

Jan. 24, 1961

R. J. MURPHY

2,968,842

TELESCOPIC BLEACHERS AND MOTORIZED MOVERS THEREFOR

Filed May 8, 1957

4 Sheets-Sheet 1

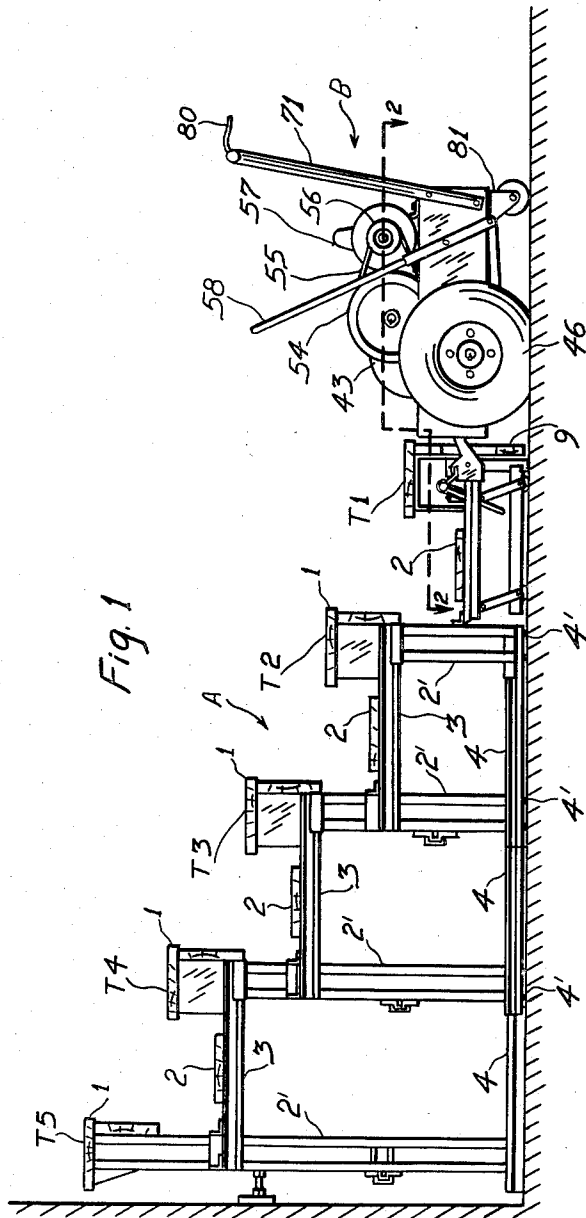


Fig 1

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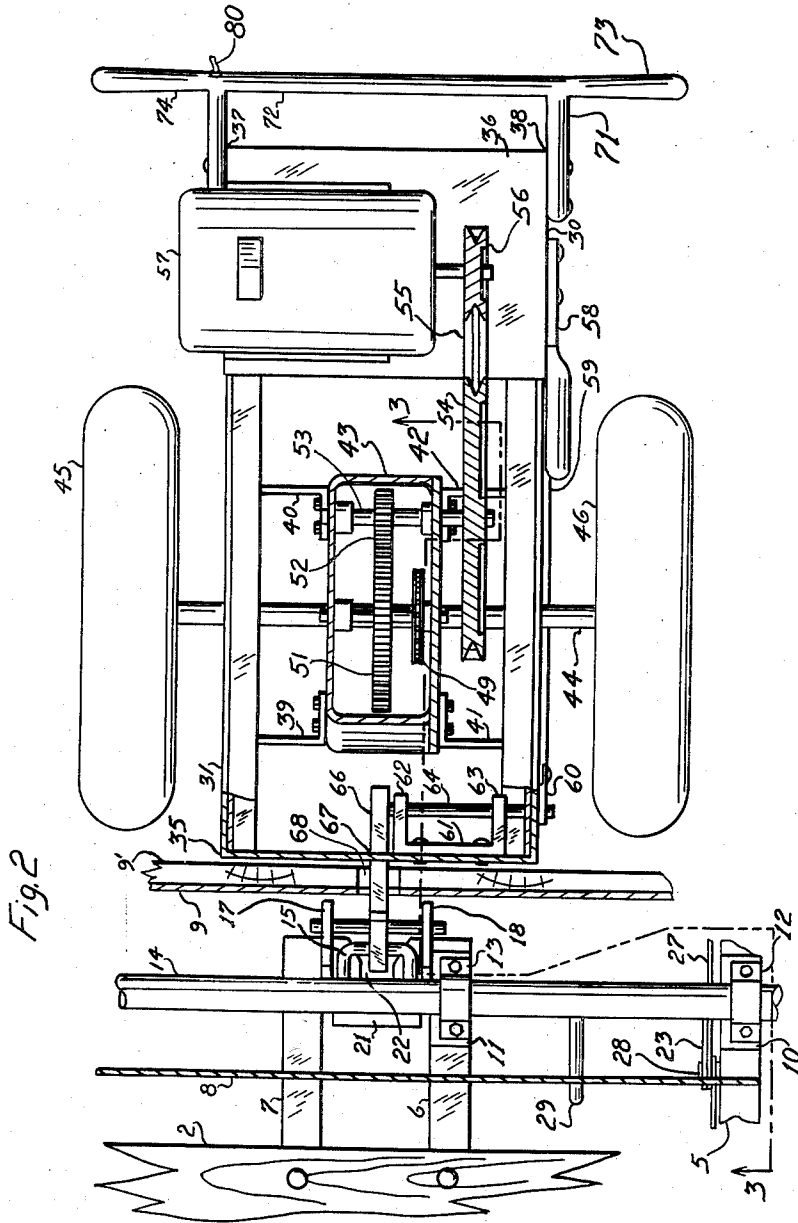


Fig. 2

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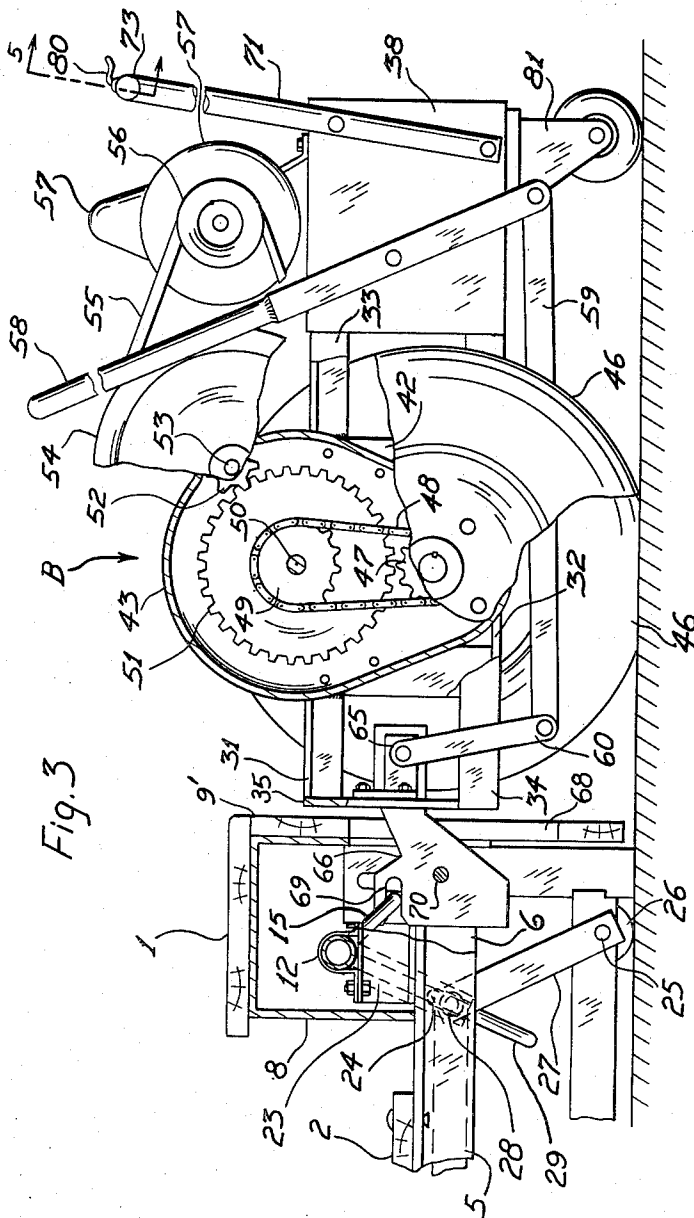


Fig. 3

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4 Sheets-Sheet 4

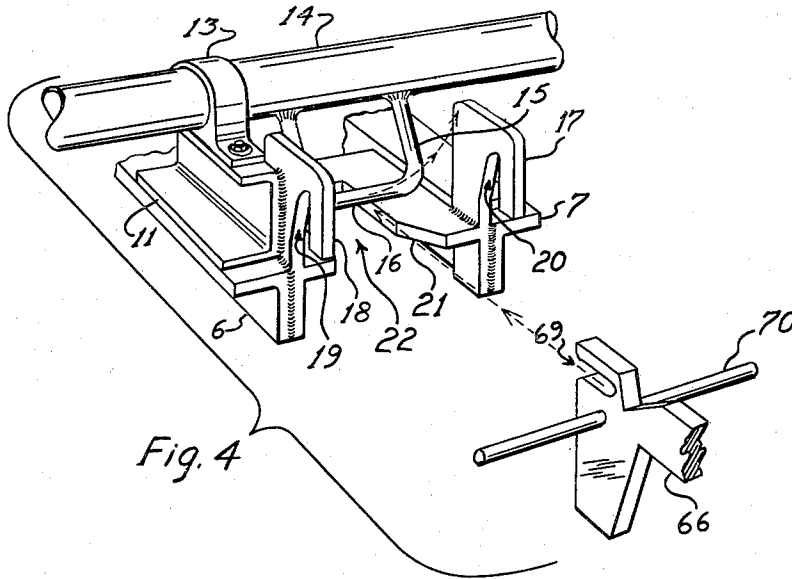


Fig. 4

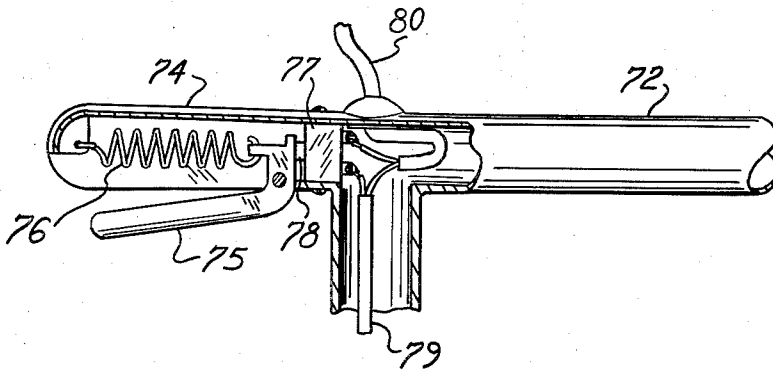


Fig. 5

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TELESCOPIC BLEACHERS AND MOTORIZED MOVERS THEREFOR

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Filed May 8, 1957, Ser. No. 657,847

3 Claims. (Cl. 20—1.126)

This invention relates generally to telescopic seating structures of the type commonly referred to as "gym-seats" and, more particularly, to tractor-type motorized movers for use in combination therewith.

In recent years, it has been a common practice to install in auditoriums and gymnasiums a retractable seating structure for accommodating large numbers of spectators. These seating structures have become known as telescopic bleachers and are normally closed when not in use so as to occupy a minimum of floor space, but can be opened up to afford a tiered seating arrangement. In view of the large load which these bleachers must be capable of safely supporting, such structures are ordinarily designed with exceedingly strong members and consequently are quite heavy. As a result, it often takes several men working together to open or close the bleacher. Furthermore, since many bleacher installations include as many as twenty or more tiers of seats, the extended length of the structure is comparatively great. Therefore, when such a bleacher is manually moved from telescoped to open position by the building attendants, janitors or custodians, these men must apply a precisely equal amount of pulling force, otherwise one end of the bleacher will extend outwardly a greater distance than the other end, resulting in the tiers being unevenly spaced from each other throughout their lengths.

It is, therefore, a primary object of the present invention to provide a power-driven or motorized device for opening and closing telescopic bleachers and similar seating structures.

It is also an object of the present invention to provide a device of the type stated which is capable of locking and unlocking a telescopic bleacher incidental to opening and closing thereof.

It is a further object of the present invention to provide a device of the type stated which is simple and convenient to operate and, therefore, enables one person to open and close telescopic bleachers of any size, height, or weight with a minimum of physical effort.

It is another object of the present invention to provide a device of the type stated which can be operated by workmen having no specialized skill or training.

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.

Broadly speaking, the present invention resides in the combination of a tractor-type motorized mover with a telescopic bleacher or gym-seat having locking means which optionally secures the bleacher in open position, said mover being adapted to lock and unlock such locking means as an incident of opening and closing the bleacher.

A preferred embodiment of the invention is shown in the accompanying drawings, in which—

Fig. 1 is a side elevational view of a telescopic bleacher and mover constructed in accordance with and embodying the present invention;

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Fig. 2 is a fragmentary sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary side elevational view of the bleacher and mover shown in Fig. 2;

Fig. 4 is an exploded fragmentary perspective view showing the manner of interengagement of the bleacher and mover; and

Fig. 5 is a fragmentary front elevational view of the mover.

Referring now in more detail and by reference characters to the drawings, A designates a telescopic bleacher comprising a plurality of successive tiers T¹, T², T³, T⁴, T⁵, each of which comprises a wooden seat-board 1 and a foot-board 2, the respective tiers being supported by vertical posts 2' and joined by upper channels 3, 4, longitudinally slidable with respect to each other so as to permit telescoping of the bleacher A. The lower channels 4 are also provided with floor-contacting rollers 4'. Supporting the front foot-board 2 and extending forwardly therefrom are three spaced parallel channel members 5, 6, 7, and positioned forwardly of the front foot-board 2 and secured to the channel members 5, 6, 7, is a transversely extending U-shaped channel 8 which supports the front seat-board 1. Also secured to the channel 8 at its forward leg 9 and below the front seat-board 1 is a fascia board 9'. Welded or otherwise secured to the forward end of the channel members 5, 6, and below the front seat-board 1 is a pair of spaced brackets 10, 11, having bolted thereto bearing members 12, 13, which journal a hollow tubular shaft 14, provided with a U-shaped ring 15 having a bight portion 16. Secured to the channel members 6, 7, and extending forwardly therefrom is a pair of spaced parallel vertical plates 17, 18, each provided with downwardly opening vertical slots 19, 20, and welded to the plate 17, 18, is a guide plate 21, the latter being downwardly spaced from the shaft 14 and having a guide slot 22 in substantial vertical alignment with the bight portion 16. Also secured to the shaft 14 adjacent the channel 5 is a downwardly and rearwardly inclined link 23, the lower end of which is formed with an elongated slot 24. Provided on the front end of the forward channel 3' is a pin 25 for rotatably supporting a roller 26 and rockably supported on the pin 25 is an upwardly and rearwardly inclined link 27, the upper end of which is provided with a pin 28 for slidable reception within the slot 24. Welded or otherwise secured to the shaft 14 intermediate the channels 5, 6, is a lever 29, for purposes presently more fully appearing.

Provided for cooperation with the telescopic bleacher A is a tractor-like motorized mover B including a chassis-frame 30 formed by four longitudinally extending channel members 31, 32, 33, 34, welded together at their respective ends in the formation of a rectangle. Welded to the frame 30 is a vertical front plate 35 and a horizontal top wall 36, and bolted to the channel members 31, 32, 33, 34, adjacent their ends are short vertical side plates 37, 38. Also bolted to the channel members 31, 32, 33, 34, below the top wall 36 and forwardly of the side plates 37, 38, are four bracket members 39, 40, 41, 42, which support a transmission housing 43. Journalled at its opposite ends in and projecting laterally outwardly from the transmission housing 43 is an axle 44 provided on its projecting ends with a pair of cushion-tired wheels 45, 46. Keyed to the axle 44 within the transmission housing 43 is a sprocket 47 which is operatively connected by a roller chain 48 to a sprocket 49 which is, in turn, fixed upon a jack shaft 50. Also fixed upon the jack shaft 50 is a gear 51 driven by a pinion 52 mounted on an input shaft 53, the latter projecting outwardly from the transmission housing 43 and above the top wall 36. Rigidly mounted on the input shaft 53 is a V-pulley 54, which is operatively connected by a V-belt 55 to a drive pulley

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56 driven by a conventional electric motor 57 bolted to the top wall 36.

Rockably secured intermediate its ends to the side plates 37, 38, is a lever 58 having pivotally secured thereto at its lower end a horizontal connecting link 59, the other end of which is, in turn, pivotally secured to a vertical connecting link 60. Bolted to the inside face of the front plate 35 is a U-shaped bracket 61 having inwardly extending parallel arms 62, 63, which journal a stub-shaft 64, the outer end of which is rigidly connected to the upper end 65 of the vertical connecting link 60. Pinned or otherwise rigidly secured to the inner end of the stub-shaft 64 is a forwardly extending vertical coupling plate 66 which projects through a narrow slot 67 in the front plate 35 and through an opening 68 in the fascia board 9', and is provided with a forwardly opening longitudinal slot 69. Secured at right angles to the coupling plates 66 in downwardly spaced relation to the slot 69 is a horizontal rod 70 of a length slightly greater than the distance between the plates 17, 18.

Swingably mounted on the rear of the frame 30 is a U-shaped hollow tubular steering handle 71 provided on its bight 72 with gripping portions 73, 74, the portion 74 rockably supporting a switch lever 75 biased by a tension spring 76. Also positioned within the bight 72 adjacent the grip portion 74 is a switch 77 having a plunger 78 adapted to be depressed by the switch lever 75. Connecting the motor 57 to the switch 77 is a length of electric cable 79, one end 80 of which can be suitably connected to a source of power (not shown). It will be apparent that as the lever 75 is pulled upwardly, reference being made to Fig. 5, the plunger 78 is depressed and the switch 77 will close so as to energize the motor 57. Upon release of the lever 75, it will move downwardly under the action of the spring 76 and open the switch 77. Also swivelly secured to the rear of the frame 30 on its under side and somewhat centrally of its width is a caster wheel 81 which facilitates steering of the device B.

In use, the bleacher A and its associated forward tier T¹ normally rest on the floor, as shown in Figs. 1 and 3. When it is desired to either open or close the bleacher A, the motor 57 is energized and the mover B driven up to the front of the bleacher A, during which time the lever 58 is in the forward position, as shown in Fig. 3, and the coupling plate 66 is fitted in the slot 22 of the guide plate 21. This permits the U-shaped ring 15 to fit within the slot 69 on the coupling plate 66 and also to cause the rod 70 to be positioned at the mouth of the slots 19, 20. The motor 57 is stopped and the lever 58 is pulled rearwardly over center causing the rod 70 to move to the upper end of the slots 19, 20, and lift the front end of the bleacher A. The motor 57 is then turned on and the bleached A is opened or closed, as the case may be, whereupon the lever 58 is again positioned forwardly, thereby lowering the bleacher A to the floor. If the mover B is unavailable for use, the lever 29 on the shaft 14 may be moved forwardly, in which case the pin 28 on the link 27 moves to the end of the slot 24 on the link 23 so that, in effect, the link 27 forces the front end of the bleacher A upwardly.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the telescopic bleachers and motorized movers therefor may be made and substituted for those herein shown and described without

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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. The combination with a telescopic bleacher and a motorized mover adapted to open and close said bleacher, of spaced vertical plates mounted on the bleacher and being provided with aligned vertical slots, a shaft journaled on said bleacher, means for raising and lowering said bleacher operatively connected to said shaft, a ring rigidly mounted on said shaft and extending between the plates, a coupling plate rockably mounted on the mover and being operatively engageable with the ring, a rod rigidly secured to the coupling plate and being slidable within the aligned slots, and means operatively mounted on said mover for rocking said coupling plate whereby to raise and lower the bleacher.

2. The combination with a telescopic bleacher provided with a floor-gripping support which normally rests on the floor and a motorized mover adapted to open and close said bleacher, of spaced vertical plates mounted on the bleacher and being provided with aligned vertical slots, a shaft journaled on the bleacher and being provided intermediate its ends with a ring member, means for raising said floor-gripping surface from said floor operatively connected to said shaft, a coupling plate rockably mounted on the mover and being provided with a slot for operative engagement with the ring, a rod rigidly secured to the coupling plate and being slidable within the aligned slots, and means operatively mounted on said mover for rocking said coupling plate whereby to raise and lower the bleacher.

3. The combination with a telescopic bleacher provided with floor-gripping surfaces which normally rest on the floor and a motorized mover adapted to open and close said bleacher, of spaced vertical plates mounted on the bleacher and being provided with aligned vertical slots, guide means positioned between said plates, a shaft journaled on the bleacher and being provided intermediate its ends with a ring member, means for raising said floor-gripping surface from said floor for purposes of moving said bleacher operatively connected to said shaft, a coupling plate rockably mounted on the mover and being provided with a slot for operative engagement with the ring in which position the coupling plate is within the guide means, a rod rigidly secured to the coupling plate and being slidable within the aligned slots, and means operatively mounted on said mover for rocking said coupling plate whereby to raise and lower the bleacher.

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