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BLEACHER SEATS

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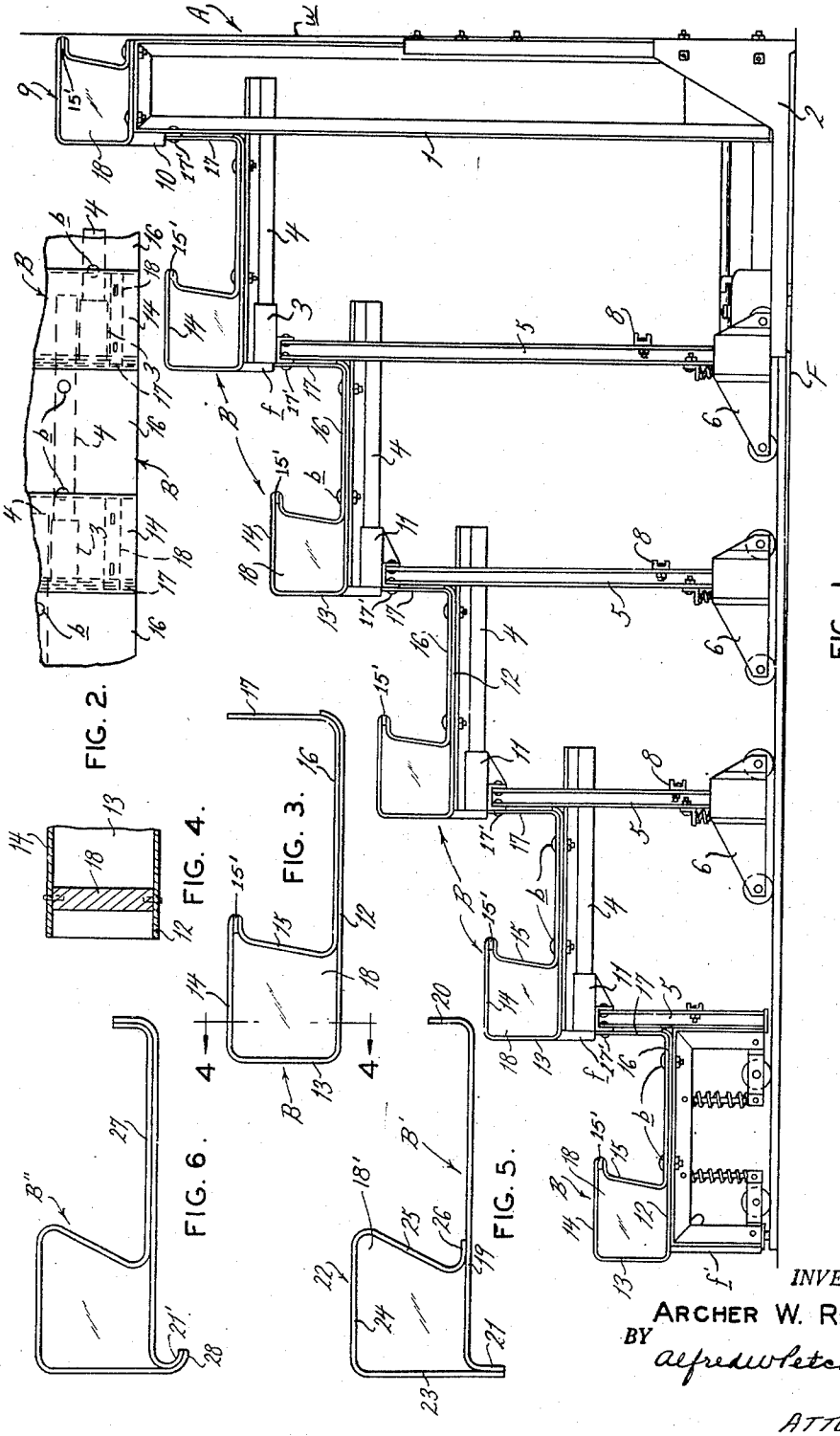


FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

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BLEACHER SEATS

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This invention relates in general to certain new and useful improvements in bleacher seats for school gymnasiums, high school auditoriums, school athletic fields, and similar places where large groups of people occasionally gather to view athletic contests and similar types of sports events, exhibitions, or the like.

It is frequently necessary, for sports events and the like, to provide seating arrangements which are sturdy and relatively inexpensive, but nevertheless are capable of accommodating large numbers of people in a relatively compact tiered arrangement, so that each row of spectators will be relatively higher than the row in front and, thus, each person has a clear view over the heads of those in front of him. These seating arrangements are usually carried out by the use of bleachers. For outdoor use, permanent bleachers are frequently constructed consisting of a plurality of suitably spaced uprights connected adjacent their upper ends by inclined beams which, in turn, support horizontally extending seat boards and foot boards.

Bleachers of the so-called knock-down type are also in widespread use and usually consist of a series of A-frames, which can be removably connected to each other and to the inclined beams, to provide a supporting framework or structure for the seat boards and foot boards. For indoor installation, bleachers of the folding or telescoping type are widely used and comprise a series of inter-connected uprights and horizontal struts, which are either hinged or slidably joined so that the several sections can be pushed telescopically together in nested relationship or folded up in some suitable manner to form a compact assembly fitting closely against a suitable wall, so as to be out of the way when not in use. Bleachers of this latter type are also provided with horizontally extending seat boards and foot boards.

In all types of bleachers the horizontally extending foot boards and seat boards are nothing more than relatively thick, wide planks of lumber, which must be of relatively straight grain and comparatively free of knots or other defects tending to produce weakness in the boards. These boards, furthermore, are relatively heavy and, by reason of the requirements of quality and size, are quite expensive. In addition to this, the supply of lumber of the quality required for this type of use is steadily decreasing with attendant difficulties in procurement and correspondingly progressive increases in price.

The conventional use of heavy wooden planks to form the seat boards and foot boards of bleachers also entails the additional problem of providing suitable reinforcing elements in the supporting framework or structure to carry a relatively large percentage of the load by reason of the fact that even the best quality of lumber is not overly strong when compared with the appreciable amount of weight and other stresses imposed thereon by the spectators during actual use. For this reason, it is necessary to employ comparatively heavy under-framing and reinforcing struts so that the bleacher, when finally

set up and in use, will be strong enough to resist the stresses and strains placed upon it. The necessary requirement for strength in the under-framing, of course, adds appreciably to the cost of the finished structure.

The conventional type of seat board and foot board formed from solid planks of lumber are also quite hazardous inasmuch as they frequently tend to splinter after being used for a period of time with resultant injury to the spectators using them. Furthermore, the bleacher-type structure constructed of an under-framing surmounted by a tiered series of alternate seat boards and foot boards is a relatively open ladder-like structure, which is rather difficult to climb or walk upon with the result that spectators are frequently falling through the open spaces between adjacent seat boards and foot boards and are injured. Sometimes people who are prone to dizziness are uncomfortably affected upon looking down through these open spaces.

A less hazardous, but nevertheless extremely annoying problem frequently encountered by the spectators, who are seated upon bleachers, results from the fact that various objects, such as hats, coats, purses, scarfs, popcorn boxes, debris, and the like, frequently drop down through the open spaces between adjacent seat boards and foot boards to become tangled in the underframing or lost somewhere on the floor or ground upon which the bleacher structure stands. When a personal article thus lost is of appreciable value, the spectator losing it usually clambers over all of his neighbors to come down from the bleachers and crawl in from the rear to search for and recover the lost article much to his own inconvenience and the inconvenience of all spectators around him.

It is, therefore, the primary object of the present invention to provide a bleacher seat having a unique type of seat and foot board element which is extremely strong, durable, and relatively economical in terms of cost and maintenance.

It is another object of the present invention to provide a bleacher seat having a seat and foot board element which is formed of materials which are much less costly than wood and will not tend to splinter or otherwise deteriorate during use.

It is another object of the present invention to provide a bleacher seat which, when set up for actual use, will present a substantially continuous appearance from top to bottom without hazard-producing spaces between the various seat board and foot board elements, thereby eliminating the danger of accidental falling and, to a very appreciable extent, avoiding the loss or dropping of various objects through the seat and foot board elements to the floor or under-framing beneath.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing—

Figure 1 is a side elevational view of a telescoping bleacher having seat and foot board elements constructed in accordance with and embodying the present invention;

Figure 2 is a fragmentary top plan view of the bleacher;

Figure 3 is an enlarged end elevational view of the seat and foot board element forming a part of the present invention;

Figure 4 is a fragmentary sectional view taken along line 4—4 of Figure 3;

Figure 5 is an end elevational view of a modified form of seat-and-foot board element constructed in accordance with and embodying the present invention; and

Figure 6 is an end elevational view of a further modified

form of seat-and-foot board element constructed in accordance with and embodying the present invention.

Referring now in more detail and by reference characters to the drawing, which illustrates practical embodiments of the present invention, A designates a so-called telescoping bleacher structure consisting of a vertical support frame 1 adapted for rigid attachment or securement to the wall *w* of a gymnasium or auditorium and having a base 2 extending along the floor F. Shiftably disposed within a horizontally extending slide fitting 3 and spaced downwardly from the upper end of the support frame 1 is a horizontal beam 4, the slide fitting 3 being, in turn, rigidly connected upon the upper end of a vertical support member 5. It will, of course, be understood that the bleacher A will be provided with a series of identical frames extending transversely along the wall *w* in direct alignment one with the other depending upon the length of the bleacher and these identical sections are connected together by longitudinally extending horizontal channels 8.

Securely mounted upon the upper end of the frame 1 is a horizontally extending seat board 9 and a narrow longitudinally extending facia board 10, which also serves structurally to connect the several transversely spaced frame sections together in co-operation with the channels 8.

The support member 5 is rigidly provided with a horizontal beam 4 for shiftable engagement in a horizontally extending slide fitting 11 of the next preceding frame element which, except for vertical height, is substantially identical with the frame element directly above and behind it. Thus, as will be seen by reference to Figure 1, the bleacher will consist of a plurality of slidably connected frame elements arranged in tiers, one in front of the other. Any number of such frame elements may be employed depending upon the number of seats and the desired height to which the bleacher A is to be constructed and each of such frame elements includes a horizontal beam 4, a vertical support 5, a roller carriage 6, and is laterally connected to identical companion frame elements by a longitudinally extending connecting channel 8. It will be noted by reference to Figure 2 that the tiered frame elements are preferably laterally offset from each other in descending or ascending order, so that, when the bleacher structure A is telescoped into closed position, the vertical supports will line up in side-by-side relation. Rigidly mounted by means of bolts *b* upon, and extending horizontally between, the laterally aligned horizontal beams 4 of each companion group of frame elements is a unitary tubular beam or seat-and-foot board element B formed or molded from hard-board, pressed wood, fibre-board bonded with a synthetic resin or similar bonding agent, any natural or synthetic structural material which lends itself to shaping, bending, welding, gluing, or riveting, or ferrous and non-ferrous metals.

The seat-and-foot board element B integrally comprises a wide bottom flange 12 curved upwardly at its forward end to form a forward face 13, which is, in turn, at its upper end, curved rearwardly to provide a horizontally extending seat portion 14. Welded or adhesively secured at its rear edge to the rearward edge of the seat portion 14 and curved downwardly and slightly forwardly therefrom is a back panel 15 which is, in turn, curved rearwardly at its lower edge in the formation of a walk-way panel 16 lying directly upon and extending across the rear portion of the bottom flange 12 and being securely welded or adhesively affixed thereto to form virtually a single double-thickness section. At their rearward margins the bottom flange 12 and walk-way panel 16 are bent upwardly in the provision of an upstanding rear flange 17 which extends upwardly with its upper margin lying substantially in the plane of the upper face of the seat portion 14 and is tightly secured to the forward face of the support members 5 by rivets or similar attachment means 17'.

The seat-and-foot board element B thus comprises an elongated tube and inserted at uniformly spaced intervals therein are tightly fitting blocks 18 each peripherally contoured to conform exactly to the interior contour of the tubular portion of the seat-and-foot board element B and being secured in place by staples or any other suitable securement means. It will be noted by reference to Figure 1, that the horizontal width of the bottom flange 14 is such that it will extend substantially across the entire length of the horizontal beam 4 and, when the bleacher A is opened out for actual use, the front face 13 is approximately in line with the forward face of the vertical support 5 and the rear flange 17 is, in turn, substantially adjacent to the forward face of the next succeeding vertical support 5 and, in effect, directly underlies the forward face 13 of the seat-and-foot board element B of the next higher tier or frame element. Thus, there are no open spaces through which objects will normally fall and when the spectator looks down no open spaces will be apparent, the vertical space between the upper edge of each flange 17 and the under side of the seat-and-foot board element B of the next higher tier being effectively out of view. The back panel 15 and the rear flange 17 thus impart a sense of security to the spectator, tend to retain dropped objects, and prevent the spectator from falling when walking along the walk-way panels 16. It will also be noted by reference to Figure 3 that a narrow strip 15' is interposed between the upper edge of the back panel 15 and the rearward marginal portion of the seat portion 14 for improved strength and to permit the edge to be rounded off so as not to catch on spectators' clothing, stockings, and the like.

Furthermore, the vertical height of the front face 13 and rear panel 15 are such that the seat-forming portion 14 will be spaced upwardly above the bottom flange 12 by a distance substantially equal to the vertical distance between the top face of the horizontal beam 4 and the under face of the next succeeding horizontal beam 4. Thus, when the frame elements are shifted from open to closed position, the various seat elements B will nest one directly beneath the other in compact relation.

Inasmuch as the various horizontal beams 4 must, of necessity, have substantial width in order to be sufficiently strong, it is necessary to provide each frame element with a longitudinally extending facia board *f* having a vertical width approximately equal to the space between the several tiers and preferably being contoured along its upper edge to fit snugly against the curve between the bottom flange 12 and front face 13 of the seat-and-foot board element B, so that when the bleacher A is telescoped into closed position it will present a virtually solid front face appearance. In this connection it will, of course, be evident that the lowermost tier will be provided with a facia board *f'* substantially wider than the other facia boards *f* and covering the entire vertical space between the lowermost seat-and-foot board element B and the floor F.

If desired, it is possible to provide a modified form of seat-and-foot board element B', as shown in Figure 5, which comprises a bottom flange 19 formed of a single piece of hard board and turned up at its rearward edge in the provision of a rear flange 20 and turned down at its forward edge in the provision of a front flange 21. Welded or otherwise rigidly secured to the forward face of the front flange 21 and extending upwardly therefrom is a seat element 22 also formed of a single section of hard board and integrally including a front face 23 welded to the forward face of the front flange 21 and extending upwardly therefrom, being curved rearwardly at its upper edge in the provision of a seat portion 24 which is, in turn, curved downwardly at its rearward edge in the provision of a slightly forwardly inclined back face 25, the latter being, in turn, curved rearwardly at its bottom edge in the provision of a flange 26, welded or otherwise adhesively secured upon the rearward portion of the bottom

flange 19. Stapled or otherwise suitably secured at spaced intervals within the tubular portion of the seat-and-foot board element are blocks 18' substantially similar to the previously described blocks 18. This particular type of seat-and-foot board element B' has one advantage over the previously described foot board element B in that the front flange 21 eliminates the necessity of any type of facia board.

It is also possible to provide a further modified form of seat-and-foot board element B'', as shown in Figure 6, which is similar to the previously described seat-and-foot board element B', except that it is provided with a two-ply walk-way 27 and with a front flange 21', which is reversely curved at its lower edge, as at 28, to provide a slight offset against the forwardly presented vertical face of the support member 5 for the purpose of imparting additional strength and durability, as well as an artistic appearance, which, to some purchasers, may be desirable.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the bleacher seat may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. For use with a seating structure, a unitary tubular seat-forming member integrally including two C-shaped and inter-nested sections rigidly secured together along their respective upper and lower margins and being spaced from each other in the region of their respective bight-portions to provide a tubular beam-like element having an upwardly presented portion adapted for use as a seat, said sections being rearwardly elongated along their lower margins in the formation of a two-ply thickness flange extending rearwardly from the beam-like element in downwardly spaced parallel relation to the bight portion and being adapted for use as a walk-way and foot-board, and transversely disposed blocks secured within the tubular seat-forming member.

2. For use with a seating structure of the bleacher type,

a unitary tubular seat-forming beam integrally including two C-shaped and inter-nested sections rigidly secured together along their respective upper and lower margins and including panel-forming sections which are laterally spaced from each other to provide a tubular beam-like element having an upwardly presented portion adapted for use as a seat, said sections being rearwardly elongated along their lower margins in the formation of a two-ply thickness flange extending rearwardly from the beam-like element in downwardly spaced parallel relation to the bight portion and being adapted for use as a walkway and foot-board.

3. For use with a seating structure of the bleacher type, a unitary tubular seat-forming beam integrally including two C-shaped and inter-nested sections rigidly secured together along their respective upper and lower margins and being spaced from each other in the region of their respective bight-portions to provide a tubular beam-like element having an upwardly presented portion adapted for use as a seat, said sections being rearwardly elongated along their lower margins in the formation of a two-ply thickness flange extending rearwardly from the beam-like element in downwardly spaced parallel relation to the bight portion and being adapted for use as a walkway and foot-board, said flange being turned up at its rear edge in the provision of a narrow rim.

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