

Audience Control BarrierTechnical Field of the Invention

The present invention pertains to the field of portable stages and auxiliary equipment therefor. More particularly, the present invention pertains to an audience control barrier for use with a portable stage for maintaining physical spacing between the audience and the stage.

Background of the Prior Art

Portable stages have come into widespread use in schools, hotels, convention centers, and other institutions having multiple use facilities, where it is sometimes necessary to set up a stage for use in a display or performance. In the case of a trade show or the like, a stage or a number of stages may be set up for displaying items for view by persons in attendance. In the case of a performance, such as a musical performance, the performers are positioned on an elevated stage so the audience can see and hear them. One example of a portable stage for this type of application is the elevationally adjustable folding stage shown in U. S. Patent No. 4,054,096, to Wilson et al. The stage of that patent may be adjusted to the desired height and a number of such stage sections can be positioned adjacent each other and interconnected to form an extended stage area.

It is sometimes desirable or even necessary to ensure physical separation of the audience from the stage. The primary example of situations in which this separation is necessary involves performances by popular musical performers, where there has sometimes been a tendency on the part of an enthusiastic and youthful audience to reach up onto the stage or even try to climb up onto the stage. To maintain this separation, it has been necessary to station guards or ushers on the floor in front of the stage, but in the case of particularly enthusiastic audiences, they may not be able to control the audience and keep them from the stage.

In addition, there are other situations in which it is desirable to keep the audience separated from the stage. For example in the case of a display of expensive, delicate or potentially dangerous equipment, it may be necessary to keep the viewers at more than arm's length from the stage.

In order to maintain audience separation from the stage, there is a need for an audience control barrier that can be used with stages, particularly portable stages.

In a first aspect the present invention provides an audience control barrier for use with an elevated stage having support legs, the barrier comprising a plurality of modules, each module including:

- (a) a rigid panel;
- (b) bracket means for supporting the rigid panel in a vertical orientation and comprising a vertical member including securement means for securing an upper portion of the panel, a horizontal member connected to said vertical member, the horizontal member including interconnection means for interconnection with the lower end of a stage support leg, and securement means for securing a bottom portion of the panel; and
- (c) means for interconnecting the modules in edge-to edge relationship.

Control barriers according to preferred embodiments of the invention (for example, that described below with particular reference to the accompanying drawings) are strong and secure enough to withstand considerable pressure from an audience, and flexible enough in design to be readily adapted to different heights, widths and configurations of stages; and, being mod-

ular, they facilitate setup and takedown for storage. Moreover, they can be quickly but securely fastened to the stage.

In a second aspect the invention provides an assembly comprising an audience control barrier of the first aspect of the invention and an elevated stage having support legs.

The vertical member preferably includes means for receiving and securing the upper edge of the panel. The horizontal member of the bracket means is preferably adjustable in length so that the spacing between the barrier and the stage may be adjusted.

In a preferred form of the invention, the securement means of the vertical member comprises a top member connected to said vertical member for extending at least part way across the top edge of said panel and a flange member extending from the top member downwardly and at a small angle outwardly from the face of the panel, whereby said flange and said vertical member may be wedged into secure relationship with the top edge of said panel by driving said vertical member downward.

A particularly advantageous interconnection means for connecting the horizontal member of the bracket to the leg of the stage includes a hook plate configured in conformity

with the cross sectional configuration of the leg to engage more than half the periphery thereof, and a flipper pivoted to the top of the hook plate for movement between a vertical open position which permits placing the hook plate about the leg, and a horizontal locked position which prevents lateral movement of the stage leg out of the hook plate.

There is now described, by way of example and with reference to the accompanying drawings, an audience control barrier according to a preferred embodiment of the first aspect of the invention and an assembly, according to a preferred embodiment of the second aspect of the invention, of that control barrier with an elevated stage.

15 In the drawings:

Figure 1 is a view in perspective of the barrier according to the present invention in use with an elevated stage;

20 Figure 2 is a plan view of the barrier and stage of Figure 1, additional barrier modules being indicated in broken line;

Figure 3 is a view of the barrier in side elevation;

Figure 4 is a view of the barrier in rear elevation;

Figure 5 is an enlarged vertical section taken along the lines 5-5 of Figure 4;

Figure 6 is an enlarged vertical section taken along the lines 6-6 of Figure 4;

Figure 7 is an enlarged perspective view of the interconnection means used for connecting the barrier to the stage leg;

Figure 8 is a plan view of the interconnection means of Figure 7 in use;

Figure 9 is a view similar to Figure 7 showing interconnection means for two barrier modules; and

Figure 10 is a view similar to Figure 8 showing two interconnection means in use.

Detailed Description of the Invention

Figures 1 and 2 show, in perspective and top plan, respectively, the audience control barrier of the present invention used in conjunction with a stage. The audience control barrier is generally designated by reference number 30, and the stage is generally designated by reference number 20. As mentioned above, the present invention can be advantageously used with a stage of the type shown in U. S. Patent No. 4,054,096 to Wilson et al. Mobile elevationally adjustable stages according to that patent can be positioned side by side to make up an extended stage surface of any desired shape or size. In Figures 1 and 2, two such stage sections are shown side by side for illustrative purposes, but it will be understood that any number of such stages could be used and the barrier 30 could be extended as necessary to cover the width of the stage. Further, it will be appreciated that other types of stages in addition to those of the type covered in the above-mentioned patent can be used with the audience control barrier of the present invention.

In use, the performers are positioned on top of stage 20, and the audience is positioned on the side of barrier 30 away from the stage, i.e., to the right of barrier 30 in Figure 1. Barrier 30 is in the preferred embodiment approximately 5 feet in height, and the elevational adjustment of stage 20 is selected in conjunction with this height, and in conjunction with the size and shape of the audience area, so that the performers will be visible to the audience over the barrier except right in front of the barrier. The height of 5 feet in the preferred embodiment discourages attempts by the audience to climb over the barrier, and if necessary, guards can be stationed at intervals in the space between barrier 30 and stage 20.

Figure 1 and the solid line of Figure 2 shows two stage sections and two modules of the barrier 30 positioned along the front of the stage. Broken lines in Figure 2 show placement of an additional module to the side of the stage and another section of the barrier diagonally guarding the corner of the stage. It will be understood that additional modules or sections of the barrier can be provided on any side, end or corner of the stage as required for a given usage.

Referring now to Figures 1 and 2 in detail, stage 20 is elevated on legs 21 having leveling screws 22 at their bottoms. The individual stage sections of stage 20 have appropriate cross members 23 and diagonal braces 24, according to the design of the particular stage section used. Audience control barrier 30 according to the invention includes modules identified by the reference numbers 31, 32, 33, and 34. Module 32 is typical as shown also in Figure 4, and it comprises a vertical panel 35 and a pair of support brackets 36, although occasions may arise as in module 33 at the corner of the stage where no support brackets are needed. Convenience of manufacture and assembly is promoted if the panels are of uniform size and the brackets are of identical construction.

As seen in Figure 4, panel 35 comprises two sheets 40 and 41 of heavy plywood secured by fasteners 42 to a surrounding frame of angle irons 43. Sheets 40 and 41 are joined in edge to edge relation by a splicing plate 44 and fasteners 45. Eyes 46 and 47 are welded to the angle iron frame pieces at the edges of the panel, and these eyes angle backwardly and outwardly for mating with like eyes of the next adjacent module, as seen in Figure 5. Eyes 46 and 47 have holes which align with one another when the panels are in position adjacent each other, for receiving interconnecting fasteners such as bolts 50 and nuts 51, so that the panels of adjacent modules can be assembled together at joints 52.

Bracket 36 is shown in Figure 3 to comprise first and second tubular members 60 and 61 rigidly joined at their ends by a welded connection 62 to form a desired angle, which is ordinarily 90 degrees. Members 60 and 61 are rigidly interconnected by a diagonal brace member 63 secured at its ends 64 and 65 to sites on members 61 and 62 remote from their joined ends. In use, member 60 is intended to be generally vertical, and member 61 is generally horizontal. In the preferred embodiment, tubular member 60 is circular in section and tubular member 61 is square, as shown in the drawings. However, it will be appreciated that other shapes could be used for either member if desired.

Member 60 is telescopically adjustable and comprises an inner portion 66 slideable within an outer portion 67. Inner portion 66 is lockable in any position by a fastener 70 received in a threaded boss 71 of portion 67 to bear on portion 66. At its upper end portion 66 carries bracket means 72 to receive the upper edge and frame of a panel 35, as shown in greater detail in Figure 6.

As seen in Figure 6, bracket 72 comprises an angled assembly attached to the top of inner portion 66 of stage support bracket 36. Bracket 72 comprises a top portion 74 welded to the top of member 66 and extending generally outwardly over the top edge of angle iron 43 at the top of the panel. Bracket 72 also includes a flange portion 75 extending downwardly across the face of the panel to capture it. Flange 75 tapers outwardly at a slight angle so as to provide a wedging action to hold the panel. Specifically, the length of top portion 74 and the angle of flange portion 75 are selected in accordance with the nominal width of the flange of angle iron 43 so that the angle iron will be wedged between the inside surfaces of member 66 and flange 75 as shown in Figure 6. Since there are slight variations in the nominal width of the flange portion of angle iron 43, a gap would normally be

left as shown so that top member 74 can be driven downwardly with a hammer to securely wedge the panel in place. For disassembly, a few taps upwardly on the bracket 72 will release the bracket.

5 Bracket 73 is secured as by welding at the joint between members 60 and 61 to receive the bottom edge and angle iron frame of a panel 35.

10 Member 61 is also telescopically adjustable, and comprises an inner portion 80 which is slideably positioned within an outer portion 81. The positioning of member 80 within member 81 is lockable by a suitable pin 82 which passes through apertures in members 80 and 81. A plurality of apertures may be provided at different positions along members 80, to provide adjustment of the effective horizontal length of bracket 36 and the predetermined spacing between the barrier 30 and the stage 20.

15 At its end extending beyond portion 81, portion 80 of the horizontal part of the bracket carries releasable means 83 for making connections with the stage leg. 20 Any suitable means for interconnection of the bracket 36 to the stage leg 21 can be provided, as for example U-bolts passing through member 80 and around leg 21. However, in the preferred embodiment the interconnection means of Figure 7 is used. This comprises a riser 84 of 25 angle iron secured to the end of member 80. A hook plate 85 is secured as by welding to riser 84. The preferred embodiment of the fastening means 83 is adapted for securing to a square sectioned tubular leg 21 of the stage, and accordingly hook plate 85 is shaped to receive and hold 30 the leg as described below. In the case of a stage having a leg with a section other than square, suitable changes in the inside dimension of hook plate 85 can be made so that it will receive and fold the leg. In Figure 7 hook plate 85 is L-shaped with one end welded to riser 84 and 35 with a hook tip 88. The inside of the L fits two sides of the leg and the hook tip fits around a third side. The fourth side is engaged by a flipper or gate member.

Flipper or gate 86 is secured by a pivotal fastener 87 to a split bracket 90, 91 secured to plate 85. Flipper 86 is movable between a first position shown in Figure 7, and a second position shown in Figure 8. In its first position flipper 86 extends perpendicular to plate 85 to enable entry of a stage leg 21 into the hook plate. In its second position flipper 86 extends parallel to plate 85 and hence perpendicular to leg 21, which is thereby retained in hook plate 85.

A special feature of the design of releasable means 83 is its adaptability for use when two brackets must be secured to the same stage leg, as at leg 21a on the corner of the stage of Figure 2. This arrangement is seen in greater detail in Figures 9 and 10. Figure 9 shows a first bracket portion 80 releasably connected to a stage leg 21, its flipper 86 being at the horizontal or locking position. A second bracket portion 180 for another module of the barrier is positioned to be connected to the same leg 21 at right angles to member 80. The flipper 186 of releasable means 183 is in its vertical or open position to receive leg 21. To secure releasable means 183 to the leg, member 180 is lifted slightly approximately the thickness of the hook plate and moved towards leg 21, while at the same time moving it slightly to the side to bring the hook portion 188 of hook plate 185 around leg 21. Figure 10 shows the connection of releasable means 183 to leg 21 completed except that flipper 186 has not yet been pivoted to its horizontal or locking position.

Operation

In use, a pair of brackets 36 have their members 61 adjusted according to the desired predetermined spacing of the barrier 30 from stage 20, and fastener pins 82 are locked in place. The brackets 36 are spaced apart from each other according to the spacing of the legs 21 of the stage, and the brackets are secured to the stage leg 21 by the releasable means 83, as previously described. Fasten-

ers 70 are released, allowing portions 66 to be raised to a position above the height of panel 35. Fasteners 70 can be temporarily tightened if desired to hold portions 66 in that position while panel 35 is being handled. Panel 35 is placed with its lower edge angle iron in bracket means 73 of brackets 36. Portions 66 are then lowered until bracket means 72 engage the upper angle iron edge of panel 35. Due to the tapered orientation of the flange 75 of brackets 73, they can be hit on the top by a hammer to wedge the brackets down on the angle iron, firmly holding them in place. Fasteners 70 can then be tightened, although they may not be necessary in view of the wedging action of brackets 72. This completes installation of the first module of the barrier.

The adjacent module is similarly assembled, and then connected to the first module at a side edge or joint 52 by bolt and nut 50, 51 and eyes 46, 47. The process is repeated until the desired length of barrier is completed. The corners of the barriers may be closed by modules such as 33, which do not require brackets but are simply fastened to front and end portions of the barrier at joints along their sides by means of the eyes 46, 47.

From the above it will be evident that the invention comprises an audience barrier which is of modular construction, and which is readily erected for use or taken down for storage. The barrier of the present invention is sturdy, inexpensive, and not easily subject to disassembly except from within the barrier.

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CLAIMS

1. An audience control barrier, for use with an elevated stage having support legs, the barrier comprising a plurality of modules, each module including:
 - (a) a rigid panel;
 - 5 (b) bracket means for supporting the rigid panel in a vertical orientation and comprising a vertical member including securement means for securing an upper portion of the panel, a horizontal member connected to said vertical member, the horizontal member including inter-connection means for interconnection with the lower end of a stage support leg, and securement means for securing a bottom portion of the panel; and
 - 10 (c) means for interconnecting the modules in edge-to-edge relationship.
- 15 2. A control barrier according to Claim 1, in which said interconnecting means enables angular adjustment between adjacent panels when said modules are inter-
20 connected.
3. A control barrier according to Claim 1 or 2, in which said panel includes a metallic frame therearound for reception in said bracket means.

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4. A control barrier according to Claim 1, 2 or 3, in which said horizontal member is adjustable telescopically to vary the distance of said barrier from said stage.
- 5 5. A control barrier according to any of the preceding claims, in which said vertical member is adjustable telescopically to receive the upper edge of said panel.
- 10 6. A control barrier according to Claim 5, in which said means for receiving said upper edge of said panel comprises a top member connected to said vertical member for extending at least part way across the top edge of said panel and a flange member extending from the top member downwardly and at a small angle outwardly from the face of the panel, whereby said flange and said vertical member may be wedged into secure
15 relationship with the top edge of said panel by driving said vertical member downward.
- 20 7. A control barrier according to Claim 4, in which said interconnection means includes a hook plate for receiving the stage leg and a flipper or gate operable in a closed position to maintain said leg in said hook plate.



8. An audience control barrier according to Claim 1,
substantially as described herein with reference to
the accompanying drawings.
9. An audience control barrier substantially as
described herein and substantially as shown in the
accompanying drawings.
10. An assembly comprising an audience control barrier
as claimed in any of the preceding claims and an
elevated stage having support legs.
- 10 11. An assembly according to Claim 10, in which said
means for interconnecting said horizontal member with
the lower portion of a stage comprises:
- a hook plate and means securing it to said
horizontal member, said hook plate extending
parallel to and beyond said end of said member,
said hook plate being configured in conformity
with the cross sectional configuration of the
lower portion of a support leg of said stage to
engage more than half the periphery of said leg; and
- a flipper pivotally connected to said hook plate
for movement between an open position, in which it
enables lateral insertion of said leg into said hook
plate, and a closed position, in which it prevents
lateral movement of said leg out of said hook plate.



12. An assembly according to Claim 11, in which said means securing said hook plate to said horizontal member comprises a vertical spacer member, whereby said hook plate engages said leg a distance above floor level to clear floor engaging devices at the bottom portion of the leg.
13. An assembly according to Claim 11 or 12, in which said hook plate has an L-shaped configuration for engaging two sides of a rectangular cross sectioned stage leg, and a hook tip portion for engaging a third side of said leg, said flipper positioned for engaging in its closed position the fourth side of said leg.
14. An assembly according to Claim 13, in which said hook plate is adapted for engaging a square cross sectional stage leg, whereby two such barrier modules can be positioned at right angles with their adjacent bracket horizontal members interconnected to the same stage leg.
15. An assembly according to any of Claims 10 to 14, in which the barrier surrounds the stage.
16. An assembly according to Claim 10, substantially as described herein with reference to the accompanying drawings.