

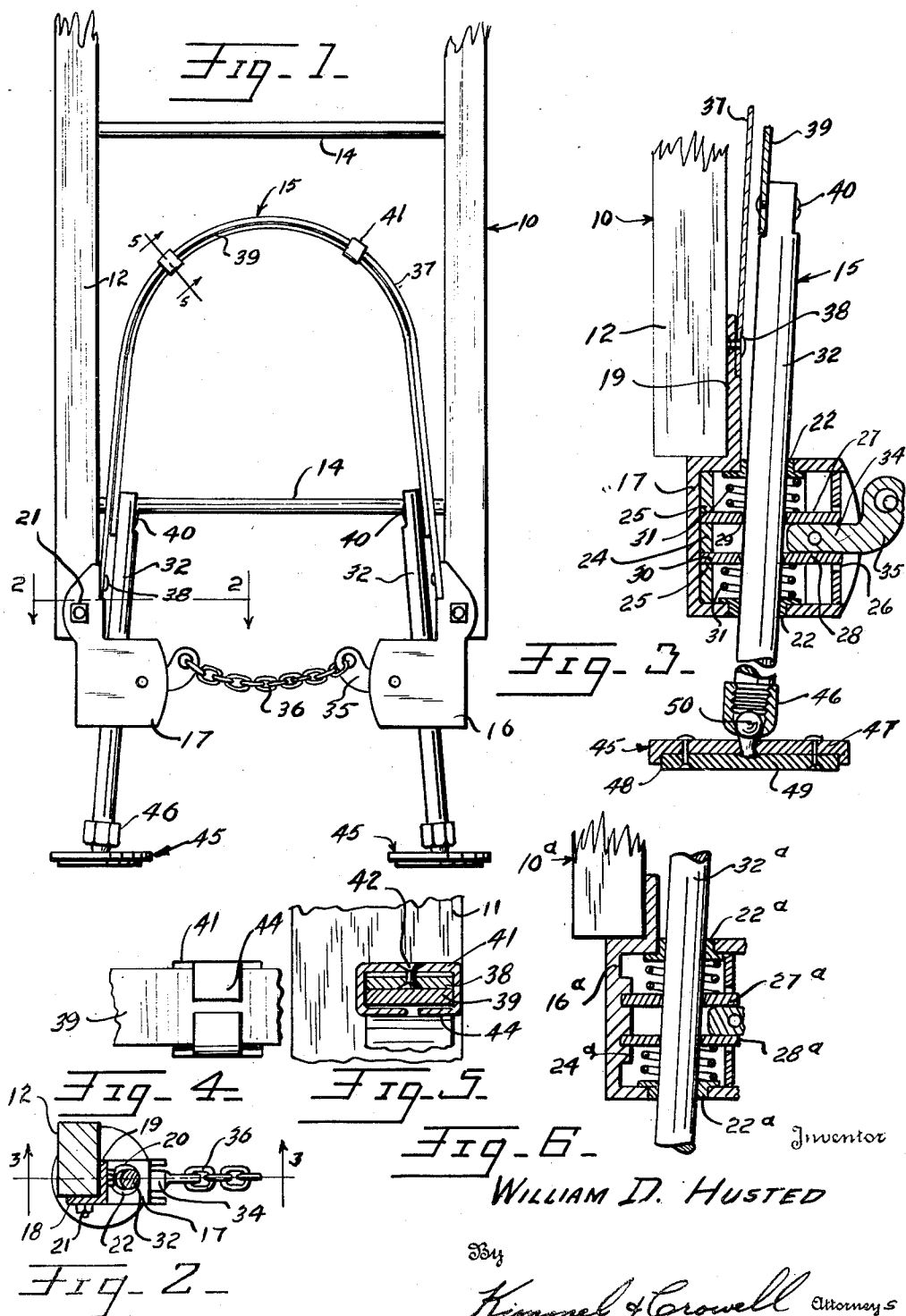
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EQUALIZER LADDER BASE

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EQUALIZER LADDER BASE

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1

This invention relates to an equalizer for ladders and is an improvement over the construction embodied in Patents Nos. 1,542,775 of June 16, 1925, and 2,289,499 of July 14, 1942.

An object of this invention is to provide an improved equalizing means for engagement with the lower end of a ladder to provide means whereby the lower end of the ladder may be engaged with uneven ground while the ladder remains in a vertical position and the supporting means at the bottom of the ladder firmly contacted with the uneven ground.

Another object of this invention is to provide an improved equalizing structure of this kind having means for automatically locking the equalizing structure in adjusted position.

A further object of this invention is to provide an improved equalizing structure having a pair of supporting members secured one to each side of the ladder, and connected together so that movement of one of the supporting members will effect movement of the other in the opposite direction.

A further object of this invention is to provide locking means for each of the equalizing members and a flexible connection between the locking means whereby both locking members will be released at the same time to permit the supporting members to be shifted relative to the lower end of the ladder.

A further object of this invention is to provide improved means for firmly locking the adjustable supporting members relative to the ladder.

A further object of this invention is to provide an improved ladder equalizing device which is so constructed that it may be mounted on different types of ladders so located that the equalizing means will not form an obstruction for the foot of a user.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claims.

In the drawings,

Figure 1 is a rear elevation of an improved equalizing structure constructed according to an embodiment of this invention, which is mounted on the lower end of a ladder, the ladder being shown in fragmentary form.

Figure 2 is a horizontal section taken on the line 2—2 of Figure 1,

Figure 3 is a vertical section taken on the line 3—3 of Figure 2,

Figure 4 is a detail bottom plan view of a guide clip,

2

Figure 5 is a section taken on the line 5—5 of Figure 1,

Figure 6 is a vertical section of a modified form of this invention.

Referring to the drawings, the numeral 10 designates generally a ladder structure having side rails 11 and 12 and rungs 14. An equalizing device designated generally as 15 is fastened to the lower end of the side rails 11 and 12 beneath and behind the lowermost rung 14. The equalizing device 15 includes a pair of equalizing housing members 16 and 17 secured to the ends of the side rails 11 and 12 respectively. The members 16 and 17 are similar in construction so that the description of one will apply equally to the other.

The housing member, as 17, is formed of a substantially rectangular metal construction having a pair of right angularly disposed flanges 18 and 19 extending upwardly from the upper surface or end of the housing 17, which flanges 18 and 19 are adapted to engage about the corner of the side rail 12 and are secured thereto by bolts 20 and 21 respectively.

The housing 17 is formed on its upper and lower surfaces with eccentrically aligned openings in which bearing members or bushings 22 are adapted to be frictionally secured, which bushings 22 may be readily removed and replaced to compensate for any wearing of the bearing surface which may develop after considerable use of the equalizing device 15.

Within the housing 17 adjacent the outer wall thereof there is fixed a plate 24 which is formed with a pair of vertically spaced apart laterally extending slots 25, and the inner wall thereof is formed with an enlarged rectangular opening 26, the upper and lower edges of which are substantially aligned with the upper and lower edges of the slots 25 respectively.

Also within the housing 17 there are a pair of vertically spaced apart flat upper and lower locking plates 27 and 28 which are rockably supported within the housing 17 by the engagement of their outer edges loosely in the slots 25 and an extension of their inner edges extends between the side walls of the opening 26 whereby the lower locking plate 28 is adapted to contact the lower edge of the opening 26 and the upper locking member 27 engages the upper edge of the opening 26. The locking member or plates 27 is formed with a centrally located opening 29 at a slight angle therethrough and the plate 28 has a similar opening 30 with the angle in the opposite direction from that of the plate 27, so that as the plates 27 and 28 engage their respective edges of the opening 26, the openings 29 and 30

3

are aligned with the bushings 22. Between the bushings 22 and each plate 27 and 28 there is provided a spring 31 which constantly urges the plates 27 and 28 together and the openings 29 and 30 out of alignment.

An elongated slide member or rod 32 is slidably mounted through the bushings 22 and openings 29 and 30 in their aligned position. In the normal position of the plates 27 and 28, the openings 29 and 30 are out of alignment and bear hard against the slide member 32 for locking it against sliding in either direction. For moving the plates 27 and 28 to unlocked position with the openings 29 and 30 in aligned position, there is provided a lever 34 which extends through the opening 26 and is rockably mounted within the housing 17 between the plates 27 and 28, whereby the plates 27 and 28 may be rocked to unlocking position against the force of the springs 31. The inner ends of the levers 34 are turned upwardly to form a substantially L-shaped lever having an upwardly extending arm 35. The upper ends of the arms 35 of the opposite housings 16 and 17 are connected by a chain 36 or other suitable flexible connecting member, whereby force downward, as by the foot of the user, will simultaneously unlock both locking members 16 and 17.

In the locked position of the plates 27 and 28 the plates bear against the rod 32 and the levers 34 are loose therebetween.

An elongated flat resilient bowed guide member 37 is connected between the locking members 16 and 17 and is attached to each by engaging in a recess in the flanges 19 to which it is connected by a rivet 38 or other suitable fastening means. An elongated flat resilient bowed tie member 39 engages the lower flat surface of the guide member 37 and is fixed at each end to the upper end of the slide members 32 by a rivet or bolt 40 whereby, in unlocked condition, movement of one member 32 in one direction will effect a similar movement of the opposite member 32 in an opposite direction.

For guiding the tie member 39 in relation to the guide member 37 there are provided flat guide clips 41 which are fixed to the guide member 37 by a rivet 42. The clip 41 engages about both members 37 and 39 and the arms 44 which engage below the member 39 on the concave side thereof are of a substantially shorter width than the remaining portion of the clip 41 in order to prevent binding the sliding tie member 39.

To provide for a substantial footing for the members 32 on the ground, there is provided a foot 45 which may be swivelly attached to the lower end of the rods 32. The rod 32 is exteriorly threaded on its lowermost end and an apertured cap 46 is adapted to be engaged thereon.

The foot 45 comprises an annular flat body 47 having a large annular recess 48 on the lower side thereof and a resilient gripping body or material 49 is secured in the recess 49 to extend partially below the body 47 for providing a non-skid ground gripping surface. Centrally of the body 47 and extending upwardly therefrom there is provided a swivel member 50 which is substantially spherical on its upper end and which is tapered convergently on its lower end. The lower end of the member 50 extends through the body 47 and may be peened over on its lower inner end for securing the member 50 to the body 47.

In Figure 6 there is shown a modified form of locking member 16a having the inside of the outer wall formed with ribs 24a in place of the plate 24

4

which extend transversely of the wall for supporting the outer end of the locking plates 27a and 28a. The remaining construction is similar to that of the locking members 16 and 17.

In the use and operation of this equalizing device 15, the guide members or housings 16 and 17 are fixed to the lower ends of the ladder on the rear side thereof so the bowed guide member 38 may be behind the rungs 14 where the device will not obstruct a user climbing on the rungs. The chain 36 or other flexible connecting member is fixed loosely between the lever arms 35 and when the ladder 10 is to be placed on uneven ground, the ladder may be raised to approximate position. By placing a foot on the center of the chain 36, and pressing downwardly, the levers 35 and 34 are simultaneously rocked on each member 16 and 17 unlocking the respective slides 32, whereupon the weight of the ladder 10 will cause the low slide 32 to slide upwardly and the high slide 32 consequently to slide downwardly until both feet 45 engage the ground. Releasing the chain 36 permits the plates 27 and 28 to again lock about the slide 32 preventing movement of the slide members 32 if a heavy load should be placed on one side of the ladder.

I do not mean to confine myself to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

What I claim is:

1. An equalizing supporting structure for a ladder having opposite side rails, comprising a guide housing secured to each of the side rails, an elongated slide member slidably carried by each guide housing and having a supporting foot on the lower end thereof, said slide members diverging downwardly, a pair of substantially horizontal parallel spaced apart plates pivotally mounted in each guide housing, said plates being formed with openings through which the associated slide member extends, the opening in the upper plate being formed with axis thereof inclined relative to the surface of said upper plate in the direction of the inclination of said associated slide member, the opening in the lower plate being formed with the axis thereof inclined relative to the surface of said lower plate in the direction opposite to the inclination of said associated slide member, spring means in each guide housing constantly urging said plates towards each other for locking said slide member relative to said housing, and a lever rockable on each guide housing engaging between said plates and adapted when rockable to separate said plates for permitting said slidable member to slide relative to said housing.

2. An equalizing supporting structure for a ladder having opposite side rails, comprising a guide housing secured to each of the side rails, an elongated slide member having a supporting foot on the lower end thereof extending slidably upwardly through each of said guide housings, said slide members diverging downwardly, a pair of vertically spaced apart plates in each guide housing pivotally carried at their outer ends by the latter, an opening in each of said plates through which the associated one of said slide members slidably extends when said plates are substantially parallel, the opening in the upper one of said plates having the axis thereof inclined relative to the surface thereof in the direction of the inclination of said associated slide member, the opening in the other of said plates being inclined relative to the surface thereof in the direction opposed to the inclination of said associated slide

member, spring means in said housing constantly urging said plates together for locking engagement with said associated slide member, a lever rockable on said guide housing engaging between the inner ends of said plates and adapted, when rocked, to move said plates to parallel disposition, means connecting said slide members together for simultaneous movement in opposite directions, and a common operator for said levers.

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