United States Patent [19]

Jarboe, deceased

[11] **3,853,202**

[45] **Dec. 10, 1974**

[54] **LADDER SUPPORTING DEVICE**

[76] Inventor: **Alfred J. Jarboe, deceased,** late of 42 Columbia Ave., Takoma Park, Md. 20012 by Hilda Jarboe, administratrix

[22] Filed: **Feb. 25, 1974**

[21] Appl. No.: **445,242**

[52] **U.S. Cl.** **182/108,** 182/206, 182/214, 248/210

[51] **Int. Cl.** **E06c 7/48**

[58] **Field of Search** 182/206, 93, 129, 229, 182/214, 107, 108; 248/210, 211

[56] **References Cited**

UNITED STATES PATENTS

3,061,041	10/1962	Taylor	182/129
3,268,196	8/1966	Anton, Sr.	182/214
3,486,580	12/1969	Nameche	182/214
3,603,431	9/1971	Nameche	182/206

Primary Examiner—Reinaldo P. Machado

[57] **ABSTRACT**

A safety device for use with ladders which are leaned at an angle to the wall of a house or the like, with their upper ends resting against a relatively narrow, horizontally extending surface, such as the outer edge of a gutter installed along the eave of a roof. The device of the invention serves to prevent slippage or other undesirable movement of the ladder when placed in such position for use. The device is constructed at one end thereof to embrace one of the side rails of the ladder, intermediate a pair of adjacent rungs near the upper end of the ladder, and is provided at its other end with means to straddle one of the spikes or similar members that are normally present for securing the roof gutter to the eave of the roof.

6 Claims, 5 Drawing Figures

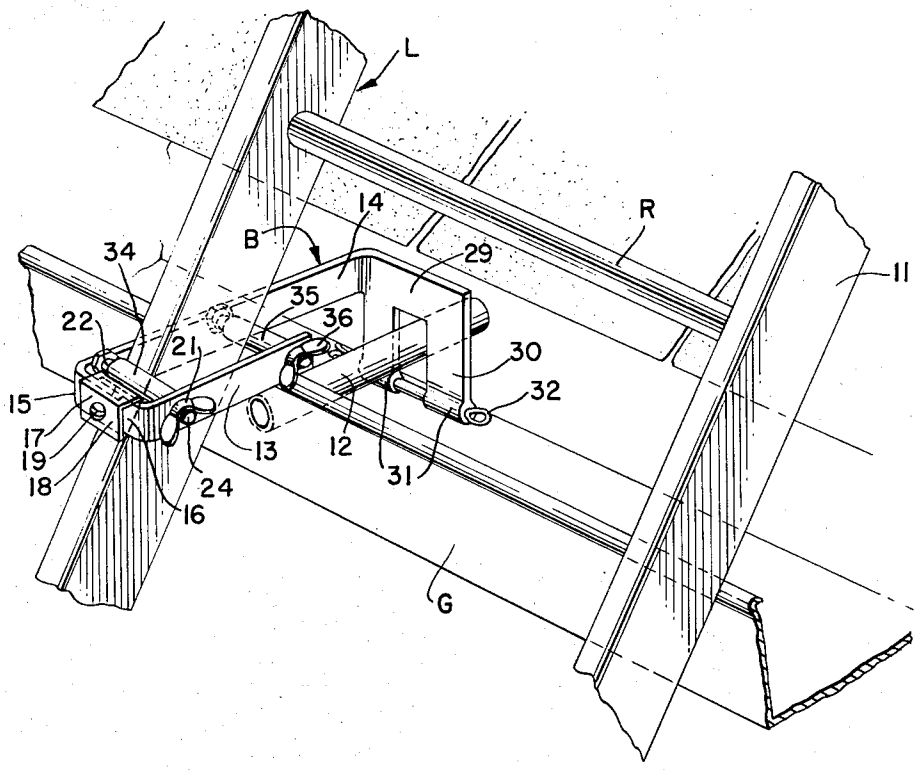


FIG. 1.

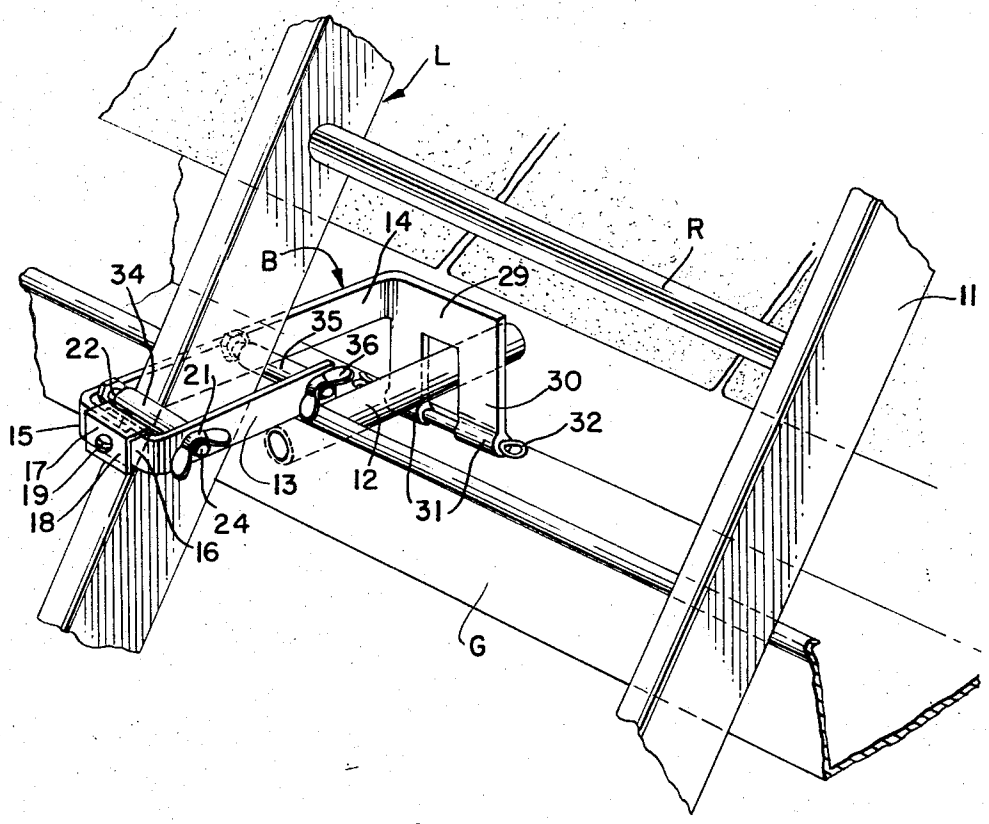


FIG. 2.

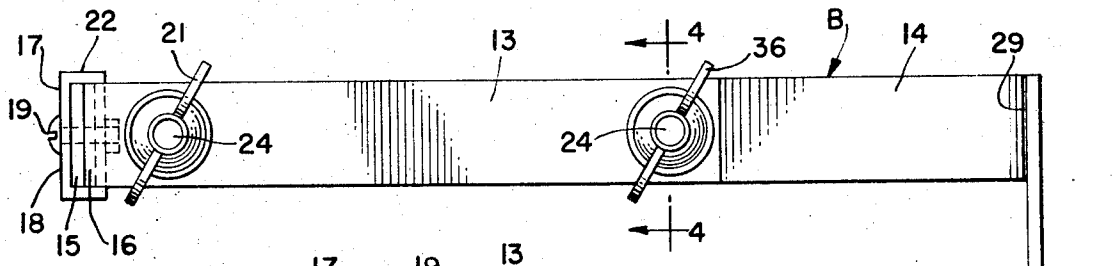


FIG. 3.

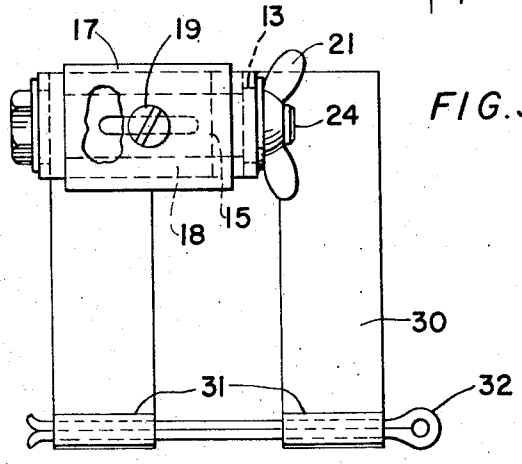


FIG. 4.

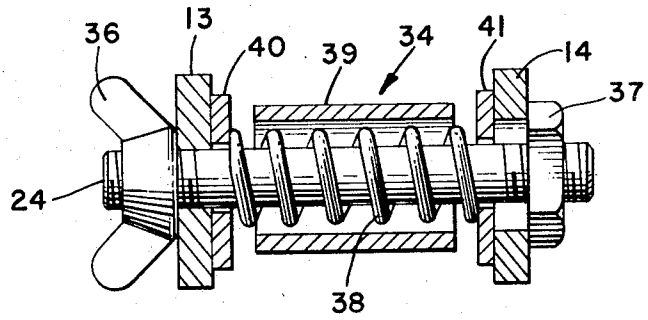
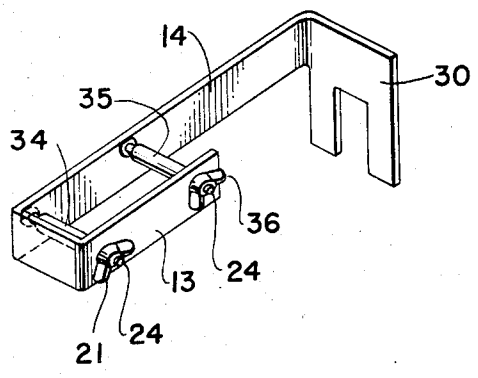


FIG. 5.



LADDER SUPPORTING DEVICE

This invention relates to a safety device for securing a ladder to a house or other building structure, to prevent the ladder from slipping out of desired position.

More particularly, the invention relates to a detachable safety device for the aforesaid purpose, designed to limit and prevent lateral slippage or similar movement of the upper end of the ladder, caused by the normal bodily motion of a person standing upon one of the rungs of the ladder when it is positioned to lean at an agle to the wall of a house or other building structure.

It is well recognized that when a person desiring to reach and gain access to an upper level of a vertical surface of a side wall or to the roof of a house or the like, as for making repairs or for other purposes, does so by ascending a ladder of adequate height and occupying a standing position on a suitable one of the upper rungs of the ladder, he faces the risk of falling from the ladder, with resultant physical injury to himself, and perhaps to co-workers or other persons in the immediate vicinity. This risk is even greater when the person is standing on one of the uppermost rungs of a ladder whose upper end extends above the eave of the roof. In the latter event, the rearward, relatively narrow surfaces of the rails of the ladder usually rest against a relatively, narrow, horizontally extending surface, as for example the outer edge of the gutter installed along the eave of the roof.

The foregoing risks are not only substantial in the case of experienced mechanics or other workmen accustomed to using a ladder in performing their tasks, but are greatly increased ones in the case of amateur workmen, such as those frequently referred to as "do-it-yourselfers."

A number of devices have been heretofore proposed for dealing with the foregoing problem. These prior art devices have included those which are of the type designed to anchor the ladder by utilizing a suction cup, or a pointed element of the device, or a suitable device to maintain frictional contact with the surface against which the ladder is supported in its leaning position. Other types of clamping brackets have been proposed. In general, these clamp the wall-engaging elements in a fixed or rigid relation to the rungs or to the side rails of the ladder. Typical of heretofore proposed devices are those, shown for example, in the patents to Taylor, U.S. Pat. No. 1,393,922; Pack, U.S. Pat. No. 1,502,490; and Boham, et al., U.S. Pat. No. 2,886,277.

The principal object of the present invention is to provide a device for the purpose mentioned above, which is simple and inexpensive to produce, easy and convenient to use, and effective and highly reliable in its operation.

A further object of the present invention is to provide a device of the foregoing character, which will anchor a ladder to a building wall by engagement with one or another of the apikes or like members which are normally used for securing the roof gutter to the eave of the roof.

Still another object of the invention is to provide a safety device of the foregoing character, in the form of a bracket which may be readily attached to and detached from a side rail of a ladder, and which is easily

adjustable by the user of the ladder after the bracket has been mounted on the rail thereof.

Yet another object of the invention is to provide a safety device as aforesaid, in the form of a bracket of the character described, and which allows ready adjustment of the angle which the ladder makes with respect to the vertical.

A still further object of the invention is to provide a device of the character described, so constructed that it may be used with ladders whose side rails may be of any one of the standard or conventional dimensions in their breadth (i.e., measurement from front edge to back edge of the rail) and thickness (i.e., measurement from one side face to the opposite side face of the rail).

The foregoing and other objects of the invention, as well as the advantages thereof, will be readily apparent from the more detailed description which follows and from the accompanying drawings, in which:

FIG. **1** is a perspective view of one embodiment of the device, illustrating the manner in which it engages a rail of a ladder and also one of the spikes by which the roof gutter is fastened to the eave of a roof;

FIG. **2** is a view of the device in side elevation;

FIG. **3** is an elevational view, looking toward one end thereof;

FIG. **4** is a view, partially in cross-section, taken longitudinally of one of the elements thereof, along line **4** — **4** of FIG. **2** and looking in the direction of the arrows; and

FIG. **5** is a view in perspective, illustrating another embodiment of the invention.

Referring more in detail to the drawings, the device of the present invention comprises a relatively elongated bracket indicated generally by letter B, this bracket being formed at its outer end so that it will encompass either of the side rails **11** of the ladder, and at its opposite or inner end with a means which straddles and is engaged with one of the spikes **12** normally used for securing the roof gutter, indicated at G, to the eave of the roof. In its preferred form, the outer end of the bracket is formed so as to be adaptable for use with ladders whose rails **11** are of any of the conventional or commercially available dimensions.

As shown in FIG. **1**, the bracket B comprises a short leg **13**, a long leg **14**, a pair of bolt assemblies **34, 35** and a slip collar **17**. Long leg **14** is formed at one end to provide a right-angle bend **29** terminating in a forked tongue portion **30**. The two tines of the fork are spaced a sufficient distance apart to allow the tongue portion **30** to slide easily over and to engage any one of the spikes **12** by which the roof gutter is attached to the eave of the roof. The lower edge of each of the tines of the forked portion **30** is formed with a cylindrical opening **31**, these openings being in coaxial alignment with one another for the reception of a cotter pin **32**. The cotter pin **32** is not a full load-bearing member, but is intended to be inserted through openings **31** after the forked portion **30** is in position around the spike **12**, to serve mainly as a safety measure to prevent the forked portion **30** from slipping out of engagement with the spike **12**.

The opposite end of leg **14**, and correspondingly one end of leg **13** are each formed with a right angular flange or bent portion **15, 16**, adapted to overlap one another and to be engaged by a slip collar **17**. The collar **17** is preferably provided with a threaded opening

18 to receive a set screw 19 also passing through threaded openings in the flanges 15, 16 when the latter are brought into register with one another by suitable spacing or adjusting the distance between the legs 13, 14. In lieu of threaded openings in the flanges 15, 16, one (or both) of the flanges may be provided with slots extending longitudinally thereof, to receive the set screw 19 at variable positions along the length of the slots, depending upon the thickness of the rail 11 of the ladder on which the bracket is to be used. Since the standard or conventional thickness of the rails of the ladders normally is not less than one inch, and vary by increasing increments of about 1/16th inch to a total of generally one and a quarter inches, the slot need not exceed a length of 1 inch. The rails of the standard, commercially available aluminum ladders vary in width from 7/8th of an inch in the case, for example, of a 16 foot light household extension ladder, to 1 1/8th inches in the case, for example, of a heavy-duty extension ladder.

As will be noted, one of the legs, as for example leg 13, has its flange 16 terminating a sufficient distance short of the other leg 14, so as to facilitate engagement of the bracket with a rail of the ladder at any desired point along the length of the rail intermediate any pair of adjacent rungs R. When the bracket has been thus positioned on the rail so that the legs 13, 14 occupy positions adjacent the opposite side faces of the rail, as shown in FIG. 1, the bracket will be in relatively free slideable engagement with the rail.

The short leg 13 of the bracket is formed adjacent its flange 16 with a circular opening 21, suitably about 1/16 to ¼ inch in diameter, and leg 14 is formed adjacent its flange 15 with a similar opening 22, in transverse alignment with the opening 21 in leg 13. These aligned openings 21, 22 are adapted to receive a loosely fitting bolt or pintle 24, threaded over a substantial distance adjacent each of its ends or over the entire length thereof. The leg 13 is formed adjacent its outer free end with a similar opening 23 in transverse alignment with an opening 24 in leg 14, the aligned openings 23, 24 being adapted to receive a second loosely fitting bolt or pintle 25, threaded as is bolt 24, for the other one 35 of the pair of bolt assemblies 34, 35.

Referring to FIG. 4, bolt 24 extends completely through opening 21 in leg 13 and across the thickness of the rail of the ladder, and through opening 22 in leg 14. Thus, by reason of the angular dispositions of legs 13 and 14 with respect to flanges 15, 16 the legs 13, 14 may be spread a sufficient distance apart to enable the bracket to be placed over the side rail of a ladder. Conventional fasteners, such as wing nut 36 and hexagonal threaded nut 37 are provided at the opposite ends of bolt 24, to enable legs 13 and 14 to be drawn together, thereby clamping the legs 13, 14 to the sidefaces of the rail of the ladder.

In order to bias legs 13 and 14 in their spaced-apart position, thereby enabling the bracket to be freely or readily moved up and down the side rail of the ladder between a pair of adjacent rungs R, before the bracket has been clamped, a coiled wire or tension spring 38 may be positioned between legs 13 and 14, so as to surround bolt 24. A sleeve 39 is provided so as to loosely surround the tension spring 38. Sleeve 39 protects spring 38 and allows the bracket to be easily slid as by a rolling motion, up and down the side rail of the ladder when legs 13 and 14 are not clamped to the rail. Washers 40 and 41 are provided between the respective opposite ends of spring 38 and the opposed inner faces of legs 13 and 14 to retain the spring in its position between legs 13 and 14, one end of the spring being preferably fastened to one of the washers.

The other bolt 25 is fitted similarly as is bolt 24, with a tensioning spring 38*a*, sleeve 39*a*, washers 40*a*, 41*a*, and nuts 36*a*, 37*a*.

FIG. 5 shows an embodiment of the invention, in which the body of the bracket, including legs 13 and 14 and forked portion 30, are fabricated from a single continuous piece of material. The embodiment of FIG. 5 has the advantage of being easy to fabricate, as well as eliminating some of the parts illustrated in FIG. 1, e.g., the slip collar 17 and set screw 19.

Either of the embodiments of the invention may be fabricated from metal such as aluminum, or from synthetic thermoplastic material having sufficient resiliency and strength to enable legs 13 and 14 to spread apart a sufficient distance to accomodate a variety of ladder side rail thicknesses.

In operation, when the user desires to ascend the ladder and to reach a level substantially above ground level, the bracket B is first installed in its approximately proper location on one of the side rails 11 of the ladder. Most conveniently, this would normally be accomplished by placing the ladder in a position with its rails more or less parallel to the ground, and inserting the bracket, before bolt assembly 35 has been put in place, on the rail at the approximate location from the upper end of the ladder (between two rungs) judged to be correct for its bifurcated end to reach the height of the spikes 12 when the ladder has been raised or erected to its inclined position against the wall to be ascended. The position of the ladder is adjusted to enable the bifurcated end to be engaged over the immediately adjacent spike 12, and the outer bolt assembly is then inserted in its place in the other pair of aligned bearings provided in the legs 13, 14 of the bracket. The wing nuts are then tightened when the bracket has adjusted itself to its proper position by movement of the bolt assembly 34 through rolling of the sleeve 39 along the surface of the outwardly facing edge of the rail 11. With the bracket thus positioned on the rail of the ladder and with its bifurcated end in engagement with the spike 12, any sidewise movement of the ladder which may be caused by the bodily motions of a person standing upon one of the rungs thereof will be precluded, thereby preventing the ladder from falling or from pivoting to a dangerous position on the lower end of its rails. Insertion of cotter pin 32 assures against accidental dislodging of the bifurcated portion 29 from its engagement with the spike 12.

What is claimed is:

1. A safety device for securing a ladder in leaning position against a vertical surface of the wall of a house or like structure, with the upper end of the ladder reaching above the roof gutter, said device comprising a relatively elongated right-angular bracket having means adjoining one end thereof formed to encompass a side rail of the ladder, means on said bracket for clamping the same to the opposite side faces of said rail, the opposite end of the bracket being disposed in a plane extending substantially at a right angle to the elongated direction of the bracket, said opposite end being bifurcated so as to be capable of straddling one

of the spikes normally used for securing the roof gutter to the eave of a roof.

2. A safety device as defined in claim **1,** wherein said clamping means comprises a pair of spaced bolts each having their opposite ends screw threaded, one end of each of said bolts having a head thereon and the opposite end of each thereof carrying a screw threaded wing nut.

3. A safety device as defined in claim **2,** wherein one of said bolts is provided with a coil wire tensioning spring.

4. A ladder safety bracket for attachment of a side rail of a ladder to one of the spaced spikes securing a roof gutter to an eave of a roof, said bracket comprising:

a. a first leg;

b. a second leg disposed in parallel relation to said first leg and having one end thereof terminating in a flange portion to form the second leg into an L-shape, said flange having a forked portion extending downwardly therefrom for engagement with said spike;

c. a pair of freely rotatable roller assemblies spaced from one another along the length of said legs and disposed between the opposing faces of said legs, each said assembly comprising a coil spring and cylindrical sleeve surrounding the coil spring, said coil spring surrounding a bolt or pintle having its ends fitted into transversely aligned openings in said legs.

5. The device as defined in claim **4,** wherein said assemblies provide means for varying the spacing between said legs, whereby to enable said device to encompass ladder rails of various thicknesses between the said legs.

6. A ladder safety bracket for securing a rail of a ladder to one of the spikes attaching a roof gutter to the eave of the roof, said bracket comprising:

a. A U-shaped member having one long leg and one short leg, said long leg terminating in an L-shaped flange portion, said flange portion having a forked portion extending downwardly therefrom for engagement with one of said spikes; and

b. a pair of roller assemblies, each assembly having a threaded pintle, a coil surrounding said pintle, and a sleeve loosely encasing said spring and the pintle surrounded thereby.

* * * * *