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PORTABLE BLEACHER

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Fig. 1

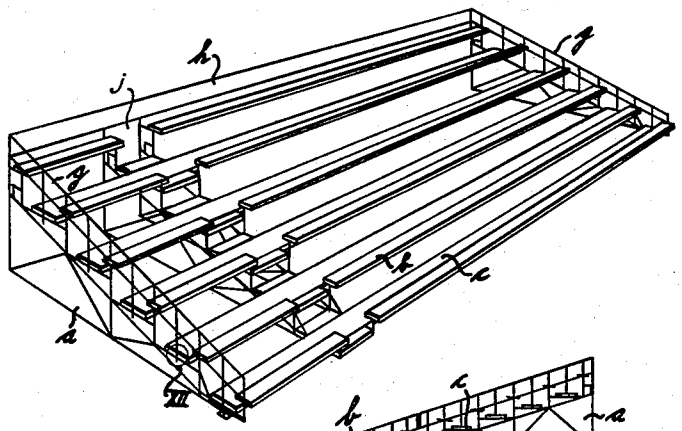


Fig. 2

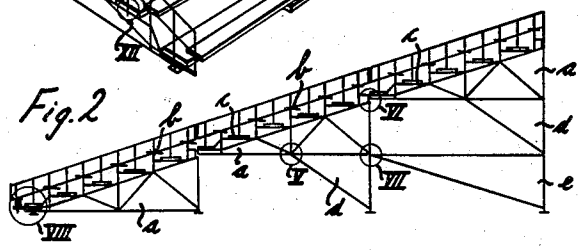


Fig. 3

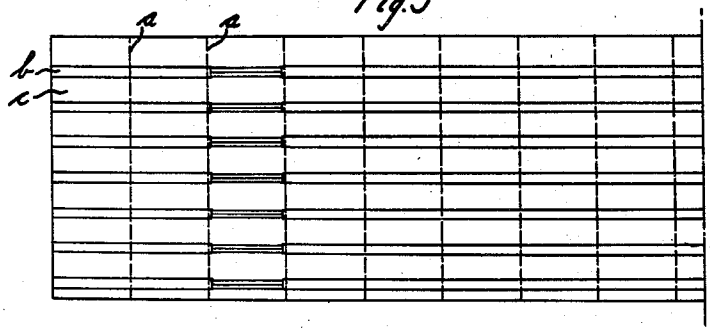
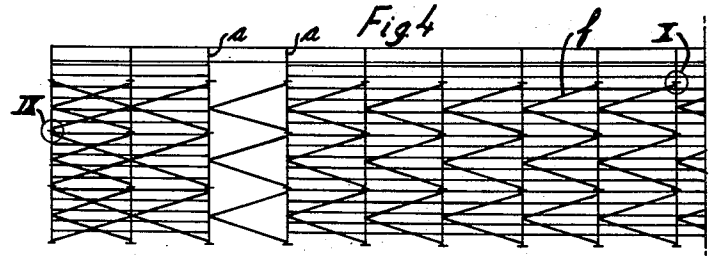


Fig. 4



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Fig. 5

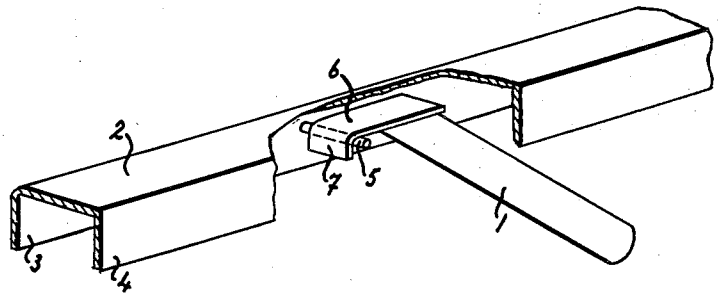
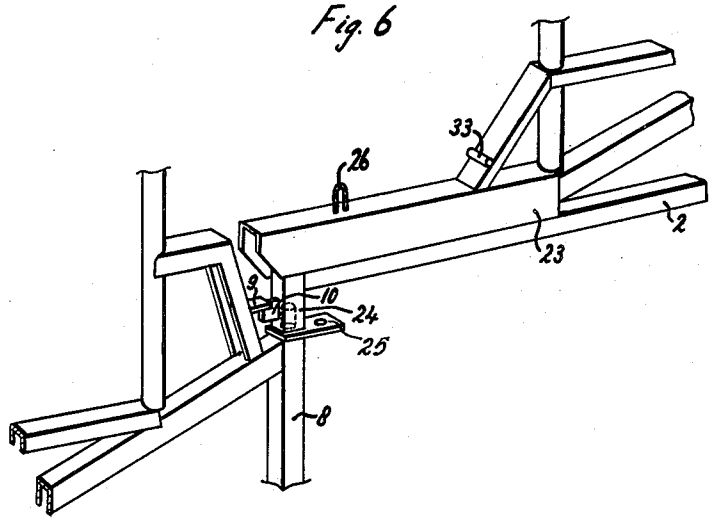


Fig. 6



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Fig. 7

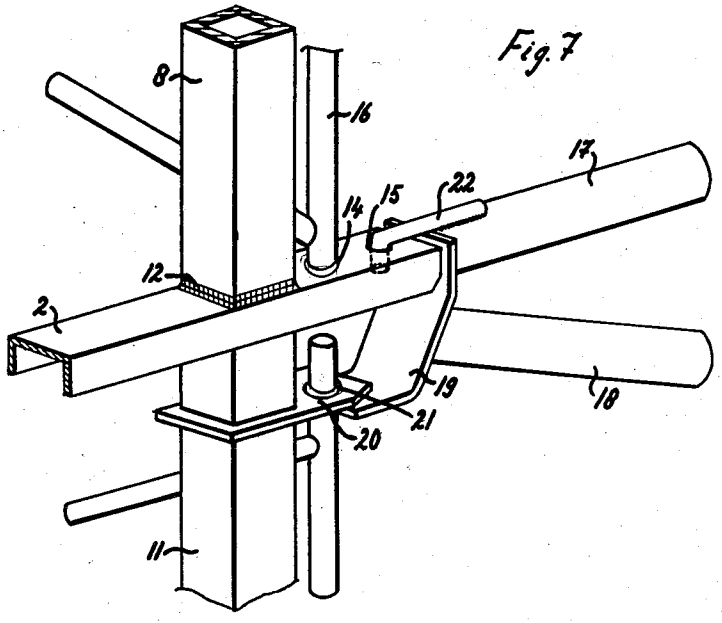


Fig. 8a

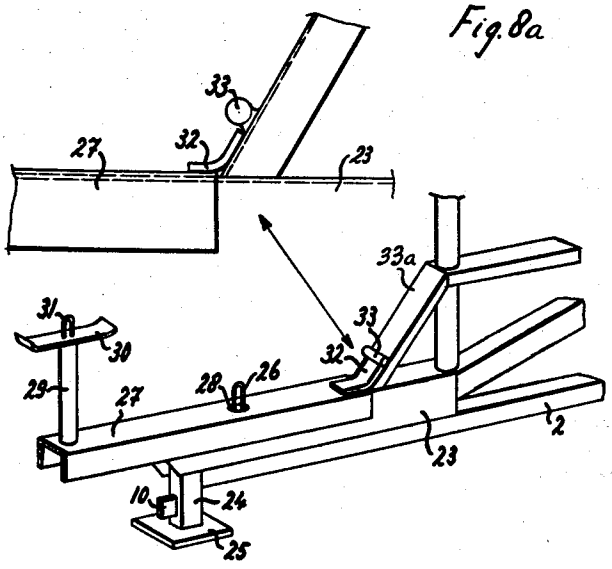


Fig. 8.

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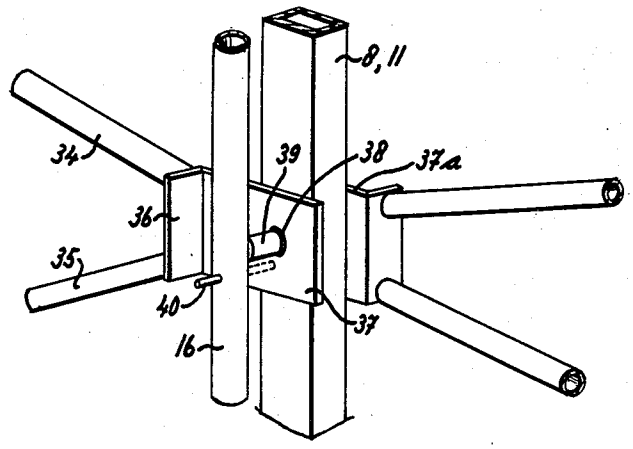


Fig. 9

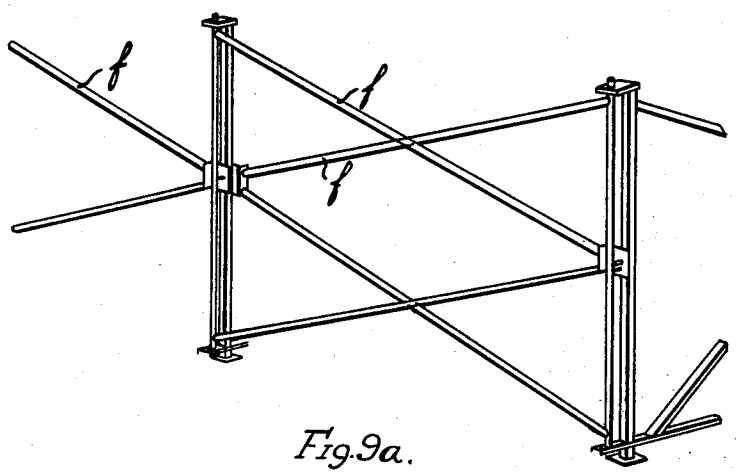


Fig. 9a.

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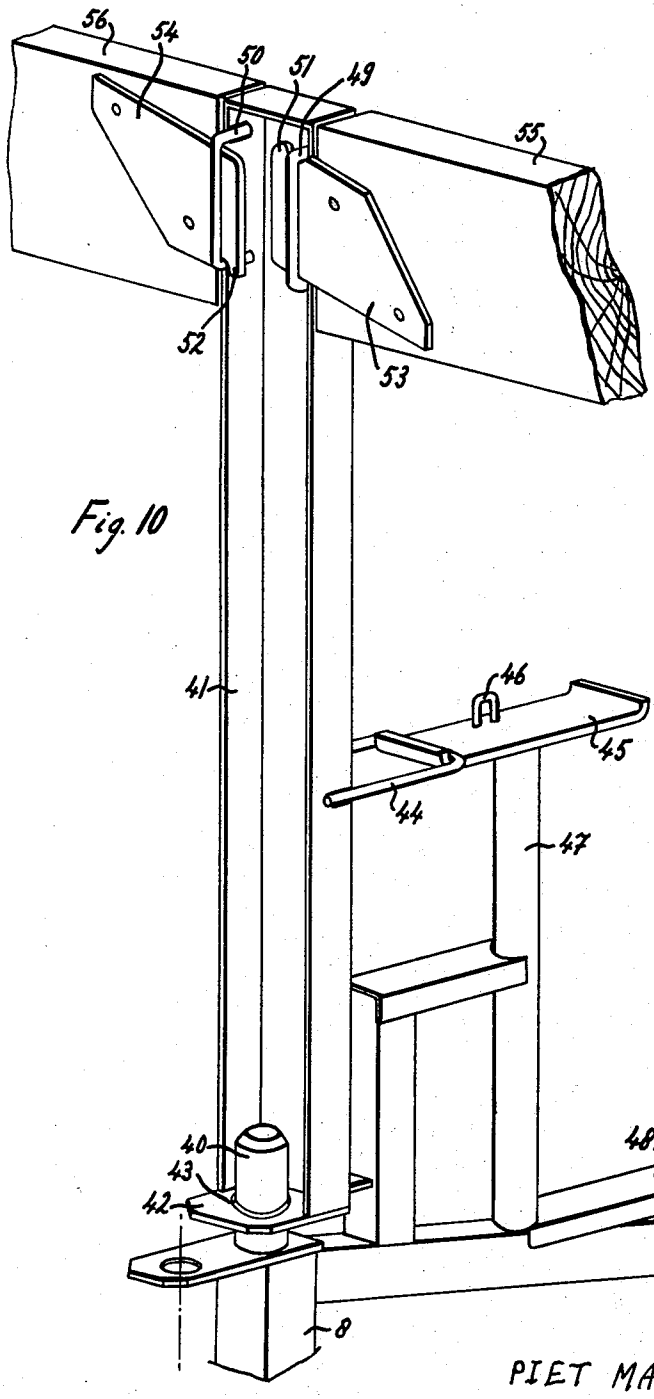


Fig. 10

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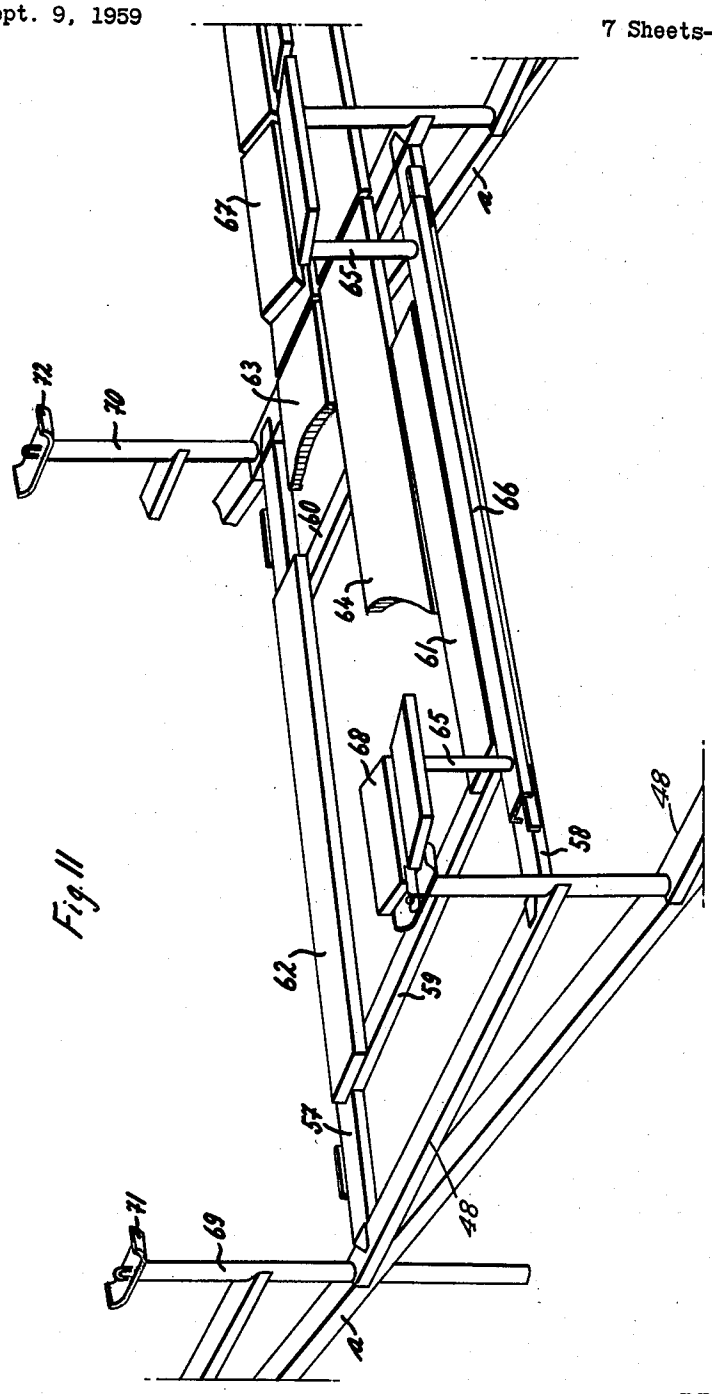


Fig 11

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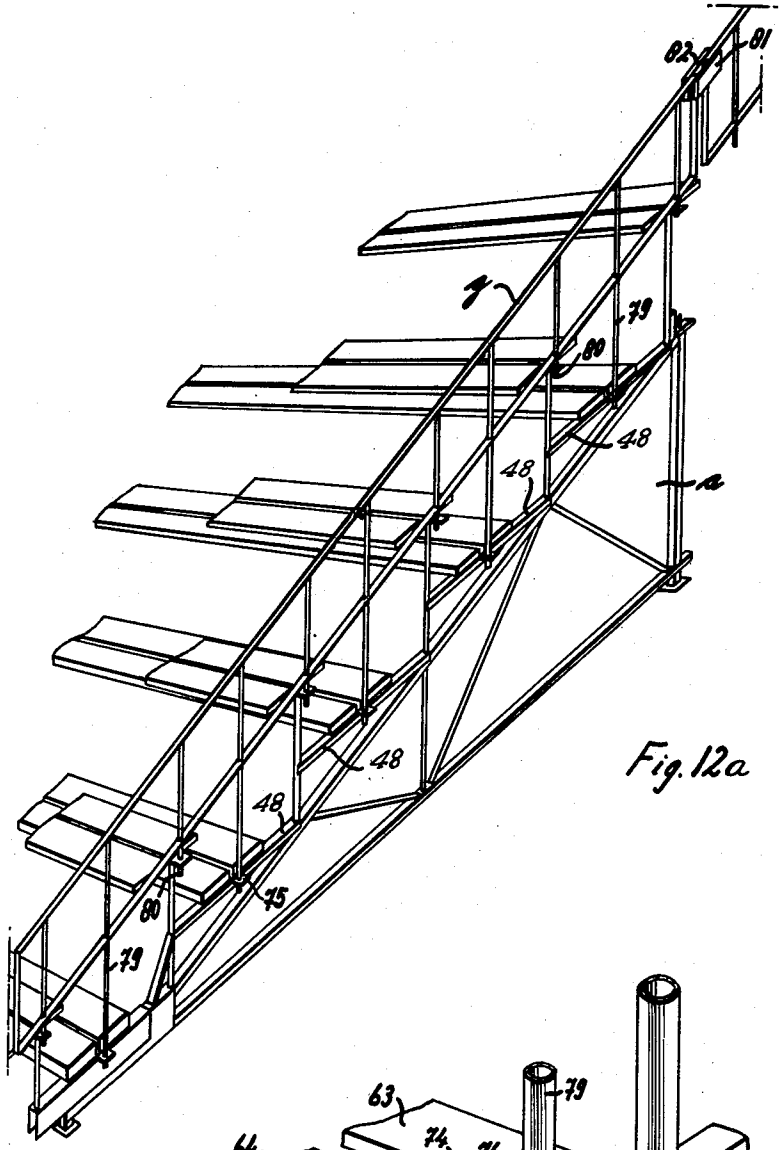


Fig. 12a

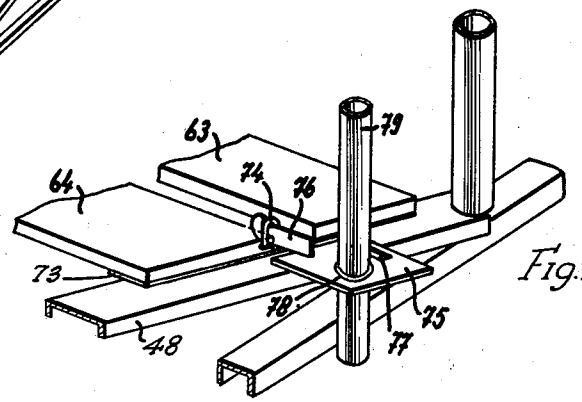


Fig. 12

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United States Patent Office 3,117,350 Patented Jan. 14, 1964

3,117,350

PORTABLE BLEACHER

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Filed Sept. 9, 1959, Ser. No. 839,025
13 Claims. (Cl. 20—1.126)

The invention relates to a spectator stand or bleacher construction, consisting of a frame built up of metal rails and provided with seats and footrests constituted by movable pieces which are locked together and to the frame, the side consisting of a railing which is placed upon the frame. In known constructions the seats and the footrests can be locked to a frame against movement in three directions which are perpendicular to each other, without the use of bolts and nuts, rivets or similar movable fastening means.

The object of the present invention is to provide a stand of the kind described, in which the supporting frame can be built up in a quick and handy way, without the necessity of using bolts, nuts and such like.

This is achieved according to the invention by constructing each frame portion of separable pieces which are locked together against movement in three directions being perpendicular to each other.

The coupling of the frame portions is then accomplished by mounting the seats and footrests on the frame portions. According to the invention each frame portion consists of a framework which may be coupled to a successive corresponding frame portion and which may be supported by means of at least one auxiliary frame on the ground.

Consequently, it is possible to couple a number of frame portions behind one another, the difference in levels with respect to the ground being compensated by one or more auxiliary frames.

A great advantage of said construction is that it uses uniform frame portions and auxiliary frames.

By using a number of spaced frame portions coupled by the seats, footrests and coupling elements, a stand can be built, the depth of which is determined by the total length of the frame portions placed one behind the other. The length of the stand depends on the number of frame portions placed side by side and spaced from each other, and the total height of the frame portions placed one behind the other determines the height of the stand. In this way it is possible to choose an unlimited length and depth of the stand. If, however, it is desired to increase said depth, together with the height of the stand, there can then be coupled behind each frame portion a corresponding frame portion supported on the ground by means of an auxiliary frame. In this way the depth and height of the stand becomes twice as large when the original stand has only a single row of frame portions. By coupling various frame portions successively and by increasing accordingly the number of auxiliary frames the depth and the height of the stand can thus be enlarged. In order to keep the transportation and the construction of the stand as simple as possible, i.e. to reduce the weight to a minimum, the frame portions are made of lengths of material having a channel or other profile.

The base of each frame portion preferably consists of a closed hollow or a U-shaped profile, the vertical limbs of which point downwards, a pin or the like being mounted half way up the limbs of the profile, a diagonal bar of an auxiliary frame having a part which is flat and which is bent over at its end, said part being insertable between the pin and the profile to grip around said pin, a vertical part of said auxiliary frame supporting a successive frame portion on the ground.

It is advantageous to make each frame portion in the

form of a frame work having the shape of a right angled triangle, the long base of which is parallel to the ground and consisting of a U-shaped profile member, the short side being a vertical part, the lower end of which rests on the ground or on another corresponding frame portion and the upper end supporting another frame.

The invention has been illustrated in the accompanying drawings wherein:

FIG. 1 is a perspective view of a stand according to the invention;

FIG. 2 is a side view;

FIG. 3 is a top view and

FIG. 4 is a back view.

The FIGURES 5–12 show details, the place of which have been encircled in the construction in the FIGURES 1, 2 and 4. The Roman numeral drawn near the circle, refers to the corresponding figure.

FIG. 5 is a detail of the coupling between the base of a frame portion and the diagonal bar of an auxiliary frame;

FIG. 6 shows the way in which two frame portions are coupled to each other;

FIG. 7 is a detail of the coupling of one frame portion to two supporting auxiliary frames;

FIG. 8 shows a detail of the way in which the first frame has the front end thereof resting on the ground;

FIG. 8*a* is an enlarged elevation view of a detail of the structure of FIG. 8;

FIG. 9 a further detail of the transverse connection;

FIG. 9*a* is a perspective view of how the frame members are coupled at the back of the bleacher;

FIG. 10 is the connection of a back of a seat to the supporting frame;

FIG. 11 shows the way in which a staircase in a stand may be constructed;

FIG. 12 shows the way in which a railing is attached to the frame.

FIG. 12*a* is a perspective view of the end of the bleacher according to the invention.

The stand according to the invention consists of a frame which is built up by uniform frame portions *a* having the shape of a right angled triangle, the long base of which is parallel to the ground. The seats *b* and the foot rests *c* rest on the frame parts. Said seats and foot rests consist of movable pieces, the length of which is determined by the distance between two laterally spaced frame portions *a*. When, as has been indicated in FIG. 2, a number of frame portions *a* are placed one behind the other, auxiliary frames *d* are used which are constituted by a diagonal bar and a vertical part and an auxiliary frame *e* having the shape of a right angled triangle.

On the back side of the stand the frame portions *a* have been coupled by bracing members *f*. At the ends of the bleacher there are provided railings *g*, and a back railing *h* is provided at the top of the back. In order to be able to reach the various seats on the stand, a staircase *j* may be built into the stand. If required there may be staircases in more than one place.

In constructing the stand, a plurality of frame portions *a* are placed side by side and spaced from each other and fastened in a known manner by placing a number of seats and footrests between them. When a deep stand must be built up a plurality of frame portions *a*, here there are shown three, must be coupled one behind the other. In that case it is necessary to use auxiliary frames *d* and *e*.

The auxiliary frame *d* consists of a diagonal bar 1 and a vertical part 11. The connection of the diagonal bar 1 with the base 2 of a frame portion *a* is shown in FIG. 5. Each frame consists of a framework of e.g. tubular material and has the shape of a right angled triangle. The long base member 2 of the triangle is parallel to

the ground and consists preferably of a U-shaped profile member 2, the sides 3 and 4 of which point downwardly. About half way along the length of the profile member 2 a pin 5 or the like is connected between the limbs 3 and 4. To the diagonal bar 1 is attached a flat plate 6 which is bent at its free end 7. When the bent part 7 is inserted between the pin 5 and the top of the U-shaped profile member 2 and then is turned, the part 7 will grip the pin 5 and the plate 6 will lie against the top of member 2. The vertical part 11 of the auxiliary frame *d* may have the lower end resting on the ground, or it may cooperate with another auxiliary frame portion *d* (see FIG. 2). The upper end supports the end of the frame portion *a* to which the diagonal bar 1 is connected. In this way said auxiliary frame is locked against movement in three directions which are perpendicular to one another, i.e. against vertical movement, against movement from front to rear, and against movement along the stand.

The connection between two frame portions *a* placed behind each other has been shown in detail in FIG. 6. The vertical member 8 of a forward frame portion *a* engages by means of a tenon and mortise joint with a foot 24 on the front end of the long base member 2 of a rear frame portion. At the upper end of the vertical member 8 of the front frame portion there is a rearwardly extending projection 9, each foot 24 having a projecting lug 10 on the front side thereof. When the frame portions are superposed, they are held at right angles to each other and subsequently they are rotated so as to be aligned, whereupon the projection 10 will grip under the projection 9. In this way too the frame portions are mutually locked against movement in three directions which are perpendicular to one another. Further each frame portion is provided with supports for mounting and locking the seats and footrests, as will be more fully described below.

In FIG. 7 is shown the joint between an auxiliary frame *e* having the shape of a right angled triangle, with a frame portion *a* and an auxiliary frame *d*. The vertical member of the auxiliary frame *d* is indicated at 11 and the horizontal member of the frame portion *a* is indicated at 2 (see also FIG. 5). The vertical member of the frame portion *a* is indicated at 8. In the top of the part 2 is an opening through which the vertical part 8 of a frame portion *a* extends, and the vertical member 8 is joined to the horizontal member at 12. In the end of horizontal member 2 which projects rearwardly past vertical member 8 are two bores 14 and 15 in the top of the profile member 2. Into the bore 14 is inserted a vertical member 16 of a triangular coupling member *f* (see FIGS. 4 and 9*a*). The U-shaped horizontal profile member 2 also serves for fastening the auxiliary frame *e* (FIG. 2) to the frame portion *a*. The auxiliary frame *e* consists of a right angled triangle, the long base 17 (FIG. 7) of which is parallel to the ground. The oblique side 18 is connected to the long base 17 by a flanged plate 19. Said plate projects horizontally forwardly and engages under a rearwardly extending projection 20 on the vertical part 11 of auxiliary frame *d*, said projection having a bore 21 into which is inserted the upper end of the vertical part of a triangular coupling member *f* situated under said part 11. The parts 8 and 11 fit together by means of a tenon and mortise joint (not shown).

To the long base 17 of the auxiliary frame *e* is attached a square headed pin 22 which is inserted into the second bore 15 in U-shaped profile member 2. The auxiliary frame *e* is held in an oblique position to insert the pin 22 into the bore 15. Thereupon the frame is turned until the plate 19 engages under the projection 20. Consequently, in this case the auxiliary frame *e* is locked against movement in three directions which are perpendicular to one another.

FIG. 8 shows the way in which the front frame portion *a* for the bleacher rests on the ground. On the front end thereof the base profile member 2 has an extension

piece 23 which has the foot 24 thereon extending downwardly therefrom. On the bottom of the foot 24 is placed a foot plate 25 which rests on the ground and is attached to the foot 24 by means of a tenon and mortise joint. The foot 24 can also be seen clearly in FIG. 6 in which said foot rests on a front frame portion *a*. To the extension piece 23 is attached an ear 26 for fastening the footrests in place.

Over the lengthening piece is fitted a U-shaped channel member 27 with the side flanges extending downwardly. The top of the U-shaped channel member 27 has an opening 28 through which extends the ear 26. To the U-shaped channel member 27 is also attached an upright 29 having on the top thereof a support 30 on which is mounted an ear 31. As seen in FIG. 8*a*, the end of channel member 27 which is toward the frame portion has a flange plate 32 which engages under a projection 33 mounted on a diagonal brace 33*a* on the frame portion *a*. Each frame *a* has a number of supports having ears thereon for engaging footrests and a number of uprights having a support provided with an ear for fastening the seats (see FIG. 12*a*). The members *f* (see FIG. 4) have been shown in detail in FIGS. 9 and 9*a*, and in particular the last frame portion. Each triangular bracing member *f* consists of e.g. round bars. The vertical part is indicated by 16 which is secured to the frames as shown in FIG. 7. The other two legs 34 and 35 are fixed to a bent flange 36 on a plate 37. In the plate 37 is an opening 38. The bracing members *f* are mounted in such a way that the opening 38 is passed over a pin 39 which is mounted in a vertical part of a frame portion *a*, an auxiliary frame *d* on an auxiliary frame *e* (see FIGS. 2 and 4). The vertical part 16 of each triangular bracing member has a pin 40 which lies under the pin 39 when the bracing members are mounted in the positions shown in the intermediate bleacher sections in FIG. 4. On the end bleacher section (see FIG. 4, left side) additional bracing members *f* are mounted in the manner shown in FIG. 9*a*. The plate 37*a* on the additional bracing member is situated behind the vertical member 8 on the frame, but it has a bore therein corresponding to the bore 38 and the pin 39 extending in back of vertical member 8 and through said bore. A split pin can be used to secure plate 37*a* to pin 39.

FIG. 10 shows the way in which a seat back can be fastened to the frame portion *a*. The vertical part 8 of each frame portion *a* has on its upper end a pin 40 forming a part of the tenon and mortise joint for securing it to another frame portion *a* as already described with reference to FIG. 6. An upright channel 41 is vertically mounted upon the vertical part 8. On the lower end of said upright channel is mounted a plate 42 having a hole 43 through which the pin 40 extends. A U-shaped clip 44 projects laterally of channel 41 and rests on a support 45 for the seats. For fastening the seats the support is provided with an ear 46 (see also FIG. 8). The support 45 rests on an upright 47 which is attached to the frame *a*. In FIG. 10 reference numeral 48 indicates a horizontal beam on which the footrests are mounted. When the seats are mounted on the support 45, the clip 44, and consequently the upright channel 41, is locked in the vertical position. There are U-shaped clips 49 and 50 at the upper end of the upright channel 41. Plates 53 and 54 have hook-shaped ends 51 and 52 hooked behind said clips, whereby seat backs 55 and 56 to which the plates 53 and 54 are secured are locked against movement in three directions which are perpendicular to one another.

When the stand is to be provided with a staircase, auxiliary pieces are used as shown in FIG. 11. In this case a bridge is put between side by side spaced frames. Said bridge consists of the bridging beams 57 and 58 which rest on the frame portions *a*. The beams 57 and 58 are interconnected by means of cross beams 59 and 60. Planks 61 and 62 are fastened to said bridge, said

planks being spaced in such a way that footrests consisting of the planks **63** and **64**, may be fastened between them. The beam **58** has U-shaped channel member **66** thereover, which channel member **66** has uprights **65** thereon on which are mounted the seat portions **67** and **68**. The seat portions **68** have a hook on the end thereof engaging under the ear on the seat support **71**, while the seat portions **67** have an aperture fitting over an ear on seat support **72**. Thus the seat portions **67** and **68** will be interlocked with the seat portions mounted on the rest of the bleacher, thus locking the stairs in place.

It is possible that the height of the uprights **69** and **70** supporting the seats leaves dangerous openings in the construction, e.g. a child could fall through said openings. In that case beams extending between adjacent frame portions can be suspended from the supports **71** and **72**.

On the ends of the stand are railings, and the method of fastening the railings to the frame is shown in FIG. 12.

Each railing consists of portions which can be placed one behind the other. Each part constitutes a substantially closed framework having long and short protruding bars.

As has already been pointed out, each frame portion *a* is provided with supports for the seats and for the footrests. Each frame portion *a* has a number of horizontal beams **48** each provided with an ear **74**. The footrests each comprise two planks **63**, **64** (see also FIG. 11), between the ends of which is connected a flat plate **73**. At one end of the footrest the plate has an opening therein and at the other end the plate is provided with a hook. The same applies to the seats situated at a higher level, but which are built in the same way.

According to FIG. 12 the footrests rest upon the beams **48** and the ear **74** extends through the opening which is situated in said connecting plate **73**.

The locking is produced by means of a locking plate **75**. Said plate has a hook **76** thereon which is hooked into the ear **74** with the plate substantially vertical, and then the plate is turned down. The hook **76** stays under the ear and the plate comes to rest on the beam **48**. Thus the footrest is locked against movement in three directions which are perpendicular one to the other. The plate **75** also has a slot **77** therein which is wide enough to receive the ear **74**. Thus it is also possible to position the plate **75** with the slot **77** over the ear **74**. This is the position which the plate **75** is given at the other end of the footrest planks **63** and **64**, on which there is a hook like hook **76** which hook is secured on plate **73**. Thus at the other end of the stand the hook from the footrest planks extends through the ear **74** which projects through slot **77**, and locking against movement in three directions which are perpendicular one to the other is again obtained. The footrest plates **73** with the slots therein rest on succeeding frames *a* over the ear **74** on the frame, and a hook like hook **76** on the next succeeding footrest planks extends through each ear **74** to lock the footrest planks in position.

The plate **75** has a bore **78** therethrough. For connecting the rail to the seats said plate is situated at a higher level.

The lateral railing *g* comprises long protruding bar **79** and short protruding bar **80** which can be put into the bores **78** of the locking plates **75**. Then it will be possible to lock one of the long or short protruding parts, after having put said part through the bore **78** of the locking plate **75**, by means of e.g. a padlock. The railing can be locked against sideways movements by means of clamps **81** and **82** connected between sections of railing, as shown in FIG. 12.

If the clearance between the protruding parts **79** and **80** and the bore **78** in the locking plate is not very great, it is usually not necessary to secure the lateral railings by means of a padlock. Usually the locking plates **75** will not be completely horizontal, so that a binding force

will hold the protruding bars **79** and **80** which will suffice for keeping the railings in place.

It will thus be observed that by the use of the structure as disclosed herein, a bleacher can be assembled by positioning a plurality of triangular frames *a* side by side and spaced from each other, connecting a plurality of auxiliary frames *d* and *e* to the backs of the frames *a*, connecting a plurality of triangular braces *f* between the back ends of the auxiliary frames and the rearmost top frame *a*, placing side railings *g* along the ends of the bleacher, placing rear railing *h* along the top of the bleacher, and then placing footrests and seat portions between the spaced triangular frames *a* beginning at one end of the stand and working to the other end. Because of the mannner in which the parts are interfitted, using the mortise and tenon joints, the projections fitting under plates, ends of bars passing through holes in plates, and the like, and then by placing the planks forming the footrests and seat portions over the ears projecting upwardly from the beams **48** on the triangular frames *a* and the ears projecting upwardly from the supports **71** and **72** on the uprights on the triangular frames *a*, a hook on one end of a footrest or seat plank passing through the ear projecting through the hole in the next adjacent footrest or seat plank, the entire structure will be locked together so that by placing a padlock or the like through the ears projecting through the footrest and seat planks at the finishing end of the stand, no part can be removed without fiirst unlocking the padlock and then disassembling at least a portion of the stand starting at the finishing end and working backwards. Thus no unauthorized persons can tamper with or remove parts of the bleacher. This is in addition to the advantage that no nuts or bolts or similar fastening means need be used.

I claim:

1. A bleacher, comprising a plurality of right triangular frames each having a vertical member with a foot at the bottom thereof, a horizontal member having a foot at the end remote from the vertical member, and a plurality of horizontal beams along the hypotenuse, a seat support on each horizontal beam, said right triangular frames being arranged in sets with each set comprising a front triangular frame adapted to rest on the ground, and at least one rearward triangular frame having the foot remote from the vertical member interlocked with the top of the vertical member of said front triangular frame, a first auxiliary frame beneath each rearward triangular frame and having a vertical member interlocked with the foot at the bottom of the vertical member of said rearward triangular frame and having a rearwardly and downwardly sloping member connected to the bottom of the vertical member of the auxiliary frame and interlocked with the horizontal member of the triangular frame, and at least one further triangular frame to the rear of said rearward triangular frame, at least one second auxiliary frame having joined vertical, horizontal and downwardly and rearwardly sloping members, the junction of the horizontal and sloping members being interlocked with the bottom of the vertical member of the rearward triangular frame and the top of the vertical member of the first auxiliary frame immediately in front of the second auxiliary frame, and the top of the vertical member of the second auxiliary frame being interlocked with the bottom of the vertical member of the first auxiliary frame immediately above said second auxiliary frame, said sets of frames being side by side and spaced along the length of the bleacher, triangular bracing members interlocked between the rear ends of adjacent sets of frames, rear rail means interlocked with the tops of the rearmost triangular frames in each set of frames, at least one stair means interlocked between two adjacent spaced sets of frames, footrest and seat portions extending between said sets of frames and interlocked with the beams and seat supports on said triangular frames and having the ends of adjacent footrests and seat portions inter-

locked with each other, all of the interlocking connections being separable only by relative movement of the interlocking parts, and side rail means interlocked with the end sets of frames, seats and footrests at opposite ends of the bleacher and having means for locking said side rails in interlocking relationship with the frames, seats and footrests, whereby the parts of said bleacher are held in interlocked relationship.

2. A bleacher as claimed in claim 1 in which the horizontal member of said triangular frames is a downwardly opening channel member having a pin connected between the downwardly extending side flanges intermediate the ends of said horizontal member, and the end of said downwardly and rearwardly sloping member of said first auxiliary member has a bent over plate on the end thereof engaging between said pin and the channel member for interlocking the triangular frame and the first auxiliary frame.

3. A bleacher as claimed in claim 1 in which the upper end of said vertical member of one triangular frame has one member of a mortise and tenon joint thereon and the foot on the end of the horizontal member of the next rearward triangular frame with which the said vertical member is interlocked has the other member of the mortise and tenon joint, a lateral projection on the foot and an opposed projecting plate on the one triangular frame member under which the lateral projection engages when the vertical member and the foot in question are interlocked.

4. A bleacher as claimed in claim 1 in which each of the front triangular frames further comprises a forward extension in the form of a downwardly opening channel member fitting over the horizontal member and having a rearwardly extending projection on the rear end thereof, the triangular frame having a forwardly extending projection under which the projection on the extension is engaged, said channel member having an aperture therein and said triangular frame having an ear thereon projecting through said aperture, and an upright on the forward end of said extension having a seat support on the upper end thereof and having an interlocking means thereon for interlocking with a seat portion.

5. A bleacher as claimed in claim 1 in which said triangular bracing members each have two diverging sloping members, a plate connecting the adjacent ends of said sloping members, said plate having a hole therein, and each vertical member of said frames having a horizontal pin midway between the ends thereof extending through said plate.

6. A bleacher as claimed in claim 1 in which said said rear rail means comprise a plurality of upright channel members, one for each set of frames, a horizontal plate on the lower end of each upright member and having a hole therein, a pin on the upper end of the vertical member of each triangular frame over which said plate is fitted, a forwardly projecting loop on each upright member, a seat support on each triangular frame in front of said pin with which said loop is engaged, a pair of rearwardly projecting loops at the upper end of said upright, rails extending between the uprights, and plates on the end of said rails having hooks thereon extending through said rearwardly projecting loops.

7. A bleacher as claimed in claim 1 in which said stair means comprises a pair of bridging beams between opposed beams on adjacent triangular frames, cross beams connecting said bridging beams, planks between said cross beams and spaced from each other in the direction of the spacing of the bridging beams a distance sufficient to permit footrests to be laid between them across the cross beams, and a downwardly opening channel member having an upright at each end with a seat support thereon, said channel member engaged over the front bridge beam of said stair means, and seat portions on said seat supports extending to seat supports on the adjacent triangular frames and having interlocking means

thereon for interlocking them with seat portions on the adjacent triangular frames.

8. A bleacher as claimed in claim 1 in which the upper end of the vertical member of each first auxiliary frame has one member of a mortise and tenon joint thereon and the foot on the bottom of the vertical member of each triangular frame has the other member of the mortise and tenon joint thereon, the horizontal member of said triangular frame extending rearwardly past the vertical member and having a hole therein, a plate on the end of the vertical member of the first auxiliary frame projecting rearwardly, and the horizontal and sloping members of each second auxiliary frame being joined by a bent flange having a bent end projecting under the plate projecting from the vertical member of the first auxiliary frame and the horizontal member of said second auxiliary frame having a hook thereon engaging with the hole in the extension of the horizontal member of said triangular frame.

9. A bleacher as claimed in claim 8 in which said extension of the horizontal member of said triangular frame has a second hole therein and said plate on the vertical member of the first auxiliary member has a hole therein, and said triangular bracing members each having a vertical member, one end of the vertical member of an upper bracing member extending through the second hole in the extension, and the end of a vertical member of a lower bracing member extending through the hole in the plate.

10. A bleacher as claimed in claim 1 in which said side rail means comprises a closed frame having alternate long and short downwardly projecting bars, plates on the ends of said bars, and interlocking means on said plates for interlocking with the ends of footrests and seat portions and the horizontal beams on said triangular frames.

11. A bleacher as claimed in claim 10 in which each horizontal beam on the triangular frames has an ear projecting upwardly therefrom, the end of each footrest and seat portion has a plate thereon with a hole therein through which said ear projects, and each plate on the bottom of a bar of the side rail has a projection thereon engageable through said ear and a hole thereon fittable over said ear.

12. A bleacher, comprising a plurality of right triangular frames each having a vertical member with a foot at the bottom thereof, a horizontal member having a foot at the end remote from the vertical member, and a plurality of horizontal beams along the hypotenuse, a seat support on each horizontal beam, said right triangular frames being arranged in sets with each set comprising a front triangular frame adapted to rest on the ground, and at least one rearward triangular frame having the foot remote from the vertical member interlocked with the top of the vertical member of said front triangular frame, a first auxiliary frame beneath each rearward triangular frame and having a vertical member interlocked with the foot at the bottom of the vertical member of said rearward triangular frame and having a rearwardly and downwardly sloping member connected to the bottom of the vertical member of the auxiliary frame and interlocked with the horizontal member of the triangular frame, and at least one further triangular frame to the rear of said rearward triangular frame, at least one second auxiliary frame having joined vertical, horizontal and downwardly and rearwardly sloping members, the junction of the horizontal and sloping members being interlocked with the bottom of the vertical member of the rearward triangular frame and the top of the vertical member of the first auxiliary frame immediately in front of the second auxiliary frame, and the top of the vertical member of the second auxiliary frame being interlocked with the bottom of the vertical member of the first auxiliary frame immediately above said second auxiliary frame, said sets of frames being side by side and spaced along the length of the bleacher, triangular bracing mem-

bers interlocked between the rear ends of adjacent sets of frames, rear rail means interlocked with the tops of the rearmost triangular frames in each set of frames, footrest and seat portions extending between said sets of frames and interlocked with the beams and seat supports on said triangular frames and having the ends of adjacent footrests and seat portions interlocked with each other, all of the interlocking connections being separable only by relative movement of the interlocking parts, and side rail means interlocked with the end sets of frames, seats and footrests at opposite ends of the bleacher and having means for locking said side rails in interlocking relationship with the frames, seats and footrests, whereby the parts of said bleacher are held in interlocked relationship.

13. A bleacher, comprising a plurality of right triangular frames each having a vertical member with a foot at the bottom thereof, a horizontal member having a foot at the end remote from the vertical member, and a plurality of horizontal beams along the hypotenuse, a seat support on each horizontal beam, said right triangular frames being arranged in sets with each set comprising a front triangular frame adapted to rest on the ground, and at least one rearward triangular frame having the foot remote from the vertical member interlocked with the top of the vertical member of said front triangular frame, a first auxiliary frame beneath each rearward triangular frame and having a vertical member interlocked with the foot at the bottom of the vertical member of said rearward triangular frame and having a rearwardly and downwardly sloping member connected to the bottom of the vertical member of the auxiliary frame and interlocked with the horizontal member of the triangular frame, and at least one further triangular frame to the

rear of said rearward triangular frame, at least one second auxiliary frame having joined vertical, horizontal and downwardly and rearwardly sloping members, the junction of the horizontal and sloping members being interlocked with the bottom of the vertical member of the rearward triangular frame and the top of the vertical member of the first auxiliary frame immediately in front of the second auxiliary frame, and the top of the vertical member of the second auxiliary frame being interlocked with the bottom of the vertical member of the first auxiliary frame immediately above said second auxiliary frame, said sets of frames being side by side and spaced along the length of the bleacher, triangular bracing members interlocked between the rear ends of adjacent sets of frames, footrest and seat portions extending between said sets of frames and interlocked with the beams and seat supports on said triangular frames and having the ends of adjacent footrests and seat portions interlocked with each other, all of the interlocking connections being separable only by relative movement of the interlocking parts, and locking means locking the end sets of frames, seats and footrests against relative movement, whereby the parts of said bleacher are held in interlocked relationship.

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