June 5, 1934. G. E. REAGLE 1,961,781

LADDER

Filed Jan. 6, 1934

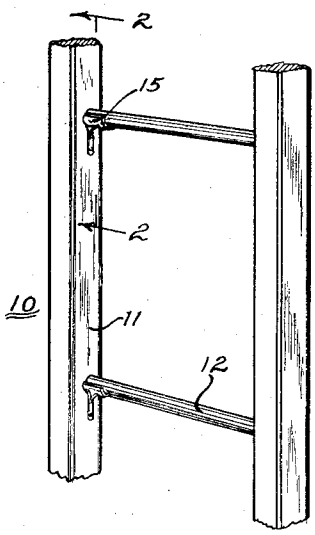


FIG-1

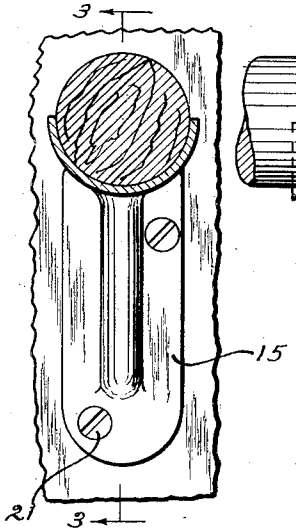


FIG-2

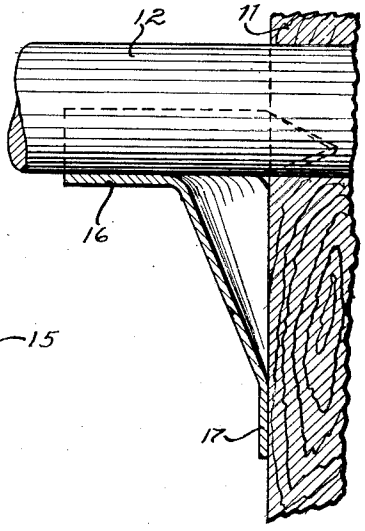


FIG-3

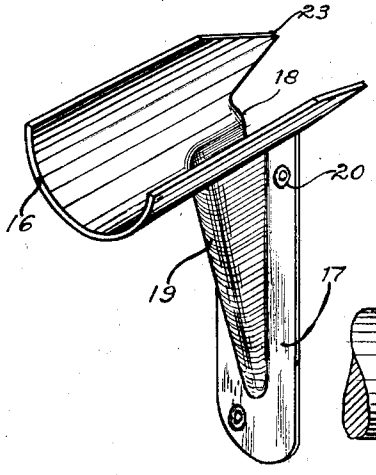


FIG-4

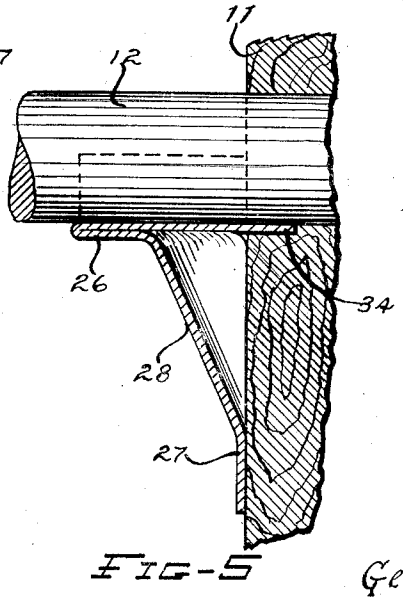


FIG-5

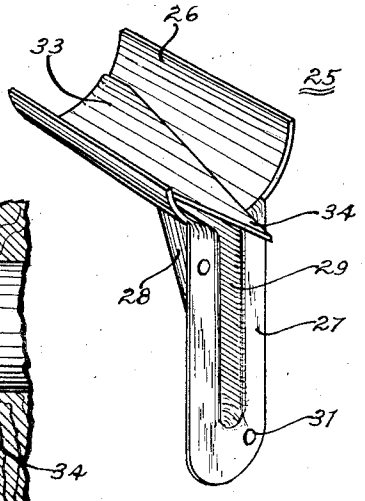


FIG-6

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UNITED STATES PATENT OFFICE

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LADDER

George E. Reagle, Jamestown, N. Y.

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3 Claims. (Cl. 228—58)

This invention relates to an improvement in ladders and more particularly to a supporting means for the rungs thereof.

In its preferred embodiment, the invention discloses two modifications of a bracket by which to mount new rungs on the rails of a ladder or by means of which old and partially rotted out rungs may be reinforced.

It is well known that ladders of the rung type, in contra-distinction to those having steps, become unsafe for use principally because of the fact that the rungs become worn, split, or rotted out from the rails. Ladders of this type, particularly painters' ladders, are generally subjected to considerable weight and strain and are more or less continuously exposed to the detrimental effects of all kinds of weather. When a ladder has been in use for some time the protective coating of paint becomes worn off from the rungs and exposes them to the harmful effects of moisture which tends to rot the rungs adjacent the rails. The present invention is intended to provide adequate support for all loads imposed upon the rungs. The invention may be added to a ladder which is partly worn and has become dangerous to use without additional support for the rungs, applied to a new ladder, or utilized to secure and support replacement rungs which extend only from one rail to the other.

One object of the invention is to provide a ladder rung support in the form of a bracket which is attached to the ladder rail.

Another object of the invention lies in the provision of pre-centering or locating means for the bracket prior to securing to the rail.

A further object of the invention lies in the provision of a bracket designed to provide adequate drainage of moisture from beneath the rung to prevent rotting adjacent the bracket.

Other and further objects of the invention will be more fully understood from a consideration of the following specification which is taken in conjunction with the accompanying drawing and in which,

Figure 1 is a perspective view of a rung ladder embodying one form of the invention;

Figure 2 is an enlarged vertical sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is an enlarged vertical sectional view taken substantially on the line 3—3 of Figure 2;

Figure 4 is a perspective view of the rung supporting bracket;

Figure 5 is a vertical sectional view of a modification of the invention applied to a ladder, being taken in the same plane as Figure 3; and

Figure 6 is a perspective view of the modified bracket shown in Figure 5.

Referring to the drawing, this invention is applied to a ladder of the rung type generally indicated by the reference numeral 10. The ladder is comprised of rails 11 which are connected by a plurality of rungs 12. Suitable openings are formed in the rails and the rungs are projected thereinto and secured in any conventional manner. The portions of the rung adjacent the rails are provided with additional means of support in the form of brackets 15. Each bracket consists of horizontal and vertical portions 16 and 17. The portion 16 is connected with the portion 17 through an angle portion 18 and a central reinforcing rib 19. The rib 19 forms a short trough-like recess in the bottom of the portion 16 which, as may be noted from the drawing, is formed in a generally arcuate curve. The rib 19 projects outwardly from the portion 17 being continued throughout almost the entire length of this portion thus increasing the angular rigidity as between portions 16 and 17. Suitable openings 20 are made in the portion 17 adjacent the rib and screws 21 are provided to secure the portion 17 against the inner face of the rail 11.

The horizontal portion 16 is of suitable curvature to partially surround the rail 12. The outer end of this portion terminates in a vertical wall whereas the inner upper edges are provided with prongs 23. These prongs (see Figure 3) are utilized to locate the horizontal portion 16 of the bracket in abutment with the under portion of the rung 12 by projecting into the rail 11 through the opening provided for the rung 12. To mount the bracket in this manner requires that it be moved upwardly against the under side of the rail and forced laterally to project the prongs 23 into the rail. When the bracket has thus been located, screws 21 secure it to the rail. The rung 12 may be worn or partially rotted out adjacent its connection with the rail, yet the bracket, since it is supported on the rail, constitutes a support for the rung which is independent of any support the rung may possess of itself.

It is contemplated (see Figures 3 and 4) to slightly depress or cut away the angle 18 which connects portions 16 and 17 for the purpose of eliminating any pocket in which moisture might

accumulate to rot away the rung at its jointure with the rail.

The modification shown in Figures 5 and 6 is of a bracket 25 which is formed with a horizontal rung supporting portion 26 and a vertical rail secured portion 27. The vertical portion 27 is formed with a rib 28 which flows into the bottom of the horizontal portion 26. The recess 29 thus provided constitutes a drain for any moisture which might accumulate in the horizontal portion 26 beneath the rung. Suitable openings 31 adjacent the rib 28 serve to receive screws by which to secure the bracket to the rail.

The horizontal portion 26 is of a curvature to partially encircle the rung 12 similarly to the portion 16 of the above described modification. The free end of the portion 26 is continued in a tongue 33 which is doubled back upon the inner face of the portion and is of sufficient length to project beyond the inner face of the vertical portion 27. The tongue 33 is tapered to a point 34 which point serves to locate the bracket in position beneath the rung by projecting into the rail through the opening provided for the rung. (See Figure 5).

It will be understood that other shaped brackets may be utilized for supporting a ladder rung and that means other than prongs 23 and tongue 34 may be utilized to properly locate the bracket against the rail and in position to support the rung. It will also be understood that any suitable means such as nails or screws may be utilized to secure the rung to the horizontal portion of the bracket for the purpose of preventing dislocation of the rung therefrom in the event a short rung is to be supported which only extends from the inner face of one rail to the inner face of the other rail. These features and other adaptations of the invention are contemplated in so far as they lie within the spirit and scope of the invention as set forth in the hereunto annexed claims.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:—

1. A ladder rung support comprising angularly disposed portions, one of said portions serving to receive a rung, the other of said portions being engageable with the rail of a ladder, rigidifying means formed from and connecting said portions, said means providing a recess in part of each of said portions by which moisture collecting in said rung supporting portion will be quickly drained off.

2. A ladder rung support comprising a curved portion suitable for receiving a rung, a further portion integral with and disposed at an angle to said curved portion, said further portion being securable to the rail of a ladder, rigidifying means connecting said portions and forming an inclined recess by which moisture collected in said curved portion will drain therefrom, and further means for positioning said support prior to securing said further portion to said rail.

3. A ladder rung support comprising a curved portion suitable for receiving a rung, a further portion integral with and disposed at an angle to said curved portion, said further portion being secured to the rail of a ladder, a hollow web connecting said portions and serving to prevent any change in angularity, said web also serving to provide an inclined recess for draining moisture from said curved portion, and a prong on said curved portion, said prong extending beyond the vertical plane of said further portion and being engageable with a ladder rail for positioning said support prior to permanently securing said further portion to said rail.

GEORGE E. REAGLE.