(No Model.)

2 Sheets—Sheet 1.

J. DU BOIS.

OPERA CHAIR.

No. 308,656. Patented Dec. 2, 1884.

Fig. 1.

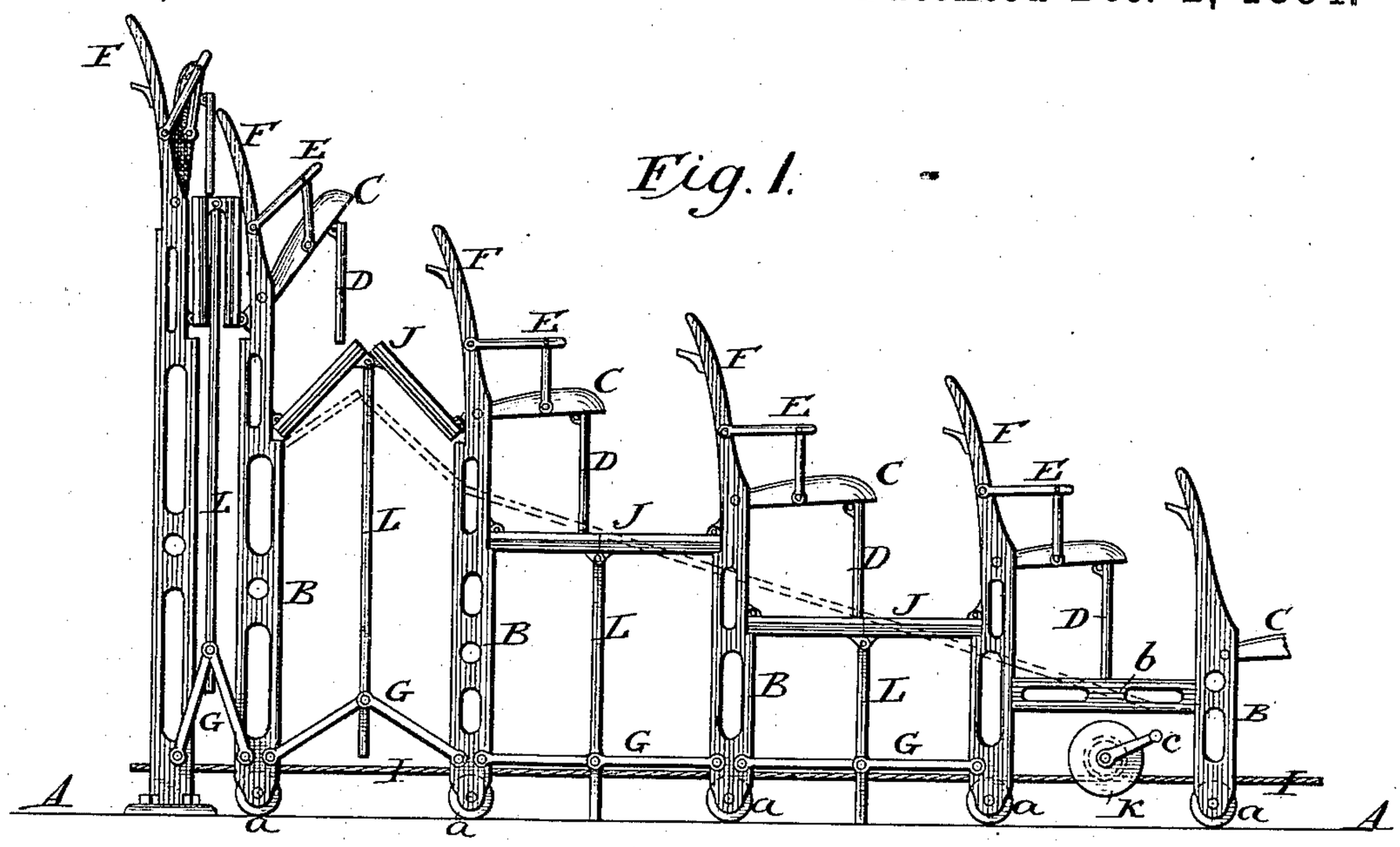


Fig. 2.

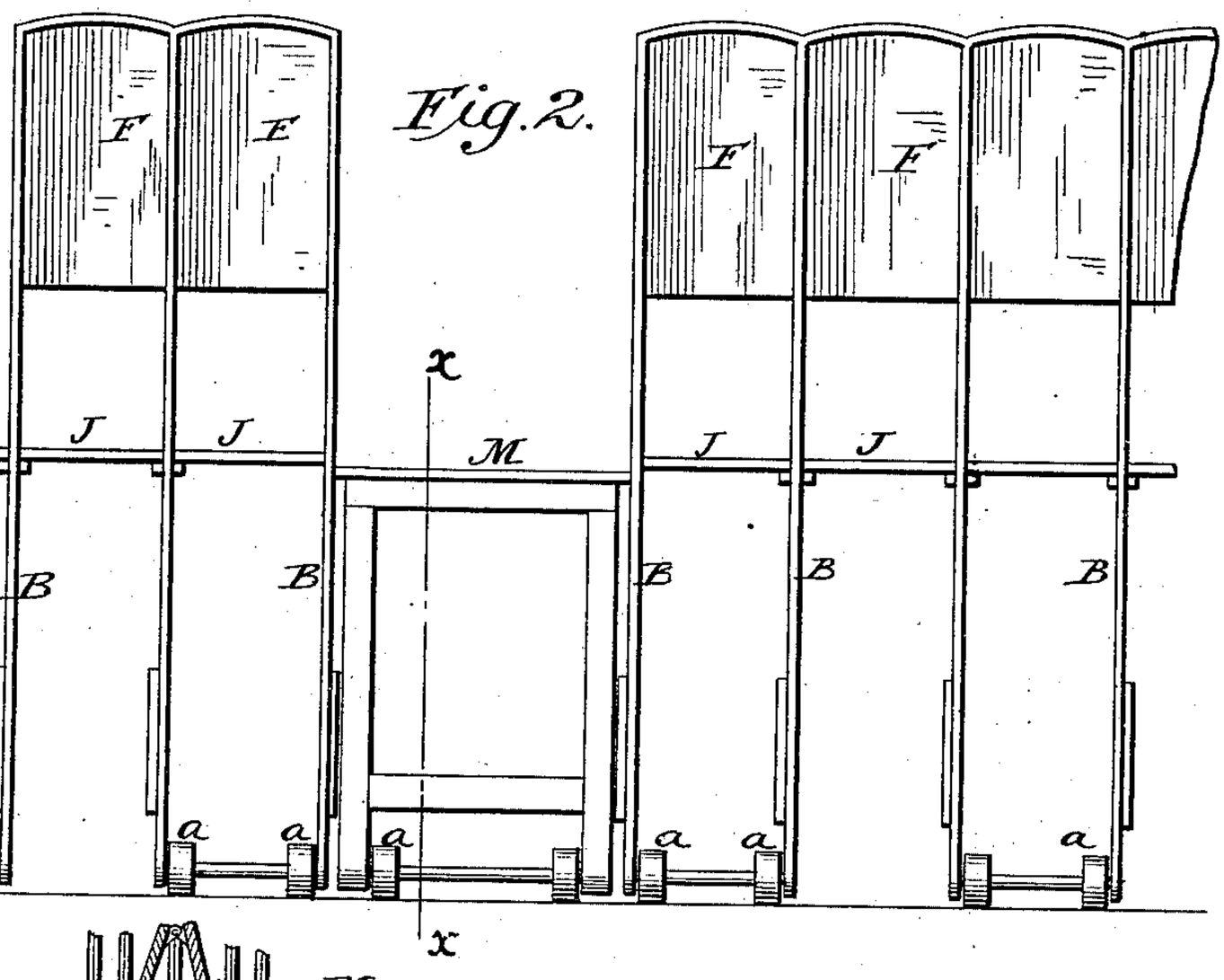
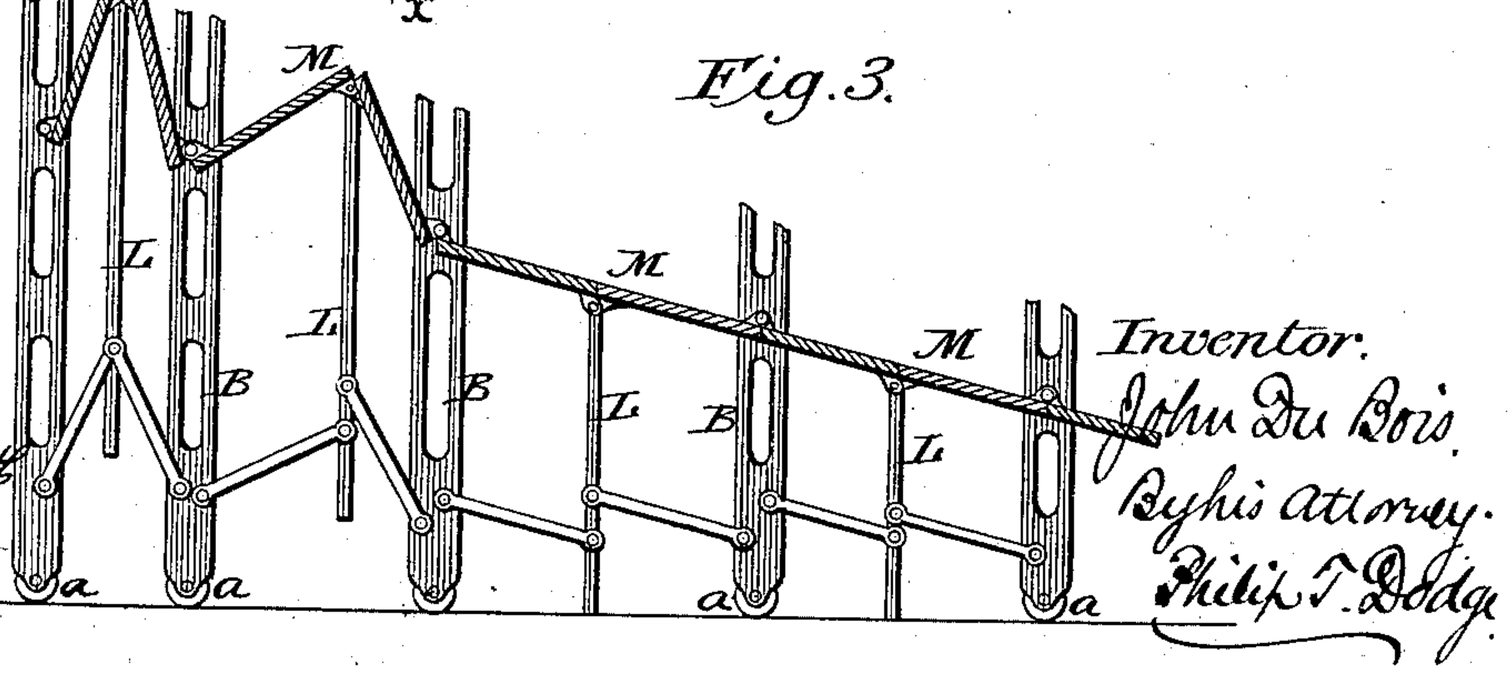


Fig. 3.



Attest

Sidney P. Hollingsworth

Newton Wyckoff.

Inventor.

John Du Bois.

By his attorney.

Philip T. Dodge.

(No Model.)

2 Sheets—Sheet 2.

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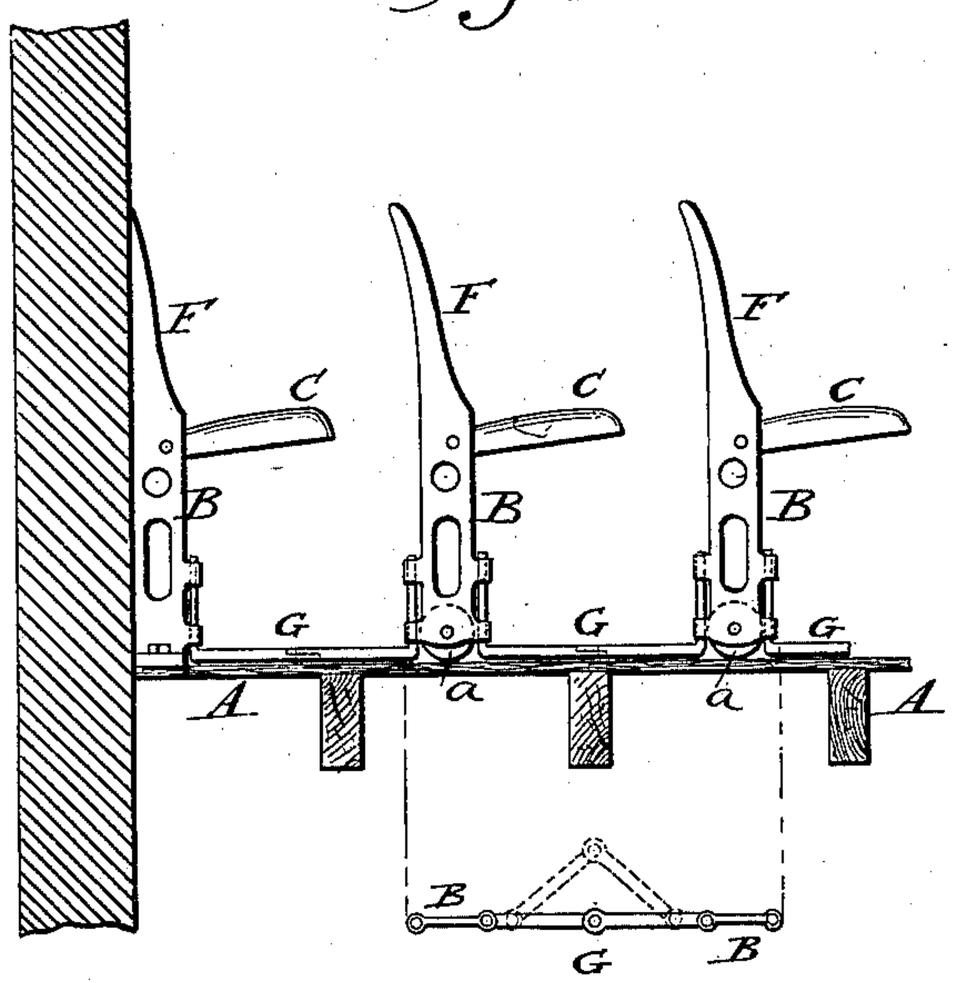
Fig. 4



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By his atty.

Philip T. Dodge.

UNITED STATES PATENT OFFICE.

JOHN DU BOIS, OF DUBOIS, PENNSYLVANIA.

OPERA-CHAIR.

SPECIFICATION forming part of Letters Patent No. 308,656, dated December 2, 1884.

Application filed January 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN DU BOIS, of Dubois, in the county of Clearfield and State of Pennsylvania, have invented certain Improvements in Seats for Opera-Houses, of which the following is a specification.

The primary object of this invention is to provide opera-houses and similar places of public assemblage with a system of seats which may be readily removed or withdrawn from the floor and placed in a small compass in order to leave the floor or the major portion of the same free and unobstructed for dancing purposes and other uses for which the seats are not required.

My system comprises standards which are movable forward and backward to and from each other, combined with folding seats thereon and devices for connecting the standards and for effecting their movement, as will be hereinafter explained.

Referring to the accompanying drawings, Figure 1 represents a side elevation of a series of seats constructed on my plan, the seats rising in sections toward the rear, and being combined with the folding floor above referred to. Fig. 2 is a rear elevation of the same. Fig. 3 is a section on the line *x x*, Fig. 2, illustrating the arrangement of the folding floor therein. Fig. 4 is a side elevation illustrating the arrangement of the seats when of uniform height.

It is to be understood that the seats may be placed at equal heights upon a stationary level floor, in which case there will be no necessity for the employment of the folding floor, the same being used only when the seats are arranged at different heights.

Referring to the drawings, A represents an ordinary stationary floor arranged horizontally.

B B represent a series of upright standards, each provided at the lower end with a supporting roll or wheel, *a*, supported upon the floor and permitting the standard to be moved forward and backward thereon. Each standard has hinged to its upper end a folding seat, C, which latter has pivoted to its forward end a depending leg, D, designed to rest upon the floor and sustain the seat when in position for use. The seat and back are also connected by means of a jointed folding arm, E; but this is not a necessary feature. The standards for each row of seats are connected at their upper ends by means of the seat-backs F, attached firmly thereto, and they may also be attached, if desired, to cross braces or bars at the lower end, the only requirement being that the several standards in each row or series shall be connected firmly to each other to prevent them from falling laterally. The standards B in each row are connected with those in the next row by any suitable means which will admit of the one row being moved backward closely against the next. A simple connection for this purpose consists, as shown in the drawings, of links G G, pivoted to each other and to the standards in the manner shown in the drawings. There may be any suitable number of these links attached to the upper and lower portions of the standard, either at the ends of the rows only or at intermediate points also, if desired. When folded downward to a horizontal position, these links cause the standards and rows of seats to be separated and held at a suitable distance apart for use, maintaining the standards at the same time in their proper upright positions. After folding the seats against the backs, however, the upward movements of the links will admit of the standards in one row being moved backward against those in the next row. In this manner the several rows of seats may be folded compactly together, as indicated at the left hand in Fig. 1.

By the method above described the seats occupying the entire floor of a building may be moved backward and placed in a compact position at one side of the room, leaving the major portion of the floor free and unobstructed.

The backward and forward motion of the seats may be effected by hand or by means of any suitable mechanism. A simple means for the purpose is that represented in Figs. 1 and 2, consisting of ropes I, attached to the rear wall or to the floor at the rear side of the room, and extending thence forward beneath the seats to a winding-drum, K, attached to or between the two forward standards. The drum is provided with a hand-crank, C, by turning which it may be caused to wind up the rope, and thereby cause the entire series of seats to

be moved gradually backward over the floor to the rear side of the room. It will of course be understood that in order to permit this folding action the links G must be constructed in such manner that they will not stand upon the center when in action, or, if so constructed, they must first be thrown upward by the attendant. When the entire series of seats are to be arranged of a uniform height or on a level, the standards will be of uniform height, as represented in Fig. 4. When, however, the seats are to be arranged of different heights, the standards will be made of increasing height toward the rear of the room, as shown in Fig. 1, with their respective seats at corresponding heights. This construction renders it necessary to provide a folding floor having steps or sections of corresponding heights. This floor may be of any suitable construction, the most simple being that represented in Fig. 1, in which it will be seen that the floor consists of a series of sections, J, each section consisting of two longitudinal halves hinged to each other at their adjacent edges, and having their outer edges hinged, one to the standard in front and the other to the standard in rear. These floor-sections folding upward at the middle in the same manner as the braces, admit of the standards and seats being closed together, as before described; but when extended in a horizontal position they serve the purpose of an ordinary stationary floor between the rows of seats.

For the purpose of giving the folding-floor sections a rigid support, vertical legs or standards L may be hinged to them at the middle, as shown in Fig. 1, these legs being adapted to rest upon the stationary floor A when the seats are in use. When these folding-floor sections are employed, they will answer the additional purpose of the upper folding links, G, for connecting the standards, so that it will only be necessary to use in connection with the folding floor one set of links G at the foot of the standard.

The folding-floor sections J may be extended across the aisles or passes between the seats, in which case the aisle will be ascended by a succession of steps; but as it is generally preferred to have an ascending aisle without steps therein, I purpose in most cases to construct the sectional floor for the aisle in the manner represented in Fig. 3. This floor consists, as shown, of a series of transverse sections or leaves, M, hinged to the seat-standards adjacent to the aisle, and arranged to turn downward in such manner as to form jointly a smooth or unbroken inclined floor. At the points where these aisle-sections are hinged to each other they are provided with sustaining-legs M, arranged to rest upon the main floor in the same manner as the legs previously described.

The entire series of standards may be given the required rigidity when in use by attaching the front or rear standards or the series permanently to the floor or to the wall of the building; but this rigid connection to the rear standard is not necessary, as good results may be secured when the entire series of standards are movable on rollers, inasmuch as the connections between the several standards will prevent them from falling out of a vertical position.

As an additional means of steadying the series, I also prefer, as shown, to connect the standards of the two front rows rigidly to each other, as shown in Fig. 1, by means of cross-bars *b* or equivalent connections.

While it is preferred to adhere substantially to the details of construction represented in the drawings, it is to be distinctly understood that my invention embraces any equivalent arrangement of details to the same end.

The supporting-rolls, instead of being made of the length represented in the drawings, may be made in the form of narrow pulleys arranged to travel upon tracks or guides.

The folding seat may be constructed and attached to its standard in accordance with any approved plan now known.

While it is preferred to make use of the rollers, because of the small amount of power required to move the seats, it will of course be understood that the rollers may be omitted and the standards provided with slides, runners, or equivalent devices to move upon the surface of the main floor or upon guides or tracks thereon.

When the standards employed are of uniform or substantially uniform height, as shown in Fig. 4, so that the operating devices are all located above the floor, the connecting-links G may be arranged to swing horizontally, as represented in said figure. When thus applied, the links, having suitable upturned ends, will serve as a means of holding the standard rigidly in position, but will at the same time lie close to the floor, so as not to interfere with the free passage between the seats. When thus arranged, the standards may be moved by a rope and windlass, as in Fig. 1, or by any other suitable means.

I am aware that a patent was issued for a platform to receive an orchestra, composed of a series of floor-sections arranged to slide one beneath another; also, that a bench provided with extension-leaves hinged together end to end has been sustained by independent movable legs thereunder. I am also aware that seats which could be lifted from the floor and moved by hand from place to place have been provided each with a foot-board adapted to be engaged temporarily with the seat next in front; and to such constructions I lay no claim, my invention having special reference to a system in which folding chairs of the class commonly denomnated "opera-chairs" are arranged to move forward and backward over the floor or other stationary support, and combined with devices whereby they are maintained in position during their movement.

Having thus described my invention, what I claim is—

1. In a system of seats for places of public assembly, the series of double-standards located one behind another, and each pair provided with a folding seat, in combination with the extensible devices, substantially such as shown, connecting said standards, and the mechanism, substantially as shown, for moving the pairs of standards toward each other, whereby the entire series of seats may be closed together when not in use without removal from the floor.

2. In combination with a series of standards located one behind another and adapted to move forward and backward independently upon the floor, folding seats applied to said standards, and extensible devices, substantially as shown, extending in a forward and backward direction from the intermediate standards and forming permanent connections between the standards, substantially as described.

3. In combination with the standards located one behind another and movable forward and backward independently, folding seats applied to said standards, and extensible devices, substantially such as shown, connecting each intermediate standard with the one in front and the one in rear thereof, and the extensible floor-sections hinged at their edges to the standards, substantially as described, whereby the standards and seats are adapted to fold without disconnecting the floor.

4. The combination, substantially as described, of the seat-supporting standards, extensible connections between the same, whereby they are rendered movable forward and backward to and from each other, and the aisle-flooring M, constructed in sections and pivoted to the standards, substantially as shown.

5. The standards B, having folding seats thereon, provided with the supporting-rolls *a*, in combination with the pivoted links G, the hinged floor-sections J, connecting said standards, and the intermediate supporting-legs, L.

6. In combination with the horizontally-movable standards B, the floor-sections J, hinged thereto, the links G, the folding seats C, and the supporting-legs D for said seats, arranged to bear upon the floor-sections, as described.

7. In combination with the standards movable independently in a horizontal direction, the folding-links connecting said standards, the seats pivoted to the standards, the rope I, and the winding drum K.

JOHN DU BOIS.

Witnesses:

GEO. R. VOSBURG,

EUGENE B. NETTLETON.