June 29, 1948. H. C. THIE 2,444,384

LADDER LEVELING DEVICE

Filed March 30, 1945

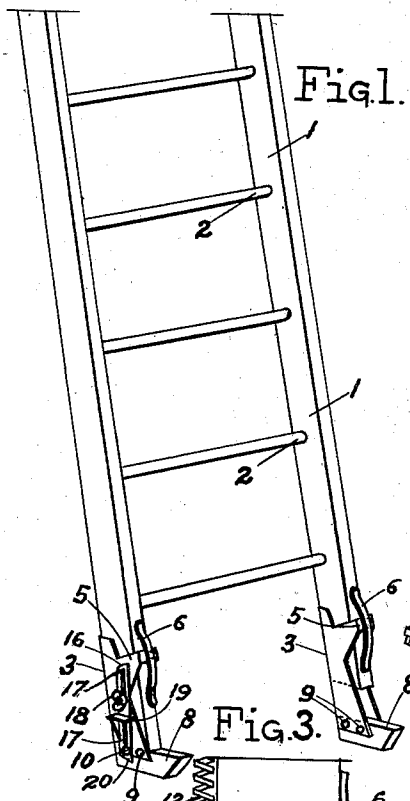


Fig. 1.

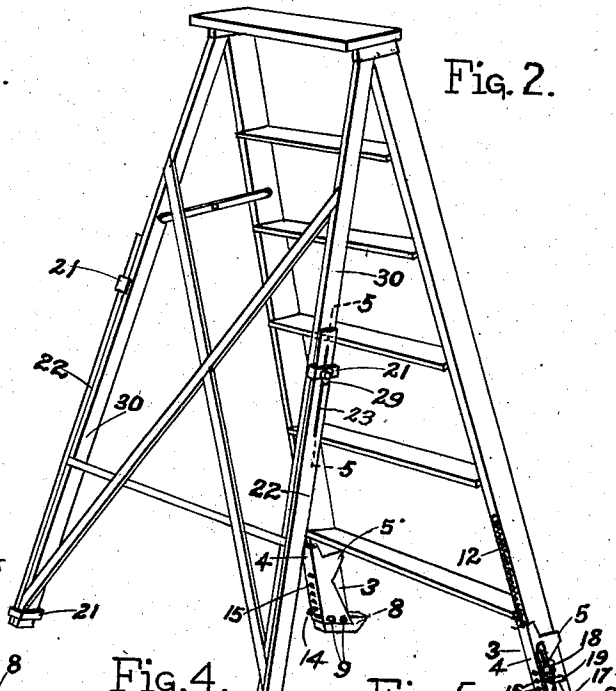


Fig. 2.

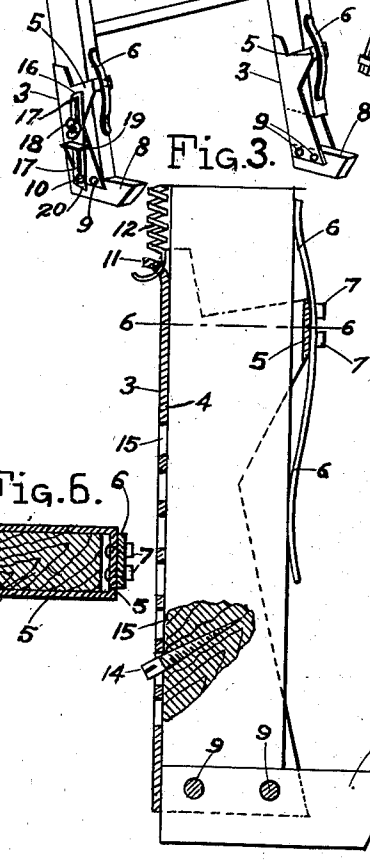


Fig. 3.

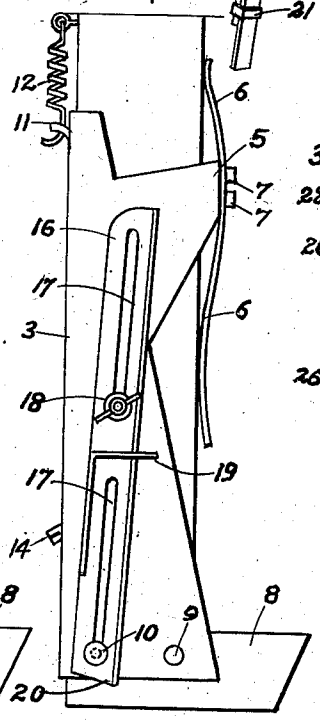


Fig. 4.

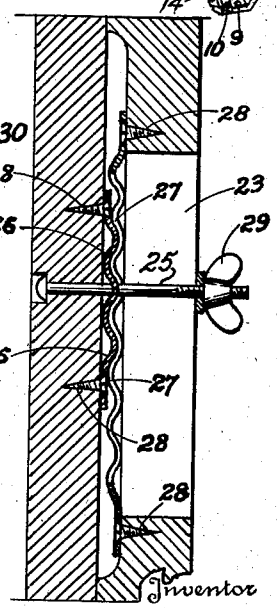


Fig. 5.

Fig. 6.

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LADDER LEVELING DEVICE

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3 Claims. (Cl. 228—63)

1

This invention relates to ladders and more particularly to an extension device adapted to be used with either straight ladders or so-called stepladders of the self-supporting type and of such a construction that it can be used singly with a single leg of a ladder or, if preferred, in connection with both legs and by means of which the length of the respective ladder legs can be varied as desired to conform with the contour of the ground or other surface upon which the ladder is positioned.

An object of the present invention is to provide an extension device of the character indicated which is easily applied to any standard make ladder and which can be manipulated with the use of a foot, thus eliminating any necessity to bend or use the hands, so that the device can be easily and safely operated by a single person while controlling the ladder.

Other objects will more particularly appear in the course of the following detailed description.

The invention consists in the novel construction, arrangement and combinations of parts hereinafter more particularly described and claimed.

One sheet of drawings accompanies this specification as part thereof, in which like reference characters indicate like parts throughout.

In the drawings:

Figure 1 is a perspective view of the lower end of a ladder showing the present invention applied to each of the legs;

Figure 2 is a perspective view of a stepladder showing the present invention applied to each of the front ladder legs;

Figure 3 is a medial cross-section through the present invention as applied to a ladder leg;

Figure 4 is a side elevation of the lower end of a ladder leg with the present invention in position;

Figure 5 is a transverse cross-section taken on line 5—5 of Figure 2; and

Figure 6 is a transverse cross-section taken on line 6—6 of Figure 3.

Referring to the drawings, the device of the present invention is adapted to be used in connection with either a straight ladder as illustrated in Figure 1 or a step-ladder as illustrated in Figure 2, in connection with either of which ladders the legs are identified by the reference 1 and the rungs by the reference 2.

To increase the length as desired of either of the ladder legs 1 a chanel-shaped sleeve member 3 is provided adapted to slidably embrace the lower end of the ladder leg 1 and having its back

2

or medial portion 4 provided with a plurality of aligned holes 15 adapted to be selectively engaged with a stud 14 herein illustrated as a screw imbedded in the ladder leg 1 and projecting from the rear edge thereof.

A tension spring 12 connects a lip 11 formed on the upper end of the channel member 3 to the ladder leg 1 substantially above the normal position of the channel member so as to tend normally to pull the channel member into its upper and retracted position on the leg.

The sides of the channel member 3 are bridged adjacent the top by a bridge member 5 to which is secured as by bolts or rivets 7 a resilient tongue 6, the ends of which are arranged to press against the forward edge of the ladder leg 1.

Secured to the bottom of the channel member as by transverse rivets or bolts 9 is a foot piece 8 adapted to constitute the ground-contacting portion where the ladder is used on a hard surface.

For situations where the ladder is to be used on the earth, a spur member 16 having aligned guide slots 17 is slidably secured to one of the side walls of the channel member 3 as by a rivet or bolt 10 passing through the channel member and the foot piece 8 and by a bolt carrying a wing nut 18 extending through the upper slot 17 and the adjacent wall of the channel member. The lower end of the slide member 16 will be pointed as at 20 to readily penetrate the earth, and the slide is provided with a foot-engaging flange 19 by means of which it can be readily lowered into operative position.

With the structure as thus described, it being desired to lengthen one or the other of legs 1 of the ladder, the foot will be applied to the foot member 8, rocking the channel member 3 rearwardly against the tension of the leaf spring 6, thus disengaging the stud 14 from one of the holes 15 in the rear wall of the channel member 3 and further pressure downward on the foot piece 8 lowers the channel member against the tension of spring 12 to the desired distance below the bottom of ladder leg 1, whereupon the removal of the foot from the foot member 8 permits the channel member under the tension of leaf spring 6 to resume its normal position in alignment with the ladder leg 1 and permitting the stud 14 to reengage the adjacent hole 15 thus securely locking the channel member 3 in its lowered position. To shorten the ladder leg 1 the channel member is similarly rocked by the application of the foot pressure on the member 8 but upon release of the pressure and while hold-

ing the channel member thus rocked the spring member 12 is permitted to draw the channel member upward into its normal elevated position.

When used in connection with a stepladder it is desirable to provide a simple means for adjusting one or both of the supporting legs 30, to which end is provided extension members 22 which are held in sliding relationship to supporting leg 30 as by a ring guide 21 adjacent the bottom of the supporting leg and a bolt 25 extending from the supporting leg 30 through a slot 23 provided in the extension part adjacent its upper end. To assure a positive grip between these two members short lengths of transversely corrugated strips 26—27 are secured to the confronting faces of the supporting leg 30 and extension 22 as by screws 28. When the thumb nut 29 is retracted upon bolt 25 the extension member 22 can be adjusted up or down on the supporting leg 30 and relocked into positive association with said leg by the tightening of the nut, thus drawing the corrugated members 26—27 into locking engagement as is well illustrated in Figure 5.

Various modifications in the construction and arrangement of the parts as well as their proportions will readily suggest themselves to those skilled in the art to readily adapt the same to any standard type of ladders.

Having thus described my invention, I claim:

1. Extension device for ladders comprising a collar adapted to slidably embrace the leg of a ladder, tension means arranged to normally draw the collar upwardly on the leg, interengaging members on one face of the collar and the adjacent face of the leg, tension means on the opposite face of the collar adjacent its top adapted to engage the adjacent face of the leg, foot engaging means carried by the bottom part of the collar, that face of the collar carrying the leg engaging tension means being cut away to permit the rocking of the collar against said tension means to release the interengaging members.

2. Extension device for ladders comprising a member of channel cross-section adapted to embrace the ladder leg, the sides of said member bridged at the upper end, a resilient member mounted on the bridging part to engage the exposed edge of a ladder leg positioned in the said channel member, interengaging members on the opposite edge of the ladder leg and the medial part of the channel member, spring means connecting the upper part of the channel member to the ladder leg, a foot engaging part on the bottom of the channel member and a spur member slidingly mounted on the channel member with means for securing the spur in adjusted position.

3. Extension device for ladders comprising a collar adapted to slidably embrace the leg of a ladder and to rock with respect to said leg, interengaging members on one face of the collar and the adjacent face of the leg, tension means operative to normally rock the collar into alignment with the leg and the interengaging members into engagement, tension means operative normally to slide the collar upwardly on the leg, and a foot carried by the collar having a part arranged to be engaged by the foot of an operator to rock the collar with respect to the ladder leg to disengage the interengaging members and permit sliding of the collar lengthwise with respect to the leg.

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