United States Patent [19]

Madison

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[54] **SAFETY DEVICE FOR LADDERS**

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[52] **U.S. Cl.** **182/206,** 182/117, 182/121, 182/214, 248/238

[51] **Int. Cl.** **E06c 1/36,** E06c 7/14

[58] **Field of Search** ... 182/120, 121, 122, 206, 214; 248/238

[56] **References Cited**

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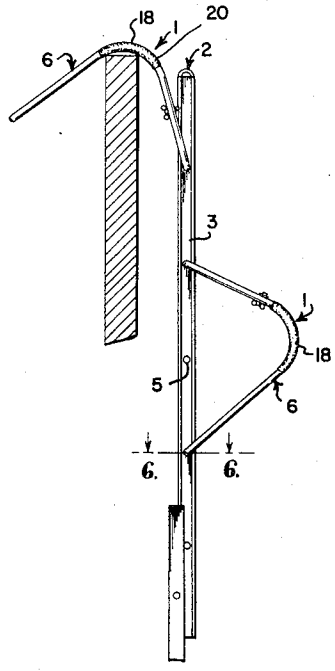
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Attorney, Agent, or Firm—Fishburn, Gold & Litman

[57] **ABSTRACT**

A safety device for use with a ladder having a pair of laterally spaced rails and a plurality of rungs extending between and spaced along the rails with opposed bores spaced along said rails in the rungs or otherwise wherein the safety device includes a pair of side members each positioned adjacent a respective one of the rails and having opposite end portions thereof each extending into a respective one of the bores and receiving a respective end portion of a respective one of a pair of connector members each adapted to be positioned in a selected one of the bores. A tie member extends between and has opposite end portions thereof connected to an intermediate portion of each of the side members. The tie member, side members, and the ladder define a cage structure for protecting a person on the ladder.

11 Claims, 6 Drawing Figures



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SHEET 1 OF 2

Fig. 1.

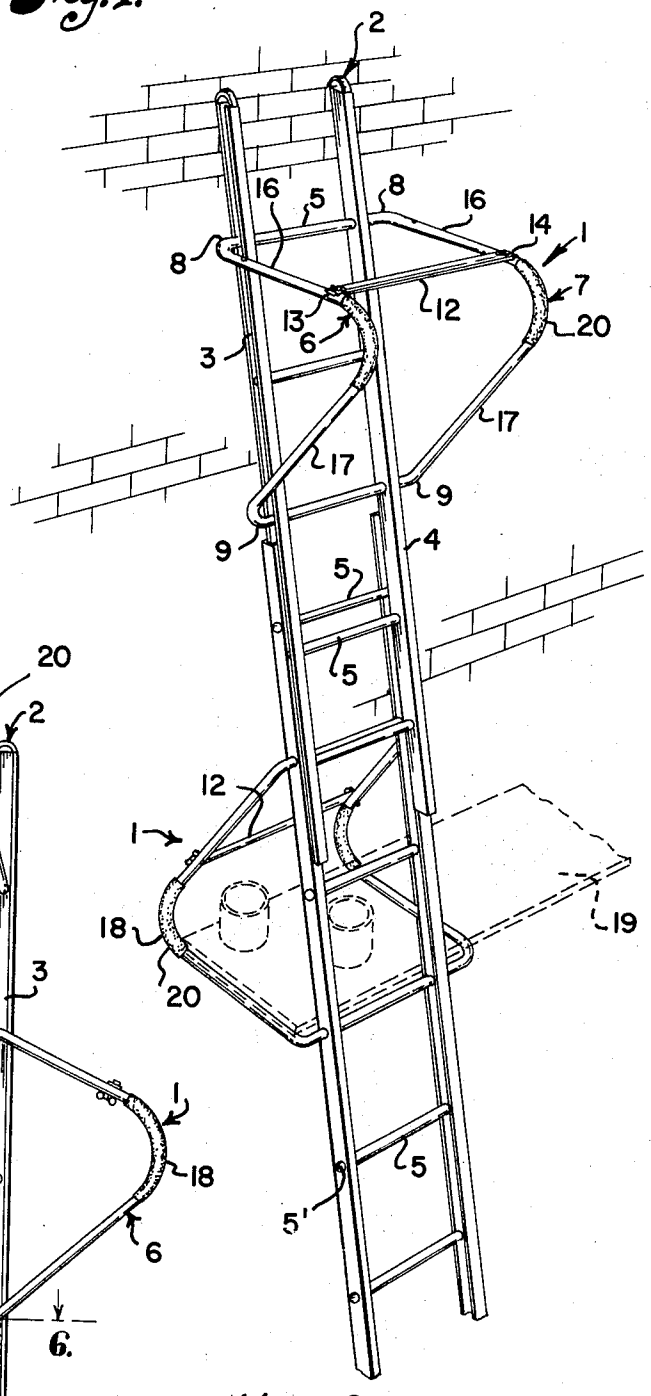


Fig. 2.

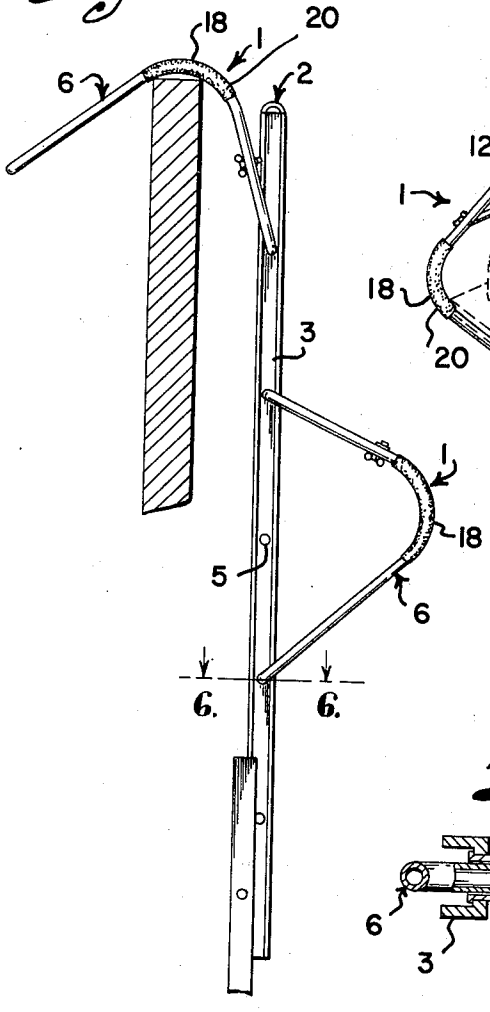


Fig. 6.

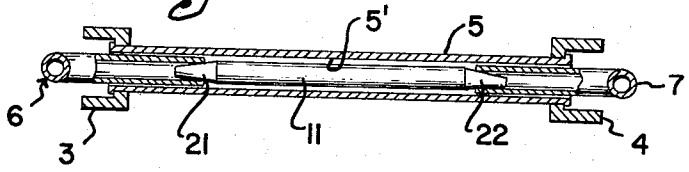


Fig. 3.

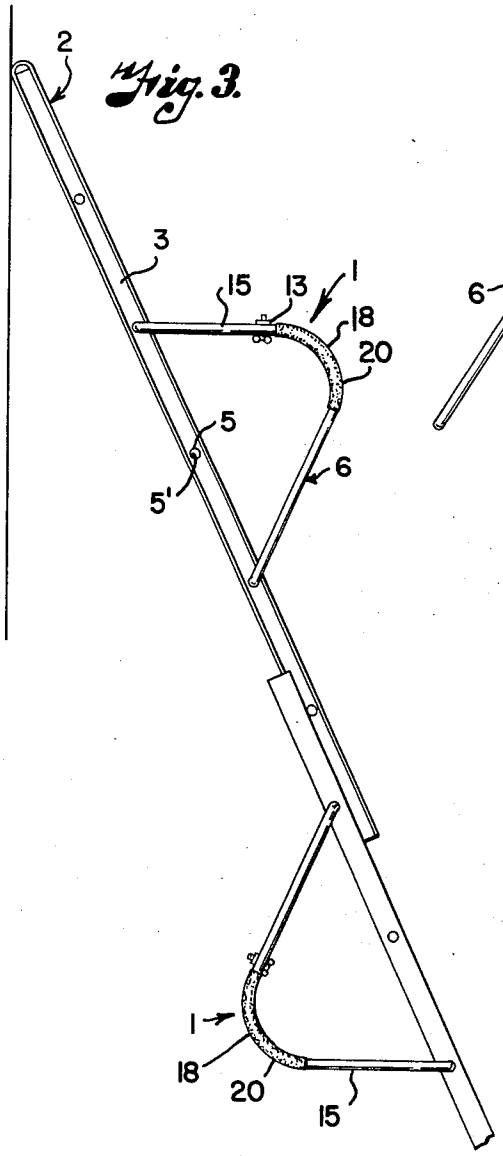


Fig. 4.

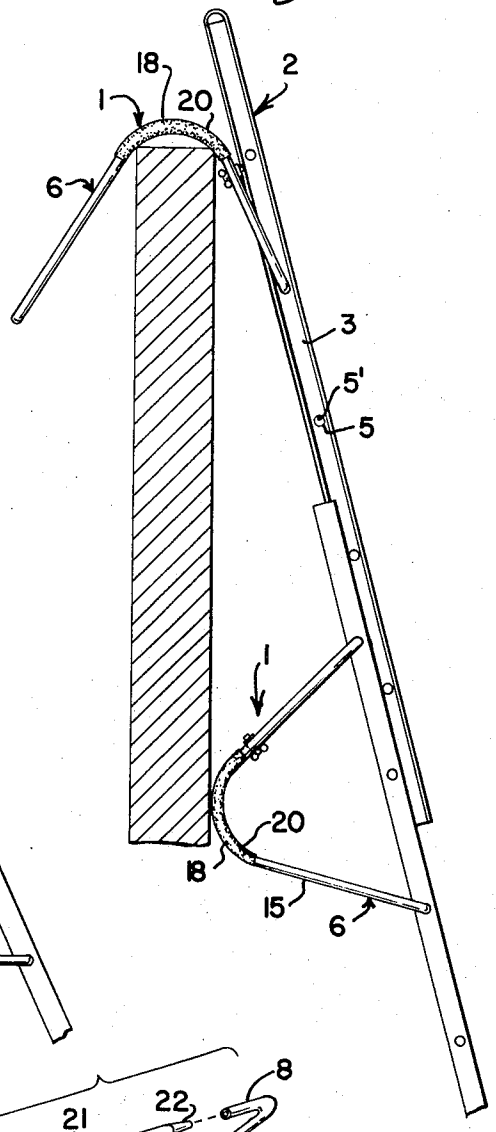
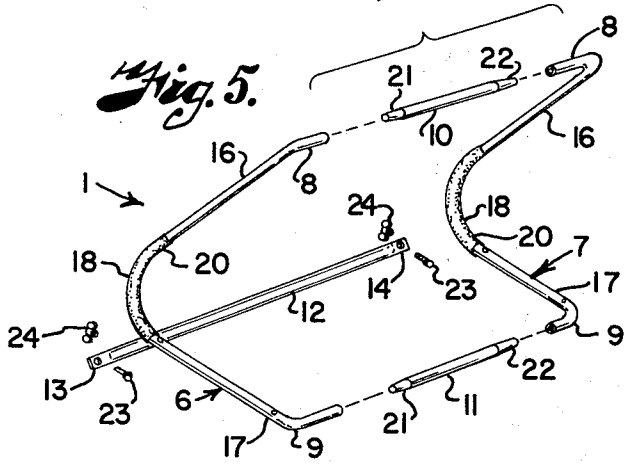


Fig. 5.



SAFETY DEVICE FOR LADDERS

The present invention relates to safety devices for ladders and more particularly to a safety device for use with a ladder having a pair of laterally spaced rails and a plurality of rungs and bores extending between and spaced along the rails.

The principal objects of the present invention are: to provide a safety device for use with a ladder having a pair of laterally spaced rails and a plurality of rungs and bores extending between and spaced along the rails and cooperating with the ladder to define a cage structure for protecting a person on the ladder; to provide such a safety device adapted to be positioned to support a generally horizontal platform; to provide such a safety device which has two side members with portions engageable with portions or bores in ladder side members and connecting members to form a cage structure associated with the ladder; to provide such a structure which is adaptable to various positions on a ladder to form a hook, scaffold holder, and other useful attachments for ladders for safety to users and to facilitate various operations of persons on ladders; to provide such a safety device adapted to be positioned to suspend a ladder from a wall, windowsill or the like; to provide such a safety device adapted to be positioned to space a lower end of a suspended ladder from the wall; to provide such a safety device which is adjustable in position along the ladder; to provide such a safety device which is easily assembled and disassembled for moving to another position along the ladder; and to provide such a safety device for use with ladders which is durable in construction, economical to manufacture, stable in use, and particularly well adapted for the proposed 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.

The drawings constitute a part of this specification and include an exemplary embodiment of the present invention and illustrate various objects and features of the safety device for ladders.

FIG. 1 is a perspective view of a ladder having first and second safety devices embodying features of the present invention mounted thereon.

FIG. 2 is a side elevational view of the ladder showing one safety device positioned to support or suspend the ladder from a wall or the like.

FIG. 3 is a side elevational view of the ladder having the safety devices mounted in the position shown in FIG. 1.

FIG. 4 is a side elevational view of the ladder having one safety device positioned to support or suspend the ladder from a wall or the like and another safety device positioned to space a lower portion of the ladder from the wall.

FIG. 5 is an exploded perspective view showing the components of the safety device.

FIG. 6 is a transverse sectional view through the ladder and attachment taken on the line 6—6, FIG. 2.

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 and 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 appropriately detailed structure.

In the disclosed embodiment of the present invention, the reference numeral 1 generally designates a safety device for use with a ladder 2 having a pair of laterally spaced rails 3 and 4 and a plurality of rungs 5 extending between and spaced along the rails 3 and 4. The ladder rails have opposed bores 5' therein to receive attachment portions, as later described. In the illustrated structure, the rungs 5 are tubular and the bores 5' extend through the ladder rails 3 and 4 and through the tubular rungs 5. The safety device 1 includes a pair of side members 6 and 7 positioned adjacent and spaced from the rails 3 and 4 respectively and having opposite end portions 8 and 9 thereof each extending into a respective one of the bores 5' and receiving a respective end portion of a respective one of a pair of connector members 10 and 11 each adapted to be positioned to extend between the rails 3 and 4 and into the end portions 8 and 9. A tie member 12 extends between and has opposite end portions 113 and 14 thereof separately connected to an intermediate portion 15 of each of the side members 6 and 7 respectively. The tie member 12, side members 6 and 7, and the ladder 2 define a cage structure for protecting a person (not shown) on the ladder 2.

The side members 6 and 7 are preferably tubular members for lightness in weight, ease of fabrication, and strength in use. The end portions 8 and 9 of each of the side members 6 and 7 extend generally normal to the intermediate portion 15 and are received in respective rungs or bores 5' of the ladder 2 whereby the intermediate portions 15 are substantially normal or perpendicular to the rails 3 and 4 respectively.

The intermediate portion 15 of each of the side members 6 and 7 is formed of a pair of outwardly converging portions 16 and 17 joined in a return bend portion 18 which is spaced outwardly from the ladder 2. The outwardly converging portions 16 and 17 of each intermediate portion 15 define an acute angle therebetween and are arranged whereby each of the outwardly converging portions 16 and 17 of one of the side members 6 and 7 is substantially coplanar with a respective one of the outwardly converging portions 16 and 17 of the other of the side members 6 and 7.

As best seen in FIG. 3, one of the outwardly converging portions of the side members 6 and 7 is substantially horizontal when the ladder 2 is in use. The one of the outwardly converging portions is positioned to define an angle between the ladder 2 and the outwardly converging portion which is substantially equal to the angle between the ladder and a line substantially normal to a wall or the like surface having an upper end of the ladder 2 positioned thereagainst. The horizontal portions of the side members 6 and 7 cooperate to support a generally horizontal platform 19.

It is preferred to have a protective coating 20 mounted on the return bend portion 18 of the side members 6 and 7 adapted to electrically insulate the safety device 1 and protect the outermost portions of the safety device 1 from scratches, marrs, and the like during engagement with a wall surface or the like.

The connector members **10** and **11** each have the opposite end portions thereof formed of a size to be suitably separably connected as by being frictionally received in a respective end portion of the side members **6** and **7.** The illustrated opposite end portions **21** and **22** of each of the connector members **10** and **11** are tapered to be received within the respective end portions **8** and **9** of the side members **6** and **7.** The portion of each of the connector members **10** and **11** between the opposite end portions **21** and **22** thereof has an exterior size substantially equal to the exterior size of the end portions **8** and **9** of the side members **6** and **7** whereby the connector members **10** and **11** are adapted to maintain the opposite end portions **8** and **9** and the side members **6** and **7** in a selected spacing therebetween.

The tie member **12** extends between and has the opposite end portions **13** and **14** thereof adapted to be connected to a respective one of the pair of outwardly converging portions **16** and **17** of an intermediate portion **15** of each of the side members **6** and **7.** Suitable fastening means, such as bolts **23** and nuts **24,** are adapted to secure the tie member **12** to the intermediate portion **15** of the side members **6** and **7.** The outwardly converging portions **16** and **17** have suitable apertures therein each adapted to receive one of the bolts **23** extending through the tie member **12** and through the respective intermediate portion **15** to receive a respective nut **24** thereon.

The safety device **1** is particularly versatile in use and may be mounted in a plurality of locations along the ladder **2.** When the safety device **1** is mounted in a position similar to that illustrated as the upper position in FIGS. **1** and **3,** the safety device **1** permits a person (not shown) to stand on one of the rungs **5** of the ladder **2** and to be adjacent the ladder **2** and have their legs or back in engagement with the tie member **12** thereby freeing both hands for work. When the safety device **1** is mounted in a position similar to the lower position illustrated in FIGS. **1** and **3,** the lower ones of the outwardly converging portions of the side members **6** and **7** are substantially horizontal and adapted to support a platform **19** thereon. The platform may be used to support suitable work items, such as paint cans or the like, and when a pair of ladders are spaced apart, the platform **19** may extend between the safety devices mounted thereon. The tie member **12** may be adjusted in position along the respective outwardly converging portion to prevent the safety device **1** from moving over the ladder thereby permitting the safety device to be mounted in a position similar to the upper position shown in FIGS. **2** and **4** and thereby suspend the ladder **2** from a wall, windowsill or ledge, or the like. The safety device **1** is also adapted to be positioned to space a lower end portion of the ladder **2** from a wall and such a position is illustrated in FIG. **4.**

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. In combination with a ladder having a pair of laterally spaced rails and a plurality of rungs extending between and spaced along said rails with opposed bores in said rails, a safety device comprising:

a. a pair of connector members each adapted to be positioned in a respective and selected one of a plurality of spaced opposed bores of a ladder;

b. a pair of side members each positioned adjacent a respective one of a pair of rails of the ladder and each having opposite end portions each extending into a respective one of the bores and receiving a respective end portion of a respective one of said connector members, said side members each having an intermediate portion spaced outwardly from the rails of the ladder; and

c. a tie member extending between and connected to the intermediate portion of said side members.

2. In combination with a ladder, a safety device as set forth in claim **2** wherein:

a the opposite end portions of each of said side members extend generally normal to the intermediate portion thereof; and

b the intermediate portion of said side members includes outwardly converging portions joined in a return bend portion.

3. In combination with a ladder, a safety device as set forth in claim **2** wherein:

a each of the outwardly converging portions of one of said side members is coplanar with a respective one of the outwardly converging portions of the other of said side members; and

b one of the outwardly converging portions of said side members is substantially horizontal when the ladder is in use.

4. In combination with a ladder, a safety device as set forth in claim **1** wherein:

a said connector members each have opposite end portions of a size to be frictionally received in a respective end portion of said side members;

b said side members are each tubular members;

c the opposite end portions of each of said side members extend generally normal to the intermediate portion of said side members; and

d the intermediate portion of said side members includes outwardly converging portions joined in a return band portion.

5. In combination with a ladder, a safety device as set forth in claim **4** wherein:

a. each of the outwardly converging portions of one of said side members is coplanar with a respective one of the outwardly converging portions of the other of said side members; and

b the return bend portion of each of said side members has a protective coating thereon.

6. A safety device for use with a ladder having a pair of laterally spaced rails and a plurality of rungs extending between and spaced along said rails and opposed bores in said rails, said safety device comprising:

a a pair of side members each positioned adjacent a respective one of a pair of rails of a ladder and each having opposite end portions each extending into a respective one of a plurality of opposed bores extending between and spaced along the rails;

b means extending between and connected to said side members at a position spaced from the rails of the ladder for maintaining a selected spacing between said side members; and

c. means engaging the opposite end portions of said side members for maintaining the opposite end portions in a selected spacing therebetween.

7. A safety device as set forth in claim **6** wherein:

a said side members each have an intermediate portion spaced outwardly from the respective rails of the ladder; and

b the opposite end portions of each of said side members extend generally normal to the intermediate portion of said side members.

8. A safety device as set forth in claim **7** wherein:

a the intermediate portion of said side members includes outwardly converging portions joined in a return bend; and

b the return bend portion of each of said side members has a protective coating thereon.

9. A safety device as set forth in claim **6** wherein:

a the opposite end portions of each of said side members are tubular; and

b said means for maintaining the opposite end portions in a selected spacing comprises a pair of connector members each adapted to be positioned in a respective one of a plurality of spaced tubular rungs of a ladder and having opposite end portions of a size to be frictionally received in a respective end portion of said side members.

10. A safety device as set forth in claim **9** wherein:

a the opposite end portions of each of said side members extend generally normal to the intermediate portion of said side members; and

b the intermediate portion of said side members includes outwardly converging portions joined in a return bend portion.

11. A safety device as set forth in claim **10** wherein:

a each of the outwardly converging portions of one of said side members is coplanar with a respective one of the outwardly converging portions of the other of said side members; and

b the return bend portion of each of said side members has a protective coating thereon.

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