

[54] **TELESCOPING STAIRWAY**

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182/208

[51] Int. Cl. **E06c 1/38**

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182/167, 95, 207, 208, 209, 210, 97, 98,
106, 195

References Cited

UNITED STATES PATENTS

1,192,387 7/1916 Cardarelli 182/67

2,448,335	8/1948	Wallace	182/208
2,736,482	2/1956	Borden	182/207
2,901,056	8/1959	McConologue.....	182/208
2,923,373	2/1960	Ledgerwood.....	182/106
3,386,531	6/1968	Sallein	182/85

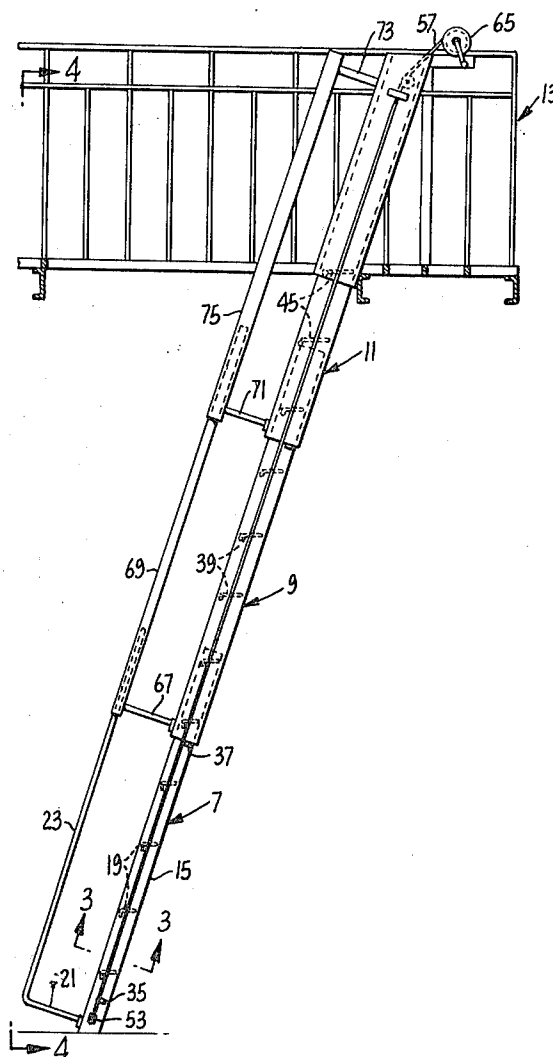
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[57]

ABSTRACT

A telescoping stairway is provided which is particularly suitable for use as a fire escape ladder. The stair treads are carried on a plurality of telescoping channel members wherein the treads of the lowest section are fixed and the treads of the upper section or sections fold to permit the telescoping action. A telescoping handrail is also provided.

3 Claims, 6 Drawing Figures



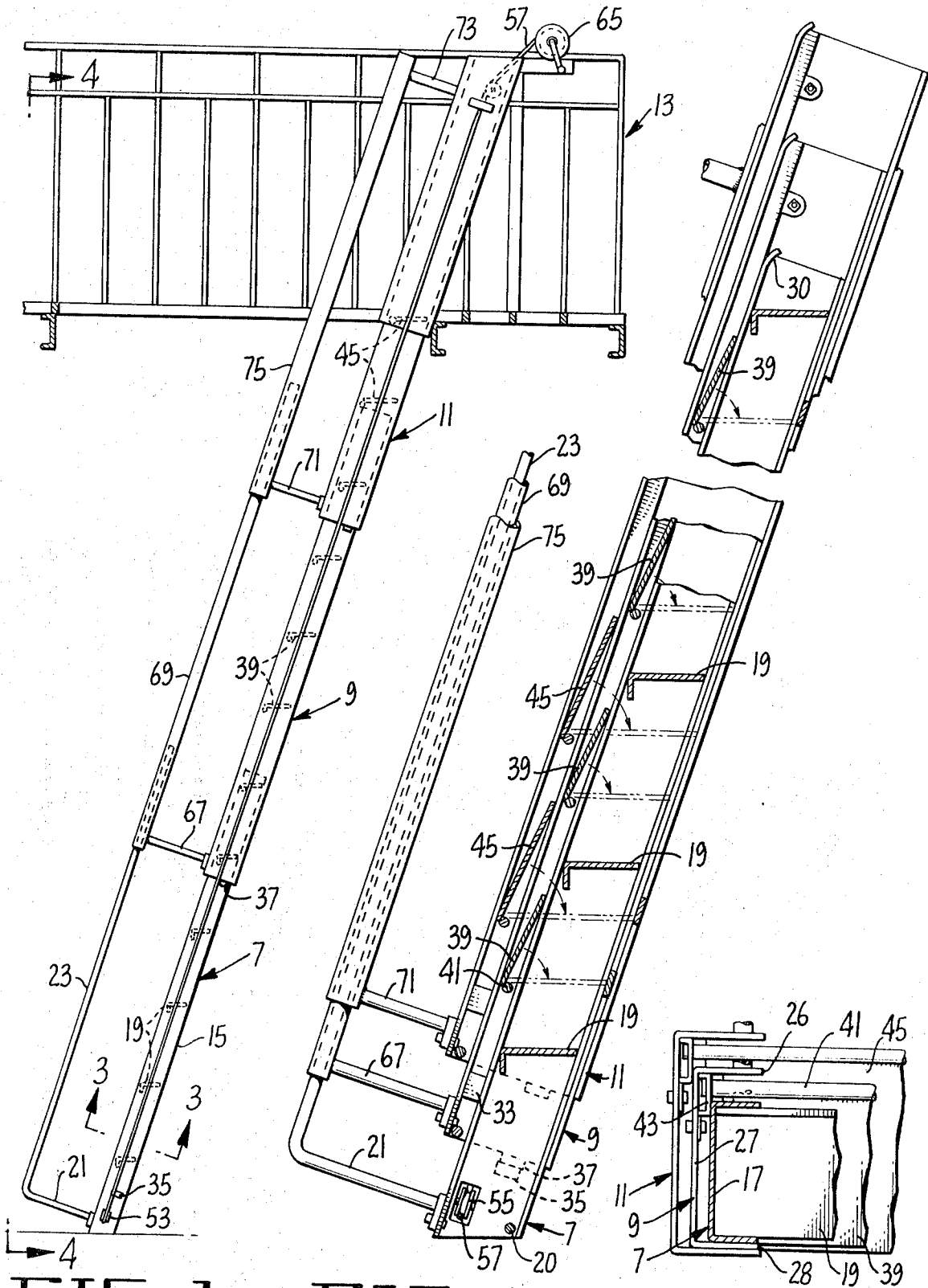


FIG. 1.

FIG. 2.

FIG. 3.

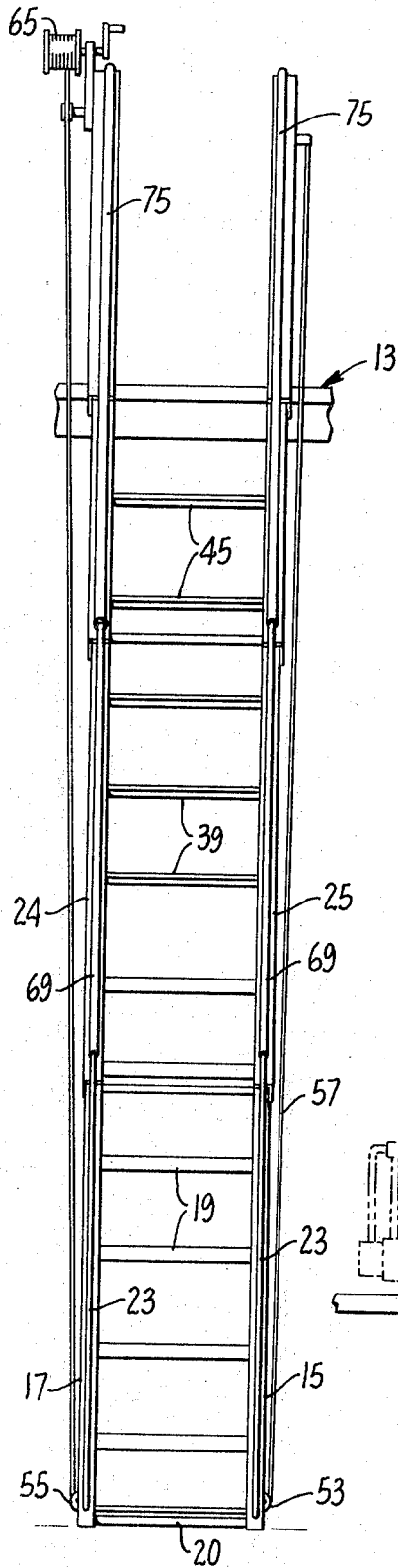


FIG. 4.

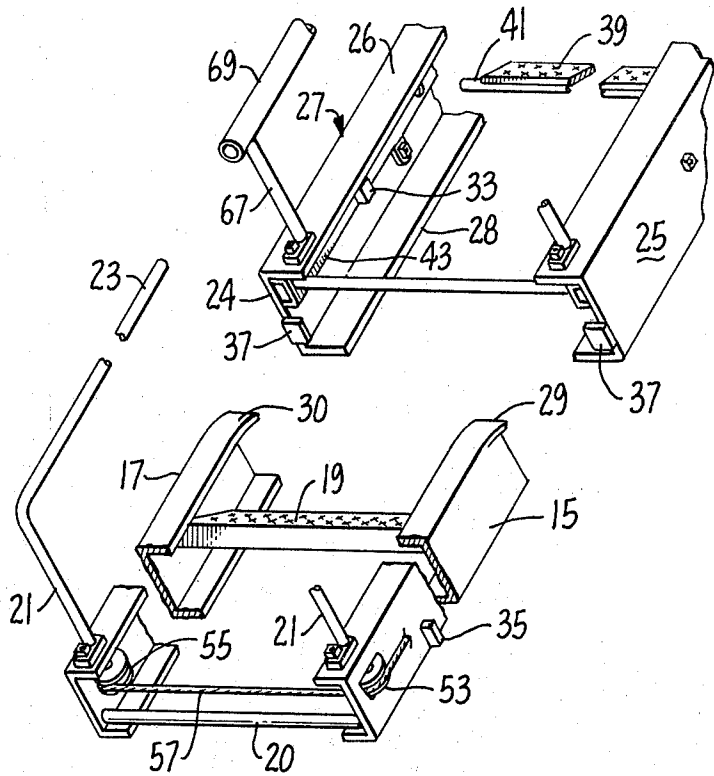


FIG. 5.

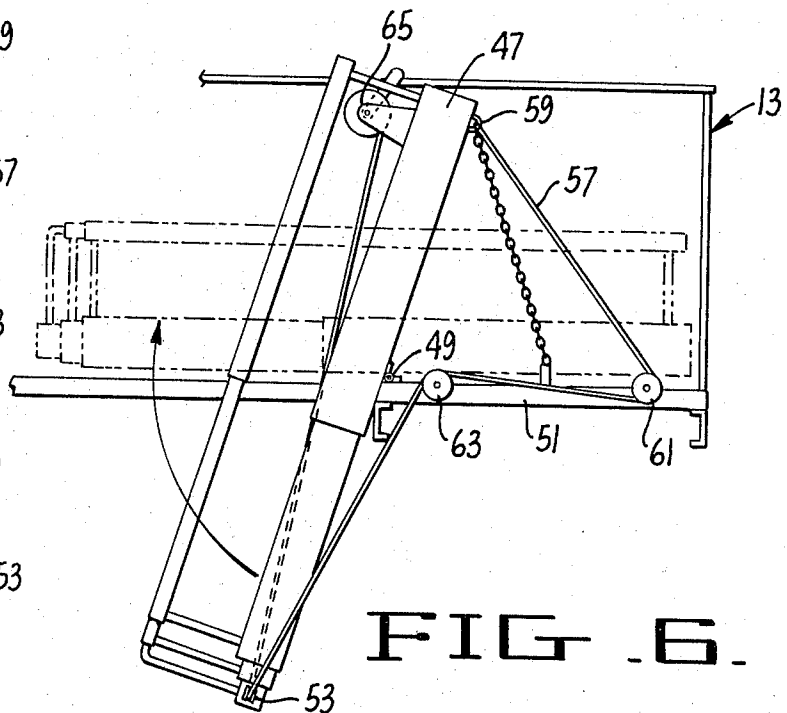


FIG. 6.

TELESCOPING STAIRWAY

SUMMARY OF THE INVENTION

Telescoping stairways have long been in use and such stairways are particularly adapted for use as the lowest section of a fire escape so that the fire escape will not provide access to a multiple story building and will not occupy ground space when the stairway is in the up position. Such telescoping stairways are also suitable for use as attic stairways wherein access is not frequently required.

Such stairways as proposed in the past have not been fully satisfactory. For one thing, such stairways have ordinarily had a plurality of exposed parts which are subject to damage. Further, such stairways frequently are somewhat shaky and are ordinarily provided with small treads.

In accordance with the present invention, a strong stairway is provided wherein the stringer members are channels of decreasing size which telescope. By providing such channel members which have a telescoping action, a very sturdy structure is provided and one which does not tend to shake when in use.

The present invention provides a truly telescoping handrail with a smooth, continuous outer surface.

Various other advantages of the present invention will be brought out in the balance of the specification.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of a stairway embodying the present invention, showing it in extended form.

FIG. 2 is an enlarged partial side view, partly in section, showing the operation of the folding treads.

FIG. 3 is an enlarged section on the line 3—3 of FIG. 1.

FIG. 4 is a front view of the stairway shown in FIG. 1.

FIG. 5 is an enlarged perspective view of a stairway embodying the present invention showing the way in which the stringers nest together.

FIG. 6 is a side view of a stairway embodying the present invention showing the folding action.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawing by reference characters the stairway of the present invention includes three major sections, namely, a bottom section 7, a middle section 9 and a top section 11. These three sections are adapted to be mounted on the second floor balcony of a fire escape generally designated 13.

The bottom section includes U-shaped channel stringer members 15 and 17 having a plurality of fixed treads 19 mounted therebetween. Cross bracing members 21 may also be provided. In addition, the stringers support uprights 21 to support the lower section of handrails 23.

The second section 9 of the stairway includes side stringer members 25 and 27 which are also channel structures having a web 24 and flanges 26 and 28 but are slightly larger than the channels 15 and 17 so that they can mesh or telescope as is best seen in FIG. 3. As is shown in FIG. 5, the flange ends of channel members 15 and 17 are turned down slightly as at 29 and 30 and these catch against stops 33 in the next adjacent section which prevents the lower section from completely withdrawing from the next section. Stops 33 also act as

guides for the channel members of the next lower section. In addition, the lower section is provided with stops 35 while the next adjacent section is provided with stops 37 which prevent the bottom section from completely telescoping with the intermediate section which would interfere with the operation of the cable lifting device, later described.

In the intermediate section, the treads 39 are welded onto bars 41 which are mounted for rotation in holes in a bracket member 43 which is welded or otherwise suitably fastened at the top inner portion of flange 26. Thus, these threads can rotate and lie parallel to the top flange 26 of the channel member and can swing downwardly and rest against the lower flange 28 in which position they are horizontal with the surface of the ground.

Top member 11 has similar channels and the treads 45 of the top member are similarly mounted so that they can rotate to lie parallel with the flanges or lie across the web in a horizontal position. The top member 11 is mounted in a frame member 47 which is pivoted at point 49 on frame 51 of fire escape 13.

The bottom section has pulleys 53 and 55 mounted thereon; a cable 57 is attached to a bracket 59 at the top of frame 47 and passes over a pulley 61 which is located on frame 51 and a second pulley 63 also mounted on frame 51 and then downwardly over pulleys 53 and 55 and upwardly to a winch 65 mounted on the opposite side of the frame 47. Pulley 61 is mounted some distance from pivot point 49 and this distance will be about equal to the distance between the pivot 49 and the point of attachment to the cable 59.

Telescoping handrails are also preferably supplied wherein the intermediate section has support members 67 for supporting handrails 69 while the top section has a pair of uprights on each side 71 and 73 for supporting the handrail 75. As can best be seen in FIG. 1, handrail 23 is smaller in diameter and telescopes with handrail 69 while similarly 69 is smaller and telescopes with handrail 75.

The operation device can now be easily seen. When the stairway is down in the position as shown in FIG. 1, the treads on sections 9 and 11 are horizontal and the sections extend to the ground. If one now turns the winch 65, the cable will first tend to draw the sections together and as the first section 7 rises into second section 9, treads 39 of the second section will rotate allowing a full telescoping action as is best seen in FIG. 2. Similarly, as the first section closes with the first, the two sections will then telescope together into the third section 11 and in the same manner the treads 45 of the top section will rotate, allowing full meshing. When the sections are fully meshed, stops 35 will be against the stops 37 preventing further meshing while similar stops between the second and third sections keep the second and third sections from completely meshing. At this point, as the winch continues to rotate, the telescoped stairway will now swing upwardly as is shown in FIG. 5 by the arrow from the position shown in solid lines to the position shown in dot-dash lines. A ratchet (not shown) on winch 65 now holds the stairway in position. To lower the stairway it is only necessary to release the ratchet whereupon the stairway can be lowered by the use of the hoist 65.

Various variations can be made on the exact structure shown without departing from the spirit of this invention. For instance, three sections have been shown

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but the stairway might be made in two sections or it might even be made in four or more sections. Other means can be used for raising and lowering the stairway.

I claim:

1. A compact and rugged telescoping stairway comprising in combination:

a. A first, elongate bottom stairway section comprising a pair of substantially parallel, spaced apart U-shaped channel members with their open sides facing each other and having a plurality of treads in fixed relationship between said channel members,

b. a second section mounted above said first section, said second section including a pair of spaced apart, substantially parallel U-shaped channel members of slightly larger size than the channel members of the first section, whereby the channel members of the first section can telescope within the second section,

c. the channel members of the second section each consisting of a center web section with front and rear flanges attached thereto,

d. a plurality of tread members mounted between said second channel members, the ends of said tread members extending between said flanges, pivot means on each of said tread members pivoting said tread member at a point adjacent the front

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flanges and the rear of the tread member being free, whereby each of said tread members can lie in a first position parallel to and closely adjacent to the front flanges and can rotate to a second position wherein the tread member rests directly at an end portion thereof on the rear flanges and is directly supported thereby, whereby,

e. said first section can telescope into said second section pushing the tread members of the second section from the second position wherein the rear surfaces of the tread members are supported directly by the rear flanges to the first position wherein the tread members lie parallel to the front flanges.

2. The structure of claim 1 wherein each said section supports a handrail, the handrail of said first section being tubular and telescoping within an enlarged tubular section carried by said second section.

3. The structure of claim 1 wherein the telescoping stairway includes a top section, a middle section and a bottom section and wherein the top section is pivoted to swing between two positions and having cable means attached to said top section whereby said cable means will telescope said sections and move the telescoped sections from a first position to a second position.

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