May 15, 1951 R. C. COURTNEY 2,552,941

LADDER SUPPORT

Filed April 15, 1946

Fig. 1.

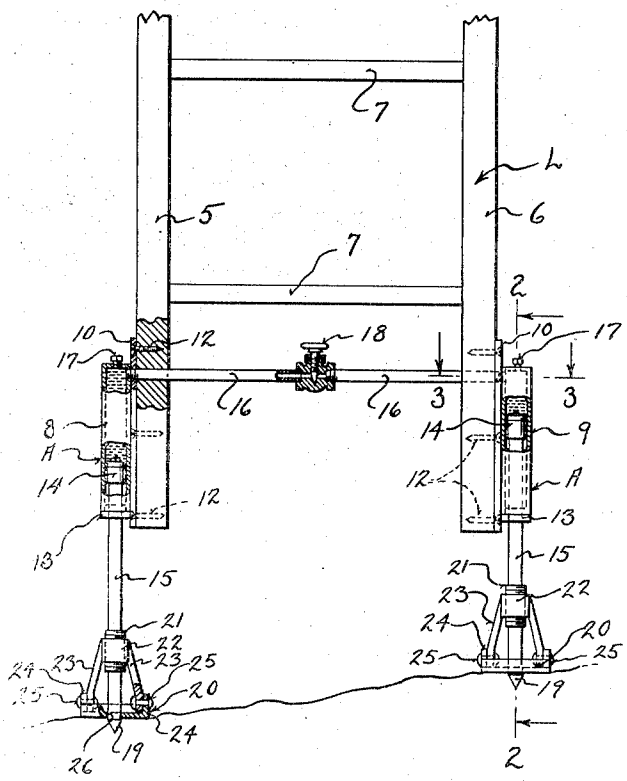


Fig. 2.

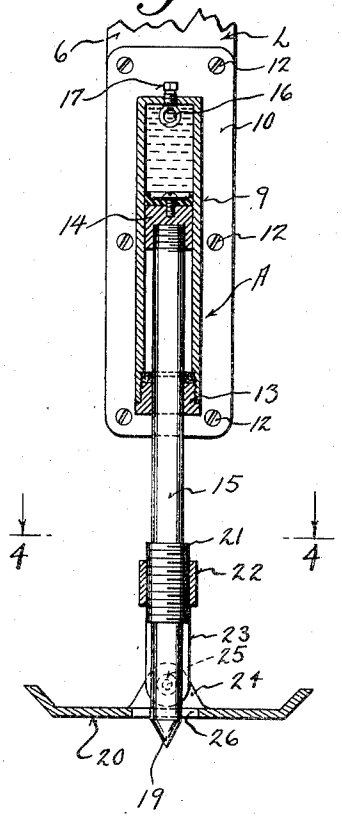


Fig. 3.

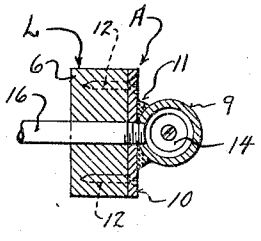
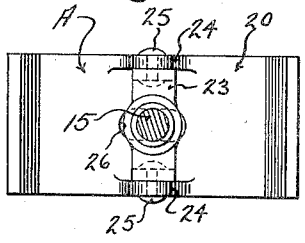


Fig. 4.



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LADDER SUPPORT

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3 Claims. (Cl. 228—63)

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This invention appertains to ladders and more particularly to a novel base therefor for facilitating the engagement of the ladder with uneven surfaces.

One of the primary objects of my invention is to provide a base for ladders which will automatically equalize and adjust itself to uneven surfaces, whereby the ladder proper will be held in a straight position against tilting or slipping.

Another salient object of my invention is to provide an attachment for ladders which can be easily and quickly associated with ladders of conventional type now found in the open market, whereby such ladders can be used with my attachment successfully on uneven surfaces.

Another object of my invention is to provide a hydraulic ladder equalizer embodying a pair of equalizing cylinders rigidly connected with the longitudinal rails of the ladder, the cylinders having slidably mounted therein pistons carrying the ground engaging legs, means being provided for permitting the flow of the hydraulic fluid from one cylinder to the other so as to permit the automatic adjustment of the pistons in the cylinders.

A further object of my invention is to provide means for permitting the flow of hydraulic fluid from one cylinder to the other during the automatic equalizing of the legs and for trapping the fluid in the cylinders after such automatic adjustment, whereby the legs and pistons will be held in their adjusted position.

A further important object of my invention is to provide novel feet on the legs, whereby the ladder can be successfully used on different characters of floors, etc.

A still further object of my invention is to provide an automatic equalizer attachment for ladders which will be durable and efficient in use, one that will be simple and easy to manufacture and one which can be placed upon the market at a low cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawing, in which drawing:

Fig. 1 is a fragmentary side elevational view of a ladder showing my novel attachment incorporated therewith, parts of the view being shown broken away and in section to illustrate structural detail.

Fig. 2 is an enlarged detail vertical sectional view taken on the line 2—2 of Fig. 1, looking in the direction of the arrows.

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Fig. 3 is a detail transverse sectional view taken on the line 3—3 of Fig. 1, looking in the direction of the arrows, illustrating the means for connecting one of the cylinders to one rail of the ladder.

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 2, looking in the direction of the arrows, showing one of the novel feet in top plan.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my novel equalizing attachment for a ladder L.

The ladder L can be of any type now found in the open market and, hence, the same includes the spaced parallel longitudinally extending rails 5 and 6 connected together by rungs 7.

My attachment A comprises a pair of like cylinders 8 and 9 and each of these cylinders are rigidly secured to an attaching plate 10. While the cylinders 8 and 9 can be secured to the attaching plates 10 in any preferred way, I have shown the same welded, as at 11 (see Fig. 3), to the plates.

The cylinders and the plates extend longitudinally of the rails 5 and 6 of the ladder and are secured in place to the rails by suitable fastening elements, such as screws 12. The cylinders and plates are arranged at the lower ends of the rails and the plates 10 not only function to secure the cylinders in position but to also strengthen and reinforce the ladder rails at the points of connection of the cylinders with the ladder. The upper ends of the cylinders are provided with end walls or heads and the lower ends of the cylinders are provided with removable stuffing boxes 13.

Pistons 14 are slidably mounted in the cylinders and piston rods or legs 15 are rigidly connected to the pistons and slidably extend through the stuffing boxes 13. Thus it can be seen that the pistons and the legs are freely slidable longitudinally of the cylinders 8 and 9. The upper ends of the cylinders are connected by a transversely extending pipe or tube 16 so that flow of fluid from one cylinder to the other above the pistons can be had. The cylinders and the connecting pipe 16 are adapted to be filled with any preferred type of hydraulic fluid and the upper ends of the cylinders can carry removable plugs 17, whereby the cylinders can be easily filled with the liquid.

The connecting pipe 16 has incorporated in the length thereof a hand operated control valve

18 and an operator, by closing the valve, can trap the fluid in the cylinders or, by opening the valve, can allow the free flow of fluid from one cylinder to the other.

In accordance with my invention, I prefer to provide ground engaging points 19 on the lower ends of the legs 15, but I also provide novel feet 20 for use with the legs. These feet will now be described.

The legs 15, adjacent to their lower ends, are provided with threaded portions 21 and these threaded portions adjustably receive collars 22. The collars 22 have formed thereon depending bracket arms 23 and the feet 20 are rockably mounted intermediate their ends on the lower terminals of the bracket arms. These feet 20 are of a flat elongated construction and have a portion of their side edges turned up to provide pivot ears 24 and these ears are connected by pivot pins 25 to the bracket arms. Obviously, the feet 20 can swing on their pivots to conform themselves to ground contour and to the angle of the ladder. The legs 15 can extend through openings 26 formed in the central portion of the feet and by turning the feet on the legs, the pointed terminals 19 of the legs can be brought above or below the lower surface of the feet.

In use of my attachment A, the same is secured to a ladder as described and the user of the ladder opens the valve 18. The ladder is now used in the ordinary way and the pistons 14 will move up and down in the cylinders according to the inclination of the ground, and, hence, the feet will automatically equalize themselves and the ladder will be held in a proper straight position. After the pistons have automatically equalized themselves in the cylinders according to the pitch of the ground, the valve 18 is closed, so that the fluid will be trapped in the cylinders and thus prevent further upward movement of the pistons in the cylinders.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

1. The combination with a ladder of a hydraulic equalizing device for the lower end thereof including a cylinder carried by each side of the ladder, pistons slidably mounted in the cylinders, ground engaging legs secured to and movable with the pistons in the cylinders, means for establishing communication between the upper ends of the cylinders above the pistons, and hydraulic fluid filling the cylinders above the pistons and normally freely displaceable from one cylinder to the other.

2. The combination with a ladder, of a hydraulic equalizing device for the lower end thereof including a cylinder carried by each side of the ladder, pistons slidably mounted in the cylinders, ground engaging legs secured to and movable with the pistons in the cylinders, means for establishing communication between the upper ends of the cylinders, hydraulic fluid filling the cylinders above the pistons and normally freely displaceable from one cylinder to the other, and manual means for controlling the flow of fluid from one cylinder to the other.

3. A hydraulic equalizing device for ladders comprising a pair of spaced parallel cylinders, attaching plates rigidly secured to the cylinders, means for securing the plates to the rails of a ladder with the cylinders extending longitudinally of the rails, pistons slidably mounted in the cylinders, ground engaging legs secured to the pistons and slidably extending through the lower ends of the cylinders, a pipe for establishing communication between the upper ends of the cylinders above the pistons, means for filling the cylinders and pipe with fluid, and a hand valve in said pipe for controlling the flow of fluid therethrough.

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