

Jan. 4, 1949.

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2,458,076

LADDER EXTENSION

Filed March 12, 1947

2 Sheets-Sheet 1

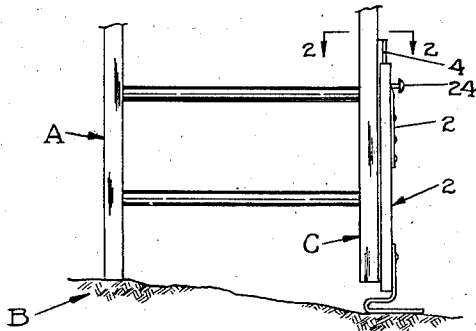


Fig. 1

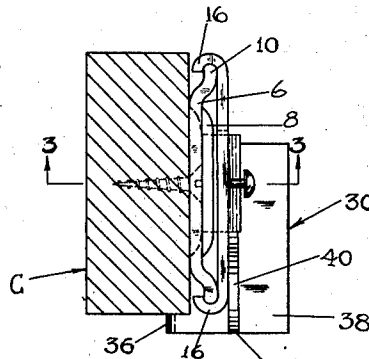


Fig. 2

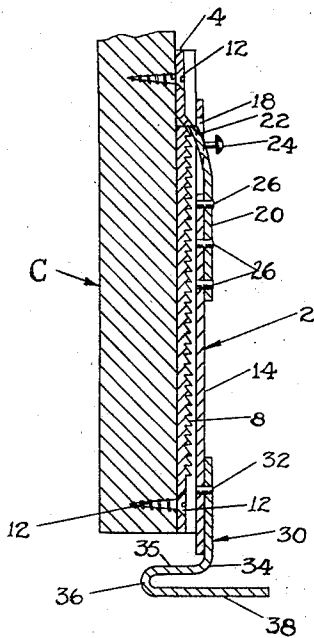


Fig. 3

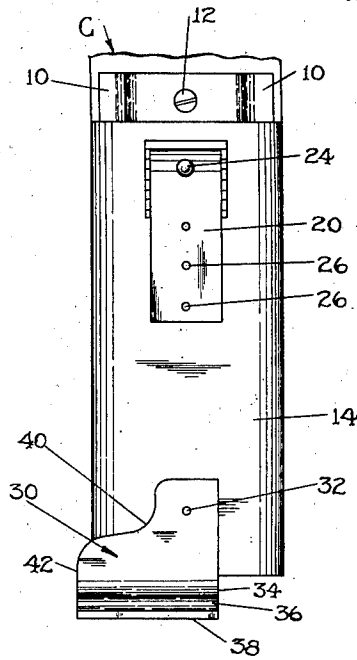


Fig. 4

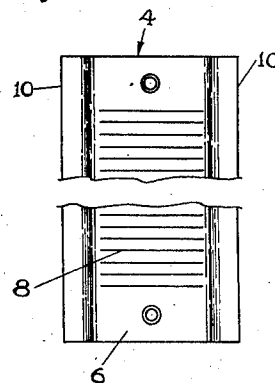


Fig. 5

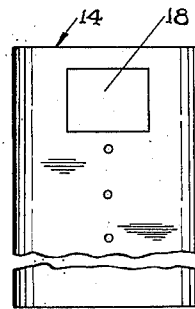


Fig. 6

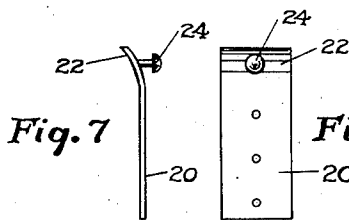


Fig. 7

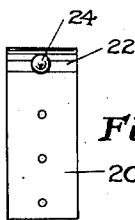


Fig. 8

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2 Sheets-Sheet 2

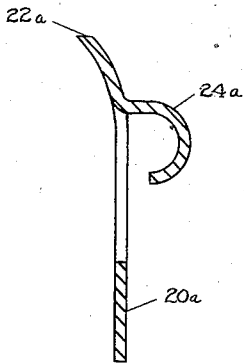


Fig. 9

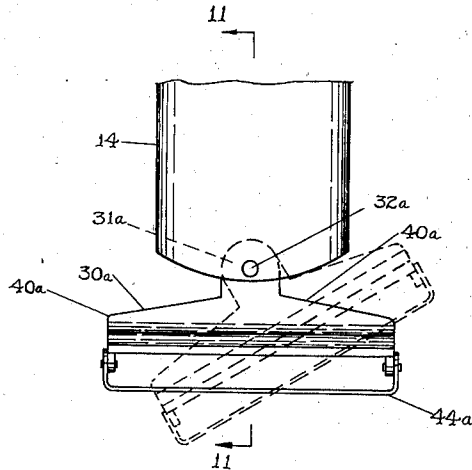


Fig. 10

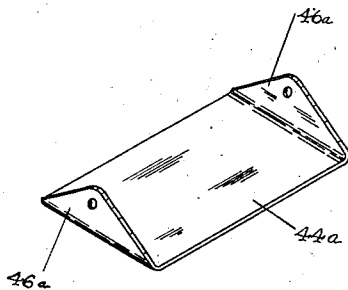


Fig. 12

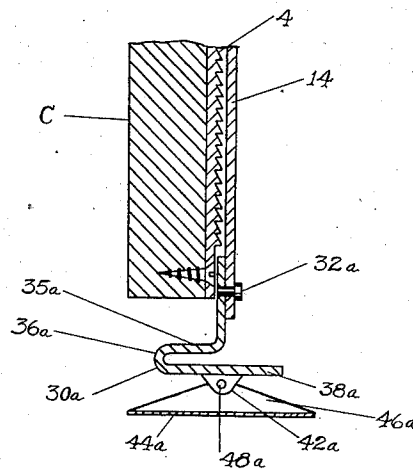


Fig. 11

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LADDER EXTENSION

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3 Claims. (Cl. 228—63)

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This invention is directed to a ladder extension, and more particularly to an extensible footing for a ladder in order that the ladder may be held vertically when standing on a slanting or uneven surface.

Many attempts have been made to provide extensible legs or footings for ladders, but in all known instances the constructions have required that the ladder legs be cut or otherwise modified in order to accommodate the extensible feature, and such features are cumbersome and expensive.

It is an object of the instant invention to provide an extensible footing for a ladder which is of simple and inexpensive construction, and which can be applied to any ordinary ladder without specially modifying the ladder. Another object of the invention is to provide an extensible footing which can be quickly adjusted into position while the ladder is being held in a vertical position.

These and other objects of the invention are obtained in general by a rack and pawl construction, the rack being a plate which is attachable to the side of an ordinary ladder and the pawl being in the form of a plate having a leaf spring tongue slideable over the rack and provided with a foot which is vertically adjustable to the position desired and which is pivotally fixed to the pawl plate so that it will adjust itself to inequalities of the surface upon which the ladder is resting.

The means by which these objects are obtained are more fully described with reference to the accompanying drawings in which:

Fig. 1 is a front view of the lower portion of a ladder with the novel extensible footing attached thereto;

Fig. 2 is a cross-sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a side elevational view of Fig. 1;

Fig. 5 is a broken side elevational view of the rack;

Fig. 6 is a broken side elevational view of the pawl plate;

Fig. 7 is a side elevational view of the tongue part of the pawl;

Fig. 8 is a side elevational view of Fig. 7;

Fig. 9 is a cross-sectional view of a modification of the tongue part of the pawl;

Fig. 10 is a front elevational view of a modified form of a footing;

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Fig. 11 is a cross-sectional view on the line 11—11 of Fig. 10; and

Fig. 12 is a perspective view of the ground bearing plate for the footing.

In Fig. 1, the ladder A of ordinary construction is shown standing on an uneven inclined surface B. In order to hold the ladder vertical, the extensible footing 2 is fastened to the ladder A.

The details of this extensible footing are more clearly shown in Figs. 2, 3 and 4. The rack plate 4 consists of a base portion 6 provided with downwardly facing teeth 8 and out-turn flanges 10 set above the plane of the base portions 6. This plate is attached to the leg C of a ladder by means of screws 12, it being noted that the out-turn flanges 10 are spaced from the surface of the ladder leg C. The pawl plate consists of a flat plate 14 having inwardly turned flanges 16, which flanges are adapted to engage slideably the outwardly turned flanges 10 of the rack as shown in Fig. 2. Adjacent the upper end of the plate 14 is an opening 18. A tongue 20 in the form of a leaf spring having a curved end 22 is adapted to engage the teeth on the rack. A knob 24 is fastened to curved end 22 so that the latter may be lifted. Tongue 20 is secured to plate 14 by means of rivets 26.

A footing 30 is pivotally attached to the lower end of the plate 14 by means of a rivet 32 mounted on the center line of plate 14. This footing 30 is formed from a flat plate which is bent to form an inverted T shape to produce a first bend 34 to form a flat portion 35 and rebent at 36 to form a bottom 38 which completes the head of the T. Bottom 38 extends from beneath the ladder leg C to a point outwardly thereof. By reason of the bend 36, portions 35 and 38 are separated. Plate 30 has one corner adjacent rivet 32 cut away at 40, and said plate is of such width and the rivet 32 so mounted as to place one edge 42 of the footing outwardly of the side of the ladder leg C.

The operation of this ladder extension is as follows:

Rack 4 is fastened by screws 12 to the ladder leg C, it being noted that this rack can be applied to the flat side of any ladder, and that no cutting or other modification of the ladder leg is necessary. Inasmuch as the flanges 10 are spaced from the side of the ladder leg, and as the inwardly turned flanges 16 are in fairly close fit with the outwardly turned flanges 10 of the rack so that there is but a slight frictional holding power between the two, when the tongue 22 is raised by a pull on the knob 24, the pawl plate

can be slid over the top of the rack from the bottom of the ladder. Now, as the ladder is held vertically, the operator, using both of his hands to hold the ladder upright and standing on uneven ground, can press with one of his feet upon the upper tread surface of the bottom plate 38 and push the foot 30 downwardly until it bears upon the surface of the ground. As the tongue 22 of the pawl slides over the downwardly facing rack teeth 8 without the necessity of any manual manipulation of the tongue 22, the adjustment of the ladder as to height is made quickly and expeditiously.

The footing 30 being attached to the ladder on the median line of the ladder will take the vertical thrust in the leg C. At the same time, because of its pivotal connections, the footing will adjust itself to any irregularities of the ground in a direction normal to the plane of the ladder.

In Figs. 9 to 12 certain modified forms of my invention are illustrated. As shown by Fig. 9, the tongue 20a in the form of a leaf spring having a curved end 22a, has a pull 24a struck out from the tongue, and curved into arcuate form so that it may be grasped easily by a finger.

In Figs. 10, 11 and 12 the footing 30a is constructed so that it is pivotally adjustable on axes at right angles to each other. The footing is composed of an upright curved upper portion 31a connected by downwardly inclined shoulders 40a to a flat portion 35a, and by a bend 36a to the bottom 38a. Ears 42a depend from bottom 38a, and to these ears a ground plate 44a is pivotally secured by means of upstanding flanges 46a and rivets 48a. Footing 30a is secured to the inside face of plate 14, and the inclination of the shoulders 40a is such that the degree of tilting of the ladder is limited to the angle at which the lower edge of the inwardly turned flange 16 of plate 14 strikes shoulders 48a. Thus the ladder leg will not turn far enough to fall off the footing. At the same time, as the axes of rivet 32a and rivets 48a are at right angles to each other, footing 30a is adjustable in two directions to meet the irregularity of the ground. In addition it is seen that as the pivot 32a is located on the vertical axis of the footing, the latter may be used on either the right or left legs of the ladder.

All the elements of the extensible footing are of simple construction and are rugged and durable in form. When it is not desirable to use the extension for the ladder, the pawl plate 14 can be removed quickly by sliding it off the lower end of the rack, and the ladder is then only encumbered by the relatively small rack plate 4. To re-

attach the pawl plate is an easily performed operation. The various elements comprising the extensible footing are preferably made of metal and may be of rolled, stamped, forged or otherwise created shapes.

Having now described the means by which the objects of my invention are obtained, I claim:

1. In a pawl and rack construction for an extensible ladder leg, said rack comprising a channel shaped member having a web with downwardly facing teeth and outwardly turned flanges, said teeth lying within the channel formed between said flanges, said pawl member comprising a channel shaped plate member having inwardly turned flanges slidably engaging said outwardly turned flanges on said rack, a tongue secured to said plate member and normally in spring engagement with the teeth of said rack, and a foot pivotally secured to said plate member and extending from a point beneath to a point outwardly of said ladder to form a tread portion.

2. In a construction as in claim 1, further comprising a ground plate pivotally attached to said foot on an axis at right angles to the pivotal connection between said foot and said plate member.

3. In a construction as in claim 1, said foot comprising an inverted T-shaped piece constructed from a plate bent to form one side of the head of said T-piece and rebent to form the bottom portion of the foot, the rebent portion being spaced from said first bent portion, and completing said T head, the leg of said T piece being adapted to be secured to said ladder leg, and the said head piece being adapted to extend both beneath an outwardly of said ladder leg to form a tread element.

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