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LADDER SAFETY BRACKET

2,886,277

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2 Sheets-Sheet 1

FIG. 1.

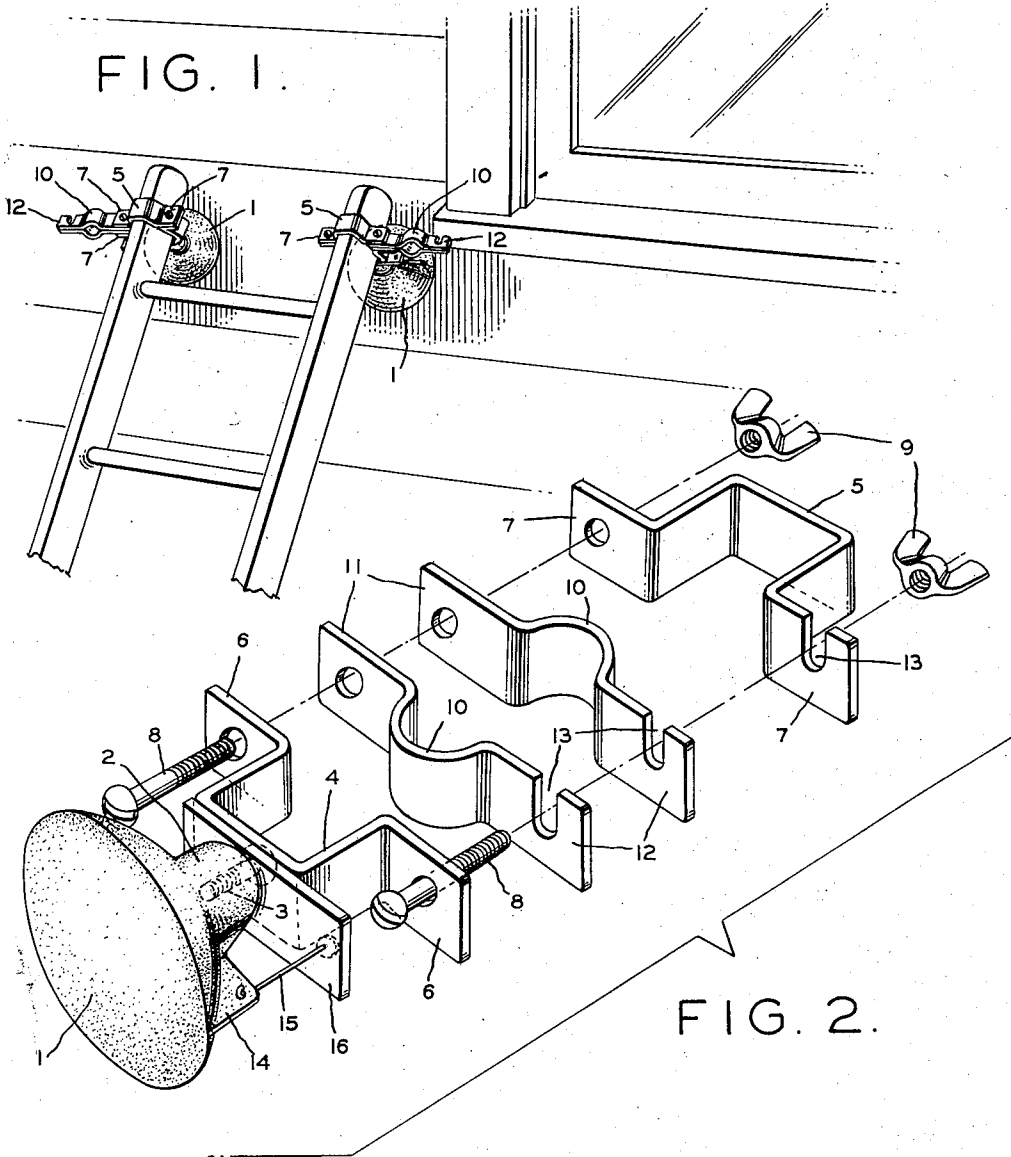
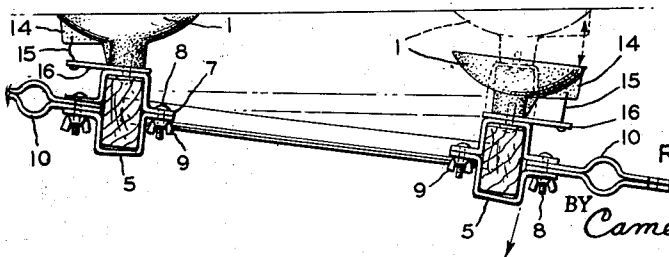


FIG. 2.

FIG. 5.



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FIG. 3.

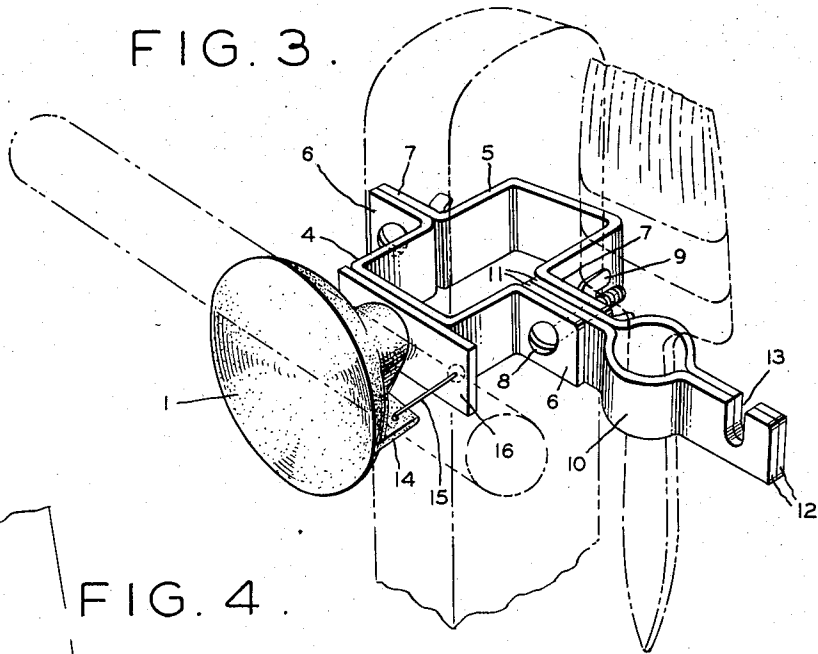
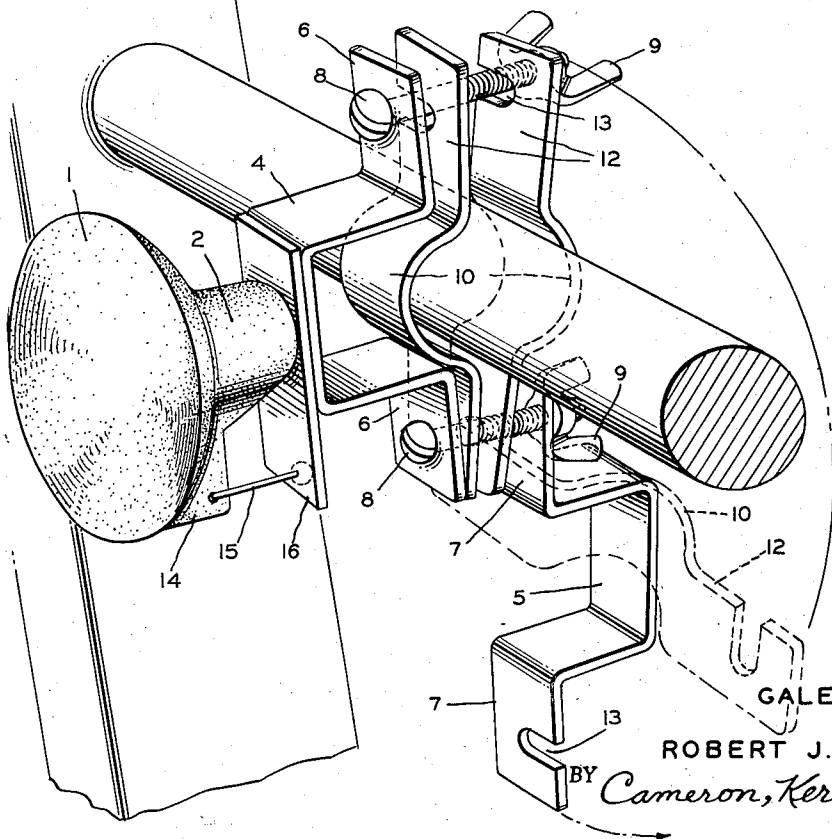


FIG. 4.



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1

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4 Claims. (Cl. 248—206)

This invention relates to a safety device for attachment to a ladder so as to maintain it in position against a wall or like surface and to prevent slippage.

Various devices of the type characterized above have been proposed heretofore. In general, it has been proposed to anchor the ladder by means such as a suction cup, a pointed implement, or some other suitable device adapted to maintain frictional contact with the ladder supporting surface. Anchoring elements of these types have been incorporated in various forms of brackets adapted to be attached to the side rails or to the rungs of the ladder, either at the top or at the bottom, in position to engage the ladder supporting surface or surfaces and to secure the ladder against accidental slippage while in use.

The present invention provides an improved device of the type described above which is simple and inexpensive, easy and convenient to use, and effective and reliable in operation.

More particularly, devices embodying the invention are characterized by quick and easy applicability to and detachability from either side rails or rungs of ordinary ladders without modification of the ladder itself.

Still further, the invention facilitates the use of anchoring means in the form of a suction cup by providing for quick and easy separation of the suction device from the supporting surface with which it is engaged during use.

The above and other objects of the invention are set forth more clearly in the following detailed description.

One embodiment of the invention has been illustrated in the accompanying drawings, but it is to be expressly understood that said drawings are for purposes of illustration only and are not to be taken as a definition of the limits of the invention, reference being had to the appended claims for this purpose.

In the drawings—

Fig. 1 illustrates the use of devices embodying the invention at the upper ends of the side rails of a ladder;

Fig. 2 is an exploded perspective view of a preferred form of device embodying the invention;

Fig. 3 is a detailed perspective view of one of the devices shown in Figs. 1 and 2, attached to the side rail of a ladder;

Fig. 4 illustrates the attachment of said device to the rung of a ladder; and

Fig. 5 illustrates the removal of the ladder from the supporting surface.

For convenience the drawings illustrate the use of a device embodying the invention at the top of a ladder which is leaning against a vertical flat supporting surface, but it will be understood that such devices may also be used at the bottom of the ladder and also that the supporting surface need not necessarily be flat. For example, the preferred form of anchoring element, i.e., a suction cup of flexible material such as rubber, will hold the ladder in position when leaning against a rounded surface such as the wall of a tank, and even

2

engages corners of walls with substantial effectiveness. It should be further understood, however, that in some aspects of the invention other known types of anchoring elements can be used.

Referring now to the drawings, the device comprises a bracket having parts adjustable to fit either the rectangular cross section of the side rail of a ladder or the round cross section of a rung, together with an anchoring element secured to the bracket in position to engage the supporting surface. As stated above, the anchoring element preferably takes the form of a suction cup 1 of rubber or other suitable flexible material. The suction cup can be attached to the bracket by any suitable means, being provided in the form shown with a boss or neck 2 that receives an attaching screw or bolt 3 as indicated in dotted lines in Fig. 2.

The bracket itself comprises two similar mating parts 4 and 5 adapted to be secured together to form a rectangular enclosure around the side rail of a ladder. To this end the parts 4 and 5 are each U-shaped and the ends of the legs thereof are provided with laterally extending flanges 6 and 7, the pairs of opposed flanges being detachably connected together in any suitable manner. As shown, the connection can be effected simply by means of bolts 8 and thumb nuts 9.

The bracket also comprises two similar strap members having opposed circular portions 10 adapted to surround a ladder rung and flat ends 11 and 12 which extend between the flanges 6 and 7 when the parts are arranged in the relation shown in Fig. 2. One connecting bolt 8 thus extends through flange 6, ends 11 and flange 7 and the other through flange 6, ends 12 and flange 7 to clamp the bracket parts together when not in use.

Provision is further made for swinging the straps 10 and one of the rectangular bracket parts 4 or 5 around one of the connecting bolts 8 for the purposes described hereinafter. Preferably the end 12 of each strap 10 and also one flange 7 of the bracket part 5 is provided with an open-ended slot 13 to receive one of the connecting bolts 8, so that when the bolts 8 are loosened, the straps and the part 5 can be rotated about the other bolt 8 relative to the bracket part 4.

When using suction cups at the top of a ladder, it is often difficult to separate the suction cups from the wall surface and to remove the ladder from the wall after the workman has descended to the ground. The present invention includes means for eliminating this difficulty by breaking the suction cup engagement with the wall surface when the ladder is simply twisted by the workman on the ground. For this purpose each suction cup is preferably provided with an external rib 14, the outer end of which is connected by a wire 15 or the like with a laterally extending arm 16 secured to the bracket part 4.

In attaching the device described above to the side rail of a ladder, the nuts 9 are first loosened and the straps 10 are swung to one side as shown in Fig. 3. The bracket parts 4 and 5 then form a rectangular strap that can be placed over the end of the ladder rail and secured in position by tightening the nuts 9. A tight clamp around the rail is not essential but undue looseness should preferably be avoided and hence it will be understood that the device can be furnished in a suitable range of sizes. If desired, the straps 10 can be used as shown in Fig. 3 to hold implements such as a paint brush.

When the ladder is used against a wall, two such devices are preferably employed, one at the top of each side rail. This use of the invention is illustrated in Fig. 1. Other devices can be used at the bottom of the ladder if desired. When the ladder is to be moved, the workman descends and then twists the ladder relative to the wall as illustrated in Fig. 5. The arm 16, wire 15, and

3

rib 14 then act to pull the edge of the suction cup away from the wall and to break the vacuum in much the same way as if a blade were inserted under the edge of the suction cup at the location of the rib and used to pry the cup loose from the wall. Having freed one cup from the wall as shown in Fig. 5, a simple reverse twist of the ladder will serve to release the other cup.

When for any reason the device is to be used on a ladder rung, the nuts 9 are first loosened and the bracket part 5 is swung out of the way as shown in Fig. 4. With the nuts 9 still loose, the outer strap 10 is swung aside and the inner strap 10 placed against the rung, after which the outer strap 10 is swung back into position as shown in Fig. 4 and the nuts 9 tightened to clamp the ladder rung.

It will be seen that devices embodying the invention are not only simple and inexpensive, but also can be furnished for quick and easy attachment to and detachment from either side rails or rungs in any position required under practical working conditions.

While only one embodiment of the invention has been illustrated and described in detail, it is to be expressly understood that the invention is not restricted to this embodiment and that various changes can be made in the form, details of construction, and arrangement of the parts without departing from its spirit. Reference should therefore be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. A ladder safety bracket for attachment to the side rails and rungs of a ladder comprising a pair of opposed U-shaped bracket parts having substantially parallel side legs connected together at one end and forming a rectangular bracket adapted to surround the side rail of a ladder, a pair of straps having opposed semi-circular recesses for engagement with the rung of a ladder, the free ends of said side legs having opposed laterally extending flanges at each side of said bracket and the pairs of ends of said straps at the opposite sides of said recess being

4

interposed between said laterally extending flanges, releasable means securing a pair of strap ends and a pair of laterally extending flanges together at each side of said bracket, one pair of strap ends and an adjacent laterally extending flange of one bracket part being formed for disengagement from one of said securing means whereby said straps and said one bracket part can be rotated about the other securing means to form a laterally extending article holder, and an anchoring element secured to the other bracket part.

2. A ladder safety bracket comprising a pair of opposed U-shaped bracket parts having parallel side legs connected together at one end and forming a rectangular bracket adapted to surround the side rail of a ladder, said legs having pairs of opposed laterally extending flanges one pair at each side of the bracket, releasable means securing together the flanges of each pair, one flange of one bracket part being formed for disengagement from one of said securing means, an anchoring suction cup secured to the other bracket part, and flexible means connecting said cup at a point adjacent its edge with a laterally projecting part of said bracket.

3. A ladder safety bracket as defined in claim 2, said cup having an external rib in a substantially radial plane, said flexible means being connected to the outer end of said rib.

4. A ladder safety bracket as defined in claim 1, one of said securing means comprising a bolt and said one end of each strap and said flange of one bracket part having open-ended slots for disengageable connection with said bolt.

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