Dec. 29, 1953 C. MACKINTOSH 2,663,914

GRANDSTAND

Filed Dec. 9, 1949

2 Sheets-Sheet 1

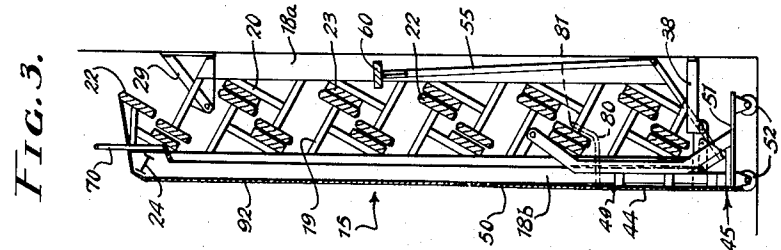


FIG. 3.

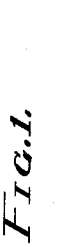


FIG. 1.

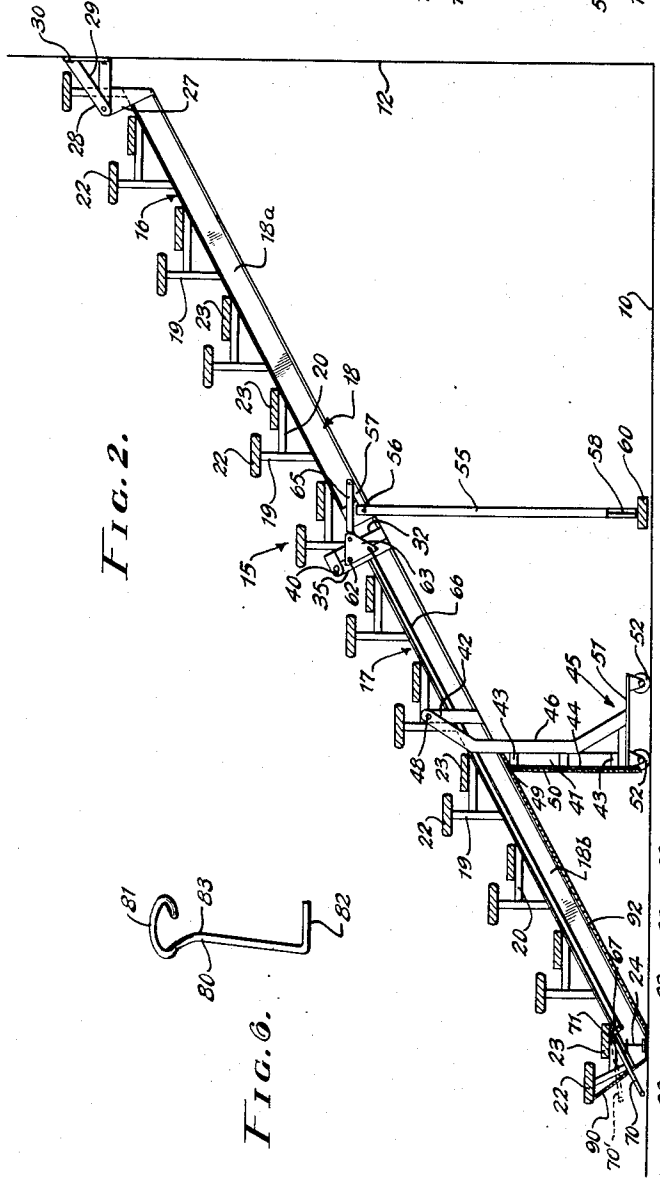
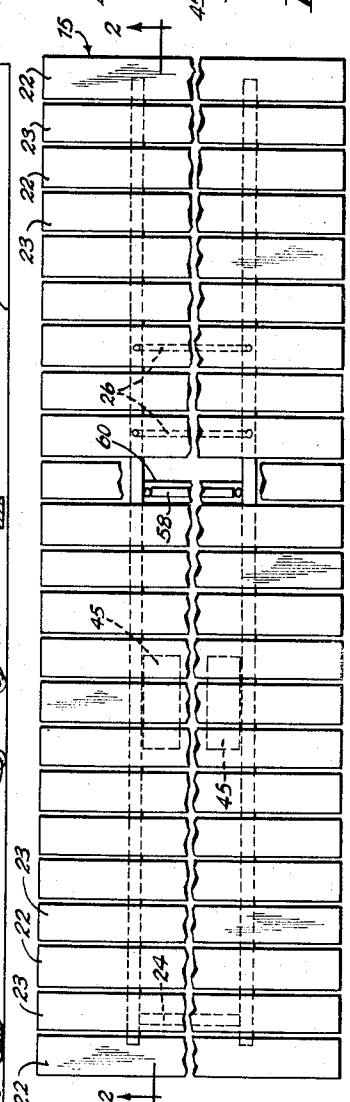


FIG. 2.

FIG. 6.



INVENTOR.
CHARLES MACKINTOSH.
BY
Watson, Cole, Grindle & Watson
ATTORNEYS

Dec. 29, 1953 C. MACKINTOSH 2,663,914

GRANDSTAND

Filed Dec. 9, 1949 2 Sheets-Sheet 2

FIG. 5.

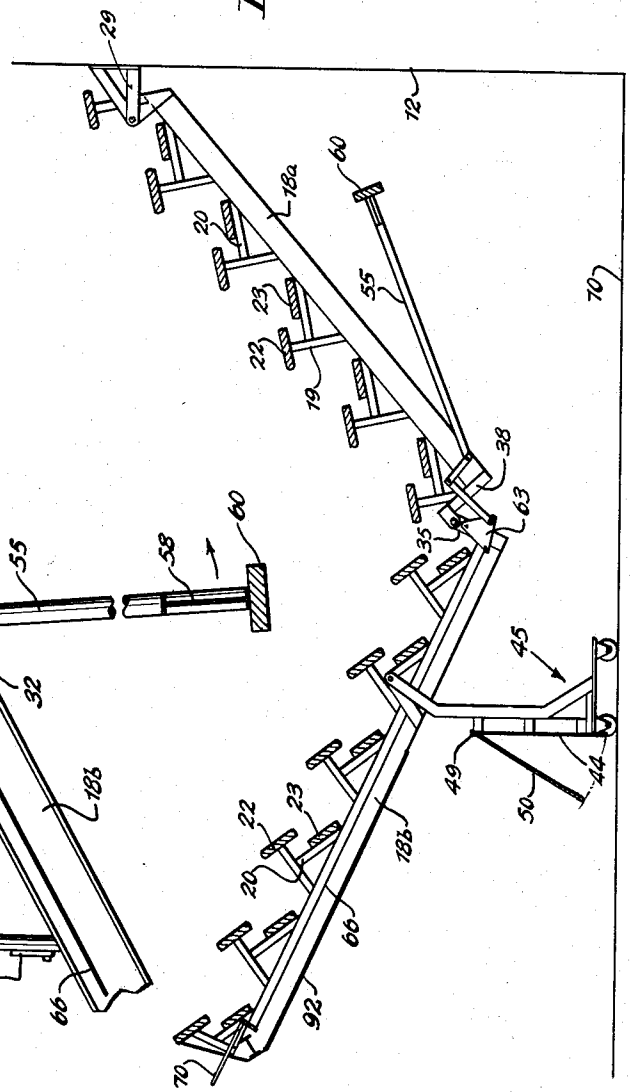
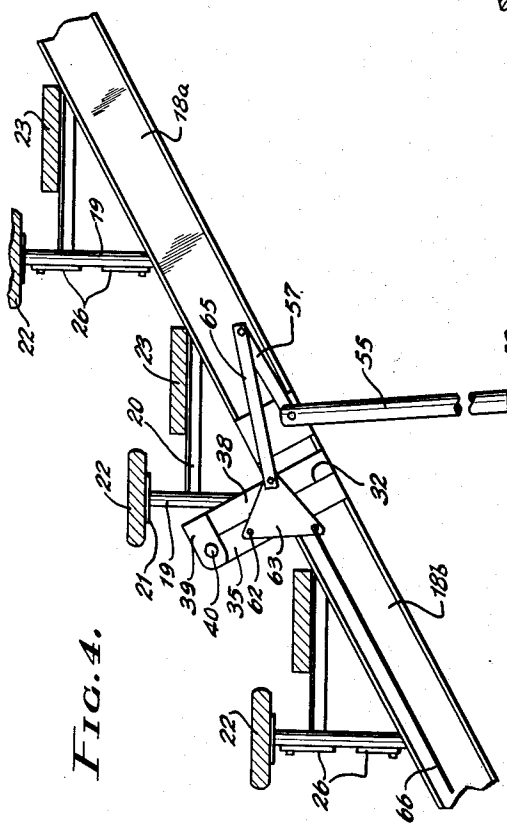


FIG. 4.



INVENTOR.
CHARLES MACKINTOSH.
BY
Watson, Cole, Grindle
& Watson ATTORNEYS

Patented Dec. 29, 1953

2,663,914

UNITED STATES PATENT OFFICE

2,663,914

GRANDSTAND

Charles Mackintosh, Los Angeles, Calif.

Application December 9, 1949, Serial No. 132,013

12 Claims. (Cl. 20—1.126)

1

This invention relates to folding grandstands or bleachers, and preferably to stands of the type which comprise hinged or pivoted frames carrying seats and footboards and adapted to assume a sloping or inclined position when opened for use or occupancy, but capable of being folded together to vertical positions to occupy a minimum of floor space when collapsed.

This invention relates to subject matter similar to that disclosed in my copending application Serial No. 122,683, filed October 21, 1949, and more particular objects of the present invention are the provision of novel and improved supporting means for the live load sustained by the stand, and novel toggle means for locking the stand in open position for occupancy.

Other objects and features of novelty, including the provision of certain sheathing means for the collapsed stand, and locking means for retaining the stand in folded or collapsed position, will be apparent from the following specification when read in connection with the accompanying drawings in which one embodiment of the invention is illustrated by way of example.

In the drawings:

Figure 1 is a somewhat diagrammatic top plan view of a grandstand embodying the principles of the invention, the central portion of which is broken away for economy of space in executing the drawings;

Figure 2 is a vertical sectional view taken on line 2—2 of Figure 1;

Figure 3 is a vertical sectional view similar to Figure 2 but with the stand in folded or collapsed position;

Figure 4 is an enlarged fragmentary sectional view of the central portion of the stand showing the breaking of the toggle as an initial stage of collapsing movement of the parts of the stand;

Figure 5 is a sectional view also taken on line 2—2 of the stand in mid-position substantially half-way between opened and collapsed position; and

Figure 6 is a perspective view of a locking element for retaining the stand in collapsed position.

Like the stands which are the subject of my above mentioned copending application, the grandstand illustrated in the present case is adapted to rest upon the floor 10 and near the wall 12 of a gymnasium or other auditorium or arena. The stand, designated generally by the reference numeral 15 may be secured at its upper rear end to the wall 12, or it may be supported by fixed or movable supports such as

2

scaffolding or wheeled dollies within the broader aspects of the invention. Both general types of stands are suggested in the copending application to which reference has been made.

In the illustrated embodiment of the invention, the stand 15 comprises the upper and lower frame sections indicated at 16 and 17 respectively, the two sections being generally similar in construction and comprising principally the spaced parallel beams 18 which may be channel beams, I-beams, or other suitable structural shapes. The number of beams 18 which are used will depend upon the width of the stands. At intervals along each of the beams 18 there are disposed the vertical slender substantially cylindrical seat supporting posts 19 and the footboard supporting horizontal strips 20 which abut the posts 19 at right angles and extend rearwardly therefrom and are secured as by welding to the beams 18. The post supports 19 are generally T-shaped and include the upper cross members 21 upon which the seat-boards 22 are secured. The foot-boards 23 extend from one side to the other of the stand 15 and rest upon the strips 20.

The lower forward ends of the front portion 18b of the beams 18 are connected by the transversely extending structural beam element 24 which in this embodiment comprises an I-beam. By the use of such a transverse rigid member, the weight of the foot of the stand is distributed across a much broader floor surface than if the feet of the beams 18 were to rest directly upon the floor at spaced points. For additional strength, the seat supporting posts 19 in certain transverse rows may be connected by cross braces such as the X-braces suggested at 26 in Figures 1 and 4.

Extending upwardly from points adjacent the rear end of the side frame members 18a of the rear section of the stand, are short posts 27, the upper ends of these posts being pivotally connected as at 28 with the brackets 29 which are secured as at 30 to the wall 12. It will be seen from a comparison of Figures 2 and 3 of the drawings that the rear channel beams 18a terminate at a point spaced from the wall 12, and that the thickness of the beam together with the length of the post 27 is approximately equal to the distance of the pivot point 28 from the wall 12.

The forward and rear sections 16 and 17 are approximately equal in length, the rear and forward sections 18a and 18b abutting adjacent the point 32. Extending upwardly from the rear

ends of the forward beam sections 18b are the brackets 35. Companion brackets 38 extend upwardly from the forward ends of the rear beam sections 18a, and are provided with short forwardly directed ears 39 which are provided with openings registering with similar openings in the brackets 35 and through which pins or bolts may extend to form the hinge joint 40 between the sections. These brackets may be separately pivoted as by means of short pintles or bolts, or a rod or pipe may pass completely across the stand from one side to the other thereof. By suitably fixedly securing portions of such a continuous rod to spaced portions of the respective upper and lower stands, a torsion spring device may be provided such as described in my copending application.

Somewhat forwardly of the junction between the front and rear sections, there are provided posts 42 extending upwardly from the beams 18b up on each side of the forward section. Two wheel supported dollies are provided for supporting the stand and these dollies are indicated generally by the reference numerals 45. Each dolly has an upwardly extending strut 46 which is preferably of the angular shape shown in the drawings, the upper end of the struts being pivotally connected with the upper ends of the posts 42 as at 48. Also extending vertically upwardly from the forward end of the dollies 45 are the frame pieces 41 which are connected by the transverse framing elements 43, the whole frame thus formed being covered with a fixed panel 44 of sheet material such as plywood. Preferably the fixed panel of plywood has another similar panel 50 hinged thereto as at 49. The purpose of these panels will be described presently.

The frames or platforms 51 of the dollies 45 are preferably resilient and are provided with the forward and rear wheels 52. The resilience of the body or platform 51 is selected so that the dolly will support the dead load of the unoccupied grandstand but will resiliently yield somewhat as soon as any additional load is applied thereto.

Just as in the grandstands disclosed in my copending application, the forward and rear sections are adapted to collapse about the pivot 40, the upper section 16 swinging downwardly about the pivots 28 to lie parallel with and closely adjacent to the wall 12 while the forward section 17 pivots about the point 48 which remains at a fixed level but moves toward the wall 12 as the dolly 45 rolls backwardly. The forward end of the stand is lifted up while the hinge point 40 descends and swings toward the wall, the adjacent ends of the beams 18a and 18b coming to rest adjacent the platform of the dolly, all as clearly shown in Figure 3 of the drawings.

For supporting the intermediate portion of the stand 15 there are provided the two downwardly extending rigid legs 55 pivoted at their upper ends to the lower portion of the upper beam sections 18a as at 56, these pivots being rigid with the legs 55 and also with the short rearwardly projecting lever arms 57. The lower ends of the legs are cross-connected beneath the stand by means of the transverse beam 58 beneath which is secured the timber 60 which is adapted to rest upon the floor 10 when the legs 55 are in vertical position and a live load is sustained by the grandstand. Under dead load alone, the pad 60 is preferably spaced very slightly above the floor 10. When any additional load over the dead weight of the stand is applied, the dolly platform 51 yields slightly and the pad 60 comes into firm and non-skidding contact with the floor 10.

Triangular plates 63 are pivotally supported at one corner as at 62 upon portions of the posts 35. Another corner of each plate is pivotally connected to the rearward end of the adjacent arm 57 which is rigid with the leg 55, by means of the link 65. The third corner of each triangular plate 63 is pivotally connected to an elongated operating rod 66, the forward end of which is pivoted to the short lever arm 67 which forms a part of the rigid bell crank operating member 70, this member being pivoted to a fixed part of the stand as at 71.

In collapsing the stand from the position shown in Figure 2 to that illustrated in Figure 3, the lever arm 70 is raised from the solid line position shown in Figure 2 toward the upper position indicated by the construction line 70'. This has the effect of swinging the triangular plate 63 clockwise upon its pivot 62 to the position shown in Figure 4 of the drawings where the link 65 has swung the fixed arm 57 upwardly through a slight angle and thus swung the legs 55 rearwardly in the direction of the arrow in Figure 4 in an amount such that the cross-beam 58 and the pad 60 are displaced rearwardly through a distance of approximately a foot or so.

This operation serves to unlock the stand, breaking the toggle comprised by the plate 63 and the link 65 so that upon lifting the forward end of the stand the sections will collapse through the position shown in Figure 5 to the ultimate position shown in Figure 3. In Figure 5 it will been seen that the legs 55 and the foot or pad 60 have swung rearwardly and upwardly through a very wide angle, the dolly 45 has moved rearwardly toward the wall 12 and the stand sections are about half-way toward their collapsed parallel position.

The relative proportions of the stand sections 16 and 17, and the locations of the pivot points 28, 40 and 48, are so selected that in collapsing the stand the center of gravity of the stand remains substantially at the same level and this renders any springs and other assisting elements unnecessary, although retracting springs may be employed if desired and especially in the case of any alteration in the proportions of the various elements.

Furthermore, no special locking or latching means is necessary in order to hold the stand in opened position for occupancy, the toggle 62, 65 and the sturdy support afforded by the legs 55 and the transverse load-spreading beam construction 58, 60, assuring against inadvertent buckling or collapsing of the stand. Any suitable locking means for the handle 70 may be employed in order to prevent unauthorized manipulation thereof. It is to be noted that if it were attempted to fold the stand and swing the leg 55 rearwardly without actuating the releasing handle 70, the attempt would fail since the necessary downward swing of the upper stand section about the pivot 40 would cause the foot 60 of the leg 55 to descent slightly below floor level and would therefore prevent the rearward swing of the leg.

In order to retain the stand sections in their collapsed position as in Figure 3, a novel clamping member, locking element, or shackle 80 is employed. This element is illustrated in one form in Figure 6 of the drawings and comprises

a hooked end portion 81 and a transverse angular extension 82 at the opposite end, the element being bent intermediate its length as at 83. The hooked end portion 81 is adapted to be placed around one of the slender cylindrical seat posts 19 as shown in Figure 3 and the shackle or clamp element 80 swung so that the extension 82 embraces the beam section 18b as clearly shown in Figure 3 of the drawings.

A plywood or sheet metal panel 90 may be provided between the front seat 22 and the forward end of the beams 18b against which basketballs may strike and rebound, or for any other protective purpose. The forward portion of the front beam sections 18b may also be covered on their undersides with plywood or sheet material as at 92, and it will be seen that when the stand is folded as in Figure 3 the plywood sheathing 92, together with the plywood sections 44 and 50, will substantially cover the exposed portions of the stand in this folded position and present a neater appearance to the gymnasium whenever public events are not scheduled.

Various changes and modifications may be made in the embodiment of the invention illustrated and described herein without departing from the scope thereof as determined by the following claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A folding grandstand comprising, in combination, a supporting frame comprising a forward and a rearward section horizontally hinged together at their adjacent edges, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the forward section resting adjacent the ground surface, a pivotal support for the upper rearward portion of the rearward section maintained at a fixed elevation above ground level, a hinge pintle pivotally securing said sections together and disposed at a point upwardly of the plane of the frame at least as far as the upper surface thereof, whereby the sections may be folded toward collapsed position one against the other in relatively upward rotary directions with respect to the axis of said pintle, a supporting leg for the stand, means pivotally connecting said leg adjacent its upper end to the rearward frame section at a point rearwardly of the pintle, a toggle connection between the upper portion of said leg and the forward section of the stand, said toggle connection consisting of two links having their adjacent ends pivotally connected with each other, one end of one of said links permanently pivotally connected with a point on the forward section of the stand, and the opposite end of the other link pivotally connected with the upper portion of said leg, and means other than the movement of the stand itself for breaking the toggle and for starting the swinging movement of said leg toward the plane of the stand to permit the collapsing of the stand.

2. A folding grandstand comprising, in combination, a supporting frame comprising a forward and a rearward section horizontally hinged together at their adjacent edges, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the forward section resting adjacent the ground surface, a pivotal support for the upper rearward portion of the rearward section maintained at a fixed elevation above ground level, a hinge pintle pivotally securing said sections together and disposed at a point upwardly of the plane of the frame at least as far as the upper surface thereof, whereby the sections may be folded toward collapsed position one against the other in relatively upward rotary directions with respect to the axis of said pintle, a normally vertical supporting leg for the stand, means pivotally connecting said leg at its upper end to the rearward frame section at a point rearwardly of the pintle, a toggle connection between the upper end of said leg and the forward section of the stand, and positively and individually actuated means other than the movement of the stand itself for breaking the toggle and also initiating the swinging movement of said leg toward the rearward section of the frame to remove it from obstructing the collapsing of the stand, a wheeled dolly supporting an intermediate portion of the forward section at a substantially constant level, a spring mounting on the dolly, adapted to yield under live load upon the stand so that the foot of the supporting leg bears upon the ground and assumes a share of the support of the stand, said spring mounting of the dolly being of sufficient strength to raise the dead weight of the stand when the live load is removed to release said supporting leg from contact with the ground surface so that it may be swung toward the rearward section for collapsing the stand.

3. A folding grandstand comprising, in combination, a supporting frame comprising two hinged forward and rearward sections and adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the stand resting adjacent the ground surface, a horizontal hinge pintle disposed at a point spaced above the medial plane of the frame, whereby the two adjacent ends of the frame sections abut when the stand is opened out for occupancy, a supporting leg pivoted at its upper end to the rearward section rearwardly of and below the axis of said pintle, a toggle connection between the leg and the forward section of the stand and comprising a first toggle element and a second toggle element, said first toggle element being pivoted to said forward section forwardly of the abutting ends of the sections and below said pintle axis, the second toggle element being pivotally connected to said first-named toggle element and operatively connected to the upper portion of said leg, and manually operable means other than the movement of the stand itself for swinging said first-named toggle element to break the toggle, whereby upon swinging the leg rearwardly the stand may be collapsed.

4. A folding grandstand comprising, in combination, a supporting frame comprising two hinged forward and rearward sections and adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the stand resting adjacent the ground surface, a horizontal hinge pintle disposed at a point spaced above the medial plane of the frame, whereby the two adjacent ends of the frame sections abut when the stand is opened out for occupancy, a supporting leg pivoted at it supper end to the rearward section rearwardly of and below the axis of said pintle, a triangular toggle element pivoted at one corner to said forward section forwardly of the abutting ends of the sections and below said pintle

axis, a second toggle element pivotally connected to said first-named toggle element at a second corner thereof and operatively connected to the upper portion of said leg, and manually operable means accessible at the forward end of the stand and connected to the third corner of the first-named toggle element for swinging said first-named toggle element to break the toggle, whereby upon swinging the leg rearwardly the stand may be collapsed.

5. A folding grandstand comprising, in combination, a supporting frame comprising two hinged forward and rearward sections and adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the stand resting adjacent the ground surface, a horizontal hinge pintle disposed at a point spaced above the medial plane of the frame, whereby the two adjacent ends of the frame sections abut when the stand is opened out for occupancy, a supporting leg pivoted at its upper end to the rearward section rearwardly of and below the axis of said pintle, a rigid arm fixed to said leg adjacent its pivot point and extending normally in a plane parallel with the rearward section, a toggle element pivoted to said forward section forwardly of the abutting ends of the sections and below said pintle axis, a second toggle element pivotally connected to said first-named toggle element and also pivoted to the rearward end of said rigid arm for swinging said first-named toggle element downwardly to break the toggle, whereby upon swinging the leg rearwardly the stand may be collapsed.

6. A folding grandstand comprising, in combination, a supporting frame comprising two hinged sections and adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the stand resting adjacent the ground surface, each of the frame sections being made up of spaced parallel side beams, a pair of cooperating hinge struts extending upwardly from the rear end of said forward section and the forward end of the rear section at each side of the frame, pivots hingedly connecting said struts at points offset upwardly from the stand, the respective side beams of the section on each side adapted to abut end to end when the stand is opened, a supporting leg pivoted at its upper end to the rearward section rearwardly of and below the axis of said pintle, a triangular toggle element pivoted at one corner to said forward section forwardly of the abutting ends of the sections and below said pintle axis, a second toggle element pivotally connected to said first-named toggle element at a second corner thereof and operatively connected to the upper portion of said leg, and manually operable means accessible at the forward end of the stand and connected to the third corner of the first-named toggle element for swinging said first-named toggle element to break the toggle, whereby upon swinging the leg rearwardly the stand may be collapsed.

7. A folding grandstand comprising, in combination, a supporting frame comprising at least two hinged sections and adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the stand resting adjacent the ground surface, each of the frame sections including longitudinally extending beams aligned with a beam of the adjacent section, slender cylindrical seat posts secured at spaced intervals along said beams, transversely extending seat-boards supported by the seat posts, said sections when the stand is in unused position being folded one against the other with the seat posts and seat-boards of each section projecting toward and interdigitated with those of the other section, a shackle element locking said stand in collapsed position, said shackle element having a hook at one end surrounding a seat post of one stand section beneath the bottom of the attached seat-board, and a hook at the other end surrounding the beam of the opposite stand section at a point adjacent said seat post when the stand is in collapsed position.

8. A folding grandstand comprising, in combination, a supporting frame comprising a forward and a rearward section horizontally hinged together at their adjacent edges, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the forward section resting adjacent the ground surface, a pivotal support for the upper rearward portion of the rearward section maintained at a fixed elevation above ground level, a hinge pintle pivotally securing said sections together and disposed at a point upwardly of the plane of the frame at least as far as the upper surface thereof, whereby the sections may be folded toward collapsed position one against the other in relatively upward rotary directions with respect to the axis of said pintle, a supporting leg for the stand, means pivotally connecting said leg adjacent its upper end to the rearward frame section at a point rearwardly of the pintle, a rigid extension on said leg projecting in a generally rearward direction from adjacent the pivot point of the leg, a toggle connection between the outer end of said extension and the forward section of the stand, said toggle connection consisting of two links having their adjacent ends pivotally connected with each other, one end of one of said links permanently pivotally connected with said outer end of the leg extension and the opposite end of the other of said links permanently pivotally connected with a point on the forward section of the stand, and means other than the movement of the stand itself for breaking the toggle and initiating the swinging movement of said leg toward the plane of the stand to permit the collapsing and folding of the stand.

9. A folding grandstand comprising, in combination, a supporting frame comprising a forward and a rearward section horizontally hinged together at their adjacent edges, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the forward section resting adjacent the ground surface, a pivotal support for the upper rearward portion of the rearward section maintained at a fixed elevation above ground level, a hinge pintle pivotally securing said sections together and disposed at a point upwardly of the plane of the frame at least as far as the upper surface thereof, whereby the sections may be folded toward collapsed position one against the other in relatively upward rotary directions with respect to the axis of said pintle, a supporting leg for the stand, means pivotally connecting said leg adjacent its upper end to the rearward frame section at a point rearwardly of the pintle said leg occupying a truly vertical position when the stand is opened for use, a rigid extension on said leg

projecting in a generally rearward direction from adjacent the pivot point of the leg, a toggle connection between the outer end of said extension and the forward section of the stand, said toggle connection consisting of two links having their adjacent ends pivotally connected with each other, one end of one of said links permanently pivotally connected with said outer end of the leg extension and the opposite end of the other of said links permanently pivotally connected with a point on the forward section of the stand, said toggle connection when in extended position serving to lock said leg in a said truly vertical position, and means other than the movement of the stand itself for breaking the toggle and for further collapsing the toggle connection to start the swinging movement of said leg toward the plane of the stand to permit the collapsing and folding of the stand, said last named means comprising mechanism carried by the forward section of the stand and movable relative thereto and accessible from the extreme forward end of the stand for actuation.

10. A folding grandstand comprising, in combination, a supporting frame comprising a forward and a rearward section horizontally hinged together at their adjacent edges, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the forward section resting adjacent the ground surface, a pivotal support for the upper rearward portion of the rearward section maintained at a fixed elevation above ground level, a hinge pintle pivotally securing said sections together and disposed at a point upwardly of the plane of the frame at least as far as the upper surface thereof, whereby the sections may be folded toward collapsed position one against the other in relatively upward rotary directions with respect to the axis of said pintle, a supporting leg for the stand, means pivotally connecting said leg adjacent its upper end to the rearward frame section at a point rearwardly and downwardly of the pintle said leg occupying a truly vertical position when the stand is opened for use, a toggle connection between the upper portion of said leg and the forward section of the stand, said toggle connection consisting of two links having their adjacent ends pivotally connected with each other, one end of one of said links permanently pivotally connected with a point on the upper end of said leg and the opposite end of the other of said links permanently pivotally connected with a point on the forward section of the stand below the pintle, said toggle connection when in extended position serving to maintain said leg in said truly vertical position, and operating means carried by said stand and capable of limited movement relative thereto for breaking the toggle and for initiating the swinging movement of said leg toward the plane of the stand to permit the collapsing of the stand, relative movement of the stand sections after the limit of movement of said last named means serving to further collapse the toggle connection the toggle connection being so constructed and arranged as to cause the leg to swing rapidly from said vertical position after the toggle is broken and during the early stages of the collapsing of the stand, and more slowly during the final stages of the collapsing movement.

11. A folding grandstand comprising, in combination, a supporting frame comprising a forward and a rearward section horizontally hinged

together at their adjacent edges, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the forward section resting adjacent the ground surface, a pivotal support for the upper rearward portion of the rearward section maintained at a fixed elevation above ground level, a hinge pintle pivotally securing said sections together and disposed at a point upwardly of the plane of the frame at least as far as the upper surface thereof, whereby the sections may be folded toward collapsed position one against the other in relatively upward rotary directions with respect to the axis of said pintle, a supporting leg for the stand, means pivotally connecting said leg adjacent its upper end to the rearward frame section at a point rearwardly of the pintle, a toggle connection between the upper end of sail leg and the forward section of the stand, said toggle connection consisting of two links having their adjacent ends pivotally connected with each other, one end of one of said links permanently pivotally connected with a point on the upper end of said leg and the opposite end of the other of said links permanently pivotally connected with a point on the forward section of the stand, and operating means carried by the forward section of the stand and capable of limited movement relative thereto for breaking the toggle and initiating the swinging movement of said leg toward the rearward section of the frame to permit the collapsing of the stand, a wheeled dolly normally supporting an intermediate portion of the forward section at a constant level, and means permanently pivotally connecting said dolly to a point on said forward section which point is substantially at the center of gravity of the weight of the forward section and the rearward section not sustained by the aforesaid pivotal support, relative folding movement of said stand section after the limit of movement of said toggle breaking means serving to further collapse the toggle connection, said toggle connection being so constructed and arranged as to accommodate its action to the collapsing movement of the stand, as supported by said dolly, without binding or jamming, and at the same time to move the leg rapidly rearwardly a short distance before the main collapsing movement of the stand section occurs.

12. A folding grandstand comprising, in combination, a supporting frame comprising a forward and a rearward section horizontally hinged together at their adjacent edges, the frame adapted when opened for use to occupy a plane of gradual inclination to the horizontal with the lower forward end of the forward section resting adjacent the ground surface, a pivotal support for the upper rearward portion of the rearward section maintained at a fixed elevation above ground level, a hinge pintle pivotally securing said sections together and disposed at a point upwardly of the plane of the frame at least as far as the upper surface thereof, whereby the sections may be folded toward collapsed position one against the other in relatively upward rotary directions with respect to the axis of said pintle, a normally vertical supporting leg for the stand, means pivotally connecting said leg at its upper end to the rearward frame section at a point rearwardly of the pintle, means operatively connected with said leg for swinging it about its pivot toward the rearward section of the frame to remove it from obstructing the collapsing of the stand, said last

named means being other than the mere movement of the stand sections themselves toward folded position, a wheeled dolly supporting an intermediate portion of the forward section at a substantially constant level, a spring mounting on the dolly, adapted to yield under live load upon the stand so that the foot of the supporting leg bears upon the ground and assumes a share of the support of the stand, said spring mounting of the dolly being of sufficient strength to raise the dead weight of the stand when the live load is removed to release said supporting

leg from contact with the ground surface so that it may be swung toward the rearward section for collapsing the stand.

CHARLES MACKINTOSH.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,067,440	Paquette	July 15, 1913
2,054,960	Adamson	Sept. 22, 1936
2,183,056	Albach et al.	Dec. 12, 1939