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Perry

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[54] SAFETY LADDER BRACE

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[52] **U.S. Cl.** **182/107,** 182/214

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

[58] **Field of Search** 182/214, 107, 108

[56] **References Cited**

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[57] **ABSTRACT**

A safety device for supporting an upper end portion of a ladder having a pair of side rails joined by rungs wherein the safety device includes a body member having a pair of diverging arms forming a generally V-shape, each having an extension with the extensions being in substantially normal planes and a flange extending outwardly from a free end of each of the extensions with the flanges being substantially coplanar and a wing extending outwardly from each of the diverging arms and having a portion engageable with a respective side rail of the ladder and a clamping member on each wing for securing the respective side rails of the ladder thereto.

8 Claims, 6 Drawing Figures

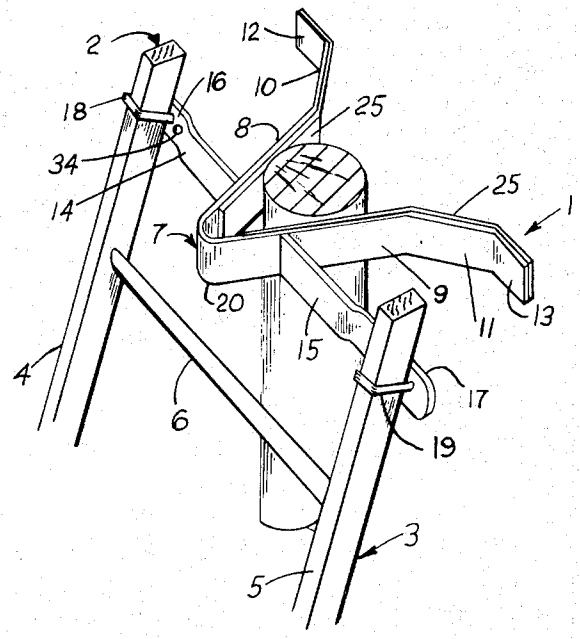


Fig. 1.

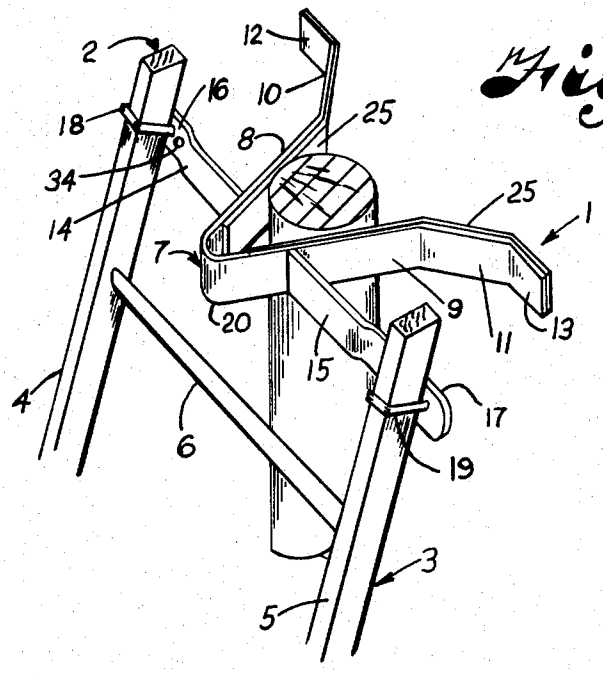


Fig. 2.

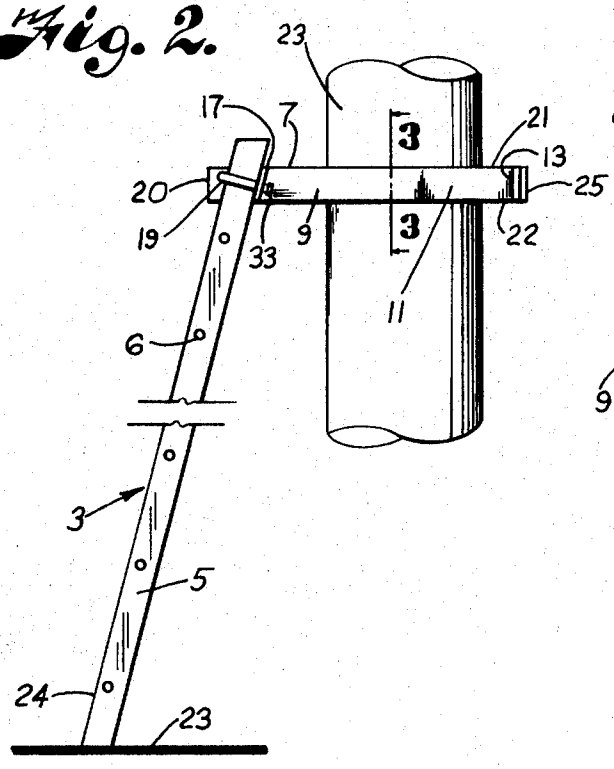


Fig. 3.

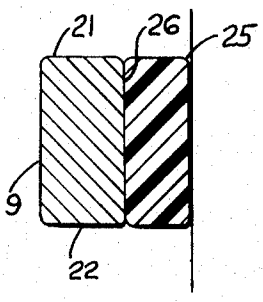


Fig. 4.

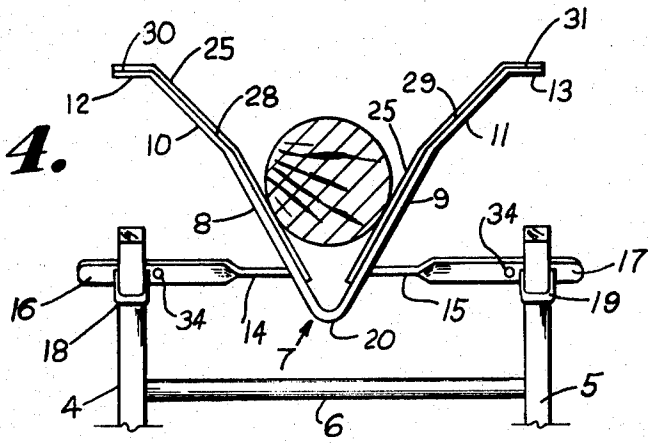


Fig. 5.

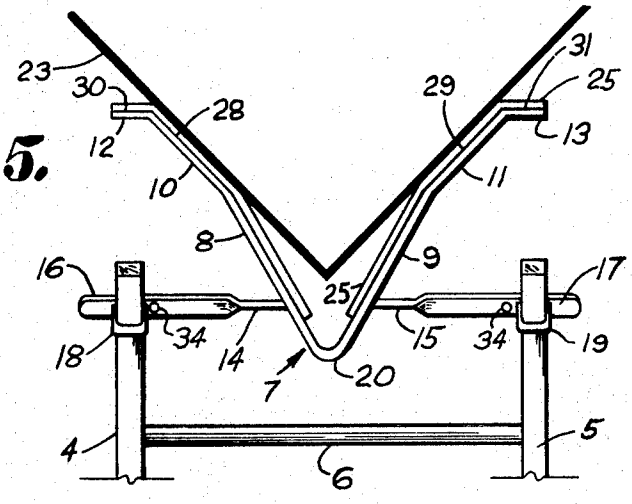
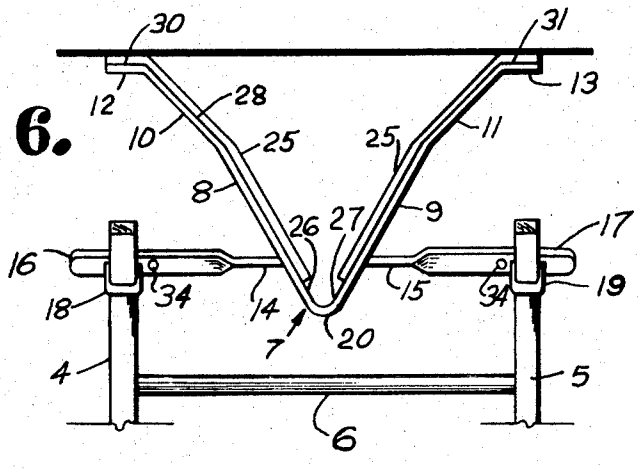


Fig. 6.



SAFETY LADDER BRACE

The present invention relates to safety devices for supporting an upper end portion of a ladder and more particularly to a safety device adapted to engage objects against which the ladder is placed such as a generally rounded object, as a pole or tree, a corner of a building and a side wall of a building with an absence of lateral movement of the ladder.

When an upper end portion of a ladder having a pair of laterally spaced side rails joined by rungs is placed in engagement with a rounded object such as a pole, tree, or the like, or a corner of a building, only the upper rung engages the supporting object and the ladder tends to rock, tip, or the like movement whereby the ladder and person thereon may fall. Also when the lower end portion of the ladder is placed on a yielding surface, such as soft ground, and the top of the ladder is placed in engagement with a rounded object or a corner of a building, the ladder may also move laterally thereby causing the person thereon to fall.

The principal objects of the present invention are: to provide a safety device for supporting an upper end portion of ladders having side rails joined by rungs and avoiding the difficulties experienced with such ladders when placed against generally rounded objects, building corners, and the like; to provide such a safety device which is versatile in use wherein the safety device has respective portions adapted to supportingly engage an exterior surface of a rounded object such as a pole, tree, a corner of a building and a generally planar wall surface; to provide such a safety device for ladders wherein respective portions of a body member of the safety device for ladders are adapted to receive the rounded object or the corner of a building with a wedging action between the respective portions of a body member; to provide such a safety device for ladders having resilient material on respective surface engaging portions to frictionally engage the respective supporting surface; to provide such a safety device for ladders effecting optimum engagement with a surface against which the ladder is placed and frictional engagement aiding in holding the ladder against movement; and to provide such a safety device for ladders which is economical to manufacture, durable in use, simple to install on an upper end portion of a ladder, and particularly well adapted for the intended use.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a safety device for supporting an upper end portion of a ladder and embodying features of the present invention.

FIG. 2 is a side elevational view of the safety device shown supporting a ladder on a generally cylindrical object.

FIG. 3 is a transverse sectional view taken on line 3—3, FIG. 2 and showing resilient material mounted on the body member.

FIG. 4 is a plan view showing the safety device engaging a generally cylindrical object.

FIG. 5 is a plan view showing the safety device engaging substantially perpendicular wall surfaces, such as at a building corner.

FIG. 6 is a plan view showing the safety device engaging a generally planar wall surface.

Referring more in detail to the drawings:

As required detailed embodiments of the present invention are disclosed herein, however, it is to be understood that the disclosed embodiments are merely exemplary of the invention which may be embodied in various forms. Therefore, specific structural functional details disclosed herein are not to be interpreted as limiting but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriate detailed structure.

In the disclosed embodiment of the present invention, the referenced numeral **1** generally designates a safety device for supporting an upper end portion **2** of a ladder **3** having a pair of laterally spaced side rails **4** and **5** joined by a plurality of vertically or longitudinally spaced rungs **6**. The safety device **1** is adapted to support and prevent lateral movement of the upper end portion **2** of the ladder **3** on a plurality of different shaped objects, including generally cylindrical objects, such as poles and trees, and intersecting surfaces, such as building corners, and planar surfaces, such as building walls.

In the disclosed embodiment, the safety device **1** includes a body member **7** having a pair of diverging arms **8** and **9** forming a generally V-shape and having extensions **10** and **11** respectively positioned in substantially normal planes adapted to engage building corners and the like. The body member **7** has flanges **12** and **13** extending outwardly from a free end of the extensions **10** and **11** respectively with the flanges **12** and **13** being substantially coplanar to engage a planar surface.

Wings **14** and **15** extend outwardly from the diverging arms **8** and **9** respectively and have portions **16** and **17** engageable with respective side rails **4** and **5** of the ladder **3** and clamping members **18** and **19** secured to the wings **14** and **15** and the side rails **4** and **5** respectively for securing the safety device **1** on the upper end portion **2** of the ladder **3**.

The illustrated body member **7** has a forward end **20** with the diverging arms **8** and **9** extending rearwardly therefrom. The diverging arms **8** and **9** are generally planar members preferably of flat metal strip and having upper and lower edges **21** and **22** respectively adapted to be positioned in respective planes substantially parallel with a supporting surface **23** for a lower end portion **24** of the ladder **3** whereby flat faces of the arms lie against the surface of an object against which the ladder is leaned. The diverging arms **8** and **9** are positioned to define and include an angle preferably less than about 60°.

It is desirable to protect the respective surfaces engaged by the body member **7** while supporting the upper end portion **2** of the ladder **3**. It is also desirable to insulate the body member **7** particularly when formed of metal, from the respective surfaces, therefore, resilient material **25** is mounted on facing surfaces **26** and **27** of the diverging arms **8** and **9** and on surfaces **28** and **29** of the extensions **10** and **11** and on rearwardly facing surfaces **30** and **31** of the flanges **12** and **13**. The resilient material **25** is engageable with respective surfaces to support the upper end portion **2** of the ladder **3** and provide a frictional engagement aiding in holding the ladder against movement.

The extensions **10** and **11** extend from the arms **8** and **9** respectively and at an angle therewith to position

the extensions **10** and **11** in substantially perpendicular or normal planes. The resilient material **25** on the extensions **10** and **11** is positioned to engage intersecting surfaces which are substantially perpendicular, such as building corners and the like.

The flanges **12** and **13** extend outwardly from free ends of the extensions **10** and **11** respectively and at an angle therewith to position the flanges **12** and **13** substantially coplanar wherein the resilient material **25** thereon is positioned to engage a generally planar surface, such as building walls and the like.

The wings **14** and **15** are generally planar members each having one end suitably secured to the body **7** and extending outwardly therefrom. The wings **14** and **15** have the portions **16** and **17** respectively which are inclined relative to the plane of the upper edges **21** of the diverging arms **8** and **9** whereby the ladder **3** may be suitably inclined with the safety device being in a substantially horizontal plane thereby providing optimum engagement with a surface against which the ladder **3** is placed.

Suitable means are provided on each of the inclined portions **16** and **17** of the wings **14** and **15** for securing the respective side rails **4** and **5** of the ladder **3** thereto. The clamping members **18** and **19** are illustrated as U-bolts having suitable fasteners thereon, such as wing nuts **32** and **33** respectively. The inclined portions **16** and **17** of the wings **14** and **15** respectively have a plurality of spaced apertures **34** therein for the U-bolts **18** and **19** to extend therethrough.

In using a safety device for ladders constructed as illustrated and described, the clamping members or U-bolts **18** and **19** are secured to respective side rails **4** and **5** to position and secure the safety device **1** on the upper end portion **2** of the ladder **3**. When the ladder **3** is to be supported relative to a generally rounded member, such as a wooden or metal pole, tree or the like, the safety device **1** is positioned with the generally rounded object between the diverging arms **8** and **9**. The safety device **1** and the upper end portion **2** of the ladder **3** are then moved toward said rounded object. The diverging arms **8** and **9** extend rearwardly from the forward end **20** of the body member **7** with the diverging arms having sufficient resiliency to permit a generally rounded object to effect some spreading of the arms **8** and **9** to thereby substantially wedge same between the diverging arms **8** and **9** and the resilient material **25** thereon. The resilient material **25** is particularly effective to frictionally engage metal poles and the like and to electrically insulate the safety device **1** and the ladder **3** from the respective metal pole. When the safety device **1** is to support an upper end portion **2** of the ladder **3** relative to substantially normal intersecting surfaces, such as at a building corner, the body member **7** is moved toward the corner and the diverging arms **8** and **9** are spread whereby the intersecting surfaces are wedged between the extensions **10** and **11** with the resilient material **25** thereon cooperating with the wedging action and frictionally engaging the respective intersecting surfaces of the building corner. When the safety device **1** is to support an upper end portion **2** of the ladder **3** relative to a generally planar surface, the flanges **12** and **13** and the resilient material **25** thereon is moved into engagement with the respective planar surface with the resilient material **25** thereon is moved into engagement with the respective planar surface with the resilient material **25** protecting the finish or surface of the respective wall to prevent damage from engagement by the safety device **1**.

It is to be understood that while I have illustrated and described one form of my invention it is not to be limited to the specific form or arrangement of parts herein described and shown.

What I claim and desire to secure by Letters Patent is:

1. A safety device for ladders having a pair of spaced side rails, said safety device comprising:

a. a body member having a pair of diverging arms;

b. a wing extending outwardly from each of said arms and having a portion engageable by a respective side rail of a ladder;

c. means on each of said wings for securing said respective side rail of the ladder thereto;

d. an extension for each of said pair of diverging arms, said extensions extending from said respective arms at an angle to position said extensions in substantially normal planes.

2. A safety device as set forth in claim **1** including a flange extending outwardly from a free end of each of said extensions, said flanges being substantially coplanar.

3. A safety device for ladders as set forth in claim **2** including resilient material mounted on surfaces of said diverging arms and extensions and flanges and positioned for engagement with respective surfaces to support an upper portion of the ladder.

4. A safety device for ladders having a pair of laterally spaced side rails joined by spaced rungs, said safety device comprising:

a. a body member having a pair of diverging arms forming a generally V-shape having substantially coplanar upper edges;

b. a wing extending outwardly from each of said arms and having a portion engageable by a respective side rail of a ladder said rail engaging portions of said wings being positioned in a plane inclined relative to the plane of the upper edges of said arms;

c. an extension for each of said pair of diverging arms, said extensions extending from said respective arms at an angle to position said extensions in substantially normal planes;

d. a flange extending outwardly from a free end of each of said extensions, said flanges being substantially coplanar; and

e. means on each of said wings for securing said respective rails of the ladder thereto.

5. A safety device for ladders as set forth in claim **4** including:

a. resilient material mounted on facing surfaces of said arms and engageable with the surface to support an upper end portion of the ladder;

b. resilient material mounted on said extensions of said arms and engageable with respective surfaces in substantially normal planes to support an upper end portion of the ladder; and

c. resilient material mounted on said flanges and engageable with a substantially planar surface to support an upper end portion of the ladder.

6. A safety device for ladders as set forth in claim **5** wherein:

a. said arms of said body member have respective upper edges adapted to be positioned in a plane substantially parallel with a surface supporting a lower end portion of the ladder;

b. said wings each have a portion inclined relative to the plane of said upper edges whereby the ladder may be inclined with the safety device being in a substantially horizontal plane;

c. said diverging arms of said body member are planar members; and

d. said diverging arms are positioned to define an included angle therebetween of less than 60°.

7. A safety device for ladders having a pair of spaced side rails, said safety device comprising:

a. a body member having a pair of diverging arms;

b. a wing extending outwardly from each of said arms and having a portion engageable by a respective side rail of a ladder;

c. means on each of said wings for securing said respective side rail of the ladder thereto;

d. said diverging arms of said body member being planar members;

e. said diverging arms being positioned to define an included angle therebetween of less than about 60°;

f. said diverging arms having sufficient resiliency to permit a generally rounded object to effect separation of said arms when a ladder having the body member thereon is moved toward and into engagement with a generally rounded object to thereby substantially wedge same between the diverging arms.

8. A safety device for ladders as set forth in claim 1 and including:

a. said diverging arms having flat inner faces;

b. resilient material fixed to said diverging arm interfaces and positioned for engagement with said generally rounded objects wedged between the diverging arms.

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