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[54] ADJUSTABLE STAIRSTEP UNIT
10 Claims, 10 Drawing Figs.

[52]	U.S. Cl.	182/115, 182/156
[51]	Int. Cl.	E06c 1/383
[50]	Field of Search	182/115, 156, 95, 96, 85, 86; 52/182

[56] **References Cited**

UNITED STATES PATENTS

3,092,383	6/1963	Dunn.....	182/115
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ABSTRACT: A staircase unit which may be temporary or permanent with a top platform tread detachably mounted to a vertically adjustable base that may also be horizontally adjusted to accommodate platform extension panels. A plurality of treads in parallel stepped relationship are movably associated by appropriate linkage with the top platform tread so that for a predetermined number of treads, the vertical distance between the top surfaces of adjacent treads, which is known as the riser height, and an appropriate tread width can be adjusted within prescribed limits for adapting the staircase unit to varying height conditions between ground level and floor level in the location in which the steps are to be used. Vertically adjustable supports are provided for the bottom tread and the entire structure is adaptable for quick assembly and disassembly with major portions being foldable into a knockdown condition for purposes of storage and transportation. An optical railing unit, if used, serves to secure the platform tread to the base.

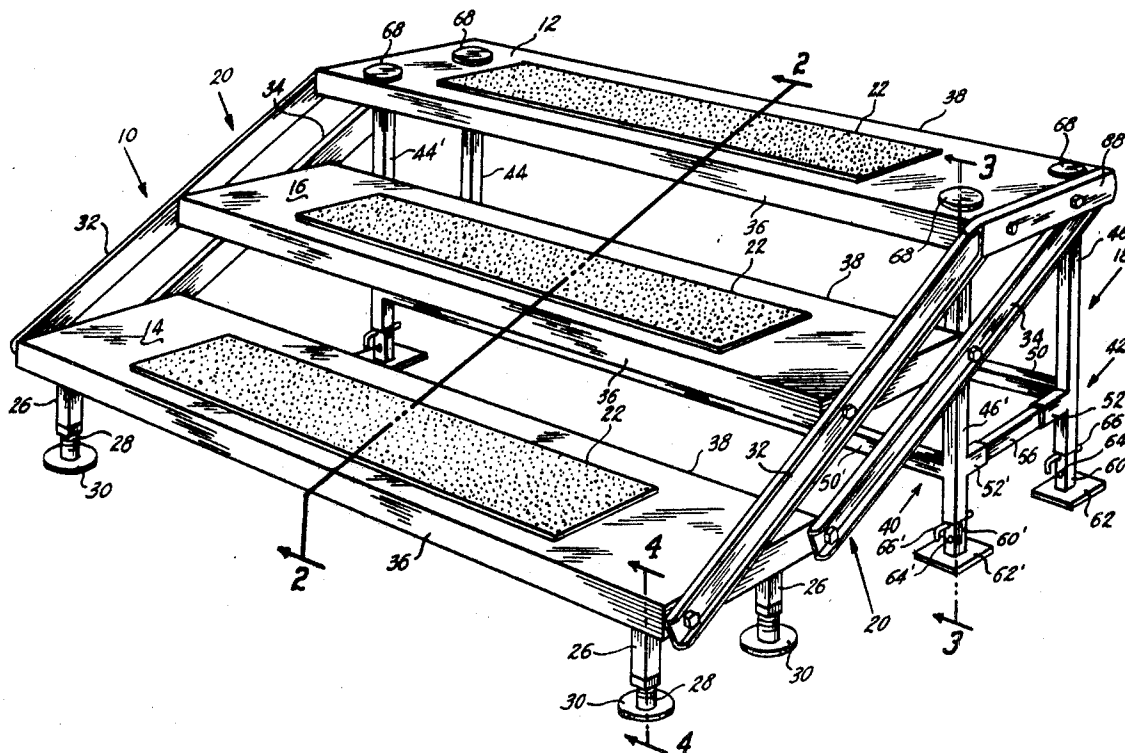


Fig. 1

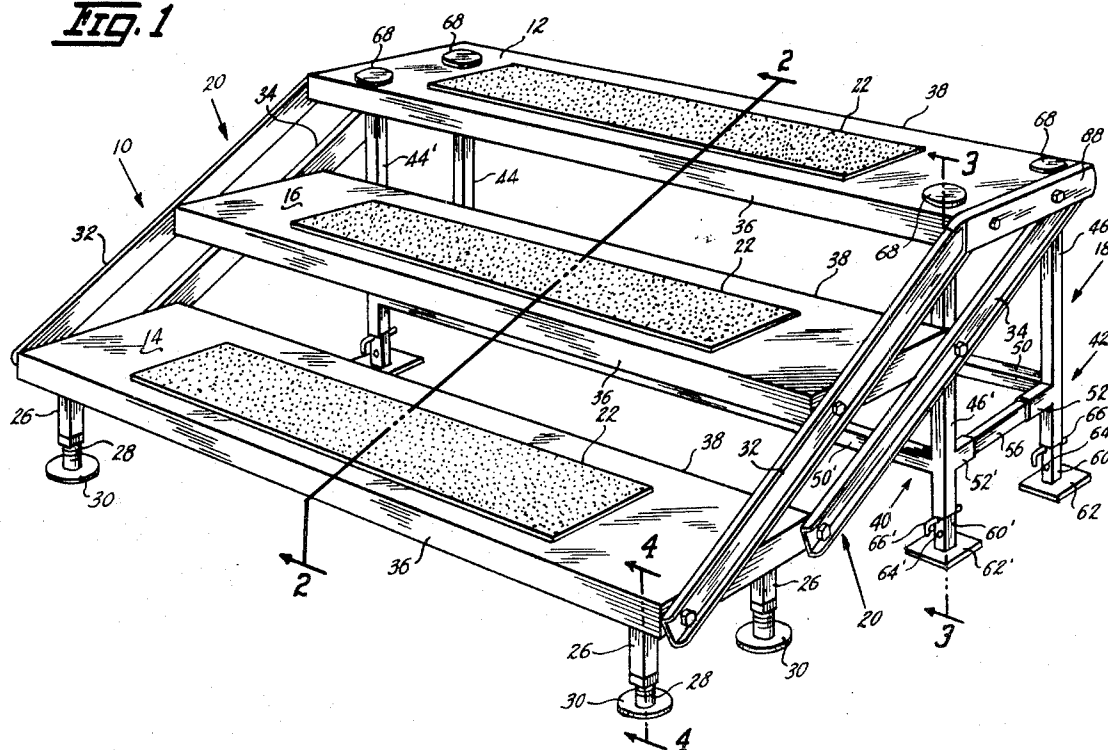


Fig. 2

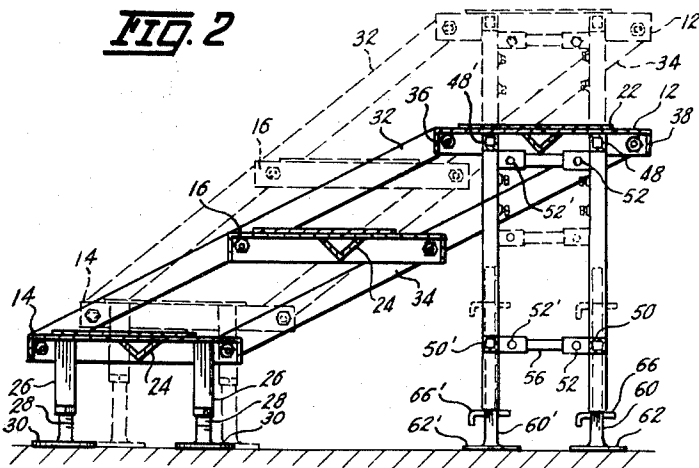


Fig. 3

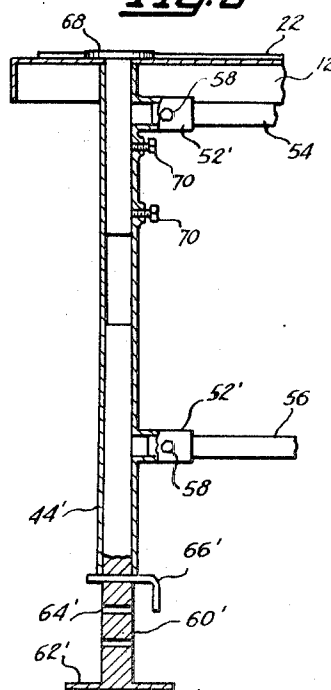
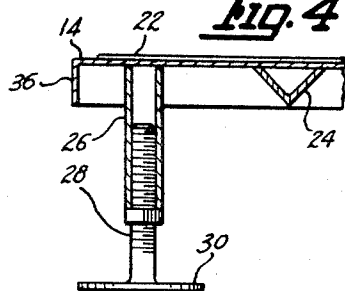
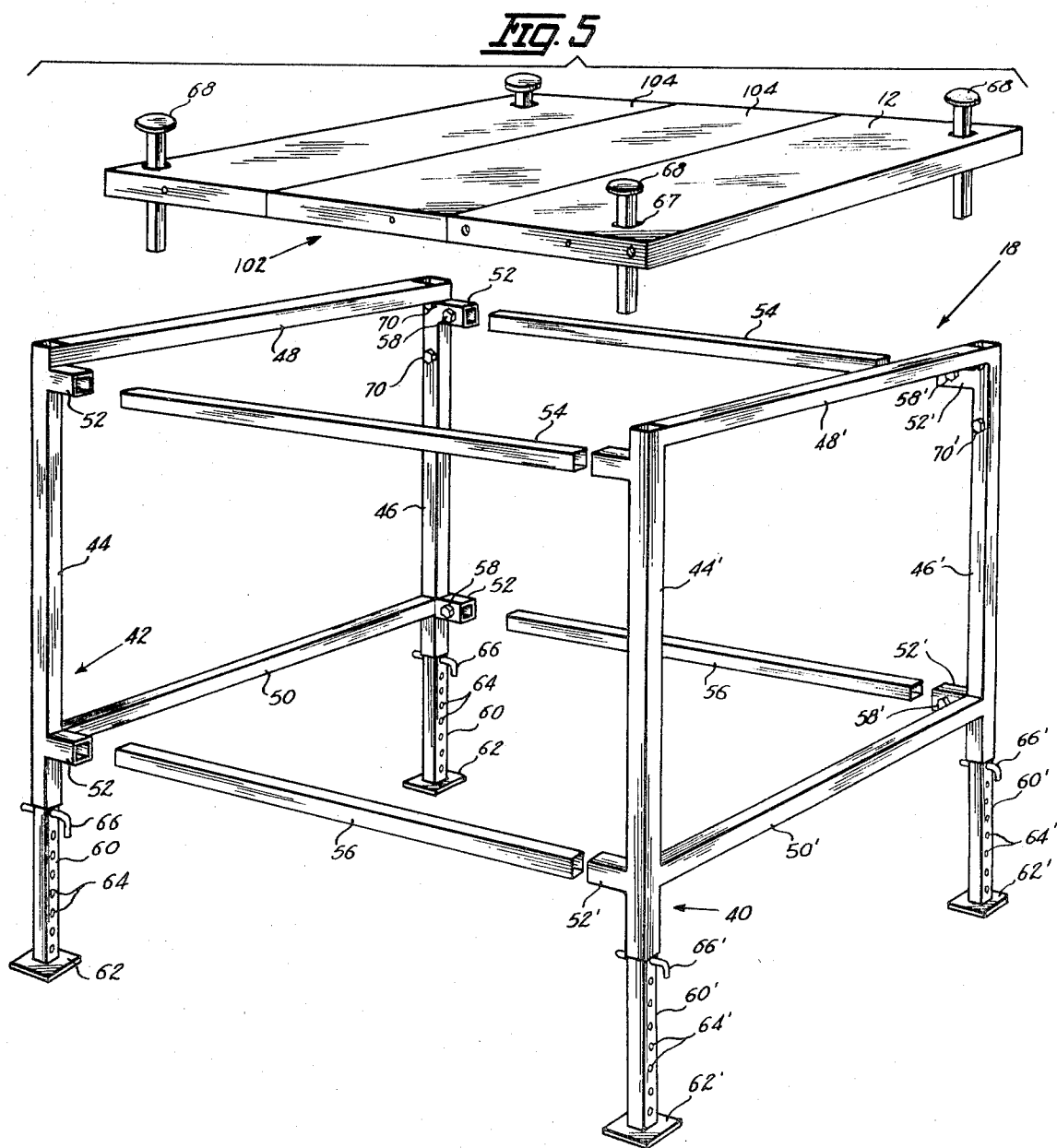


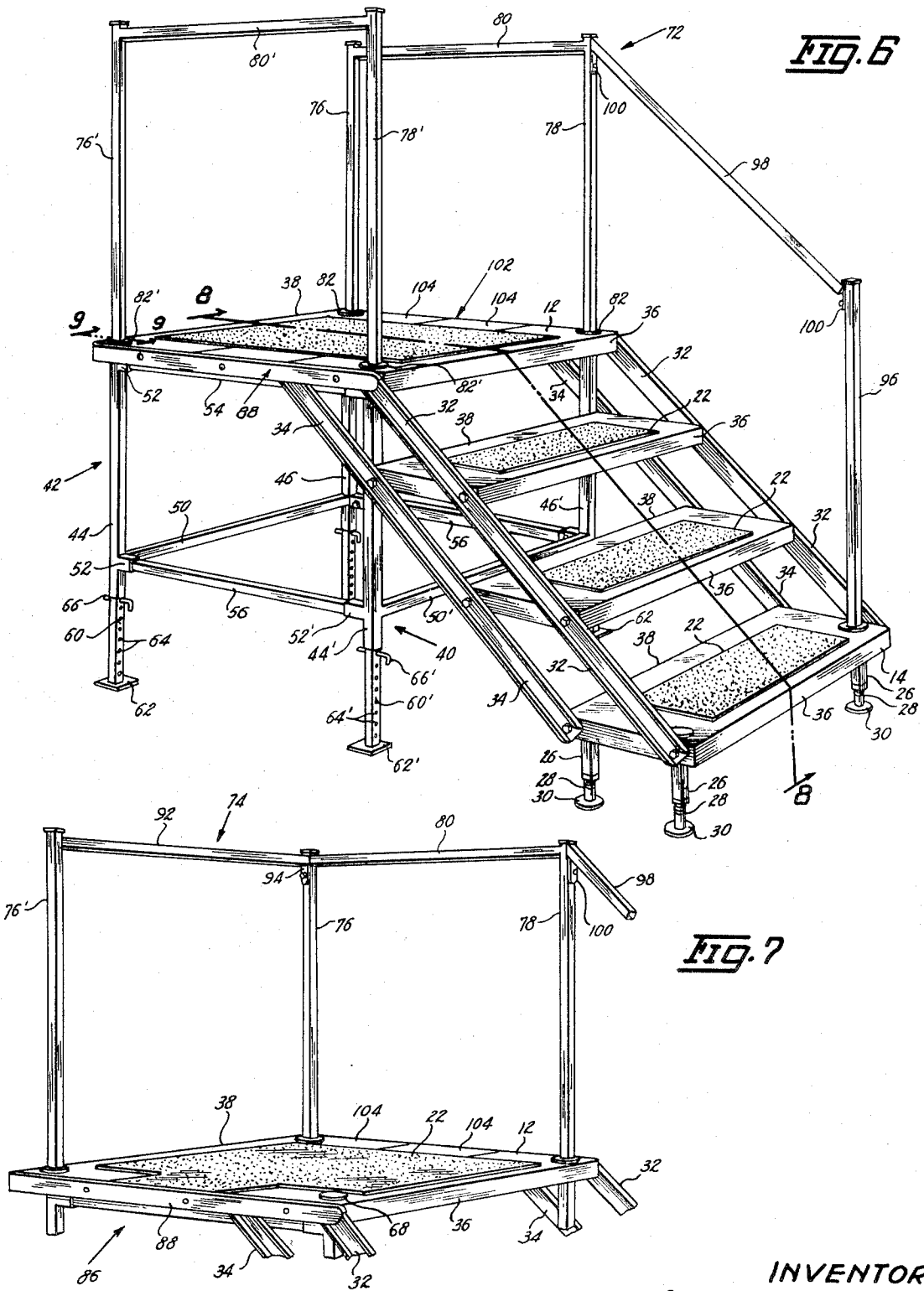
Fig. 4

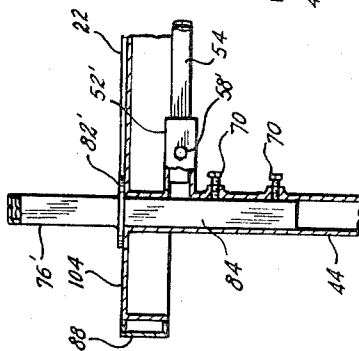
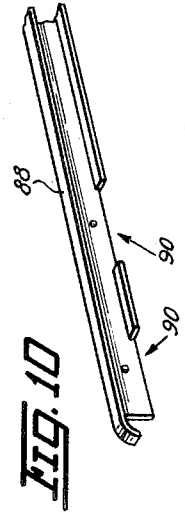
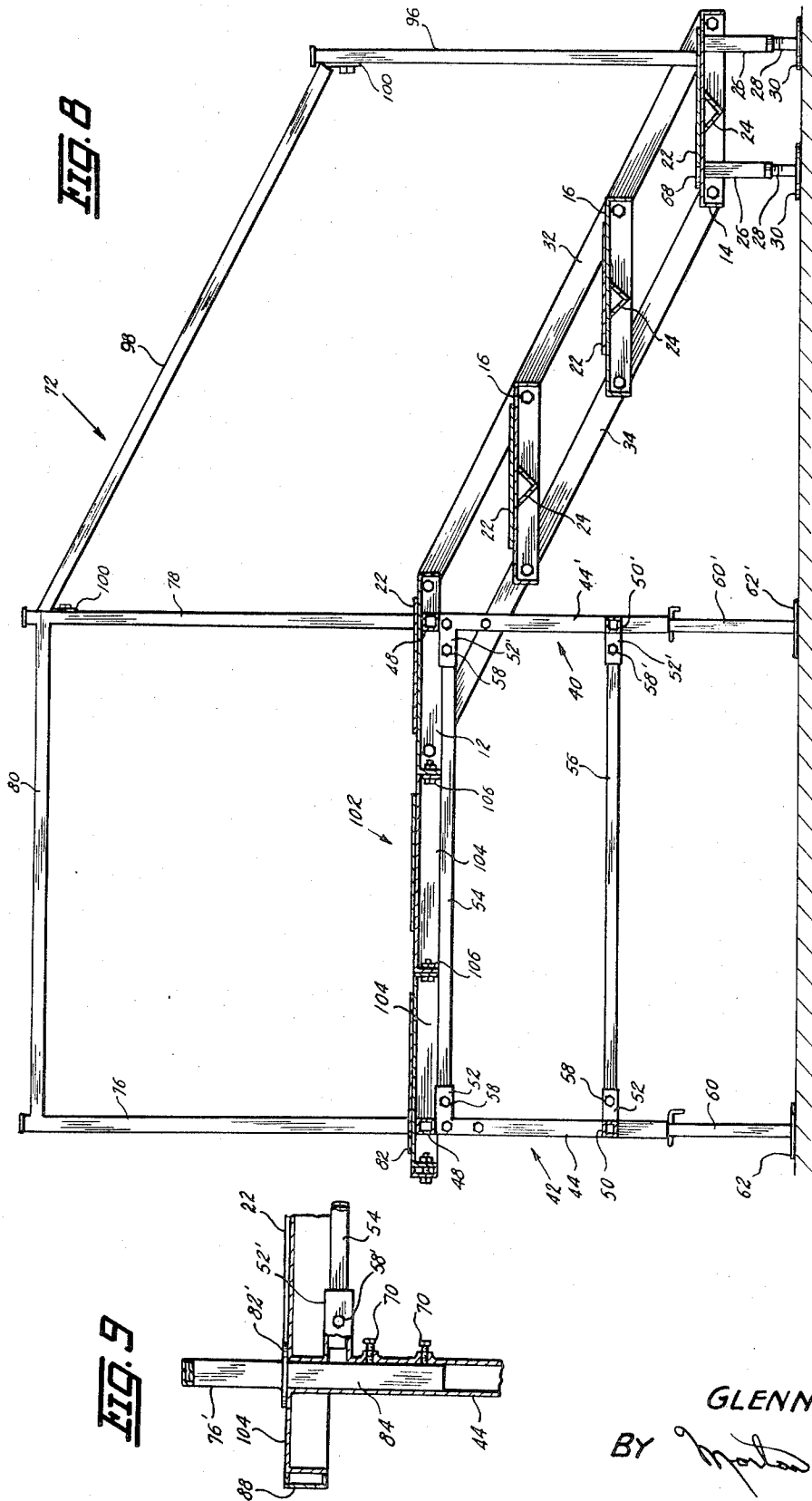


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ADJUSTABLE STAIRSTEP UNIT

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a stairstep unit in which the riser height and normally usable tread surfaces are adjustable within prescribed limits for adapting a single stairstep unit of a given number of steps to varying height conditions between ground level and the floor level where the steps are to be located.

2. Description of the Prior Art

The construction of stairsteps is an old art and is accomplished either on an individual or custom basis for a particular location or through the use of prefabricated or preformed steps. More predominant in the latter category are concrete steps but some construction of plastic material is also being used.

It is essential in any stairstep construction that the treads be level and it would appear to be generally recognized that for proper utility and safety, the riser height in stairway construction should be maintained between 6 to 8 inches with a normally usable tread width of substantially 10 inches, such width being the distance from the front edge of a step or tread to a point intersecting a vertical line from the front edge of an adjacent step or tread. In constructing steps on a custom basis for a particular location, the number of steps and the desirable riser height is determined by proper measurements of the vertical distance between the two levels to be bridged together with the angle of inclination of the tread assembly so that an appropriate and accurate step structure can be fabricated. However, in a prefabricated stairstep assembly, the riser height, tread width and relative angle of the tread assembly are prefixed so that any given prefabricated unit may not necessarily be accurately constructed for all situations where steps may be desired and thus additional work and materials may be required for an appropriate fit.

U.S. Pat. No. 3,407,901 illustrates a form of step structure for mobile homes, pickup campers and the like which may be stored during travel and quickly set in place from time to time as needed. This structure is first hooked to the frame of the vehicle and swung downwardly until it engages the ground. To the extent that it will accommodate different vertical heights between the ground and doorway sill, it has a purpose similar to the present invention but it would also appear that no concern has been had to maintaining riser heights within fixed limits so that such a structure may under some conditions be more in the form of a ladder than stairsteps and must be used on level ground for any assurance of safety and rigidity. This arrangement is quite at variance with the present invention which provides an adjustable stairstep unit of a true conventional form under all circumstances and may be properly oriented on unlevel ground.

The advantage of the present invention is that any given unit may be adjustable for height variations between prescribed vertical heights and for unevenness of the ground or other supporting surface without the necessity of additional cost and labor for mounting the unit. In addition, the present invention may be either a permanent or temporary arrangement and is susceptible of being disassembled and compactly packaged for purposes of transportation or storage.

The present invention is preferably made of a suitable gauge steel which is appropriately painted and can be manufactured considerably cheaper than a custom made stairstep unit and for approximately one-half of the price of comparable size precast concrete steps, for example.

SUMMARY

The present invention comprises an assembled predetermined number of steps which may consist of units of three, four, five or more steps with each step having an actual tread depth of preferably 12 inches. The steps for any given assembly may be preformed into different lengths such as 4, 5 or

6 feet as may be desired or required in a particular location. The series of steps in each unit are movably connected on respective opposite sides by a pair of rigid links which serve as the stringers and form a parallelogram shaped support. One such link on each side is pivotally connected to each step adjacent the forward edge thereof and the other link on each side is similarly connected adjacent the rear edge of each step. Such links will normally extend on an incline outwardly from the top step to the bottom and those steps below the top step are movable as a unit toward and away from the top step whereby as they are moved toward the top step, the vertical height between adjacent treads is correspondingly increased and the normal tread width is narrowed. Conversely, as the steps are moved outwardly away from the top step, the vertical height between adjacent treads is correspondingly decreased and the normally usable tread width is increased.

A vertical adjustable base is provided for supporting the top platform tread so that the level of the same can be adjusted planar with the surface to which such step is to be abutted. Means are provided for extending the depth of the frame to accommodate expansion panels to provide an enlarged platform at the level of the platform tread if desired. Vertical adjustable supports are provided under the bottom tread for engagement with the supporting surface therefor.

The link-type stringer construction is designed to permit the vertical distance between the treads to be varied between 6 and 8 inches which are the preferable limits for safety and efficiency. Thus, with a 6 inch riser height, the normal tread surface will be somewhat greater than the minimum 10 inches and with the riser height adjusted to 8 inches, the minimum desirable 10 inch tread surface will be maintained. With a three step assembly unit, for example, providing for vertical height variation between treads from 6 to 8 inches, it will be seen that such a unit can be adjusted to accommodate any vertical distance between ground level and the doorway to be served of 18 to 24 inches and with additional preassembled steps in the unit, greater vertical distances can be accommodated as required.

A railing unit is provided that can be appropriately mounted whether the steps are in straightaway alignment with the building entrance or disposed at a 90° angle to such entrance. In either case, the railing, if used, has means not only for attachment to the platform tread but for attaching such tread to the adjustable base. In addition, that portion of the railing adjacent the treads as distinguished from the railing on the platform, is so mounted that it need not be removed for any height readjustment of the tread assembly.

The base, and expansion panels and railing if used, may be easily assembled and disassembled and the stringer linked step assembly is readily foldable so that the entire step unit can be conveniently reduced to a knockdown status for purposes of packaging, transportation or storage.

The objects of this invention together with details of the operation outlined and the advantages of the same will be more fully described and developed in relation to the more detailed description of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a three riser stairstep unit made according to this invention and in position for use,

FIG. 2 is a sectional view taken on the line 2-2 of FIG. 1 with the dotted lines illustrating the adjustment of this unit for bridging a higher vertical level,

FIG. 3 is a longitudinal sectional view taken on the line 3-3 of FIG. 1,

FIG. 4 is a longitudinal sectional view taken on the line 4-4 of FIG. 1,

FIG. 5 is an exploded perspective view of the supporting base and showing the use of an enlarged platform,

FIG. 6 is a perspective view of a four riser stairstep unit made according to this invention and showing the use of railings when the step components are in direct alignment with the building entrance with which this step unit is associated,

FIG. 7 is a fragmentary perspective view of the top platform of a stairstep unit showing a railing arrangement when the step components are disposed at a right angle to the building entrance with which the step unit is associated,

FIG. 8 is a sectional view taken on the line 8-8 of FIG. 6,

FIG. 9 is a sectional view taken on the line 9-9 of FIG. 6, and

FIG. 10 is a fragmentary perspective view of the platform edge cover taken on the line 10-10 of FIG. 6.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, a stairstep unit embodying the of this invention is designated generally by the numeral 10 as seen in FIG. 1. Unit 10 may comprise any given number of individual treads or steps which include a top tread 12, a bottom tread 14 and one or more intermediate treads 16. The several treads are preferably rectangular and are all of like width and length for any particular unit although the top tread 12 which serves as a platform tread may extremities a larger width than the other treads, if desired. However, by keeping all treads of like length and width, the costs of fabrication are reduced and the top platform can be enlarged by expansion panels or treads as will be referred to later in more detail. Preferably, the width of such treads is approximately 12 inches with the length being varied as desired as, treads, example, 36 or 48 inches or more. The top platform tread 12 is mounted to a vertically adjustable base unit 18 which is also horizontally expandable as will later be described in more detail and all of the individual treads are connected at their respective longitudinal edges by a linkage arrangement 20 which will also be referred to in more detail. Each of the top surfaces of the individual treads is provided with a nonslip surface portion 22 of any suitable type and the underside of each tread is provided with a V-shaped rib 24 as best seen in FIG. 4 for purpose of adding strength and rigidity thereto. Depending from each corner of the bottom tread 14 is a foot support member 26 as best seen in FIG. 4 which threadably receives a shank 28 to the bottom of which is secured a suitable enlarged foot 30 for engagement with the ground or other supporting surface. By this arrangement, each of the feet 30 can be individually vertically adjusted so that tread 14 can be placed level irrespective of any irregularity in the ground or other supporting surface at this point.

The linkage arrangement 20 comprises a pair of like length rigid links or bars 32 and 34 at each longitudinal end of the several treads. As seen in FIGS. 1 and 6, each tread is pivotally attached at a point on its end adjacent its forward edge 36 to the front bar 32. Likewise, each tread is pivotally secured at its edge portion adjacent the rear edge 38 to the rear bar 34. With bars 32 and 34 being of like length, the respective extremities of bar 32 terminate at the forward edge of the top platform tread and the forward edge of the bottom tread and the extremities of the rear bar 34 will terminate at the rear edges of the respective top and bottom treads. If the top platform tread should be wider than the other treads the distance between the pivotal points of bars 32 and 34 thereon will be the same as the distance between the corresponding points on the other treads. The arrangement of bars 32 and 34 as described provide a parallelogram-shaped support which maintain the several treads in level position as all of the treads below the top platform tread are moved toward and away from said platform tread as will later appear.

The base 18 as best seen in FIG. 5, comprises a forward and rear section designated generally by the numerals 40 and 42 which are of like construction and reference will be made to the rear frame 42 where like parts for the front frame 40 will be given like numerals primed. A pair of corner posts 44 and 46 are secured in spaced relationship by an upper horizontal rail 48 and a lower horizontal rail 50 with the distance between such posts being such as to accommodate the selected length of the platform. Each post 44 and 46 is provided near its upper and lower end portions with a short integral square tubular sleeve member 52 oriented in a direction

perpendicular to the axis of rails 48 and 50. The front and rear frames 40 and 42 are joined into a unitary base by means of the square tubular side rails 54 and 56 which are tightly slip-fitted at their respective ends into the sleeves 52 and 52' and may, if desired, be additionally secured therein by means of a suitable set screw 58 in each of the sleeves. However, with a suitable tight fit of rails 54 and 56 into sleeves 52 and 52', I have found from experience that set screws 58 are not generally required. The detachability of rails 54 and 56 serves the dual purpose of permitting frames 40 and 42 to be disassembled and to permit the use of different length rails 54 and 56 to form a unitary base susceptible of accommodating a top platform of any desired or required depth as will appear.

The corner posts on frames 40 and 42 are preferably of square tubular construction and in the bottom of each foot member there is telescopically arranged the square tubular shank 60 having a suitable enlarged foot pad 62. Each corner post is vertically adjustable by means of shank 60 and it will be appreciated that this may be provided for in numerous ways. As shown, shank 60 is provided with a plurality of vertically spaced openings 64 through which a key or pin 66 is inserted at any desirable point. By this arrangement, it will be appreciated that each of the corner posts on frames 40 and 42 are individually vertically adjustable as may be required.

For proper utility and safety in a stairway unit, it is desirable that the riser height not exceed 8 inches or be less than 6 inches with such height being determined from the top surface of one tread to the top surface of an adjacent tread. Likewise, the horizontal distance of the tread surface measured from the front edge of one tread to the front edge of an adjacent tread should preferably be maintained not less than 10 inches and the present structure 10 is designed to be usable so as to maintain these limits. As a result, the vertical height to be bridged from the ground surface to the sill of a doorway, for example, will indicate the desired number of treads applicable to such situation. In the illustration shown in FIG. 1, for example, where there are three treads to be used so that the riser heights do not exceed 8 inches or be less than 6 inches, it will be understood that such three tread or three riser unit is adaptable for any vertical distance between 18 and 24 inches and that each tread added to the unit will increase the range for such unit by 8 inches. It will thus be understood that each unit 10 of any given number of treads has a vertical range limitation for proper utility and safety.

To employ this unit 10 at a given location, base 18 will be first appropriately arranged relative to the doorway or entrance to which the steps will lead and in this regard, each of the individual corner posts can be separately vertically adjusted within the prescribed vertical limits for the particular base. It will be understood that such base can be arranged for the steps to be in straightaway alignment with the doorway or at a 90° angle thereto for what may be referred to as a side entrance approach. Once such base 18 has been put in place, the tread assembly is arranged so that the top or platform tread 12 rests upon the four corner posts. The corner portions of the platform tread are provided with suitable openings 67 to register with the upper end portions of each corner post and the platform tread 12 is secured to base 18 by means of flanged headed pins 68 of square tubular material inserted through the openings in the platform tread 12 and tightly slip-fitted into the top end of each of the corner posts. Such pins are preferably from 6 to 8 inches long and a tight slip-fit attachment to the corner posts is sufficient for adequate rigidity of the platform. However, if desired, the corner posts may be provided with the set screws 70. With the platform tread 12 anchored, the remaining treads connected by links 32 and 34 are then moved either toward or away from the platform tread as may be required for their proper adjustment with the foot members 30 beneath the bottom tread 14 being suitably adjusted relative to the supporting surface therefor and thus arranged, this stairway unit will provide a sturdy and stable assembly having tread surfaces and riser heights within the requirement for utility and safety hereinbefore indicated.

While not required, the edge of the platform adjacent the building being served may be secured to such building in any suitable manner such as by screws, bolts or the like.

It is generally desirable to have some form of a railing arrangement with a stairway unit and for the present invention, the railing 72 as shown in FIG. 6 is designed for use when the general position of the several treads is in direct alignment with the doorway being served and in FIG. 7, the mounting of the railing 74 is shown when the general arrangement of the treads is at a 90° angle to the doorway being served or, in other words, steps are arranged for what might be called a side approach.

With reference now to FIG. 6, railing 72 comprises two vertical members 76 and 78 connected by the horizontal top rail 80. Near the bottom of each vertical member 76 and 78 there is a flange 82 and depending below flange 82 is the square tubular shank member 84. When these railing components are used, the pins 68 previously referred to will not be employed and the shanks 84 of vertical members 76 and 78 will be tightly slip-fitted into the upper ends of corresponding corner posts so that flanges 82 abut the top of the platform member. By this arrangement, the railing is not only secured to the platform tread but the platform tread is secured to the base 18. In the arrangement for the railing shown in FIG. 6 which is for direct alignment of the treads with the doorway to be served, it will be noted that vertical members 76 and 78 are secured to two adjacent corner portions at one side of the platform tread of which the corner portion for member 76 is at the rear edge 38 and the corner portion for member 78 is at the front edge 36. It will be understood that the back edge 38 of the platform tread will be abutted, or attached, if desired, to the sill of the doorway to be served so that a similar railing structure is mounted on the platform tread on the opposite side thereof and like parts are given like numerals primed.

In the arrangement shown in FIG. 7, which is for a side approach as referred to, the side edge 86 of the platform will be oriented relative to the doorway to be served and for this purpose, I have provided an edge cover member 88 that is suitably secured to the edge of the platform so as to embrace particularly the point of pivotal attachment of the link members 32 and 34. For this purpose, as best seen in FIG. 10, the cover member 32 is provided with the cutout portions 90 to allow for any movement of the links 32 and 34. By the use of the cover 88, such cover can be abutted against any suitable building structure and serves as a buffer member to permit the free movement of links 32 and 34 as may be necessary. Since cover 88 has also certain aesthetic effects, a similar cover can be provided on the opposite platform edge if desired.

In the side entrance arrangement for the railing as seen in FIG. 7, the vertical members 76 and 78 connected by member 80 are used in the same manner as shown in FIG. 6. However, the vertical member 78' and the horizontal member 80' in FIG. 6 are eliminated and to the vertical member 76' there is secured a horizontal rail 92 extending parallel to the rear edge 38 of the platform tread to member 76 to which it is secured by any suitable means such as the clip 94. This arrangement provides railing protection across the rear edge and the far edge of the platform as related to the side 86 which will be oriented to a doorway and as seen in FIG. 7 leaves one of the front corner portions of the platform tread free of any railing. At such corner, one of the pins 68 previously described is used for securing the platform tread to the corresponding corner post.

A further handrail means is provided between the platform tread and bottom tread and for this purpose a vertical rail post 36 is secured by any suitable means to the bottom tread 14. A handrail bar 98 is secured by a flexible fastening means 100 at its respective ends to post 96 and to the vertical member 78 which is at one of the forward corners of the platform tread. Fastener 100 is a relatively rigid but flexible metal strap welded at one end to the respective ends of rail 98 and then suitably secured to members 78 and 96. By this arrangement, any adjustment of the several treads which may alter the riser

height can be done without removing post 96 and rail 98 since the flexible fastening means will permit rail 98 to assume the appropriate angle due to any such adjustment.

With particular reference to FIG. 5 and also as seen in FIGS. 6 and 8, there is shown an enlarged platform designated generally by the numeral 102 as compared with the single tread size platform 12 illustrated in FIG. 1. An enlarged platform 102 will probably be desirable in the majority of installations and while it may be fabricated in one piece, I have preferably used one or more expansion panels 104 which are actually duplications of the individual treads 12, 14 and 16 and such expansion panels are joined together along one longitudinal edge and similarly joined to the platform tread 12 by suitable nut and bolt means 106 as best seen in FIG. 8. In this arrangement, all top surfaces of platform tread 12 and expansion panels 104 are planar to form the enlarged platform 102 as a unitary piece. In adapting the base 18 to any enlarged platform, it will be appreciated that the length of side rails 54 and 56 on base 18 will be appropriate for the size of platform. Thus as seen in FIGS. 1 and 5, the relative size of rails 54 and 56 are such as to accommodate the smaller or the larger platform.

It will be understood that a platform of one piece may be used that is larger than the platform 12 as illustrated, and if this is done, the distance between the pivotal points of attachment at the side of such larger platform of links 32 and 34 will be the same as the corresponding distance on the respective treads 14 and 16 so that the same parallelogram support structure will be provided as shown in FIG. 1.

It will be appreciated from the foregoing description that while this stairstep unit is in effect a prefabricated assembly, it has the capacity for appropriate and accurate adjustment between predetermined vertical heights so that any given unit of a preselected number of treads can efficiently and safely serve a relatively wide range of situations and that whatever the vertical level is within the range of the particular stairstep unit, such unit will be in the form of traditional and conventional steps having adequate and appropriate riser heights and tread surfaces.

While this step unit is designed to be used as a permanent stairstep unit, it is also susceptible of being easily and quickly disassembled and packaged in a relatively compact space for purposes of transportation and storage. Despite the rigidity of construction when this unit is assembled as described, the railings 72 or 74 may be quickly removed together with any of the pins 68 that may be employed so that the tread assembly including the several treads and the link members 32 and 34 can be suitably folded to occupy a minimum area. At the same time, base 18 by the removal of side rails 54 and 56 is for all intents and purposes, completely collapsed so that the entire disassembled unit can be packaged for storage or shipment or can be easily carried in its individual parts from one location to another. The individually adjustable feet members 30 under the bottom tread 14 and the individually adjustable foot pads 62 under the base 18 make it possible to adjust this unit on a supporting surface irrespective of any irregularities in such surface so that all of the treads and the platforms will be level at all times. Accordingly, from all of the foregoing it is thought a full understanding of the construction and operation of this invention will be had and that the advantages of all of the improved characteristics and features of the same will be appreciated.

I claim:

1. An adjustable stairstep unit, comprising:

a plurality of treads,

means pivotally connected to all of said treads to form a stairstep unit with said treads in parallel stepped relationship defining at least a top platform tread and a bottom tread,

a base vertically adjustable between predetermined horizontal levels,

said base comprising:

a front and rear frame section each having two upstanding spaced corner posts with the posts in each section connected by a respective horizontal rail.
 respective side rails of a selectively determined length detachably secured to said frame sections to form a unitary base,
 a ground engaging foot carried by each post, means for selectively vertically adjusting each corner post relative to its respective foot, and
 means for locking each corner post against relative movement to its respective foot at selective positions of vertical adjustment, and
 means detachably securing said platform tread to said base.

2. A structure as defined in claim 1 including:
 at least the upper end portion of each corner post being of hollow construction,
 the corner portions of said platform tread being provided with an opening to register with the top end of a respective corner post, and
 flanged head pin means extended through the respective corner holes in said platform tread and friction fitted into the top portion of registering corner posts.

3. A structure as defined in claim 1 including:
 a railing having at least two vertical members secured in parallel spaced relationship,
 said railing disposed on said platform tread and extending to and between two adjacent corners thereof,
 a flange on each vertical member near the bottom thereof,
 a depending shank on each vertical member below said flange,
 at least the upper end portion of each corner post being of hollow construction,
 the corner portions of said platform tread being provided with an opening to register with the top end of a respective corner post,
 the depending shanks on said vertical members extending through a respective opening in said platform tread so that said flange abuts said platform tread and said shanks being friction fitted into the top of a respective post to secure said railing to said platform tread and also to secure said platform tread to said frame, and
 pin means extended through corner holes in said platform tread not occupied by said shanks and friction fitted into registering corner posts.

4. A structure as defined in claim 3 including:
 said platform tread having a front and rear side and one of said vertical members being disposed at a corner of said platform tread adjacent said front side,
 a vertical railing post suitably secured to said bottom tread, a hand rail, and
 flexible fastening means connecting respective opposite ends of said hand rail to said railing post and said vertical member at the front of said platform tread whereby said hand rail remains in place even though a riser height adjustment of said staircase unit is made.

5. A structure as defined in claim 1 including:
 a platform expansion panel of like length as said platform tread,
 said side rails being of appropriate length to provide an extended base to accommodate said platform tread and said platform expansion panel,
 said platform expansion panel having one longitudinal edge abutting a corresponding edge of said platform tread so that the top surfaces of said tread and panel are planar,
 means securing said top platform tread and platform expansion panel together to define an enlarged platform,
 at least the upper end portion of each corner post being of hollow construction,
 the corner portions of said enlarged platform being provided with an opening to register with the top end of a respective corner post, and
 flanged head pin means extended through the respective corner holes in said enlarged platform and friction fitted into the top portion of registering corner posts.

6. An adjustable staircase unit, comprising:
 a plurality of treads,
 said treads having respective parallel front and rear edges and parallel sides,
 means pivotally connected to all of said treads to form a staircase unit with said treads in parallel stepped relationship defining at least a top platform tread and a bottom tread,
 said means comprising:
 a first and second respective elongated rigid link at each side of said staircase unit with each first link pivotally connected to respective corresponding sides of said treads at a point adjacent the front edge thereon and each second link similarly connected to said treads below said platform tread on respective sides at a point adjacent the rear edge thereon, and
 said second link similarly connected to corresponding sides of said platform tread so that the distance between the points of pivotal attachment of said links on said platform treads is the same as the corresponding distance on the other treads,
 a protective cover on at least one edge of said platform tread embracing the pivotally attached ends of said links whereby such cover serves as a buffer to permit free movement of said links when said covered edge is abutted against any structure having a doorway to be served by said staircase unit,
 a base vertically adjustable between predetermined horizontal levels, and
 means detachably securing said platform tread to said base.

7. An adjustable staircase unit, comprising:
 a staircase assembly including a top platform tread and a bottom tread,
 means for supporting said treads in a stepped relationship,
 a base vertically adjustable between predetermined horizontal levels,
 said base comprising:
 a front and rear frame section each having two upstanding spaced corner posts with the posts in each section connected by a respective horizontal rail,
 means for detachably securing said frame sections together in a predetermined spaced relationship to form a unitary base,
 a ground engaging foot carried by each post,
 means for selectively vertically adjusting each corner post relative to its respective foot,
 means for locking each corner post against relative movement to its respective foot at selective positions of vertical adjustment, and
 means detachably securing said platform tread to said base.

8. A structure as defined in claim 7 including:
 at least the upper end portion of each corner post being of hollow construction,
 the corner portions of said platform tread being provided with an opening to register with the top end of a respective corner post, and
 fastening means engageable with said platform extended through the respective corner holes in said platform tread and friction fitted into the top portion of registering corner posts.

9. A structure as defined in claim 7 including:
 a railing having at least two vertical members secured in parallel spaced relationship,
 said railing disposed on said platform tread and extending to and between two adjacent corners thereof,
 a flange on each vertical member near the bottom thereof,
 a depending shank on each vertical member below said flange,
 at least the upper end portion of each corner post being of hollow construction,
 the corner portions of said platform tread being provided with an opening to register with the top end of a respective corner post,

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the depending shanks on said vertical members extending through a respective opening in said platform tread so that said flange abuts said platform tread and said shanks being friction fitted into the top of a respective post to secure said railing to said platform tread and also to secure said platform tread to said frame, and

pin means extended through corner holes in said platform tread not occupied by said shanks and friction fitted into registering corner posts.

10. A structure as defined in claim 7 including:

a platform expansion panel of like length as said platform tread,

said side rails being of appropriate length to provide an extended base to accommodate said platform tread and said platform expansion panel,

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said platform expansion panel having one longitudinal edge abutting a corresponding edge of said platform tread so that the top surfaces of said tread and panel are planar, means securing said top platform tread and platform expansion panel together to define an enlarged platform, at least the upper end portion of each corner post being of hollow construction,

the corner portions of said enlarged platform being provided with an opening to register with the top end of a respective corner post, and

fastening means engageable with said platform extended through the respective corner holes in said enlarged platform and friction fitted into the top portion of registering corner posts.

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