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FOLDING STEP FOR LADDERS

Original Filed June 25, 1941

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FOLDING STEP FOR LADDERS

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2 Sheets-Sheet 2

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My invention relates to improvements in folding steps for straight ladders, the principal object in view being to provide a simply constructed, safe, device of this character which may be easily attached to the rounds of a straight ladder to form a flat, wide step, or platform, thereon, and which is adapted to be folded when not in use into compact form for storage or carrying.

The instant application is substituted for application Serial No. 399,713, filed June 25, 1941.

To the accomplishment of the above, and the subordinate objects presently appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawings, set forth in detail in the succeeding description, and defined in the claims appended hereto.

In said drawings:

Figure 1 is a view in vertical section taken on the line 1—1 of Figure 2 and showing a ladder equipped with my improved folding steps.

Figure 2 is a fragmentary view in front elevation.

Figure 3 is a view in bottom plan of the folding steps detached.

Figure 4 is a fragmentary view in top plan, partly in section.

Figure 5 is a detail view in transverse section taken on the line 5—5 of Figure 7, and drawn to an enlarged scale.

Figure 6 is a view in perspective of one of the balls, and

Figure 7 is a view in top plan showing the balls folded.

Referring to the drawings by numerals, according to my invention a ladder step is provided in the form of a rectangular platform 1 of wood, or other suitable material, and of the proper size to fit, with a wide clearance, between the side members 2 of the ladder to project, when substantially centered relative to said members, for a substantial distance forwardly and rearwardly of said members. The bottom face of the platform 1 has suitably formed thereon a series of transversely rounded, cross, cleats 3 extending parallel in laterally spaced relation and the purpose of which will presently be clear.

A pair of rodlike, side, keeper balls 4 are provided for the platform 1, each of which comprises a pair of front and rear legs 5, 6 having right angled feet 8 pivotally connected to the top of the platform adjacent what constitutes the front and rear corners thereof, and by hook-shaped bolts 9 having threaded ends extending downwardly through the platform 1 and equipped with wing nuts 10 providing for loosening of said bolts to detach the balls 4, should occasion require, and, for instance, in replacement of parts. The feet 8 and bolts 9 are adapted so that the balls 4 are swingable, on the one hand, upwardly of said platform to unfold the same into upstanding position on opposite sides of the platform, as shown in Figure 2, or, on the other hand, swingable downwardly and inwardly over said platform 1 into crossed folded relation, as best shown in Figure 7.

The balls 4 are substantially V-shaped and the outer ends of the legs 5, 6 of each ball are connected by a U-shaped bridge portion 11 designed when the platform is placed on top of one round 12 of the ladder, and said balls unfolded, to span and frictionally grip the next higher round 13, as best shown in Figure 1, so that said platform is locked to said higher round in attached position against turning on the lower round. Also, the bridge portions 11 are proportioned so that when the platform 1 is attached, the closed ends of said portions are spaced from the platform a distance less than the distance between the rounds 12, 13, thereby said platform may be shifted forwardly and rearwardly, using the upper round 13 as a fulcrum, to cant the platform and thereby level the same when the ladder is stood at different angles. The described cleats 3 interlock in pairs with the lower rounds 12 to prevent the platform 1 from slipping in the different canted positions thereof.

By unfolding the balls 4, in the manner already described, said balls may be easily displaced from gripping relation to detach the platform as will be clear.

The feet 8 of the rear legs 6 are provided with right angled, terminal extensions 14 for engaging the top of the platform 1 and establishing the unfolded positions of the balls 4. The feet 8 of the front legs 5 are similarly provided with extensions 15 oppositely turned relative to extensions 14 and similarly engaging the platform 1 to lock the balls 4 in unfolded position. The balls 4 are formed of resilient metal and feet 8 of the front legs 5 are slideable forwardly and rearwardly, as represented in dotted lines in Figure 4, in the bolts 9 so that when said balls 4 are unfolded the front legs 5 may be pulled forwardly with the extensions 15 clear of the front edge of the platform 1 and the balls 4 thus unlocked for folding. Since the balls 4 are of resilient material, the front legs 5 thereof will react when said balls are folded to frictionally engage the locking extensions 15 with the front edge of the platform 1, as indicated in Figure 7 and thus lock said balls folded.
The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention, as described, is susceptible of modification without departing from the inventive concept, and rights is herein reserved to such modifications as fall within the scope of the subjoined claims.

What I claim is:

1. A folding step for attachment to the rounds of a ladder between the side members thereof comprising a rectangular platform adapted to be imposed on one round of the ladder crosswise thereof, and a pair of keeper balls at opposite sides of said platform, respectively, swingably mounted thereon for unfolding upwardly into upright positions at said sides and for folding downwardly on said platform into crossed position, said balls comprising resilient U-shaped portions constructed and arranged to be swung upwardly beneath a round of the ladder under such upward swinging of said balls into straddling friction gripping relation to said round as an incident to unfolding of said balls.

2. A folding step for attachment to the rounds of a ladder between the side members thereof comprising a rectangular platform adapted to be imposed on one round of the ladder crosswise thereof, a pair of keeper balls at opposite sides of said platform, respectively, swingably mounted thereon for unfolding upwardly into upright positions at said sides and for folding downwardly on said platform into crossed position, said balls comprising resilient U-shaped portions constructed and arranged to span and frictionally grip a round of the ladder during such upward swinging of said balls, said balls being resilient and provided with extensions engageable with an edge of the platform by springing of the balls and interlocking with said edge to retain the balls folded.

3. A folding step for attachment to the rounds of a ladder between the side members thereof comprising a rectangular platform adapted to be imposed on one round of the ladder crosswise thereof, a pair of keeper balls at opposite sides of said platform, respectively, swingably mounted thereon for unfolding upwardly into upright positions at said sides and for folding downwardly on said platform into crossed position, said balls comprising resilient U-shaped portions constructed and arranged to span and frictionally grip an upper round of the ladder under such upward swinging of said balls, said balls being provided, respectively, with oppositely turned lateral extensions for engaging the top of the platform to lock the balls in unfolded position against folding.

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The following references are of record in the file of this patent:

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