Feb. 18, 1969 R. I. BAIR 3,428,146

LADDER HAVING TELESCOPING SECTION

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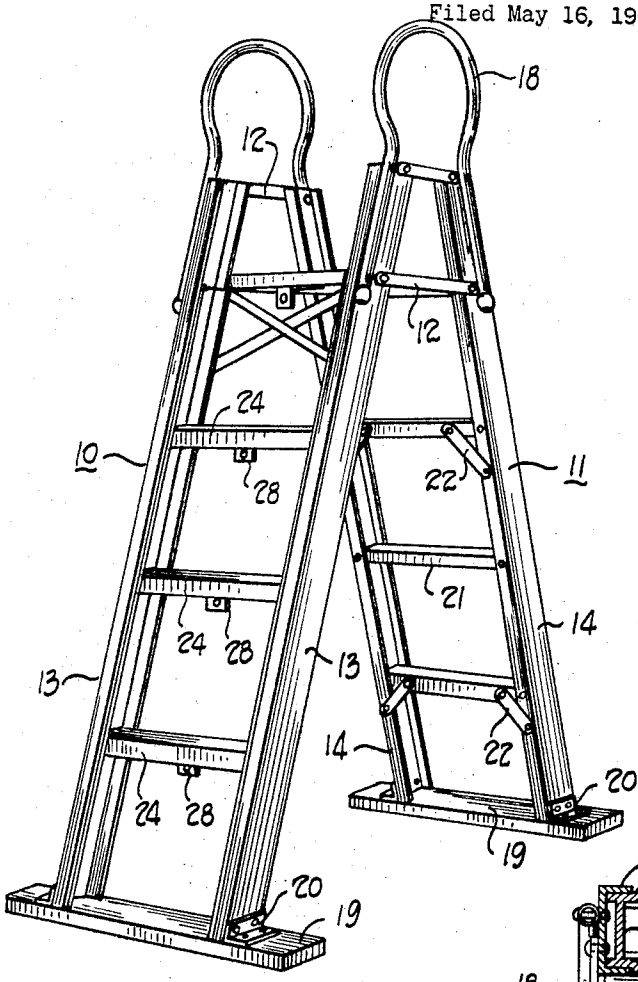



Fig. 1

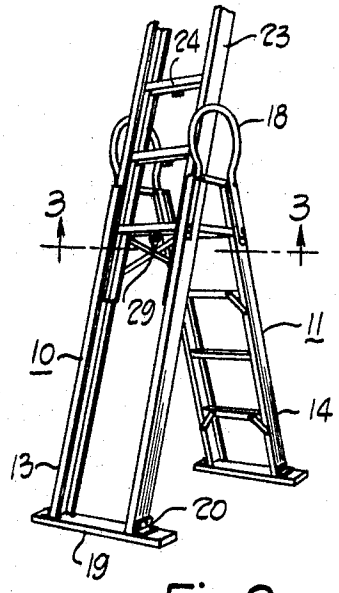



Fig. 2

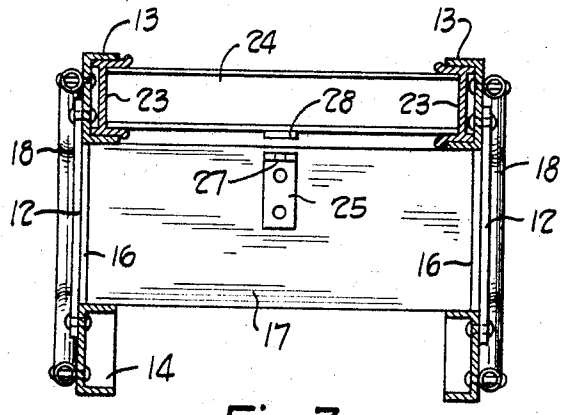



Fig. 3

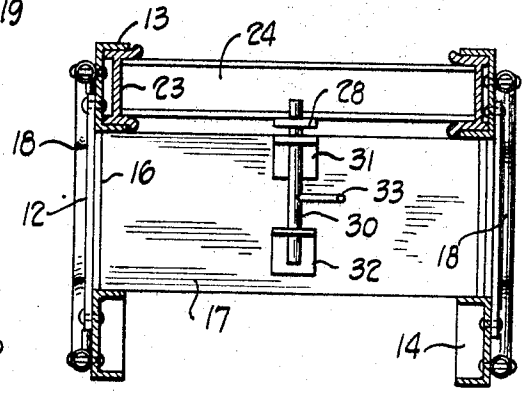



Fig. 4

INVENTOR.
RODGER I. BAIR
BY Wesley K. Taylor
ATTORNEY.

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# LADDER HAVING TELESCOPING SECTION

Roger I. Bair, 2 Park Drive, Larchmont,
Baltimore County, Md. 21207

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## ABSTRACT OF THE DISCLOSURE

A ladder comprising two sections connected to one another, each section having step means to enable that section to be ascended and descended, the step means of one section being mounted therewith to afford movement of the step means from a position of use to a position of non-use or inaccessibility, thereby to render that section unusable. Preferably, the movement of the movable step means is a sliding action longitudinally of the section with respect to which the step means is mounted.

### *Background of the invention*

A general ladder construction that has been quite popular comprises two sections connected together at one end to form substantially an inverted V. One of the sections has steps to enable that section to be ascended or descended. The popularly termed "step-ladder" results when such sections are pivotably connected and therefore can be selectively folded together as for storage.

Several modifications of this general ladder construction have previously been suggested. For example, prior modifications have included a stepladder construction wherein one of two sections of the ladder may be further extended as by a telescoping part. In all of such known cases, this extension is for the purpose of enabling the user to reach a higher elevation. As instances, U.S. patent, No. 1,836,163 to Goode and No. 2,926,746 to St-Mars disclose ladder constructions of this type. In all of such structures, the extension serves the function of making additional steps available, so that the user can climb to a higher position. None embodies actually removing steps from the lower elevation so as to make the ladder inoperative.

### *Summary of the invention*

In some applications of use for a generally inverted V-shaped ladder, it is desired to render the ladder inoperative at certain times. A common example of such an application is the use of a ladder for a portable swimming pool popularly adapted for erection on a lawn. Such a pool normally has a rubbery, flexible flooring secured to an upstanding cylindrical wall. In order to provide a means of ingress and egress with respect to the pool, the two sections of an inverted V-shaped ladder are placed on opposite sides of the cylindrical wall.

At times, it is necessary to guard against unwanted use of the ladder and pool. For instance, in the absence of suitable supervision, use by small children should be prevented as a matter of safety. Further, vandalism can be discouraged by preventing ready access to the interior of the pool.

These and related objects are realized by the present ladder in having the step means of one section mounted so as to be movable between a position of use and a position of non-use or inaccessibility. In the preferred form, this is accomplished by having the steps of such a section bodily transferable with respect to that section so as to put the steps beyond ready reach of a potential user.

### *Brief description of the drawing*

The accompanying drawing illustrates the present invention wherein:



FIGURE 1 is an isometric view of one form of the present ladder;

FIGURE 2 is a view similar to FIGURE 1 but on a reduced scale and shows the steps of one section of the ladder moved to an inoperative position;

FIGURE 3 is a section of FIGURE 2 on the line III—III and illustrates retainer or lock means used to hold the step means of one section in a position of inaccessibility; and

FIGURE 4 is a section similar to FIGURE 3 and shows a modified form of a retainer.

### *Description of the preferred embodiments*

In general, the present ladder comprises two sections secured adjacent one end to each other to define an inverted V-shape. Each section has steps to aid in climbing or descending that section. The steps of one section may be shifted to a non-operative position and preferably held there by a suitable lock or retainer.

Referring to the drawing, the embodiment illustrated by FIGURES 1 through 3 comprises ladder sections generally indicated at **10** and **11**. The sections are joined together at a common end by cross-braces **12** bolted to and extending between side rails **13** of section **10** and side rails **14** of section **11**. Channel runners **16** (FIGURE 3) of U-shape cross-section are fixed to and extend between the facing edges of each of the rails **13** and **14** and receive a platform **17**. The platform normally comprises several planks of wood placed side-by-side in the channel runners **16**. The platform **17** provides footing as for diving into a pool and also supplies a base for firm footing when entering or leaving a pool.

A continuous, looping, tubular handrail **18** is also fixed to and extends between each of the opposed rails **13** and **14** and is bolted thereto. The handrail facilitates crossing from one section of the ladder to the other. At the diverging ends of the sections **10** and **11**, the rails **13** and **14** may be suitably secured to a wooden base plate **19** as by an angle **20** bolted to each connecting part.

The side rails of section **14** are preferably U-shaped beams, preferably of extruded aluminum, and have a plurality of steps or treads **21** extending therebetween. The steps **21** may also be U-shaped in cross section, the flanges thereof being bolted to the flanges of the rails **14** and reinforced as by braces **22**. The side rails **13** of section **10** are also U-shaped beams, preferably of extruded aluminum, and contain inner sliding rails **23** of identical construction. The inner rails **23** have substantially an I-shape in cross-section, the exposed ends of the I having a flange bead. This bead partially encircles the adjacent edges of the rails **13** (FIGURE 3) to enhance a free sliding action. A series of interconnecting steps **24** are spaced along the length of and interconnect the inner rails **23**. The steps **24** may be of the same U-shaped cross-section as the steps **21** with the flanges fixed to the flanges of the rails **23**, as the flanges of steps **21** are secured with respect to the rails **14**.

When the inner rails **23** are lifted relatively to the outer rails **13**, the steps **24** naturally follow. In order to hold the rails **23** and steps **24** in an elevated position suitable locking or retainer means are employed. Conveniently, such means are located on the platform **17** which is in close proximity to the rails **23** and interconnecting steps **24**. In one form, the retainer may take the form of an L-shaped lug **25** (FIGURE 3), the longer stem of which is suitably secured as by bolts to the underside of the platform **17**, and the shorter stem of which has a suitable opening **27**. At least the bottommost of the steps **24** and preferably several or all of such steps have a cooperating, apertured lug **28** fixed centrally of the steps and in vertical alignment with lug **25**.

In use, when it is desired to render the ladder inoperative, the rails **23** are lifted as by the steps **24** and elevated

with respect to the base plates **19**. Any step **24** which has a lug **28** is raised to a point opposite to the opening in lug **25** as illustrated by FIGURE 3. A suitable lock, such as a padlock **29** as in FIGURE 2, may be passed through the aligned openings of lugs **25** and **28** and thereby fix the lugs together. This, in turn, maintains the rails **23** and steps **24** in a position of inaccessibility as shown by FIGURE 2. When it is desired to place the ladder in use, the padlock **29** is opened and the rails **23** and steps **24** allowed to descend by their own weight preferably to rest upon a base plate **19**. Thereafter the ladder may be used as before.

In place of the padlock **29**, any suitable retainer means may be used. FIGURE 4 illustrates a modification wherein a sliding bolt retains the telescoping rails **23** in an elevated position. In this case, a bolt **30** moves reciprocably in the direction of its length through the apertured legs of two lugs **31** and **32** fixed to the under side of the platform **17**. A handle **33** enables a user so to move the bolt **30** and also acts as a stop to prevent the bolt from sliding completely through the lugs **31** or **32**. When the rails **23** and steps **24** are raised, the bolt **30** engages an opening in a lug **28**, as shown in FIGURE 4, to retain the inner rails **23** and steps **24** in a position of inaccessibility.

The safety innovation afforded by the movable rails **23** prevents children from ascending the ladder at times of no supervision. Although various movements of the rails are contemplated, it is much preferred that these rails slide longitudinally of or telescope the outer rails **13** rather than pivot thereabove. The preferred sliding or telescoping mounting eliminates swinging the movable section through a large angle of 180 degrees and, moreover, eliminates the possibility of inadvertently dropping the movable section on a user, particularly a child. Further, by a sliding arrangement, the inner rails **23** can be locked or retained with respect to section **10** at any tread or step **24** by a padlock, bolt, or still other type of retainer. Moreover, if preferred, the rails **23** and interconnecting steps **24** can be completely removed by merely sliding this assembly entirely out of its engagement with the relatively stationary rails **13**.

Many modifications are possible with the present ladder without departing from the spirit of the invention. For example, the sections **10** and **11** have been shown fixed at one end. However, it is understood that these sections may be pivotably hinged together, if desired. Also, as used herein, the word "telescope" and forms thereof are meant to mean generally one member having a generic, relatively sliding arrangement with respect to another member.

Although the foregoing describes several embodiments



of the present invention, it is understood that the invention may be practiced in still other forms within the scope of the following claims.

I claim:

**1.** A ladder comprising two sections connected to one another at least through a substantially horizontally disposed platform adapted to define a standing area for a user of the ladder, each section having step means to enable that section to be ascended and descended, the step means of one section forming a unit telescopingly engaging its section and adapted for longitudinal movement thereof either to a position of inaccessibility while still forming a part of said ladder or optionally to a position entirely free of the ladder for independent use, retainer means mounted on the horizontally disposed platform, and retainer means on an appreciable number of the steps of said longitudinally moving section, each retainer means on a step cooperating with said retainer means on the platform, whereby the longitudinally movable section may be selectively retained at a plurality of its steps with respect to said platform when in a position of inaccessibility.

**2.** The ladder of claim **1** wherein said section having the telescopingly engaging unit includes relatively fixed side rails having U-shaped portions facing one another, and said unit includes opposed rails effecting said sliding engagement with the U-shaped portions of the relatively fixed side rails and joined one to another by interconnecting steps, said opposed rails being substantially I-shaped in cross section, the exposed ends of the I for at least one of the rails having flange beads partially encircling the adjacent edges of a U-shaped portion of a relatively fixed rail to enhance a free longitudinally guiding action therewith.

**3.** The ladder of claim **1** in combination with a wall member extending between said two sections, whereby said wall member may be selectively traversable or nontraversable dependent upon whether said movable step means is, respectively, in said usable or inaccessible positions.

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REINALDO P. MACHADO, *Primary Examiner.*

U.S. Cl. X.R.

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