. In order that all of the seats may be raised and lowered in unison, the shaft 18 is made in sections that are connected by socket-couplings 24 25, as clearly shown in Fig. 6.

Secured to the back is a section of flooring 26, which is of a size when raised to permit the seat portion readily to be elevated to the position shown in Figs. 2 and 3, and when the seat is lowered to rest upon the joist J, as shown in Fig. 5, and lie flush with the remaining portion of the floor.

In order to cause the back and floor sections to raise when the seat portion of the chair is raised and to fold down over the same when the seat portion is lowered, there is a yoke 27 provided, one end of which is looped around the arm 17, as clearly shown in Fig. 2, and the other end of which is hooked into engagement with an approximately L-shaped arm 28, secured to the rear side of the back and between it and the floor-section 26. When the arm 17 is moved in the direction of the arrow shown in Fig. 3, it engages with the crest of the yoke, and thus exerts a pull upon the arm 28, which will operate to lift the back and floor section to the position shown in Fig. 2, and upon the reverse movement of the arm 17 the head 16 will bear upon the rear portion of the yoke, as shown in Fig. 5, and thereby force the back and floor section to the position shown in the said figure.

The means for causing the leg-sections 4 and 5 automatically to close inward, and thus permit the seat to lower, consists of a pair of coiled springs 29, one terminal of each of which is stapled or otherwise secured to the base of the support S and the other terminal of each of which is formed into a hook 30, each of which engages a projection or lug 31, carried by the leg member 4, as clearly shown in Fig. 2. To prevent setting of the leg members, so that they would resist breaking joints when the seat is to be lowered, the members will never be brought into alinement, but will always converge inward toward each other, as shown in Fig. 2, so that on the initial movement of the shaft 18 the leg members will immediately begin to move inward toward each other, and thus secure the object sought.

In order to hold the worm and sector positively in engagement with each other against possibility of working apart from strain, there is a novel form of bearing provided which is shown in detail in Fig. 8, which consists of a plate 33, that is securely bolted to one of the side members *s* of the support and is provided with an opening 33′ to receive the shaft 18 and with an extension 34 extending at right angles to the face of the plate and provided with an opening 35 to receive the worm-shaft 21. It will be seen from this arrangement that the worm and sector will always be held operatively combined and will be braced in such manner as to insure positive intermeshing at all times.

While the invention is herein shown as applied to a series of seats, it is to be understood that it is adapted for use in connection with one seat or with two or more seats that are disconnected, and thus capable of being operated independently of each other, and as this will be readily understood detailed illustration of such obvious modifications is omitted.

I claim—

1. In a chair, a seat, toggle-levers connected therewith, a positively-actuated arm coacting with the seat, and operating to raise the same when moved in one direction, means operating to buckle the levers and lower the seat when the arm is moved in an opposite direction, a back hinged to the seat, and a connection between the back and the arm whereby on the initial movement of the arm the back will be raised and on the return movement thereof it will be lowered.

2. The combination with the flooring of a building having rows of openings therein, of seats arranged below the openings, backs carried by the seats, flooring-sections carried by the backs, shafts arranged transversely of the seats and carrying toothed sectors, arms rigid with the shafts and carrying heads engaging the under sides of the seats, a yoke connected with each of the arms and with the chair-back, a shaft extending longitudinally of the rows of seats and having worms engaging the sectors, and springs coacting with the knuckles of the levers.

3. The combination with the flooring of a building having rows of openings therein, of seats arranged below the openings, backs carried by the seats, flooring-sections carried by the backs, shafts carrying clutches, arranged transversely of the seats and carrying toothed sectors, arms rigid with the shafts and carrying heads engaging the under sides

of the seats, a yoke connected with each of the arms and with the chair-back, a shaft extending longitudinally of the rows of seats and having worms engaging the sectors, and springs coacting with the knuckles of the levers.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES G. FLUGAN, SR.

Witnesses:
T. W. VOGAN,
ALVIN LEE.