

[54] **SAFETY ACCESSORIES FOR LADDERS**

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[51] **Int. Cl.**..... E06c 1/22

[58] **Field of Search** 182/106, 172; 248/226 A;
24/81 G

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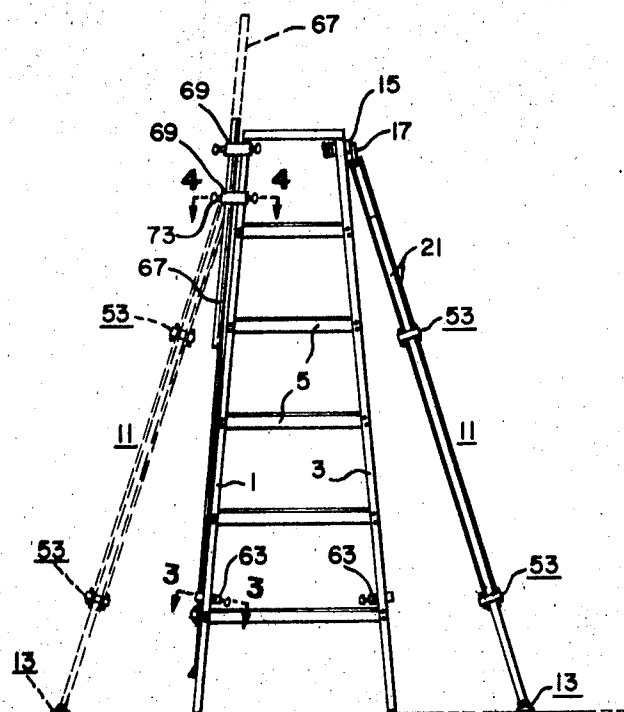
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Primary Examiner—Reinaldo P. Machado

[57] **ABSTRACT**

A stabilizer bar at each side of a ladder is connected at one end thereto by a universal connection and at its other end, the stabilizer bar terminates in a foot pad for ground engagement, to stabilize the ladder when in use. Each stabilizer bar is adjustable as to length to compensate for ground irregularities, the adjustability being accomplished by forming each bar of a pair of members, one member sliding along the other on a substantially three line contact to minimize jamming. A vertically adjustable hand hold, mountable at the upper end of the ladder, enables the individual to steady himself while working on the ladder, while the ladder itself is stabilized.

5 Claims, 12 Drawing Figures



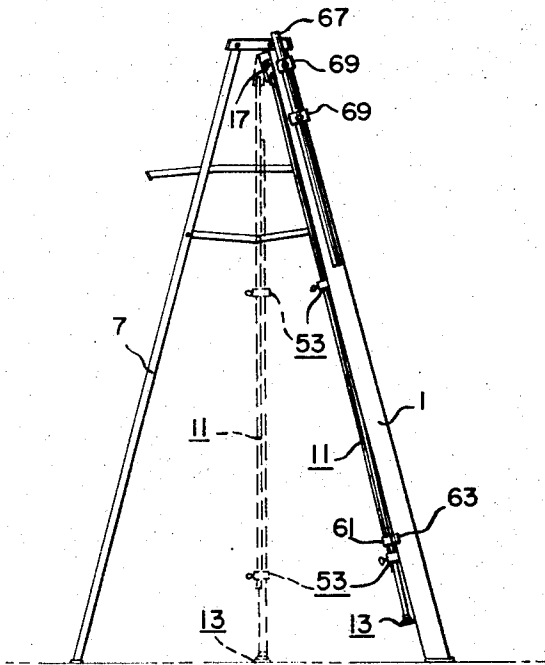


FIG. 2

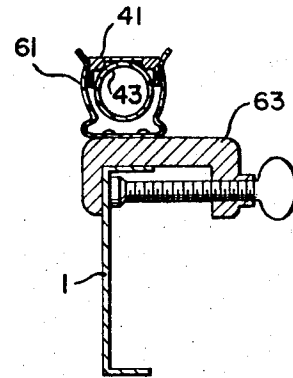


FIG. 3

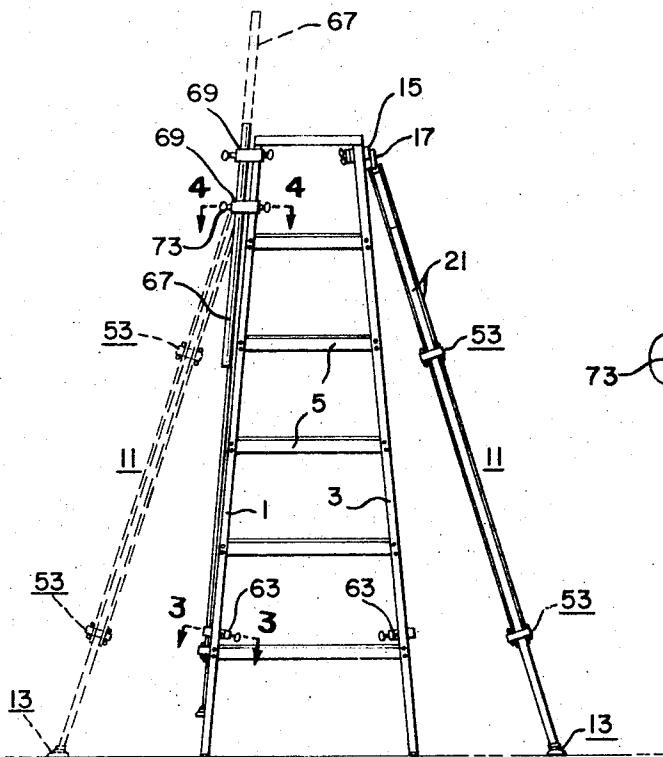


FIG. 1

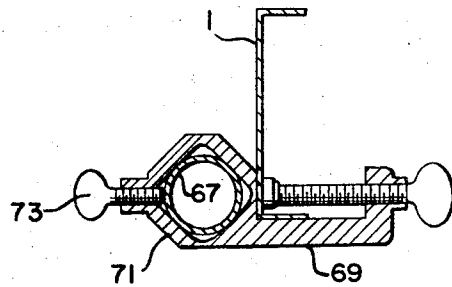


FIG. 4

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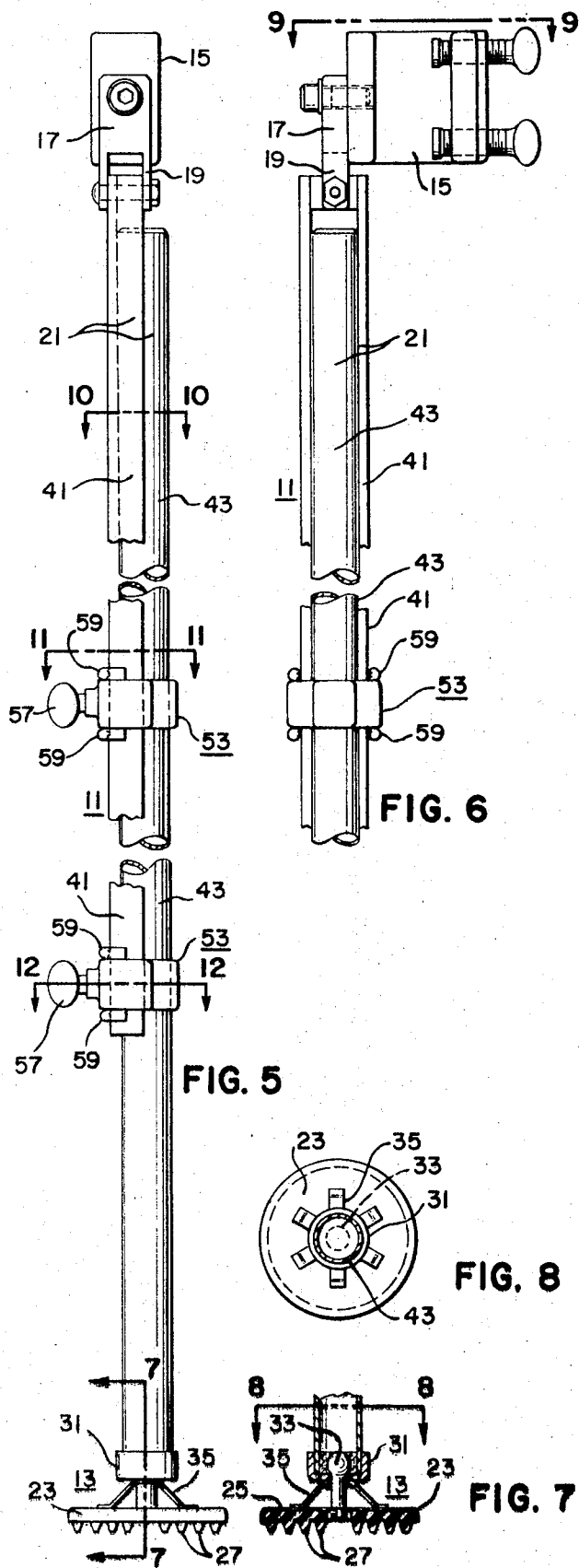


FIG. 9

FIG. 10

FIG. 11

FIG. 12

FIG. 8

FIG. 7

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SAFETY ACCESSORIES FOR LADDERS

My invention relates to ladders and more particularly to safety accessories for use with ladders.

While the invention is applicable to ladders of different types, it will be explained as to its application to a ladder of the step ladder type, which comprises basically a pair of side rails supporting spaced steps or rungs, the ladder being hingedly secured at its upper end to a back frame, which in the open condition of the ladder, is presumed to stabilize the same.

Such back frame, however, adds little to the lateral stability of the ladder, and not too much to the stability of the ladder in other directions should the surface on which the ladder is resting, be irregular.

Such instability, is furthermore aggravated should the individual using the ladder be somewhat unsteady in his movements while working from the ladder, thereby stimulating a probable tipping of the ladder, even though the ladder may be resting solidly on its supporting surface.

Among the objects of the present invention are;

1. To provide novel and improved safety accessories for ladders, for purposes of stabilization while an individual is working from a ladder;

2. To provide novel and improved safety accessories for a ladder, which will add to the safety of an individual working from such ladder;

3. To provide a novel and improved stabilizing bar assembly which may be applied to ladders of various types, to render such ladders stable while in use;

4. To provide a novel and improved stabilizing assembly for ladders of various types, which bar is adjustable as to length, to accommodate itself to ladders of various heights;

5. To provide a novel and improved stabilizing bar assembly for ladders of varying types, which may be secured to and stored with a ladder, and rendered usable when the occasion requires;

6. To provide a novel and improved stabilizing bar assembly for ladders of various types, which stabilizing bar assembly is adjustable, and so designed and constructed as to minimize probable jamming which might otherwise impair the adjustability thereof.

Additional objects of my invention will be brought out in the following description of a preferred embodiment of the same, taken in conjunction with accompanying drawings wherein

FIG. 1 is a front view in elevation of a ladder of the step ladder type, and illustrating the safety accessories installed in functional relationship to the ladder;

FIG. 2 is a side view in elevation of the ladder of FIG. 1 with the safety accessories installed;

FIG. 3 is a view in section, taken in the plane 3—3 of FIG. 1;

FIG. 4 is a view in section, taken in the plane 4—4 of FIG. 1;

FIG. 5 is a side view in elevation of an adjustable stabilizing bar assembly constituting one of the safety accessories of the present invention;

FIG. 6 is a fragmentary front view in elevation of the stabilizing bar assembly of FIG. 5;

FIG. 7 is a view in section, taken in the plane 7—7 of FIG. 5;

FIG. 8 is a view in section, taken in the plane 8—8 of FIG. 7;

FIG. 9 is a plan view in elevation of a clamping means as viewed in the plane 9—9 of FIG. 6;

FIG. 10 is a view in section, taken in the plane 10—10 of FIG. 5;

FIG. 11 is a view in section, taken in the plane 11—11 of FIG. 5; and

FIG. 12 is a view in section, taken in the plane 12—12 of FIG. 5.

Referring to the drawings for details of the invention, it is shown in its preferred form as applied to a ladder of the step ladder type involving basically a pair of side rails 1, 3, supporting spaced steps or rungs 5, the ladder being hingedly secured at its upper end to a back frame 7, which, in the open condition of the ladder assembly, is presumed to stabilize the ladder.

As previously indicated, lateral stability of such ladder is rather limited, and particularly if the four legs of the ladder assembly do not rest solidly on a supporting surface, or should the individual while using such ladder, be unsteady on his feet or for some other reason, impart a lateral unbalancing or tilting force to the ladder assembly.

To impart stability to such ladder, I provide a stabilizing bar assembly 11, preferably one for each side of the ladder, each such stabilizing bar assembly including a ground engaging end terminating in a pad assembly 13, and means at its other end for attaching same to one of the side rails of the ladder.

The attaching means preferably includes a universal connection along with means for conveniently clamping this end of the stabilizing bar assembly to the rail of the ladder.

One form of such attaching means involves a C-clamp 15 adapted to straddle the ladder rail and be clamped thereto. To one end of this C-clamp, is pivotally secured a link 17 terminating in a yoke 19, for movement in one plane, while to the yoke end of the link is pivotally secured to a bar 21 for movement in a plane at right angles to that of the link, thereby providing a universal coupling at this location.

The pad assembly 13 included at the foot of the bar 21, involves a shallow disc shaped housing 23 to retain a surface gripping pad 25 of resilient material, preferably provided with a plurality of surface engaging teats 27. This pad is connected by a universal connection to the lower end of the bar, such connection including a cap 31 on the end of the bar, and which extends a headed pin 33, which, at its lower end is fixedly connected to the pad housing. A spring 35 installed under compression between the cap and the housing, will tend to hold the pad in a fixed position but yet will permit universal flexing under load pressure, enable the pad to accommodate itself to irregularities in the supporting surface.

Important to the present invention, is the fabrication of the bar 21 whereby, not only is it made adjustable, but the adjustability thereof is substantially unaffected by damage or injury due to stresses or strains to which the stabilizing bar assembly will be exposed when placed in use.

To achieve such adjustability, the bar 21 is made up of a pair of slidably meshing members, one such member 41 being of channel section, and the other member 43 being cylindrical, such as would be provided by a length of pipe, and slidably receivable in the channel member, whereby, due to the difference in sections of

the two members, only line contact between the two is provided.

Preferably, the channel section is formed with a two stage trough to provide opposed recessed edges 47, 49 and a floor 51 while the cylindrical member is preferably of an outside diameter such as to fit within the channel and contact the recessed edges and the floor in a three line engagement.

The members are retained in this relationship by suitably spaced clamps 53, each including a body portion 55 encircling the members and contoured thereto, and a manually adjustable set screw 57 adapted to engage the channel upon being tightened, to effect a clamping of the two members. The clamps 53 are retained at their selected locations on the channel member 41 by U-shape clips 59 pressed into the channel member to each side of the clamps.

Upon loosening of such set screws, the members are capable of then being shifted with respect to each other to effect a lengthening or a shortening of the stabilizing bar assembly to whatever length is desired, following which the adjustment may be maintained by a tightening of the clamps.

It will be noted that the sectional configurations of the members will permit adjustability of the one with respect to the other, regardless of any damage or injury thereto due to the stresses and strains to which the stabilizing bar assembly may be exposed when in use. This is quite important to the present invention, for it will be appreciated that were the adjustability of these members to be impaired at any time, the stabilizing bar assembly would lose its usefulness.

To avoid the necessity of removing these stabilizing bar assemblies when the ladder is not in use, and permit them to be stored with the ladder, ready for use at any time, I provide a clip 61 on the under or rear side of the rail to which a stabilizing bar assembly may be clamped, such clip being positioned at a low point on the rail by means of a suitable C-clamp 63 to which the clip is affixed as by riveting. The clip may be of any appropriate spring type and of a size to conveniently receive and hold the stabilizing bar assembly until again needed.

Supplementing the safety afforded by the stabilizing bar assemblies and to enable an individual on the ladder when in use, to function with security, I provide an adjustable hand grip in the form of a section of pipe 67 or equivalent, vertically adjustable in a pair of clamps 69 normally holding the hand grip adjacent one of the side rails of the ladder at its upper end. Each of the clamps employed for this purpose, is of the C-clamp type with means 71 at one end for slidably receiving the pipe section and a manually operable set screw 73 carried by the clamp for locking the pipe section in its adjusted position.

While the safety accessories described above have been illustrated in connection with a ladder of the step ladder type, it will be apparent that the same may be employed in connection with various other types of ladders, to impart stability to the ladder and safety to the individual working therefrom.

While I have illustrated and described the invention in its preferred form and in considerable detail, the invention as illustrated and described, is susceptible to

alteration and modification without departing from the underlying principles involved, and I, accordingly, do not desire to be limited in my protection to the specific details so illustrated and described except as may be necessitated by the appended claims.

I claim:

1. Safety accessory for a ladder having side rails and interconnecting rungs, comprising a stabilizing bar assembly including a stabilizing bar and having a ground engaging end, and means at its other end for attaching same to one of the side rails of such ladder, said ground engaging end including a ground pad, a universal pin extending from the lower end of said stabilizer bar and connecting with said ground pad to permit of said ground pad conforming to slope deviations in all directions, and compression spring means installed between said ground pad and the proximate end of said stabilizer bar to render said stabilizer bar assembly substantially non-affected by normal sway movements of a ladder while in use.

2. Safety accessory for a ladder in accordance with claim 1 characterized by said attaching means including a universal connection and said compression spring means comprising a conical type spring having a plurality of radial arms and a central opening for passage of said pivot pin.

3. Safety accessory for a ladder in accordance with claim 1, characterized by said adjustable stabilizing bar assembly including a pair of slidably related members, one of said members having line sliding contact with the other to preclude sliding contact over an extended area with resulting probable jamming in use.

4. Safety accessory for a ladder having side rails and interconnecting rungs, comprising a stabilizing bar assembly having a ground engaging end, and means at its other end for attaching same to one of the side rails of such ladder, said stabilizing bar assembly including a pair of slidably related members of substantial length to permit of substantial adjustment of overall length of said stabilizing bar assembly and characterized by one of said members being of channel section and the other of said members being of circular section adapted to enter said channel section and of diameter such as to slidably engage said channel section along more than one line of contact, and means for retaining said members in assembled sliding relationship during adjustment as to length including a plurality of spaced clamps, each comprising a body portion embracing said members sufficiently close to maintain said members in assembled relationship while an adjustment thereof as to length is being made.

5. Safety accessory for a ladder, in accordance with claim 4, characterized by said channel section having a floor and opposed recessed edges, and said circular section engaging each of said edges and the said floor, to provide a three line sliding contact, and said means for retaining said members in assembled relationship comprising a clamp including a body portion encircling said members and contoured thereto, and means for arbitrarily pressuring said body portion against said member of circular section after an adjustment, to clamp said members.

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