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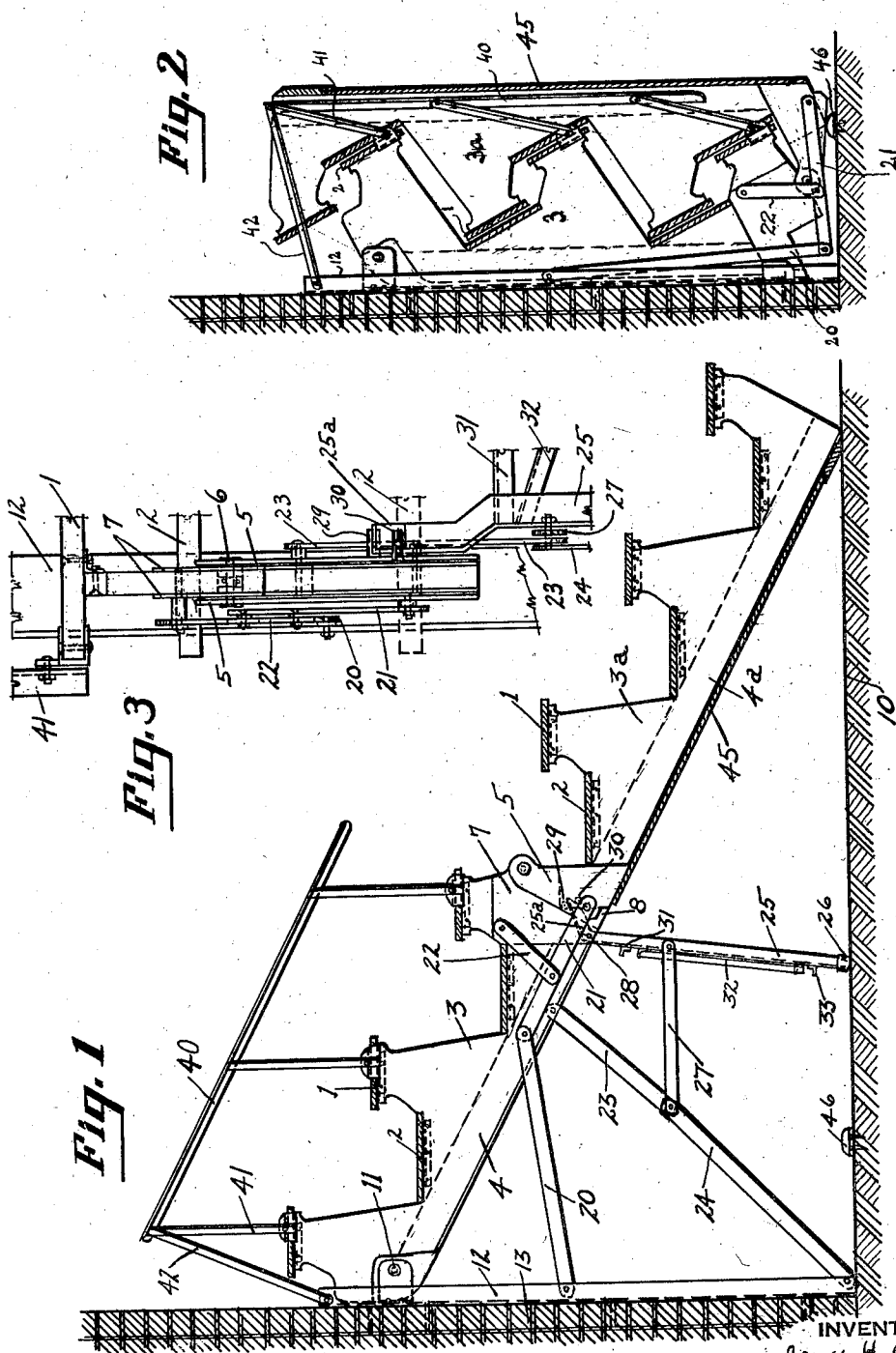
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FOLDING GRANDSTAND

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FOLDING GRANDSTAND

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8 Claims. (Cl. 20—0.5)

This invention relates to new and useful improvements in folding grandstands.

It is the object of the present invention, in which a grandstand provided with the usual seat and footboards may be folded up, to leave most of the space normally occupied by the grandstand free from obstruction, the folding of the grandstand being readily effected although no springs, counterweights, or the like are provided which complicate the structure and often interfere with the smooth operation of the device.

This object is attained by supporting the seat and footboards on stringers divided into two sections which may be folded up to a position where the footboards of one section are nestled against the footboards of the other section, the two sections being provided with an upright which may be fastened to the wall of a building through hinged levers which are actuated in response to the lifting and lowering of one of the grandstand sections.

In order more clearly to explain the nature of the invention a preferred embodiment thereof will be described in detail with reference to the drawings in which—

Fig. 1 is a side elevation showing the grandstand in an open position ready for use;

Fig. 2 is a side elevation showing the grandstand folded;

Fig. 3 is a front elevation showing details of the folding mechanism;

Fig. 4 is a view similar to Fig. 1 showing the grandstand in a partly folded position; and

Fig. 5 is an elevation and section of grandstand showing folded position of folding arms, supporting foot and grandstand section itself.

The folding grandstand consists of seat and footboards 1 and 2 supported near their edges by suitably shaped wood or steel stringers 3. The lower straight edge of each stringer is reinforced by a steel plate 4 fastened thereto. The stringers on each side of the seat and footboards consist of two sections 3 and 3a which are hinged together so as to permit the folding up of the grandstand in the manner illustrated in Figs. 2, 4, and 5. This is accomplished by providing a double bracket 5 on the left-hand end of the reinforcing plate 4a on stringer 3a, which is pivoted at 6 to a double plate 7 fastened to the right-hand end of the reinforcing plate 4. The lower ends of the plate 7 and the reinforcement 4 are formed into a tongue 8 which, when the grandstand is open as illustrated in Fig. 1, is seated in the cut-out portion 9 of the bracket

5, affording thus an overlapping, firm support. In the open condition as illustrated in Fig. 1, the lower end of stringer 3a rests on the floor 10 of the building and the upper end of the stringer 3 is hinged at 11 to a steel bar 12 fastened to the side wall 13 of the building.

The two stringer sections are connected with one another and with the steel bar 12 so as to permit the ready opening and closing of the grandstand, although no special counterweights, springs or the like are provided. A lever 20 is pivoted at one end to the steel upright 12 and its other end is hinged to a lever 21 which is fastened to the bracket 5 on the lower stringer section. An arm 22 has its lower end pivoted to the arm 21 midway between its ends and its upper end to the plate 7 provided on the upper stringer section. A hinged lever 23, 24 has its upper end pivoted to reinforcement 4 of the upper stringer and its lower end to the upright 12 near the floor 10. A leg 25 rests with its rubber tipped foot 26 on the floor 10 and is linked to the lever 23, 24 by means of a hinged connection 27. The upper end of leg 25 is pivoted to the reinforcement 4 of the upper stringer at 28 and has an arm 29 projecting beyond the pivot point 28, said arm being engaged by an upper and a lower pin 29 and 30 projecting from the bracket 5.

The levers and associated mechanism 20 to 30 just described are duplicated on the other side of the stringers, the legs 25 on the two sides being interconnected by braces such as 31, 32, 33.

When, as shown in Fig. 4, it is desired to fold up the grandstand, the lower edge of the stringer 3a is grasped and this stringer section is lifted up by rotating it around its pivot point 6. The pin 29 will bear against the free end of the arm 25a and will rotate the leg 25 in a clockwise direction around its pivot point 28. Through the agency of the arm 27 the leg 25 will break the hinged lever 23, 24, whereby the upper stringer section 3 will be rotated towards the wall 13 around its pivot point 11. This movement of the stringer section 3 will be aided also by the linkage 20, 21, 22.

When it is desired to open the grandstand the operations are performed in the reverse order. When the stringer section 3 is folded down from its upright position, as shown in Figs. 2 and 5, it will first open the linkage 21, 22, and when the pin 30 engages the lower side of the arm 25a it will cause leg 25 to rotate in a counterclockwise direction and straighten out the hinged lever 23, 24 until the position

shown in Fig. 1 is attained automatically, placing the leg 25 in a locked position.

Along the edges of the seats 1 of the upper stringer section 3 a hand rail 40 is provided which is hingedly connected to the seat boards by means of arms 41. The rail 40 is hinged also by means of a lever 42 to the upper end of the upright 12. As the grandstand is folded into place the railing 40, 41, 42 will also be folded into the position shown in Fig. 2.

The bottom surface of the stringer section 3a is covered by a finished panel of any suitable material 45, whereby in the folded position the grandstand will present a continuous wall as shown in Figs. 2 and 5. In the folded position the bracket 5 is seated on a cushion 46 provided on the floor 10.

It will be seen, therefore, that although no counterweights, springs or the like are provided, the folding and unfolding of the two sections of which the grandstand consists may be readily effected when the lower section is lifted or lowered, since the motion of lowering or raising the grandstand section will be transmitted through the hinged connections to the other section, the weight of which aids in the folding operation.

As will be clearly seen from Figs. 2 and 5, when the lower section is folded against the upper section, the seatboards of the upper section lie against the footboards of the lower section, whereby the grandstand occupies a very small space and leaves the floor 10 free from obstruction.

What is claimed is:

1. In a folding grandstand, stringers supporting seat and footboards, each of said stringers being divided into an upper and a lower section, a hinged connection between the two sections so that the two sections may be opened up to form a continuous stringer and folded into substantially parallel relation with one another, a stationary upright, a pivotal connection between the free end of the upper stringer and said stationary upright, and hinged levers connecting said stringer sections with said upright.

2. In a folding grandstand, stringers supporting seat and footboards, each of said stringers being divided into an upper and a lower section, a hinged connection between the two sections so that the two sections may be opened up to form a continuous stringer and folded into substantially parallel relation with one another, a stationary upright, a pivotal connection between the free end of the upper stringer and said stationary upright, hinged levers connecting said stringer sections with said upright, a hinged support for the upper section, and means controlled by the lower section for actuating said support.

3. In a folding grandstand, stringers supporting seat and footboards, each of said stringers being divided into an upper and a lower section, a hinged connection between the two sections so that the two sections may be opened up to form a continuous stringer and folded into substantially parallel relation with one another, a stationary upright, a pivotal connection between the free end of the upper stringer section and said stationary upright, a first hinged connection between said upright and said stringer sections, a second hinged connection between said upright and the upper stringer section, a leg pivoted on the upper stringer section, and

means controlled by the lower stringer section for actuating said leg.

4. In a folding grandstand, stringers supporting seat and footboards, each of said stringers being divided into an upper and a lower section, a hinged connection between the two sections so that the two sections may be opened up to form a continuous stringer and folded into substantially parallel relation with one another, a stationary upright, a pivotal connection between the free end of the upper stringer section and said stationary upright, a first hinged connection between said upright and said stringer sections, a second hinged connection between said upright and the upper stringer section, a supporting leg pivoted on the upper stringer section, means controlled by the lower stringer section for actuating said leg, an arm pivoted on said leg and engaging said second hinged connection, a collapsible hand rail on said upper section, and a hinged connection between the hand rail and said upright.

5. In a folding grandstand, stringers supporting seat and footboards, each of said stringers being divided into an upper and a lower section, a hinged connection between the two sections so that the two sections may be opened up to form a continuous stringer and folded into substantially parallel relation with one another, a stationary upright, a pivotal connection between the free end of the upper stringer and said stationary upright, a hinged three-armed lever with one arm pivoted to said upright, a second arm to the upper stringer section and a third arm to the lower stringer section, a hinged link having one end pivoted on said upright and the other end to the upper stringer section, a leg pivoted on the upper stringer section and having a projection, two pins on the lower stringer section, one engaging the upper and the other engaging the lower face of the projection on said leg, and an arm pivoted on said leg and engaging said hinged link.

6. In a folding grandstand, stringers supporting seat and footboards, each of said stringers being divided into an upper and a lower section, a hinged connection between the two sections so that the two sections may be opened up to form a continuous stringer and folded into substantially parallel relation with one another, a stationary upright, a pivotal connection between the free end of the upper stringer and said stationary upright, a hinged three-armed lever with one arm pivoted to said upright, a second arm to the upper stringer section and a third arm to the lower stringer section, a hinged link having one end pivoted on said upright and the other end to the upper stringer section, a leg pivoted on the upper stringer section and having a projection, two pins on the lower stringer section, one engaging the upper and the other engaging the lower face of the projection on said leg, an arm pivoted on said leg and engaging said hinged link, a hand rail, rods pivoted on said hand rail, a pivotal mounting for each rod on a seatboard, and a hinged link between the hand rail and said upright.

7. In a folding grandstand cooperating with a vertical support or wall and a horizontal support or floor, stringers, seat-boards supported on said stringers at different levels, foot-boards supported on said stringers at different levels, said foot-boards being in different horizontal planes than said seat-boards when the grandstand is

opened, a hinged connection between the two sections and a hinged connection between the wall and one section so that the two sections may be opened up to form a continuous stringer the lower end of which rests on the floor, and said sections may be folded into substantially nested relationship with the seat-boards of one

section contacting with the foot-boards of the other section.

8. A folding grandstand according to claim 7 and in which a hand rail is pivotally mounted on one section, and a hinged connection between the wall and the hand rail.

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