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ADJUSTABLE LEG LADDER

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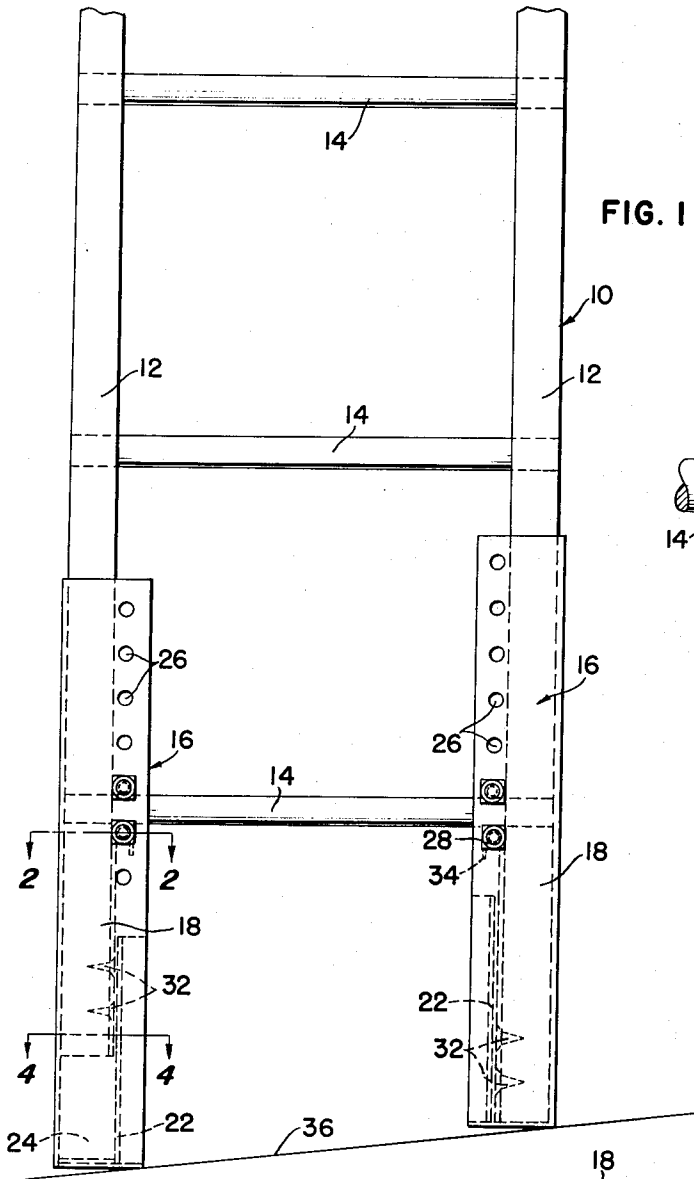


FIG. 1

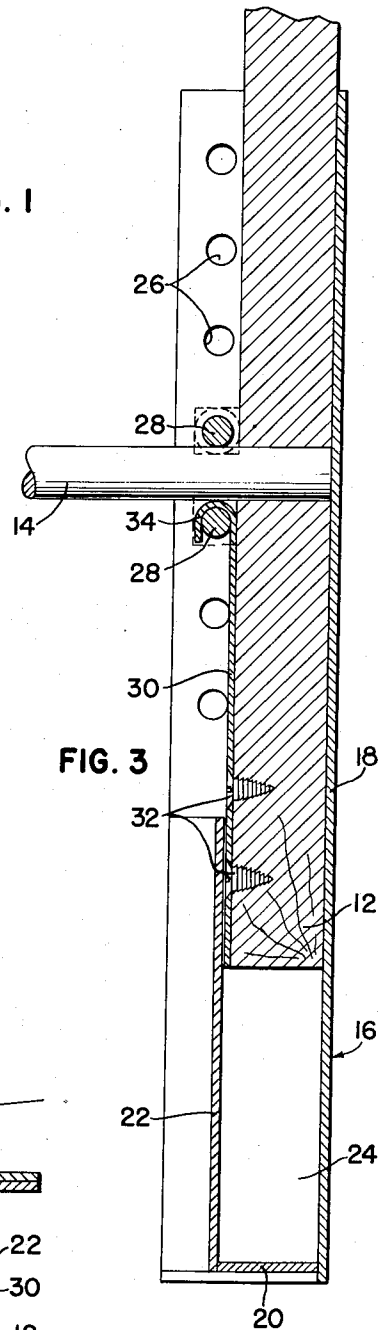


FIG. 3

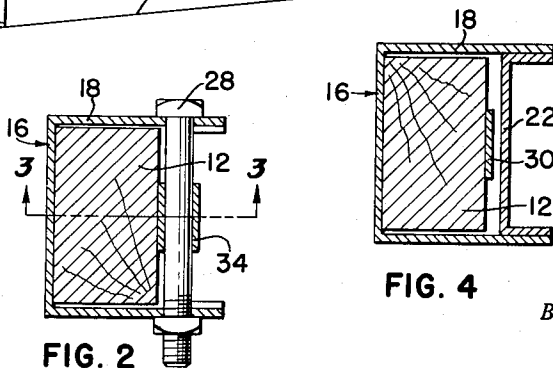


FIG. 2

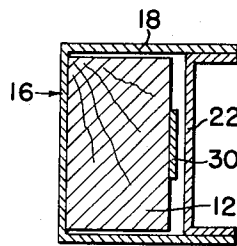


FIG. 4

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ADJUSTABLE LEG LADDER

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4 Claims. (Cl. 228—63)

This invention relates to adjustable leg ladders, and more particularly, to a removable boot or extension adapted to be adjustably secured to one or more side rails of a conventional rung-type ladder to make one of the side rails longer than the other so that the ladder can be employed upon a slope or hill.

It has been proposed heretofore to provide conventional side rail and rung-type ladders with adjustable length extensions for the side rails in order that the ladder can be employed with greater safety upon a slope or hill. However, so far as I am aware, known adjustable leg ladders of the type described are open to the objection that the adjustable leg extensions are relatively complicated, difficult to install or adjust, and are relatively expensive. Or else, they are not adapted to use with a conventional side rail and transverse rung-type ladder, but require special installations or attachments, plus modification of the ladder itself, so that the extension cannot be removed and the ladder used as a conventional ladder.

It is the general object of my invention to avoid and overcome the foregoing and other difficulties of and objections to the prior art practices by the provision of an improved, relatively inexpensive, high strength extension for a conventional ladder which can be quickly attached to or removed from the ladder, and which can be readily adjusted as to length.

Another object of my invention is to provide an adjustable extension for a conventional side rail and rung-type ladder, and wherein the ladder can be used as a conventional ladder when the extension is removed.

Another object of my invention is the provision of an adjustable leg or extension of the type described for a rung-type ladder wherein the load of the extension and the ladder is transmitted by means of a hanger strap so as to prevent injuries to any portion of the ladder including the rungs.

Another object of my invention is to provide as adjustable extension for a conventional rung-type ladder, and wherein the extension is cheaper and better than existing devices.

The foregoing objects of my invention, and other objects which will become apparent as the description proceeds, are achieved by the provision in combination of a conventional ladder including an extension slidably associated in telescopic relation with at least one side rail of the ladder. The extension includes a plurality of vertically-spaced holes, usually separated vertically by about the vertical height of a ladder rung. Bolt, or like means, extend laterally through the holes to lock the extension to the side rail, with the bolt or other means engaging both the top and the bottom of the ladder rung. Strap hanger, or like means, are associated with the underside of the ladder rung adjacent the side rails to transmit the load from the bolt means of the extension to the ladder.

For a better understanding of my invention, reference should be had to the accompanying drawing wherein:

Fig. 1 is a front elevation of a conventional ladder

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incorporating the adjustable extensions of my invention.

Fig. 2 is a horizontal cross-sectional view, and on a larger scale, taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a vertical transverse sectional view taken substantially on line 3—3 of Fig. 2; and

Fig. 4 is a horizontal cross-sectional view taken substantially on line 4—4 of Fig. 1, and on the same scale as Fig. 2.

In the drawings, the numeral 10 indicates generally the conventional ladder having side rails 12 joined in the usual manner with round rungs 14.

Mounted in sliding telescopic relation with one or more of the side rails 12 is the extension or adjustable leg of my invention, and indicated as a whole by the numeral 16. Describing only one of the extensions 16, inasmuch as they are duplicates of each other, each extension includes a metal channel 18 which, as best seen in Figs. 2 and 4, is of a size to snugly but slidably receive the side rail 12 of the ladder 10.

The lower end of the channel 18 is closed preferably with a plate 20, and a shallow channel or plate 22 is provided adjacent the lower portion of the channel to form a box-like opening 24 in the lower portion of the extension 16 which slidably receives the lower end of the side rail 12 of the ladder.

The side flanges of the channel 18 extend laterally inwardly beyond the side rail 12, and are provided with a plurality of vertically spaced holes 26. These holes are spaced apart vertically from edge to edge at a distance just slightly greater than the vertical height of the ladder rung 14, and a pair of bolts 28 extend through opposed holes 26 in the flanges of the channel 18 in the manner shown in the Figs. 2 and 3 to lock the extension 16 in desired relation with the side rail 12 of the ladder 10. It will be noted that in Fig. 3, the upper bolt 28 prevents the extension 16 from dropping off of the ladder when the ladder is raised with the extension thereon, and the lower bolt 28 engaging with the under side of the lowermost rung 14 prevents the downward movement of the ladder with respect to the extension 16.

In order to better transmit the load between the ladder 10 and the extension 16, and to prevent damage to the underside of the rung 14, I secure a metal hanger strap 30, as by screws 32, to the side rail 12 of the ladder beneath the lowermost rung 14, the hanger strap including an inverted U portion 34 which engages around the lower bolt 28.

It will be recognized from the foregoing that the objects of my invention have been achieved by the provision of an improved and simplified extension for a conventional ladder leg. It is relatively inexpensive, but of high strength, and can be quickly attached to or removed from the side rail of a conventional ladder without in any way affecting the normal structure or operation of the ladder. Removal of the bolts 28 is all that is necessary for the removal of the extension from the ladder, and vertical adjustment of the extension with respect to the ladder is fast and is achieved by merely repositioning the bolts 28 in any selected set of the vertically spaced holes 26 in the side flanges of the extension 16.

As noted heretofore, a pair of the extensions of my invention can be employed, with one on each side rail of the ladder, for example, to adapt the ladder to be used upon a slope or hillside represented by the numeral 36 in Fig. 1. However, in the more usual use of my invention, only a single extension 16 is employed at one time with a ladder, the extension being mounted upon the downhill side rail of the ladder, and being adjusted to the desired length to compensate for the downhill positioning or sidehill positioning of the ladder so that the downhill side rail will be brought to the proper length

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to give adequate support and safety to the ladder in use.

While in accord with the patent statutes, I have specifically illustrated and described one best known embodiment of my invention, it is to be particularly understood that I am not to be limited thereto or thereby, but that the scope of my invention is defined in the appended claims.

I claim:

1. In combination, a ladder having side rails connected together with transverse rungs, an extension adjustably associated with the lower end of each side rail, each extension including a channel adapted to slidably receive the side rail, a plate bridging the side flanges of the lower portion of the channel to provide a box slidably receiving the side rail, the side flanges of the channel, above the box, extending laterally inwardly of the side rail and formed with a plurality of opposed vertically spaced holes, the holes being spaced apart vertically from edge to edge about the thickness of a ladder rung, a pair of bolts extending between the side flanges of the channel, one bolt being above and the other bolt being below the ladder rung and substantially in engagement therewith to position the extension on the side rail of the ladder and a hanger strap secured to the inside of the side rail of the ladder and below the bottom rung and having a portion adapted to engage with the bolt below the ladder rung to help carry the load from the ladder to the extension.

2. In combination, a ladder having side rails connected together with transverse rungs, an extension adjustably associated with the lower end of each side rail, each extension including a channel adapted to slidably receive the side rail, a plate bridging the side flanges of the lower portion of the channel to provide a box slidably receiving the side rail, the side flanges of the channel, above the box, extending laterally inwardly of the side rail and formed with a plurality of opposed vertically-spaced holes, the holes being spaced apart vertically from edge to edge about the thickness of a ladder rung and a pair of bolts extending between the side flanges of the channel, one bolt being above and the other bolt being below the ladder rung and substantially in engagement therewith to position the extension on the side rail of the ladder.

3. In combination, a ladder having side rails connected

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together with transverse rungs, an extension adjustably associated with the lower end of each side rail, each extension including a channel adapted to slidably receive the side rail, the side flanges of the channel extending laterally inwardly of the side rail and formed with a plurality of opposed vertically-spaced holes, the holes being spaced apart vertically from edge to edge about the thickness of a ladder rung, a pair of bolts extending between the side flanges of the channel, one bolt being above and the other bolt being below the ladder rung and substantially in engagement therewith to position the extension on the side rail of the ladder, and a hanger strap secured to the inside of the side rail of the ladder and below the bottom rung and having a portion adapted to engage with the bolt below the ladder rung to help carry the load from the ladder to the extension.

4. In combination, a ladder having side rails connected together with transverse rungs, an extension adjustably associated with the lower end of each side rail, each extension including a channel adapted to slidably receive the side rail, the side flanges of the channel extending laterally inwardly of the side rail and formed with a plurality of opposed vertically-spaced holes, the holes being spaced apart vertically from edge to edge about the thickness of a ladder rung, and a pair of bolts extending between the side flanges of the channel, one bolt being above and the other bolt being below the ladder rung and substantially in engagement therewith to position the extension on the side rail of the ladder.

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