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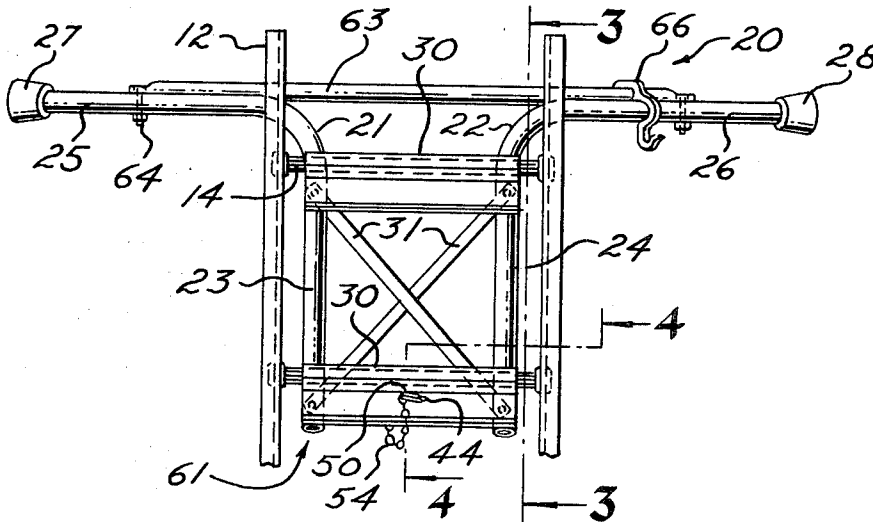
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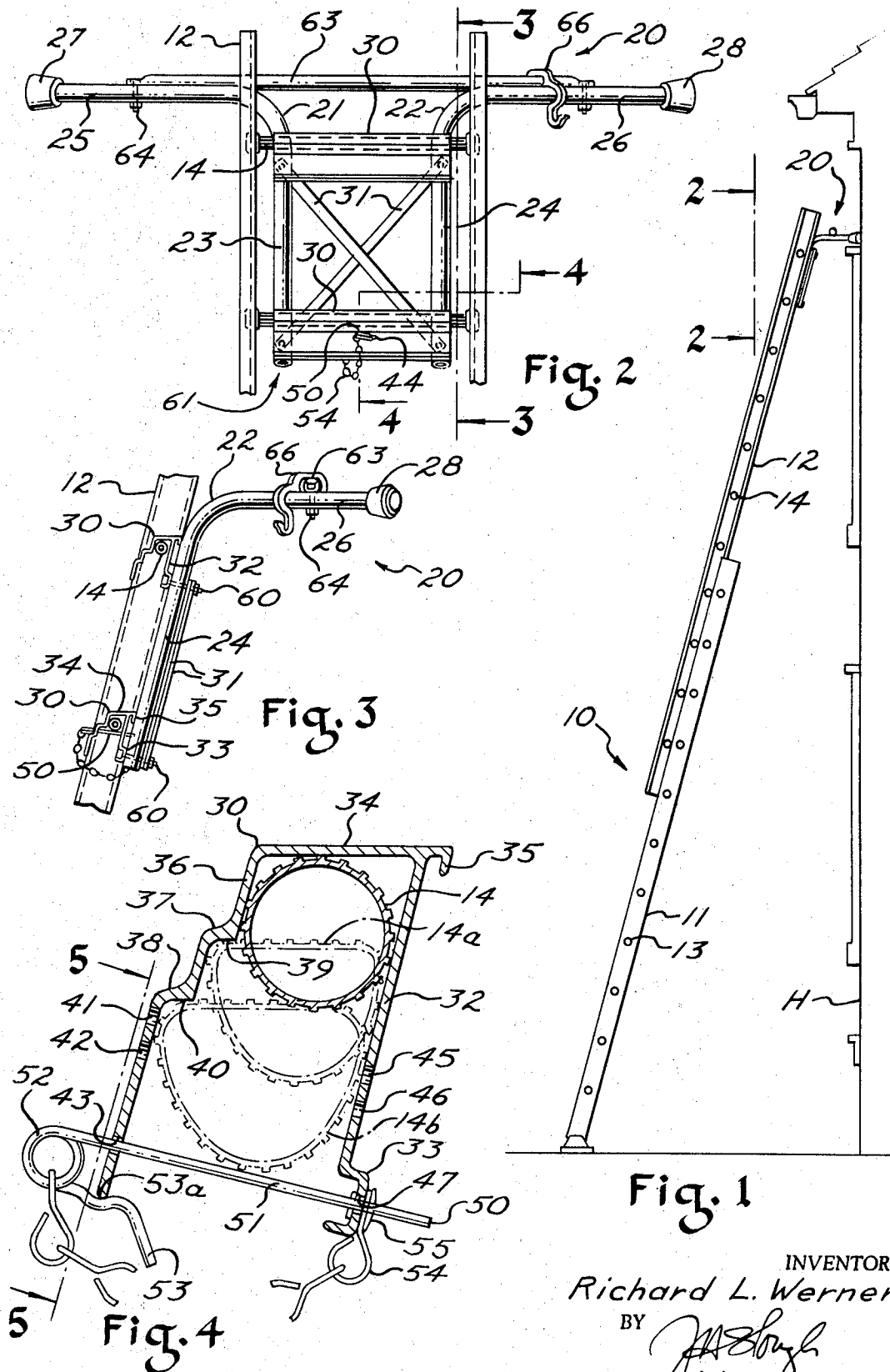
[54] LADDER STABILIZING DEVICE 10 Claims, 8 Drawing Figs.

[52] U.S. Cl..... 182/214
 [51] Int. Cl..... E06c 7/48
 [50] Field of Search..... 182/214,
 108, 107, 129; 248/210, 211

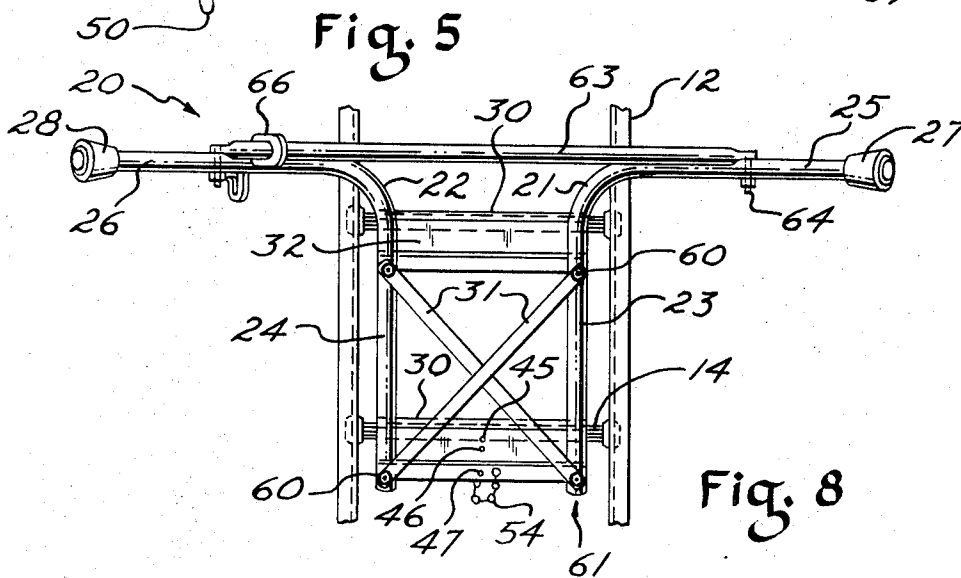
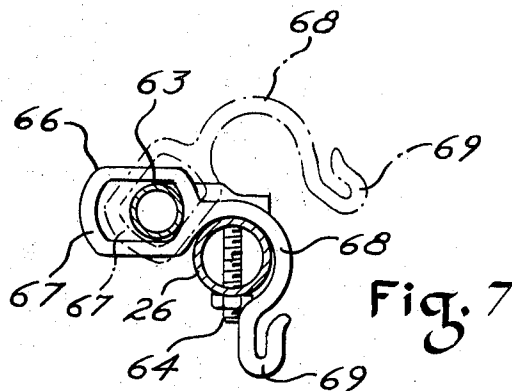
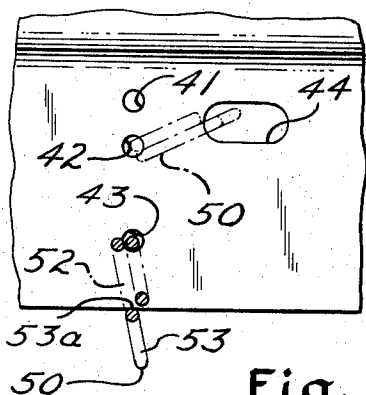
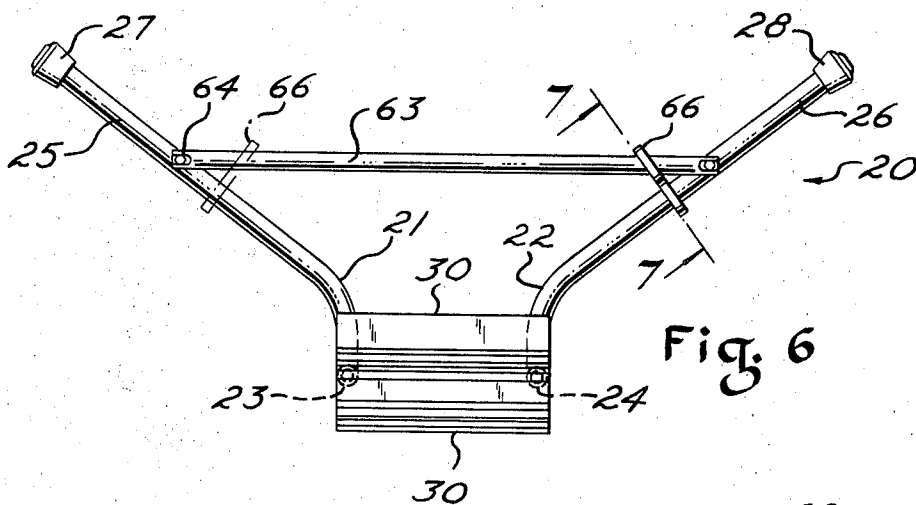
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ABSTRACT: A stabilizing device is provided with a pair of inverted, rung engaging channel members and two outwardly diverging arms, the arms being connected together by a lateral brace. The channel members are adapted to fit over rungs of different shapes and sizes, and retainer means extend across the open side of one channel member to maintain the member in engagement with a rung.





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LADDER STABILIZING DEVICE

This invention relates to a stabilizing device for attaching to the upper rungs of a straight ladder for widening the bearing points of the ladder, and particularly to such stabilizing device adapted to be detachably connected to rungs of various sizes and cross-sectional shapes.

In general, the invention as herein disclosed comprises a pair of support members having vertical portions connected together by a pair of horizontal, inverted U-shaped brackets and leg portions diverging outwardly from the ladder and connected together by a lateral brace. The inverted U-shaped brackets are adapted to nest downwardly over two adjacent upper rungs of a straight ladder or an extension ladder, and the distal ends of the diverging arms are adapted to abut a work surface whereby the upper end of the ladder is stabilized by increasing the distance between its bearing points and is, at the same time, spaced outwardly of the work surface a comfortable distance. The U-shaped brackets are shaped to engage ladder rungs of varying cross-sectional shapes, and retainer means for retaining the member in engagement with a selected rung is provided. A bucket holder clip may be slidably mounted upon the lateral brace and can be moved from one side of the stabilizer to the other for attachment to either of the diverging leg portions.

The general object of the invention is to provide a stabilizing device for a straight ladder or an extension ladder which increases the resistance to side loading or tipping of the ladder and positions the upper end portion of the ladder outwardly from a vertical wall or other similar work surface.

Another object of the invention is to provide a stabilizing device as set forth above which is adapted to be attached to ladder rungs of varying cross-sectional shapes and sizes.

Still another object of the invention is to provide a stabilizing device as set forth above having means for quickly and easily securing the device to the ladder rungs or removing the same therefrom.

Yet another object of the invention is to provide in a stabilizing device as set forth above simple means for hanging a bucket or similar article optionally at either side of a workman.

A further object of the invention is to provide a ladder stabilizing device as set forth above which is light in weight, simple and sturdy in construction, and highly durable in use.

Other objects and a member of advantages of the present invention will be readily understood from the following description of one embodiment of the invention, illustrated in the accompanying drawings in which said drawings:

FIG. 1 shows a side elevation of the ladder stabilizing device of this invention attached to an extension ladder and positioned for use against the outside wall of a house;

FIG. 2 is an enlarged front elevation of the stabilizing device as viewed from the line 2-2 of FIG. 1;

FIG. 3 is an enlarged side elevation of the stabilizing device;

FIG. 4 is a still further enlarged transverse section taken generally along the line 4-4 of FIG. 2;

FIG. 5 is a section taken along the line 5-5 of FIG. 4;

FIG. 6 is a top plan view of the stabilizing device drawn to the scale of FIG. 2;

FIG. 7 is an enlarged section taken along the line 7-7 of FIG. 6; and

FIG. 8 is a rear elevation of the stabilizing device drawn to the scale of FIG. 2.

Referring now to the drawings in all of which like parts are designed by like reference numerals, FIG. 1 shows an extension ladder 10 having a stabilizing device 20 of this invention connected adjacent to the upper end thereof. The extension ladder 10 is shown propped against a vertical work surface, such as the side of a house H, with the stabilizing device 20 abutting the house and spacing the upper end of the ladder outwardly a short distance from the work surface. As herein illustrated, the extension ladder 10 comprises a base section 11 and an overlapping, vertically movable fly section 12. The ladder sections 11 and 12 are provided with rungs 13 and 14,

respectively, and the stabilizing device 20 is preferably secured to the two top rungs 14 on the rear side of the ladder; that is, the side facing the house H. The specific ladder herein illustrated is a metallic or aluminum type ladder, and as will herein later become evident the present stabilizing device is particularly adapted for use with ladders of this type. However, it will also be readily understood that the present invention may be used with ladders made of wood, fiberglass reinforced plastic, or other suitable materials. It will be obvious that the stabilizing device may also be used with any straight, nonextensible ladder if desired.

The stabilizing device 20 comprises a pair of laterally spaced, angularly bent support members 21 and 22 having parallel, vertical portions 23 and 24 and rearwardly and slightly upwardly diverging leg portions 25 and 26, respectively. The support members 21 and 22 are preferably formed from lengths of lightweight, metal tubing such as aluminum, and the leg portions 25 and 26 diverge rearwardly whereby the distal ends thereof provide bearing points against the house H which are substantially further apart than bearing points normally afforded by the upper end of the fly section 12. The distal ends of said leg portions 25 and 26 are provided with cup shaped, resilient cap members 27 and 28, respectively, made of rubber or other suitable material affording good frictional contact with the work surface and protecting the same against marring and scratching by the distal ends of said leg portions.

The vertical portions 23 and 24 are laterally connected together by a pair of vertically spaced, inverted U-shaped brackets 30 and a pair of diagonal braces 31. The brackets 30 are substantially identical, and reference will be made to the detailed showing of the lowermost bracket shown in FIG. 4. Possible differences in the construction of the uppermost bracket and herein later described.

Each bracket 30 comprises a rear wall 32 having a forwardly open, rearwardly offset channel 33 formed laterally along the bottom edge thereof. An upper, horizontal wall 34 is integrally formed with the rear wall 32 and is disposed at a slightly acute angle with respect thereto. Said upper wall projects rearwardly beyond the rear wall 32 and has a downturned lip 35 spaced away from said wall 32 substantially the same distance as the rearwardly projecting channel 33. An integral front wall 36 projects downwardly from the forward edge of the upper wall 34 and is forwardly stepped at 37 and 38 to provide a pair of inner shoulders 39 and 40. The wall 36 extends downwardly from the forward edge of the step 38 to a point slightly below the channel 33 and is provided with two closely spaced apertures 41 and 42 adjacent to the step 38 to a point slightly below the channel 33 and is provided with two closely spaced apertures 41 and 42 adjacent to the step 38 and a third aperture 43 disposed therebelow adjacent to the lowermost edge of the wall 36. By referring to FIG. 5 of the drawings, it will be noted that the apertures 41, 42, and 43 are disposed in a vertical alignment and that laterally of the uppermost apertures 41 and 42 there is provided a laterally somewhat elongated slot 44. It will be further noted in FIG. 4 that the rear wall 32 is provided with apertures 45 and 46 which are aligned with the apertures 41 and 42, respectively, of the front wall 36. The bottom of the channel 33 is provided with an aperture 47 disposed in alignment with the aperture 43 of said front wall.

The apertures 41-43 and 45-47 and the slot 44 are adapted for receiving and manipulating an elongated retainer pin 50. Said retainer pin is preferably made of heavy spring steel wire stock and has an elongated shank portion 51, and integrally formed spring loop 52 at one end of the shank, and an S-shaped arm 53 having an indentation 53a therein extending from said spring loop. A small chain 54 engages the loop 52 at one end thereof and is secured to the outside of the channel 33 at the other end thereof by any suitable means such as a rivet 55. The chain 54 insures that the retainer pin 50 will always be attached to the lowermost bracket 30 and available for ready use.

As shown in FIG. 4, the stepped construction of the inverted, Unshaped bracket 30 allows said bracket to accommodate ladder rungs of various sizes and shapes. Particularly in the construction of lightweight metallic or aluminum ladders, various cross-sectional shapes and sizes of rungs are utilized. These rungs may be of any cross-sectional configuration such as circular, elliptical, rectangular, D-shaped, etc. To illustrate the principle of the present invention, a circular rung is shown in full line at 14, said rung being of such size as to fit between the rear wall 32 and front wall 36 above the first step 37. A first size of D-shaped rung is shown in broken line at 14a and is of such width that it engages the upper shoulder 39. A larger D-shaped rung is shown in broken lines at 14b and is of such width that it is adapted to engage the lowermost shoulder 40. Thus, it will be seen that the stepped bracket 30 is readily adapted for use with ladders of either light or heavy construction having either large or small rungs of different shapes.

The retainer pin 50 is adapted to insure that the brackets 30 do not become accidentally disengaged from the rungs once seated thereover. As illustrated in FIG. 4, the retainer pin 50 is positioned with its shank portion 51 projecting through the aligned apertures 43 and 47, its loop disposed forwardly of the front wall 36, and its S-shaped arm 53 compressively engaging the bottom edge of the wall 36 at the indentation 53a to prevent accidental removal of said retainer pin. This is the position of said retainer pin where the rungs are of larger size such as that indicated at 14b. Where the rung is of medium size such as that indicated at 14a, the shank portion 51 of the retainer pin would be disposed through the apertures 42 and 46 with the arm 53 entering the elongated slot 44 (FIG. 5) and the indentation 53a resiliently engaging the edge of said slot to prevent removal thereof. This position illustrated in broken lines in FIG. 5. Where an even smaller rung is used such as that shown at 14, the shank 51 would be positioned through the aligned apertures 41 and 45 with the indentation 53a of the S-shaped arm 53 again engaging the edge of the slot 44. This is the position shown in FIGS. 2 and 3.

The uppermost bracket 30 is identical with the lowermost bracket with the exception that it need not be provided with the retainer pin 50 and the apertures and slot for use therewith. Since the two brackets 30 must move together, retaining the lowermost bracket upon a rung automatically retains the uppermost bracket on its rung. It will be understood, however, that the retainer pin 50 may be associated with the upper bracket alone, if desired, or the same may be applied to both brackets as an additional safety measure.

The brackets 30 are secured to the vertical portions 23 and 24 of the support members 21 and 22 by suitable bolt and nut assemblies 60 which projects through suitable apertures in the channels 33 adjacent to the ends of the brackets and through other aligned apertures provided in the vertical portions 23 and 24. Said bolt and nut assemblies 60 also engage suitable apertures in the ends of the crossed braces 31 whereby said vertical portions, brackets, and cross braces become a solid mounting frame 61 for engaging the rungs of the ladder 10.

As best seen in the top plan view of FIG. 6 and also shown in FIGS. 2, 3, and 8, the leg portions 25 and 26 of the support members 21 and 22, respectively, are connected together by a lateral brace 63 secured at the ends thereof by any suitable means such as nut and bolt assemblies 64. The brace 63 adds to the strength and rigidity to the stabilizing device and is positioned a substantial distance away from the distal ends of said leg portions to afford a workman access to the work surface directly in front of him.

The brace 63 also provides means for mounting a bucket holder clip 66 shown in FIGS. 2, 3, and 8 and detailed in FIG. 7. The clip 66 is an integral member having a closed loop 67 on one end which is telescoped over the brace 63, an intermediate arch 68 adapted to nest over one of the arms 25 or 26, and an upturned hook 69 on the other end thereof. It will be noted that the closed loop 67 is somewhat elongated thereby allowing free shifting and manipulation of the clip 66. The

loop 67 also allows said clip to be disposed at an oblique angle with respect to the brace 63 as illustrated in FIG. 6. The clip 66 is freely movable along the brace 63 to either side of the stabilizing device 20 at which point the clip is pivoted upwardly to the broken line position of FIG. 7 whereby the hook 69 and arch 68 will pass over the top of the adjacent leg portion. The clip is then dropped downwardly whereby the arch 68 nests over the adjacent leg portion and the hook 69 is in the full line position shown in FIG. 7 for receiving the bail of a paint bucket or other container. By hooking the clip over the adjacent leg portion, said clip and the bucket supported thereby are prevented from slipping or moving laterally when in use. It will be readily seen that the workmen can quickly and easily shift the bucket holder clip 66 from one side to the other, whichever is most convenient.

From the foregoing it will be seen that the present ladder stabilizing device provides means for steadying the upper end of a straight ladder which said means is readily adapted for use with both metallic and nonmetallic ladders and ladders having rungs of various cross-sectional shapes and sizes. It will be further seen that means are provided for quickly and easily attaching the stabilizing device to the ladder rungs in such manner that the same cannot become dislodged therefrom and, further, that simple and effective attachment means are provided for supporting a bucket or other container at either side of the device.

I claim:

1. A ladder stabilizing device for mounting to the upper end portion of a straight ladder of the type having generally parallel side rails connected by transverse rungs, said stabilizing device comprising vertically spaced, upper and lower, inverted U-shaped brackets each comprising an elongated channel member adapted to nest downwardly over substantially the entire length of one of two rungs adjacent to the upper end of the ladder; support means rigidly connecting said upper and lower brackets to each other; said support means having a pair of legs projecting divergently outwardly from the plane defined by said support means for contacting a work surface and spacing the upper end of said ladder away from the work surface; each said channel member having a substantially horizontal upper wall, a first sidewall disposed at a slightly acute angle with respect to said upper wall, and a second sidewall disposed generally parallel with said first sidewall; said second sidewall having a plurality of outwardly directed steps therein providing inner shoulders whereby each said bracket is shaped in cross section to provide a stepped, generally U-shaped opening of progressively diminishing size from the open bottom upwardly thereof adapted to nest over ladder rungs of various shapes and sizes; said support means being secured to said first sidewall and said legs projecting outwardly therefrom.

2. A ladder stabilizing device for mounting to the upper end portion of a straight ladder of the type having generally parallel side rails connected by transverse rungs, said stabilizing device comprising vertically spaced, upper and lower, inverted U-shaped brackets adapted to nest downwardly over two rungs adjacent to the upper end of the ladder; support means rigidly connecting said upper and lower brackets to each other; said support means having a pair of legs projecting divergently outwardly from the plane defined by said support means for contacting a work surface and spacing the upper end of said ladder away from the work surface; said brackets being shaped in cross section to provide a stepped, generally U-shaped opening of progressively diminishing size from the open bottom upwardly thereof whereby said brackets are adapted to nest over ladder rungs of various shapes and sizes; each said bracket having a first wall disposed adjacent to and generally parallel with said support means, a generally parallel second wall spaced outwardly from said first wall in the opposite direction from said legs, and a top wall connecting the upper edges of said first and second walls; said second wall having a plurality of outwardly directed steps therein providing inner shoulders adapted to engage rungs of various sizes

and shapes; said first and second walls of at least one of said brackets having apertures therein arranged in pairs aligned across the bracket from wall to wall and spaced different distances from said top wall; and a retainer pin adapted to be inserted in a selected pair of said aligned apertures to retain said bracket on rungs of various sizes and shapes.

3. A ladder stabilizing device as set forth in claim 3: one of said apertures in said second wall being disposed adjacent to the lower, free edge of said wall and other of said apertures being spaced upwardly therefrom; said second wall having a relatively enlarged opening disposed laterally of and adjacent to said other apertures; said retainer pin comprising a shank portion for inserting through a pair of said aligned apertures and a backwardly turned, resilient arm at one end of said shank portion disposed generally parallel with said shank portion and spaced laterally therefrom; said arm having an indentation therein and adapted to slide resiliently over the free lower edge of said second wall when said shank is inserted through said one aperture and slide over the edge of said opening when said shank is inserted through one of said other apertures, said indentation engaging the respective edges to hold said retainer pin in place.

4. A ladder stabilizing device as set forth in claim 4: said legs projecting laterally beyond the side rails of the ladder and providing bearing points disposed substantially a greater distance apart than the ladder rails; an elongated brace disposed parallel with said brackets and interconnecting intermediate portions of said legs; a bucket holder clip carried by said brace; said clip having a loop portion at one end thereof loosely fitted over said brace whereby said clip is slidable from one side of said stabilizing device to the other, an intermediate arch portion adapted to fit downwardly over either of said legs, and a depending hook at the opposite end thereof whereby to provide means for hanging a bucket at either side of the ladder.

5. A mounting bracket for a ladder stabilizing device adapted to be mounted to the upper end portion of a straight ladder having generally parallel side rails connected by transverse rungs, said mounting bracket comprising an inverted, elongated U-shaped member having a substantially horizontal upper wall, a first sidewall disposed at a slightly acute angle with respect to said upper wall, and a second sidewall disposed generally parallel with said first sidewall; said second sidewall having a plurality of outwardly directed steps therein providing inner shoulders whereby each said bracket is shaped in cross section to provide a stepped opening of progressively diminishing size from the open bottom upwardly thereof adapted to nest over ladder rungs of various sizes and shapes; said bracket adapted to engage substantially the entire length of a ladder rung.

6. A mounting bracket for a ladder stabilizing device adapted to be mounted to the upper end portion of a straight ladder having generally parallel side rails connected by transverse rungs, said mounting bracket comprising an inverted, U-shaped member shaped in cross section to provide a stepped opening of progressively diminishing size from the open bottom upwardly thereof whereby said bracket is adapted to nest over ladder rungs of various sizes and shapes; said bracket having spaced, generally parallel sidewalls and a top wall connecting the upper edges of said sidewalls; one of said walls having a plurality of outwardly directed steps therein providing inner shoulders adapted to engage ladder rungs of various sizes and shapes; said sidewalls having apertures therein arranged in pairs aligned across said bracket from wall to wall and spaced different distances from said top wall; and a retainer pin adapted to be inserted in a selected pair of said aligned apertures to retain said bracket on rungs of various sizes and shapes.

7. A mounting bracket as set forth in claim 6: one said aperture in one said sidewall being disposed adjacent to the lower edge of said one sidewall and other said apertures being

spaced upwardly therefrom; said one wall having a relatively enlarged opening disposed laterally of said other apertures; said retainer pin comprising a shank portion for inserting through a pair of said aligned apertures, a spring loop formed at one end, and a backwardly turned arm having an indentation therein; said arm adapted to slide resiliently over the free lower edge of said one sidewall when said shank is inserted through said one aperture and slide over the edge of said opening when said shank is inserted through one of said other apertures, said indentation engaging the respective edges to hold said retainer pin in place.

8. A bucket holder clip for a ladder stabilizing device having means for mounting the device to the upper end of a straight ladder and outwardly divergently directed, work surface contacting legs connected at their medial portions by an elongated brace, said clip having an enlarged loop at one end adapted to fit loosely over said brace whereby said clip can freely slide from one leg to the other; said clip having an intermediate arch portion adapted to fit downwardly over either of the legs to retain said clip at one side of the stabilizing device; said clip having a depending hook at the opposite end thereof whereby to provide means for hanging a bucket at either side of the ladder.

9. A ladder stabilizing device for a straight ladder having substantially parallel side rails connected by transverse rungs, said stabilizing device comprising a pair of support members having parallel, laterally spaced portions adapted to be disposed generally parallel with the ladder side rails; said support members having leg portions diverging outwardly from the plane of said parallel portions; a pair of elongated brackets laterally connecting upper and lower portions of said parallel portions; a pair of crossed brace members obliquely connecting said parallel members and opposite ends of said brackets to each other; said brackets being inverted, U-shaped in section transverse to the lengths thereof and so vertically spaced as to nest downwardly over two adjacent rungs near the top of a ladder; each said bracket having generally parallel sidewalls and a substantially flat, horizontal top wall connecting said sidewalls; said sidewalls being disposed at an angle with respect to said top wall corresponding substantially to the angle of the ladder in use whereby said top wall remains substantially horizontal in use of said stabilizing device; one of said walls being connected to said parallel portions on the side opposite said legs portions; the other of said walls having a plurality of outwardly directed steps therein providing inner shoulders adapted to engage rungs of various sizes and shapes; said brackets adapted to engage substantially the entire length of the ladder rungs.

10. A ladder stabilizing device for a straight ladder having substantially parallel side rails connected by transverse rungs, said stabilizing device comprising a pair of support members having parallel, laterally spaced portions adapted to be disposed generally parallel with the ladder side rails; said support members having leg portions diverging outwardly from the plane of said parallel portions; a pair of elongated brackets laterally connecting upper and lower portions of said parallel portions; a pair of crossed brace members obliquely connecting said parallel members and opposite ends of said brackets to each other; said brackets being inverted, U-shaped in section transverse to the lengths thereof and so vertically spaced as to nest downwardly over two adjacent rungs near the top of a ladder; each said bracket having generally parallel sidewalls and a top wall connecting said sidewalls; one of said walls being connected to said parallel portions on the side opposite said leg portions; the other of said walls having a plurality of outwardly directed steps herein providing inner shoulders adapted to engage rungs of various sizes and shapes; said sidewalls adapted to extend downwardly below the ladder rungs; the sidewalls of at least one of said brackets having apertures therein arranged in pairs aligned across the bracket from wall to wall and spaced different distances from said top wall and adapted to receive a retainer pin at different levels to retain said one bracket on rungs of various sizes and shapes;

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one of said pairs of apertures being disposed adjacent to the lower edges of the sidewalls and other of said apertures being spaced upwardly therefrom; said stepped wall having a relatively enlarged opening disposed adjacent to said other apertures; a retainer in pin comprising a shank for inserting through a pair of said aligned apertures and a backwardly turned, resilient arm at one end of said shank disposed generally parallel with said shank and spaced laterally

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therefrom; said arm having an indentation therein and adapted to slide resiliently over the lower edge of said stepped wall when said shank is inserted through the lowermost pair of aligned apertures and slide over the edge of said opening when said shank is inserted through a pair of said other apertures, said indentation engaging the respective edges to hold said retainer pin in place.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,568,801 Dated March 9, 1971

Inventor(s) Richard L. Werner

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover sheet [73] "H. D. Werner Co. Inc." should read -- R. D. Werner Co. Inc. --. Column 5, line 7, "as set forth in claim 3" should read -- as set forth in claim 2 -- line 24, "as set forth in claim 4" should read -- as set forth in claim 3 --.

Signed and sealed this 30th day of November 1971.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of Patents