Jan. 23, 1968 R. S. CURRA, JR 3,364,637

GYMNASIUM STAND

Filed March 25, 1964 2 Sheets-Sheet 1

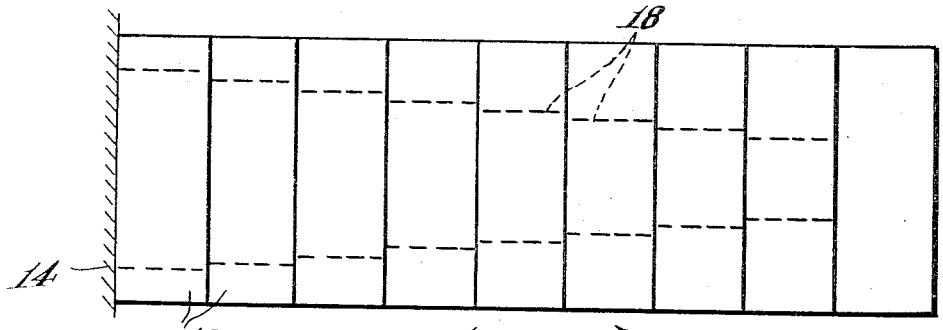


Fig. 1

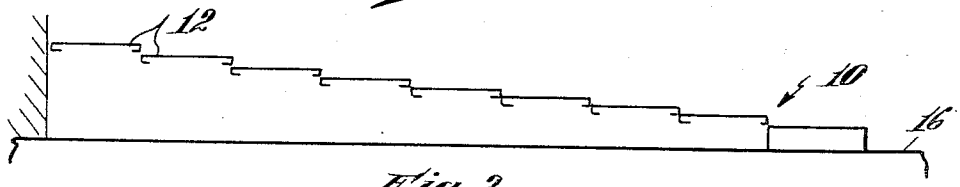


Fig. 2

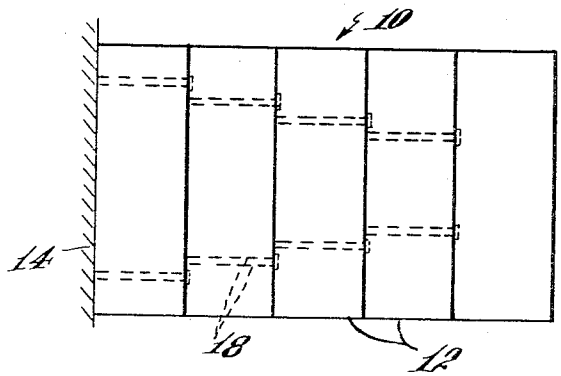


Fig. 3

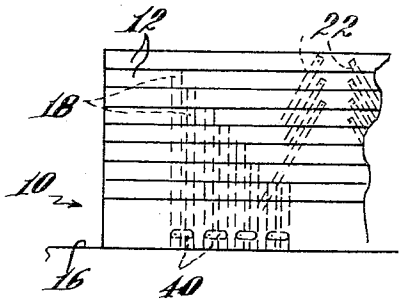


Fig. 6

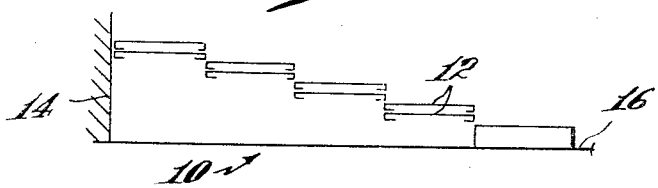


Fig. 4

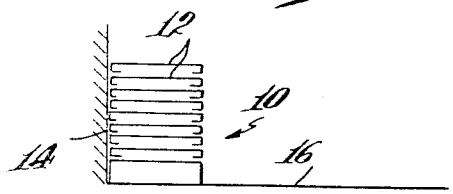


Fig. 5

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GYMNASIUM STAND

Filed March 25, 1964 2 Sheets-Sheet 2

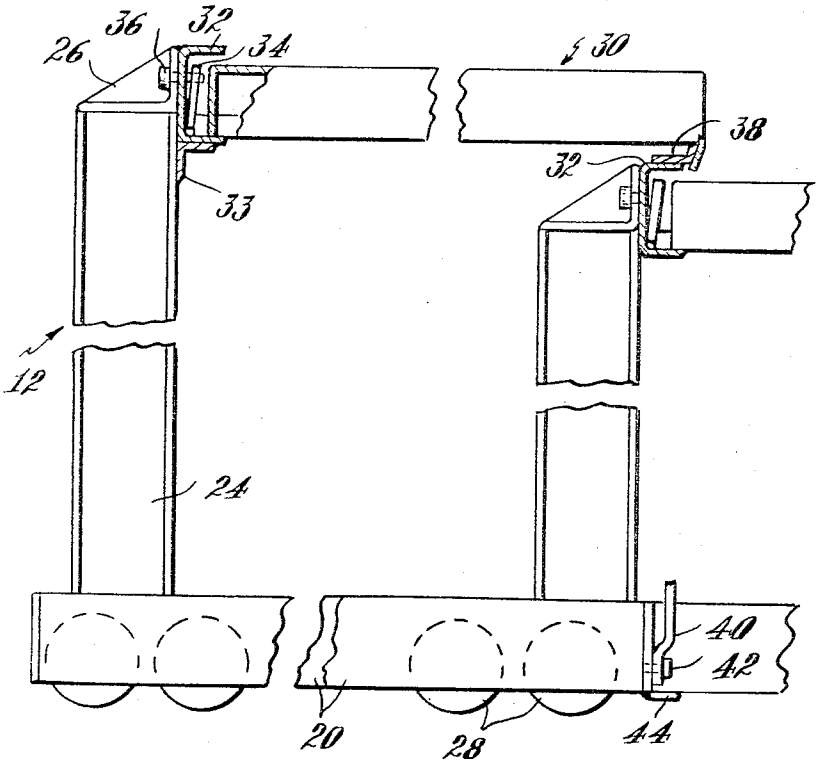


Fig. 7

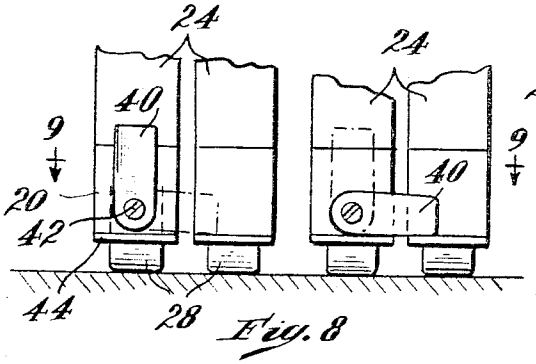


Fig. 8

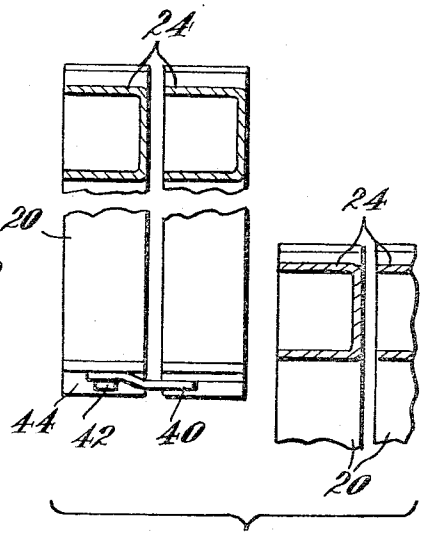


Fig. 9

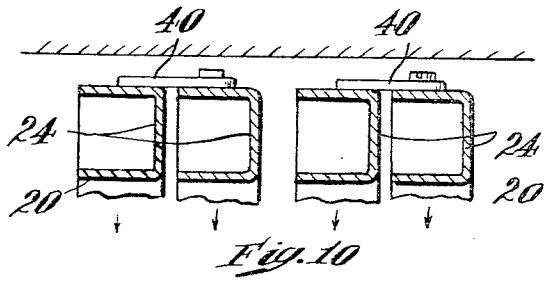


Fig. 10

United States Patent Office 3,364,637 Patented Jan. 23, 1968

3,364,637

GYMNASIUM STAND

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Filed Mar. 25, 1964, Ser. No. 354,619
4 Claims. (Cl. 52—183)

This invention relates to stands comprising tiers of decks for seating persons attending athletic contests, rallies, entertainment, and the like, and more especially to stands designed for indoor use as in gymnasiums, auditoriums, and halls.

In order to clear the floor for use of substantially its entire area when the stands are not needed, such stands are conventionally comprised of a plurality of supporting structures which may be telescoped to store the decks substantially vertically subjacent each other against the wall. As heretofore designed, stands of this kind have only two functional positions, either the supporting structures are completely telescoped for storage, or completely extended for use. Consequently, if more floor space is required for a particular event than would be available with the stands fully extended, resort must be had to a larger hall or the stands must be stored and other seating facilities used. Such stands are also limited to the same heightwise rise between decks. Hence the advantage of greater elevation between successive rows of seats to afford a better view cannot be had without sacrifice of every other row of seats.

The principal objects of this invention are to provide an improved stand of the foregoing kind which, by partial extension, will make available a smaller number of rows of seats for use; to provide a structure in which the partial extension can be achieved without modification or dismantling of the structure and/or the seats; to provide a structure which, when partially extended, will increase the elevation between successive rows of seats; and to provide means for use with conventional stands of the foregoing kind which will enable such partial extension, which is simple, which is readily operable, and which in no way interferes with normal use of the stand.

As herein illustrated, the invention resides in the combination with a stand comprising a plurality of interconnected supporting structures arranged, by relative movement of successive structures, to be telescoped substantially vertically subjacent each other for storage and to be extended in stepped relation for use, of means operative to prevent extension of one of the structures of each pair of structures relative to the other structure of the pair without interfering with the relative movement of successive pairs of structures or of relative movement of the structures of other pairs of structures thus enabling controlling extension of the stand. As illustrated, lugs are pivotally secured to parts of the outer structure of each pair of adjacent structures which are rotatable into positions of engagement with parts of the inner structure of the pair and, by such engagement, prevent extension of the inner structure relative to the outer structure without interfering with extension of the next pair of structures inwardly thereof.

The invention will now be described in greater detail with reference to the accompanying drawings wherein:

FIG. 1 is a diagrammatic plan view of a section of a stand showing the relation of the legs of successive supporting structures in dotted lines;

FIG. 2 is a diagrammatic end elevation of the stand shown in FIG. 1;

FIG. 3 is a diagrammatic plan view of the stand shown in FIG. 1, partially extended in accordance with this invention;

FIG. 4 is a diagrammatic end elevation of the stand shown in FIG. 3 partially extended;

FIG. 5 is a diagrammatic end elevation of the stand with the supporting structures telescoped against the wall;

FIG. 6 is a diagrammatic front elevation of the stand with the supporting structures telescoped against the wall;

FIG. 7 is a fragmentary end elevation of the stand showing a pair of supporting structures with the inner one fully extended relative to the outer one and with the locking lug on the outer one in an upright inoperative position;

FIG. 8 is a fragmentary front elevation taken at one side of the center line of the stand showing portions of two pairs of supporting structures and the inoperative and operative positions of the locking lugs on the outer supporting structure of each pair of structures;

FIG. 9 is a transverse section taken on the line 9—9 of FIG. 8; and

FIG. 10 is a horizontal section through the legs of two pairs of structures showing an alternative mounting of the locking lugs.

Referring to the drawings (FIGS. 1 and 2), there is shown diagrammatically a single section of stand **10** fully extended with the supporting structures **12** which may comprise decks or bench-type seats arranged in stepped relation extending from a wall **14** to which the stand is connected, forwardly over the floor **16** of the hall or auditorium in which it is installed. In FIG. 1, the dotted lines **18** represent the positions of pairs of supporting legs for the successive structures. The supporting legs are not only progressively shorter heightwise but the distance between legs is progressively shorter widthwise as clearly shown in FIG. 6, so as to permit telescoping the sections into substantially subjacent relation against the wall as illustrated in FIGS. 5 and 6, in which the spaced legs of the structures are stored within each other. When stored, all of the legs are abreast along a single front.

It is the purpose of this invention to provide means for limiting the extension of the stand as shown diagrammatically in plan and elevation in FIGS. 3 and 4 by retaining every other supporting structure and the deck and seats supported thereby stored under the preceding supporting structure. This partial extension provides a stand with stepped decks of full width (FIG. 4) extending half the distance from the wall that the stand would have extended if fully extended, thereby affording greater floor space and providing elevation between decks which is greater than the elevation between stepped decks when the stand is fully extended. The partial extension is attained, as will clearly appear hereinafter, by providing means for preventing extension of one of each pair of supporting structures relative to the other.

Each supporting structure **12** (FIG. 7) comprises a base frame made up of spaced parallel beams **20—20**, vertically mounted legs **24—24** connected at their lower ends to the rear ends of the beams **20—20** and at their upper ends to a transverse beam **26**, and diagonal braces **22—22** which extend from the beam **26** downwardly and outwardly to the lower ends of the legs **24—24** in conventional fashion. The heights of the legs **24—24** and the distance between them are successively shorter from the back of the stand to the front so that the supporting structures nest when telescoped against the wall. Wheels **28** are provided for rolling the supporting structures **12** into and out of telescoping relation with respect to each other. Each supporting structure supports in cantilever fashion a deck

or seat 30, the rear side of which rests on the lower flange of a channel beam 32. The lower side of the channel beam 32 rests on a transverse angle member 33 secured to the legs 24—24 and its back is welded in part to the beam 26 and in part to the upper ends of the legs 24—24. To enable adjustment of the level of the deck 30 a bracket plate 34 is secured to the rear side of the deck at a forwardly inclined angle to the beam 32 and bolts 36 are inserted through holes in the beams 26 and 32 for threaded engagement with the bracket plate 34 so that, by turning the bolts 36, the plate 34 can be moved relative to the beam 32 and hence tip the deck upwardly or downwardly. At the forward edge or side of the deck there is secured a bearing plate 38 which is adapted, by engagement with the upper flange of the beam 32 on the supporting structure forwardly thereof, to take part of the load.

In accordance with this invention, the extension of the supporting structures of the stand is limited by lugs 40 (FIGS. 7, 8 and 9) which are rotatable from positions of attachment to the front ends of the beams 20 of one supporting structure into engagement with the front ends of the beams 20 of the next supporting structure inwardly thereof. In FIGS. 8 and 9, the front ends at one side, only, of two pairs of structures are shown with the lugs 40 pivotally mounted on the outer structure of each pair for rotation inwardly therefrom into engagement with the structure inwardly thereof. Since the base of each supporting structure has two beams 20—20, there will be two lugs 40, one on the forward end of each of the beams 20. Bolts 42, secured in the forward ends of the beams 20, support the lugs 40 for rotation from their vertical inoperative positions, as shown in FIG. 8, to horizontal positions, extending from the beams to which they are pivoted across the forward ends of the beams of the supporting structures next thereto thus preventing the inner supporting structure of each pair of structures from being moved forwardly relative to the outer structure of the pair, but without interfering with restoring the inner supporting structure to a telescoped position for storage or with extending pairs of structures relative to each other. Flanges 44 at the forward ends of the beams 20 support the lugs in their horizontal positions.

By rotating all of the lugs into operative position when the structures are nested, the stand will be restricted when extended to half of its full length. It is possible, of course, by leaving some of the locking lugs in an inoperative position to control the extent of extension to whatever length is desired. Whenever one deck or seat is stored under the preceding deck or seat, the height between successive decks or seats will be greater than that of the decks or seats when the stand is in its fully extended position.

The lugs 40 are shown (FIGS. 8 and 9) as secured to the forward ends of the beams 20 of the outer supporting structure of each pair of structures and are rotated to positions in front of the inner structure of the pair. The same result may be achieved (FIG. 10) by mounting the lugs 40 on the rear sides of the legs 24 of the inner

structure of a pair of structures and rotating them to positions behind the rear sides of the legs of the outer ones of the pairs of structures. Optionally, the lugs may be placed on any conveniently accessible part of either of the supporting structures of a pair of structures so that when moved into operative position they will prevent movement of the two structures relative to each other without interfering with relative movement of successive pairs of structures.

The foregoing structure provides a very simple expedient for adjusting the stands in accordance with the floor space available or required for a particular event without modifying the structure or dismantling any of its parts.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. In combination with a stand comprised of a plurality of interconnected structures arranged, by relative movement of successive structures, to be telescoped substantially vertically subjacent each other for storage and to be extended in stepped relation for use; manually movable means mounted on the structures movable from an inoperative position to a position of engagement with an adjacent structure, only while the structures are telescoped movement of each of said means into operative position operating to connect a pair of adjacent structures in vertically subjacent telescoped relation for extension in unison relative to the succeeding structures.

2. Apparatus according to claim 1, wherein said means are pivotally mounted lugs mounted on the forward ends of the structures for pivotal movement into engagement with the adjacent structures outwardly thereof.

3. Apparatus according to claim 1, wherein said means are pivotally mounted lugs mounted on the rear ends of the structures for pivotal movement into engagement with the adjacent structures inwardly thereof.

4. Apparatus according to claim 1, wherein the lugs are mounted on one of the structures of each successive pair of structures.

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