July 4, 1961 R. J. MURPHY 2,990,587

POWER ACTUATED MOVERS FOR TELESCOPING GYMNASIUM SEAT-STRUCTURES

Filed March 20, 1959

3 Sheets-Sheet 1

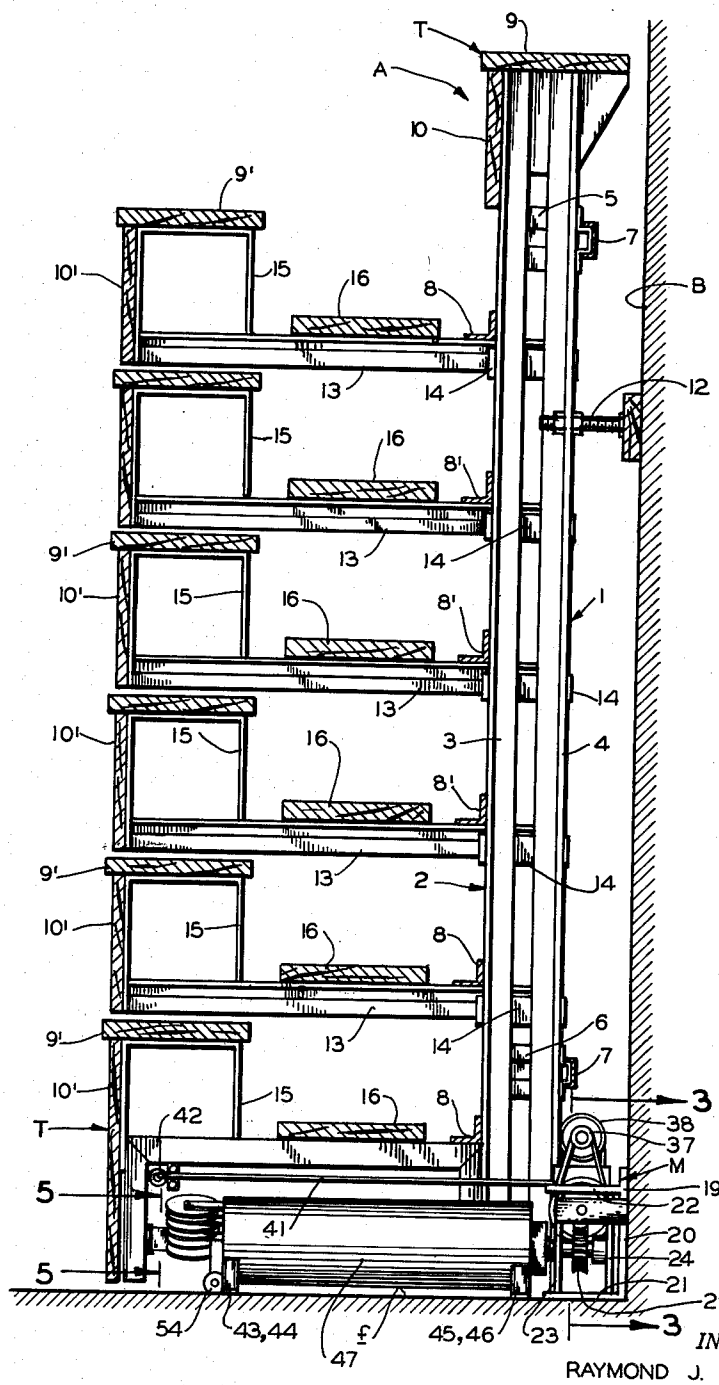


FIG. 1

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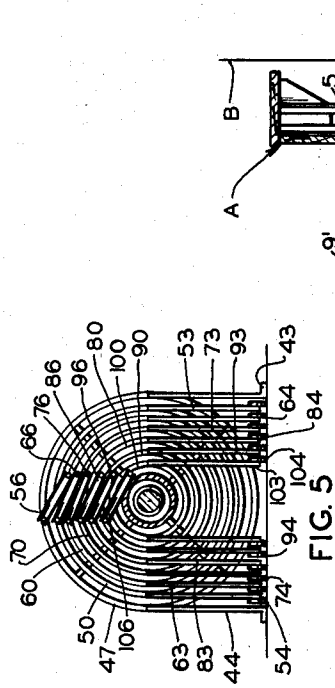


FIG. 5

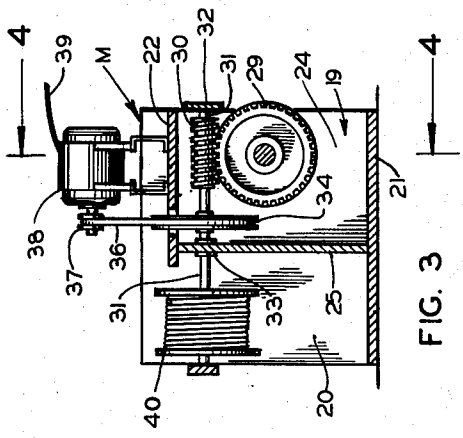


FIG. 3

FIG. 2

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POWER ACTUATED MOVERS FOR TELESCOPING GYMNASIUM SEAT-STRUCTURES

Filed March 20, 1959 3 Sheets-Sheet 3

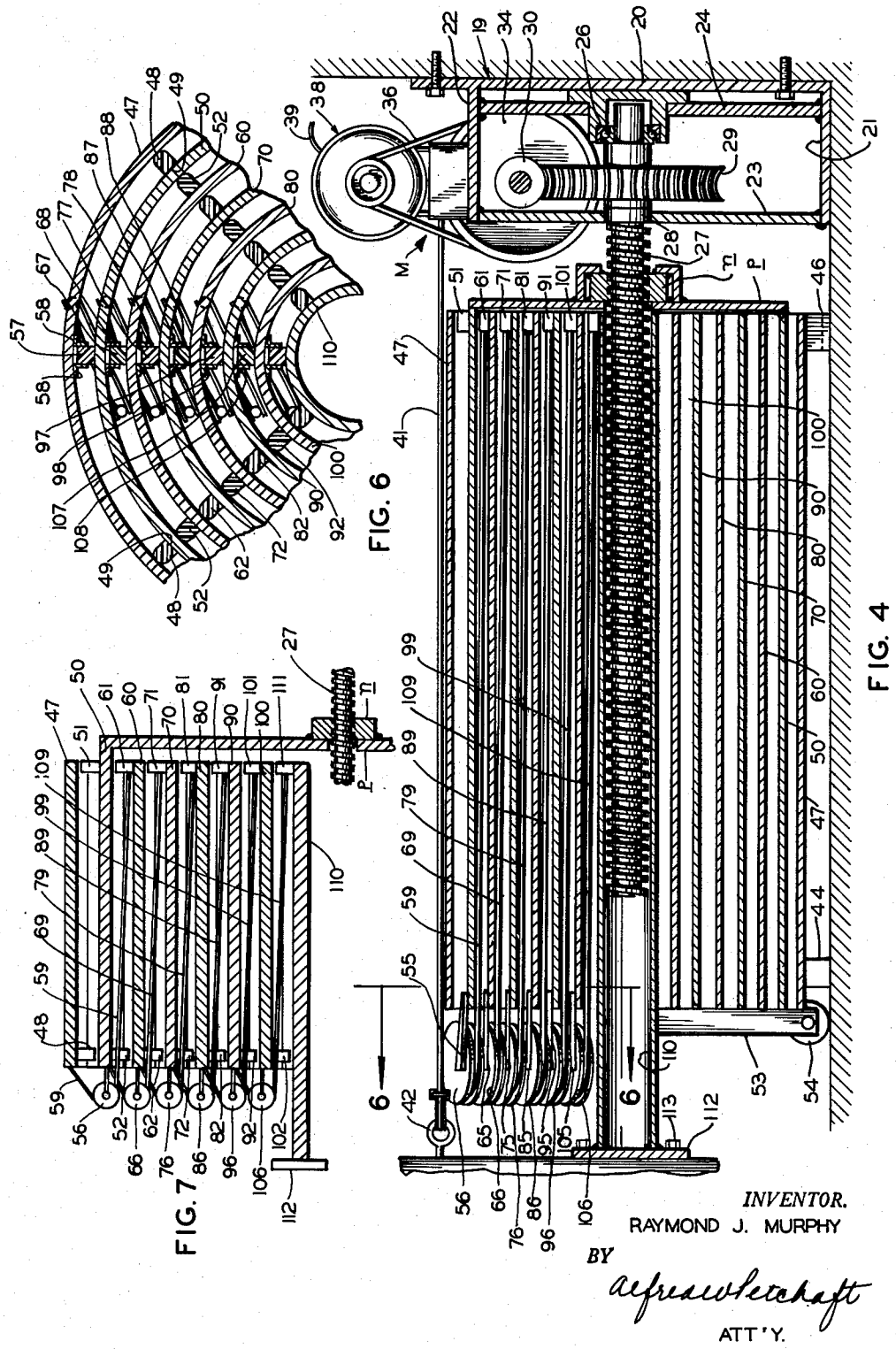


FIG. 4

FIG. 6

FIG. 7

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2,990,587

POWER ACTUATED MOVERS FOR TELESCOPING GYMNASIUM SEAT-STRUCTURES

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3 Claims. (Cl. 20—1.126)

This invention relates in general to certain new and useful improvements in gymnasium equipment and, more particularly, to a power actuated mover for telescoping gymnasium seat-structures and the like.

So-called telescoping seating-structures commonly used in school gymnasiums and similar auditoriums ordinarily consist of a plurality of strong steel-work frames which nest one within the other and carry horizontal seat-boards and foot-boards in suitably spaced relation to provide a tier of bleacher-like seats. Ordinarily, the entire structure is telescoped compactly against the wall and extends outwardly into the gymnasium only a short distance and the several tiers are, in effect, nested one within the other. The dimensions of such seating-structures vary, depending upon the design of the manufacturer and the requirements of the particular gymnasium involved in the installation. For instance, it is more or less conventional practice to build these seating-structures from twelve to eighteen feet in length and comprising from six or seven tiers of seat-boards up to twenty-four tiers, depending upon the size of the gymnasium. It is, of course, true that greater or lesser lengths and other variations in size are occasionally employed.

Obviously, telescoping seating-structures must be ruggedly built in order to support the total weight of the number of persons who will be seated thereon and to withstand the live loads resulting from movement. Consequently, telescoping seating-structures are quite heavy and the combined efforts of several workmen are required to move them from open to closed positions. Moreover, the workmen, as a rule, are not evenly matched in strength, with the result that the structure will not be pulled out in a straight line so as to be truly perpendicular to the wall upon which the seating-structure is attached. This is referred to as "crabbing" and creates serious problems when the seating-structure is one of a series arranged in side-by-side relation along a gymnasium wall because the "crabbing" unit will interfere with the opening up of the adjacent unit.

It is, therefore, the primary object of the present invention to provide a power driven device for moving telescoping gym seats into open and closed positions.

It is another object of the present invention to provide a gym seat mover of the type stated which can readily be adapted for use with, or attached to, various different types of existing telescoping gymnasium seat-structures.

It is a further object of the present invention to provide a gym seat mover which, in telescoped position, is extremely compact and can be readily extended to an open position, the length of which is many times greater than the length of the closed position.

It is also an object of the present invention to provide a gym seat mover of the type stated having a plurality of telescoping sections which are articulated with respect to each other in a very simple, economical and highly efficient manner, so that the entire structure may be shifted from closed to open position or open to closed position at a relatively rapid rate with a minimum of power loss due to friction and similar inefficiencies.

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 drawings (three sheets)—

FIGS. 1 and 2 are side elevational views of a telescoping gym seat equipped with a gym seat mover constructed in accordance with and embodying the present invention respectively showing the device in closed and open positions;

FIG. 3 is a fragmentary transverse sectional view taken along line 3—3 of FIG. 1;

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

FIG. 5 is a sectional view taken along line 5—5 of FIG. 1;

FIG. 6 is a fragmentary sectional view taken along line 6—6 of FIG. 4; and

FIG. 7 is a schematic view of the pulley system forming a part of the present invention, showing said pulley system in closed or retracted position.

Referring now in more detail and by reference characters to the drawings, which illustrate a preferred embodiment of the present invention, A designates a telescoping seating-structure or bleacher which includes a main or rear frame 1 consisting of a suitable plurality of transversely spaced oblong rectangular panels 2, each consisting of spaced parallel uprights 3, 4, cross-connected at their upper ends by means of a connecting plate 5 and at their lower ends by a plate 6. The several panels, only one of which is fully shown in FIGS. 1 and 2, are connected in laterally spaced upright relation by means of elongated channels 7, 8, welded, riveted, or otherwise rigidly attached thereto.

Mounted upon the upper end of, and extending horizontally between the panels 2, is a seat-board 9, and similarly mounted directly beneath, and extending along, the seat-board 9 is a facia board 10. At their lower ends, each of the panels 2 is rigidly welded to a horizontal foot-forming frame which is adapted to rest directly upon the gym floor *f* so that, when each of the panels 2 is rigidly attached to a conventional gymnasium wall or similar masonry structure B, by means of conventional tie bolts 12, the entire top or main seating tier A will be rigid, permanent, and stationary.

Secured to each of the panels 2, in downwardly spaced relation to the seat-board 9, is a forwardly extending horizontal element or beam 13 for slidable track-forming engagement within a slide-fitting 14, which is, in turn, rigidly welded to the upper end of an auxiliary panel section 2', substantially similar to the panel section 2 previously described. Welded to and extending upwardly from the forward end of the beam 13 is a seat-mounting plate 15 for supporting a seat-board 9' and a facia board 10', the latter being substantially similar to the previously described seat-board 9 and facia board 10. Also bolted or otherwise suitably secured to the upper side of the beam 13 and located below and between the seat-boards 9, 9', is a foot-board 16. Thus, when the seating-structure is in operative use, a spectator may be seated upon the seat-board 9 and rest his feet upon the foot-board 16 directly below and in front of the facia board 10, the proportion of these members being such as to form a comfortable seat for the average adult. It will, of course, be understood in this connection that these seat dimensions are ordinarily used in gymnasiums associated with high schools, junior colleges, and similar institutions where young men and women and adults will constitute the body of spectators. If the seating-structure is designed for use in elementary or primary schools where children will be the spectators, it is possible to make the dimensions of the entire structure somewhat smaller to accommodate the smaller users.

Each of the panels 2' corresponds to one of the panels 2 and there are, of course, a similar plurality of such panels 2', each consisting of spaced parallel uprights 3', 4', cross-connected by plates 5', 6', in the same manner as the panels 2. At their lower ends, each of the vertical

panels 2' is welded rigidly to a horizontal downwardly opening U-shaped channel in the provision of an under-frame carriage generally designated by the reference numeral 17, thereby forming a first sliding or telescoping tier T which can be shifted inwardly toward the wall B in vertically aligned underlying relation to the main seating tier A.

As will be noted by reference to FIGS. 1 and 2, the telescopic bleacher of the present invention consists of a plurality of substantially identical tiers T, each consisting of a plurality of laterally aligned panels 2' formed by and having a seat-board 9', a facia board 10', and a foot-board 16, all supported upon an under-frame 17 and laterally connected by tie channels 7' and angle members 8'. Each tier T may include any number of laterally spaced panels 2', depending upon the length of the seating-structure and, similarly, any number of tiers T may be employed, depending upon the number of seats desired and the height to which the structure is to be carried, within reasonable and practical limits.

Each under-frame carriage 17 is resiliently connected to a roller 18 which rests upon the gymnasium floor. When the telescopic bleacher structure is unloaded, each of the panels 2 and its related structure will be resiliently held upwardly with respect to the floor so that the entire seating-structure A will roll freely inwardly and outwardly. However, when appreciable weight, such as the weight of a spectator, is brought to bear on the structure, the entire structure will shift downwardly a short distance with respect to the rollers 18 and come to rest immovably in stationary position on the floor so that the weight of the spectators will thus be carried through the panels 2, 2', into the under-frames 17, which, in turn, rest directly upon the floor.

Provided for co-operation with the seating-structure A is a so-called seat mover M which comprises a rectilinear housing 19 fabricated in the usual manner from steel-plate and including a vertical upright back wall 20, a horizontal base plate 21, a top plate 22, a front wall 23, an intermediate rear wall 24, and a vertical side plate 25, the latter being located about midway between the vertical margins of the back wall 20 and being perpendicular thereto. Rigidly secured between the walls 20, 24, and projecting forwardly through the latter is a thrust bearing 26 operatively supporting the rear end of a horizontal lead screw 27, which is also journaled in and extends through a bearing 28 mounted in the wall 23. Keyed upon the portion of the lead screw 27 which extends between the walls 23, 24, is a worm gear 29 adapted for meshing engagement with a worm 30 pinned or otherwise fastened upon a drive shaft 31 journaled at its end in a bearing 32 and also extending through a bearing 33 mounted in the side plate 25. The shaft 31 is provided with a pulley 34 connected by a belt 36 to a drive pulley 37 operatively driven by an electric motor 38 mounted by any suitable conventional means upon the top plate 22. The electric motor 38 is provided with a conventional electrical connector cord 39 by which it may be connected to any available source of electrical power and switch control (not shown). The switch control can, of course, be located at a convenient position either proximate to or remote from the seating-structure A.

Keyed upon the shaft 31 for rotation therewith is a cable-drum 40 adapted for receiving a plurality of turns of a cable 41 which is wrapped therearound and connected at its remote end in an eye 42 secured in the forwardmost tier T, as shown in FIG. 4 and for purposes presently more fully appearing.

Rigidly mounted upon the floor *f*, by means of leg-like brackets 43, 44, 45, 46, and projecting horizontally forwardly from the housing 19, is an elongated cylindrical guide member 47 formed of relatively strong structural tubing and provided upon its inner face adjacent its forward end with a plurality of slide blocks 48 having downwardly presented horizontal slide faces 49.

Slidably telescoped within, and extending co-axially through the guide member 47 is a tube 50 provided upon is outer face adjacent its rear end with slide blocks 51 which bear against the inner face of the guide member 47 and are aligned lengthwise with the slide blocks 48 so as to abut endwise in the manner of stops when the tube 50 is fully extended, as will presently be described. Upon its inner face adjacent its forward end, the tube 50 is provided with slide blocks 52 which are radially aligned with the slide blocks 48. Also at its forward end, the tube 50 is provided with depending legs 53 having floor-engaging rollers 54, and welded to the tube 50 is a forwardly projecting plate 55 having a pulley 56 operatively mounted thereon for rotation in an angular plane. Formed integrally with, and extending closure-wise across, the rear end of the tube 50 is a back plate *p* having a central nut *n* which is threadedly mounted on the lead screw 27. Also rigidly fastened to the upper face of the tube 50 and extending axially therealong is a spline 57 which is slidably disposed between slide-forming angle-sections 58 welded upon and depending from the inner face of the guide member 47 to prevent relative rotation between the tube 50 and the guide member 47. Trained around the pulley 56 is a cable 59 attached at one end to the forward end of the guide member 47 and at its other end to a smaller tube 60 which is, in turn, slidably telescoped within the tube 50.

The tube 60 is provided upon its outer face adjacent its rear end with slide blocks 61 which bear against the inner face of the tube 50 and are aligned lengthwise with the slide blocks 52 so as to abut endwise thereagainst in the manner of stops when the tube 60 is fully extended with respect to the tube 50. Upon its inner face adjacent its forward end, the tube 60 is provided with slide blocks 62 which are radially aligned with the slide blocks 52. Also at its forward end, the tube 60 is provided with depending legs 63 having floor-engaging rollers 64, and welded to the tube 60 is a forwardly projecting plate 65 having a pulley 66 operatively mounted thereon for rotation in an angular plane. Also rigidly fastened to the upper face of the tube 60 and extending axially therealong is a spline 67 which is slidably disposed between slide-forming angle-sections 68 welded upon and depending from the inner face of the tube 50 to prevent relative rotation between the tube 60 and the tube 50. Trained around the pulley 66 is a cable 69 attached at one end to the forward end of the tube 50 and at its other end to a smaller tube 70, which is, in turn, slidably telescoped within the tube 60.

The tube 70 is provided upon its outer face adjacent its rear end with slide blocks 71 which bear against the inner face of the tube 60 and are aligned lengthwise with the slide blocks 62 so as to abut endwise thereagainst in the manner of stops when the tube 70 is fully extended with respect to the tube 60. Upon its inner face adjacent its forward end, the tube 70 is provided with slide blocks 72 which are radially aligned with the slide blocks 62. Also at its forward end, the tube 70 is provided with depending legs 73 having floor-engaging rollers 74, and welded to the tube 70 is a forwardly projecting plate 75 having a pulley 76 operatively mounted thereon for rotation in an angular plane. Also rigidly fastened to the upper face of the tube 70 and extending axially therealong is a spline 77 which is slidably disposed between slide-forming angle-sections 78 welded upon and depending from the inner face of the tube 60 to prevent relative rotation between the tube 70 and the tube 60. Trained around the pulley 76 is a cable 79 attached at one end to the forward end of the tube 60 and at its other end to a smaller tube 80, which is, in turn, slidably telescoped within the tube 70.

The tube 80 is provided upon its outer face adjacent its rear end with slide blocks 81 which bear against the inner face of the tube 70 and are aligned lengthwise with the slide blocks 72 so as to abut endwise thereagainst in the manner of stops when the tube 80 is fully extended with

respect to the tube **70**. Upon its inner face adjacent its forward end, the tube **80** is provided with slide blocks **82** which are radially aligned with the slide blocks **72**. Also at its forward end, the tube **80** is provided with depending legs **83** having floor-engaging rollers **84**, and welded to the tube **80** is a forwardly projecting plate **85** having a pulley **86** operatively mounted thereon for rotation in an angular plane. Also rigidly fastened to the upper face of the tube **80** and extending axially therealong is a spline **87** which is slidably disposed between slide-forming angle-sections **88** welded upon and depending from the inner face of the tube **70** to prevent relative rotation between the tube **80** and the tube **70**. Trained around the pulley **86** is a cable **89** attached at one end to the forward end of the tube **70** and at its other end to a smaller tube **90**, which is, in turn, slidably telescoped within the tube **80**.

The tube **90** is provided upon its outer face adjacent its rear end with slide blocks **91** which bear against the inner face of the tube **80** and are aligned lengthwise with the slide blocks **82** so as to abut endwise thereagainst in the manner of stops when the tube **90** is fully extended with respect to the tube **80**. Upon its inner face adjacent its forward end, the tube **90** is provided with slide blocks **92** which are radially aligned with the slide blocks **82**. Also at its forward end, the tube **90** is provided with depending legs **93** having floor-engaging rollers **94**, and welded to the tube **90** is a forwardly projecting plate **95** having a pulley **96** operatively mounted thereon for rotation in an angular plane. Also rigidly fastened to the upper face of the tube **90** and extending axially therealong is a spline **97** which is slidably disposed between slide-forming angle-sections **98** welded upon and depending from the inner face of the tube **80** to prevent relative rotation between the tube **90** and the tube **80**. Trained around the pulley **96** is a cable **99** attached at one end to the forward end of the tube **80** and at its other end to a smaller tube **100**, which is, in turn, slidably telescoped within the tube **90**.

The tube **100** is provided upon its outer face adjacent its rear end with slide blocks **101** which bear against the inner face of the tube **90** and are aligned lengthwise with the slide blocks **92** so as to abut endwise thereagainst in the manner of stops when the tube **100** is fully extended with respect to the tube **90**. Upon its inner face adjacent its forward end, the tube **100** is provided with slide blocks **102** which are radially aligned with the slide blocks **92**. Also at its forward end, the tube **100** is provided with depending legs **103** having floor-engaging rollers **104**, and welded to the tube **100** is a forwardly projecting plate **105** having a pulley **106** operatively mounted thereon for rotation in an angular plane. Also rigidly fastened to the upper face of the tube **100** and extending axially therealong is a spline **107** which is slidably disposed between slide-forming angle-sections **108** welded upon and depending from the inner face of the tube **90** to prevent relative rotation between the tube **100** and the tube **90**. Trained around the pulley **106** is a cable **109** attached at one end to the forward end of the tube **90** and at its other end to a smaller tube **110**, which is, in turn, slidably telescoped within the tube **100**.

The tube **110** is provided upon its upper face adjacent its rear end with slide blocks **111** which bear against the inner face of the tube **100** and are aligned lengthwise with the slide blocks **102** so as to abut endwise in the manner of stops when the tube **110** is fully extended with respect to the tube **100**. The tube **110** is substantially longer than the previously described tubes **50**, **60**, **70**, **80**, **90**, and **100** and projects axially outwardly at its forward end for a substantial distance beyond the pulleys **56**, **66**, **76**, **86**, **96**, and **106**, and being welded at such forward end to an annular flange **112** which is fastened by means of bolts **113** to the forwardmost tier T of the seating-structure A, substantially as shown in FIG. 4.

The legs **53**, **63**, **73**, **83**, **93**, and **103** are disposed in inwardly spaced relation to each other so that, when the gym seat mover M is in fully telescoped or closed position, these legs **53**, **63**, **73**, **83**, **93**, and **103** will be nested in laterally aligned relation, as shown in FIG. 5. Similarly, the pulleys **56**, **66**, **76**, **86**, **96**, and **106** will be nested in vertically spaced relation one beneath the other. By reason of the angulation of the pulleys, the cables **59**, **69**, **79**, **89**, **99**, and **109** will run forwardly in the space between one pair of tubes and downwardly into the space between the next succeeding pair of tubes, as best seen in FIG. 6.

In use, the switch control, which, as above pointed out, may be located in any conventional position within the gymnasium and is of the conventional forward-and-reverse type, can be manually actuated to energize the motor **38**. Assuming that the seating-structure A is in closed positon, as shown in FIG. 1, the switch control will be closed in the appropriate manner so as to cause the motor **38** to rotate in such direction as to impart a counter-clockwise rotation to the cable-drum **40** (reference being made to FIG. 4). The cable **41** will, thereupon, be unwound from the cable-drum **40**. At the same time, the lead screw **27** will be rotated in an appropriate direction so as to translate the nut *n* and the tube **50** forwardly in relation to the guide member **47**. Thereupon, the pulley **56** will move forwardly. As will be seen by reference to FIG. 7, the cable **59** which is trained around the pulley **56** is attached at one end to a cylindrical guide member **47** and at its other end to the slide block **61** of the tube **60**. Consequently, as the tube **50** and its associated pulley **56** moves outwardly the cable **59** will be pulled around the pulley **56** and the tube **60** will be propelled outwardly in relation to the tube **50**.

Similarly, as the tube **60** is propelled outwardly, the pulley **66**, which is carried thereby, will also move forwardly. The cable **69** which is trained around the pulley **66** is attached at one end to a cylindrical guide member **57** and at its other end to the slide block **71** of the tube **70**. Consequently, as the tube **60** and its associated pulley **66** moves outwardly, the cable **69** will be pulled around the pulley **66** and the tube **70** will be propelled outwardly in relation to the tube **60**.

Similarly, as the tube **70** is propelled outwardly, the pulley **76**, which is carried thereby, will also move forwardly. The cable **79** which is trained around the pulley **76** is attached at one end to a cylindrical guide member **67** and at its other end to the slide block **81** of the tube **80**. Consequently, as the tube **70** and is associated pulley **76** moves outwardly, the cable **79** will be pulled around the pulley **76** and the tube **80** will be propelled outwardly in relation to the tube **70**.

Similarly, as the tube **80** is propelled outwardly, the pulley **86**, which is carried thereby, will also move forwardly. The cable **89** which is trained around the pulley **86** is attached at one end to a cylindrical guide member **77** and at its other end to the slide block **91** of the tube **90**. Consequently, as the tube **80** and its associated pulley **86** moves outwardly, the cable **89** will be pulled around the pulley **86** and the tube **90** will be propelled outwardly in relation to the tube **80**.

Similarly, as the tube **90** is propelled outwardly, the pulley **96**, which is carried thereby, will also move forwardly. The cable **99** which is trained around the pulley **96** is attached at one end to a cylindrical guide member **87** and at its other end to the slide block **101** of the tube **100**. Consequently, as the tube **90** and its associated pulley **96** moves outwardly, the cable **99** will be pulled around the pulley **96** and the tube **100** will be propelled outwardly in relation to the tube **90**.

Similarly, as the tube **100** is propelled outwardly, the pulley **106**, which is carried thereby, will also move forwardly. The cable **109** which is trained around the pulley **106** is attached at one end to a cylindrical guide member **97** and at its other end to the slide block **111** of the tube **110**. Consequently, as the tube **100** and its associated pulley **106** moves outwardly, the cable **109** will

be pulled around the pulley **106** and the tube **110** will be propelled outwardly in relation to the tube **100**, thereby opening the seating-structure to fully extended position.

The cable **41**, of course, is merely reeled off of the drum **34** in timed relation to the extension of the tubes **50**, **60**, **70**, **80**, **90**, and **100**, at a linear rate equal to the linear rate of extension of such tubes **50**, **60**, **70**, **80**, **90**, and **100**, so as not to interfere with or prevent the extending movement of the seating-structure A. The cable **41**, however, performs its major function when the seating-structure A is being shifted from opened position to closed position because under the latter circumstance, it is the cable **51** which supplies the retractive force and causes the tubes **50**, **60**, **70**, **80**, **90**, and **100**, to follow along into fully telescoped position one with the other. Of course, the screw **27**, being also driven in timed relation to the drum **34**, will retract the tube **50** in timed relation to the inward movement of the cable **41**, but all of the other tubes **60**, **70**, **80**, **90**, and **100**, follow along by reason of the fact that the inward or retractive force applied by the cable **41** acts through the forwardmost seat section upon the tube **110**.

When it is necessary or desirable to withdraw the seating structure A into closed position, the switch control is manually pressed to reverse the motor **38**, thereby turning the cable-drum **40** in the opposite direction so that the end of the cable **41** which is attached to the eye **42** will be pulled in. The reverse rotation of the motor **38** will, of course, reverse the rotation of the lead screw **27** and retract the several tubes into nested or closed position. When the seating-structure A reaches the fully nested position shown in FIG. 1, the switch control is manually released and the motor **38** will, accordingly, stop rotation.

The seat mover M is not limited to use with the particular type of telescoping seating-structure A as above described, but is equally capable of being adapted to practically all types of folding gymnasium seating-structures which can be pushed outwardly from a closed position against the wall to an open position extending outwardly into the gymnasium. In the telescoping seating-structure A above described, the various tiers T nest one within the other when the seating-structure A is in closed position and, in such closed position, the various seat-boards **9**, **9'**, are in vertical registration or, at least, in vertically registering groups, depending upon the size and number of seats employed. Some other types of folding seating-structures, which are commercially available, close up accordion-wise so that the various vertical posts or structural support-frames lie one in front of the other. The seat mover M of the present invention is quite universal in the sense that it can be utilized in connection with practically all existing types of telescoping and folding gymnasium seating-structures, inasmuch as it is relatively low, flat and does not take up a great deal of space in comparison to the overall size of the seating-structures with which it can be utilized.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the power actuated movers for telescoping gymnasium seat-structures 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 foldable seating-structure adapted to shift across a floor or similar support from a closed position against a wall to an open position in which the seating-structure extends outwardly from the wall, a power mover comprising a housing adapted to be mounted in stationary relation to the wall, a plurality of horizontally disposed telescoping tubular members shiftably mounted one within another, each sucessive tubular member being substantially smaller in diametral size than the next adjacent tubular member within which it is telescoped, slide-bearing means interposed between each of the tubular members whereby to maintain said tubular members in annularly spaced concentric alignment and capable of moving slidably one within the other, one of said members being adapted to be attached to the seating-structure and another of said members being mounted in stationary relation to the housing, each of said tubular members being provided at its outer end with a pair of diametrally opposed vertical legs, each leg being provided at its lower end with a wheel for supporting such tubular member upon the floor as it shifts outwardly in relation to the other tubular members, and power-driven means for shifting the tubular members relatively to one another.

2. For use with a foldable seating-structure adapted to shift across a floor or similar support from a closed position against a wall to an open position in which the seating-structure extends outwardly from the wall, a power mover according to claim 1 in which the wheeled legs of the several tubular members are spaced laterally from one another so as to be disposed in side-by-side relation when the tubular members are telescoped one within another.

3. For use with a foldable seating-structure adapted to shift across a floor or similar support from a closed position against a wall to an open position in which the seating-structure extends outwardly from the wall; a power mover comprising a housing adapted to be mounted in stationary relation to the wall, a stationary member mounted in stationary relation to the housing and projecting forwardly therefrom, a plurality of telescoping tubular members shiftably mounted within the stationary member and one within another, each successive tubular member being substantially smaller in diametral size than the next adjacent tubular member within which it is telescoped, a set of slide-bearing members interposed between each tubular member and the tubular member within which it is telescoped whereby to support said tubular members one within the other in concentrically spaced slidable relation, said slide-bearing members within each set being disposed in a uniformly spaced annular series, one of said tubular members being adapted to be attached to the seating-structure, a pulley operatively mounted on and projecting outwardly from the outer end of each of the tubular members, a short cable operatively threaded around each of said pulleys and being attached at its opposite ends to the tubular members on opposite sides of the tubular members on which such pulley is mounted, a drum operatively mounted on the housing, a long cable fastened at one end to the seating-structure and at the other end to the drum, said long cable being wound up on said drum for a substantial portion of its length when the mover is in closed position, said power-operated means also being operatively associated with the drum for rotating the drum in timed relation to the outward shifting movement of the tubular members whereby to reel out the long cable at a linear rate equal to the linear rate of extension of the tubular members, said power-operated means associated operatively with said drum and with one of said tubular members for shifting it outwardly in relation to the housing and thereby also shifting the other tubular members with respect to each other for moving said seating-structure from closed to open position, and floor-engaging means associated with each of said tubular members for supporting it upon the floor as it shifts outwardly in relation to the other tubular members.

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