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2,486,783

STEP PLATFORM ATTACHMENT FOR RUNG-TYPE LADDERS

Filed July 24, 1946

3 Sheets-Sheet 1

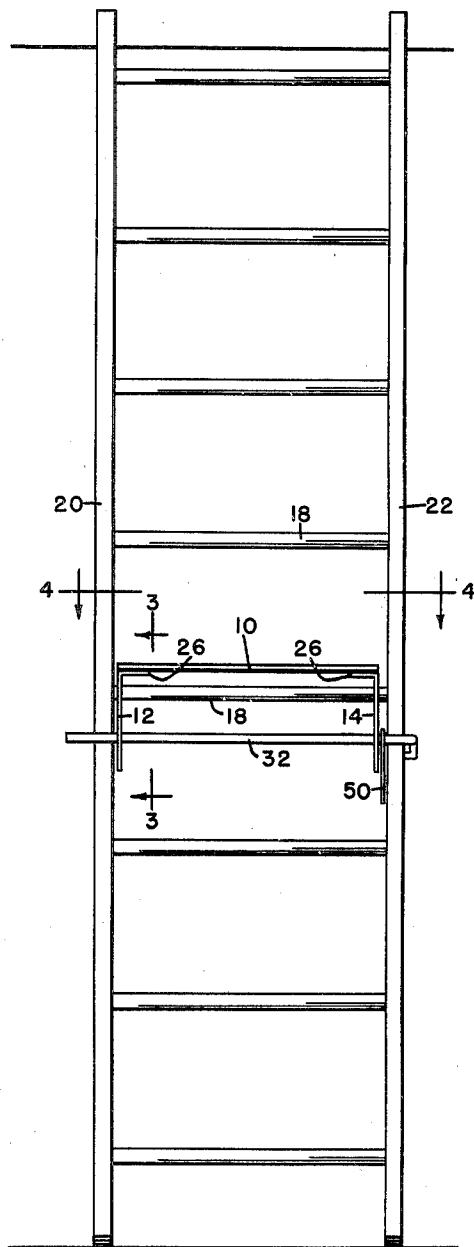


FIG. 2

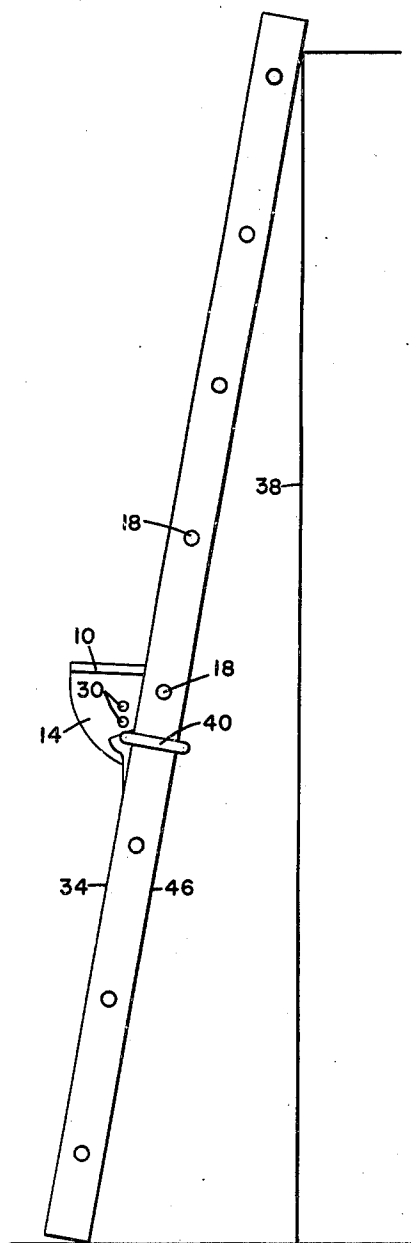


FIG. 1

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3 Sheets-Sheet 2

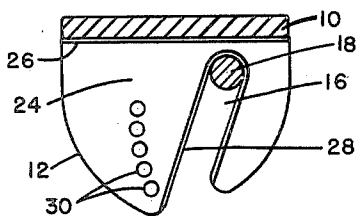


FIG. 3

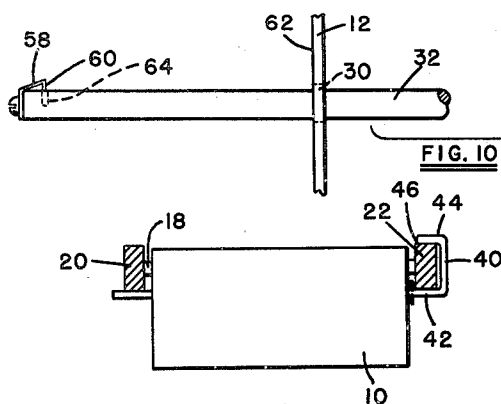


FIG. 4

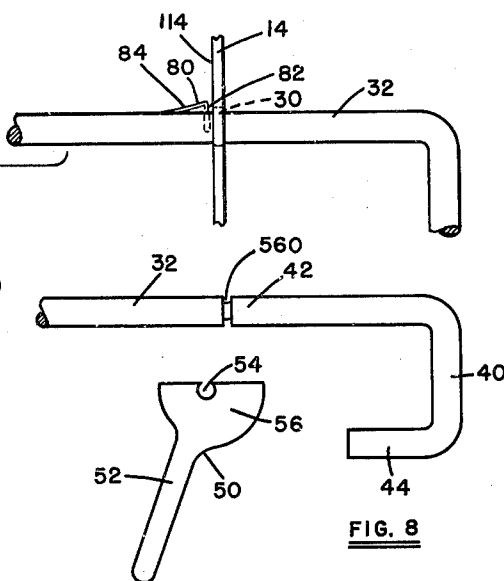


FIG. 8

FIG. 9

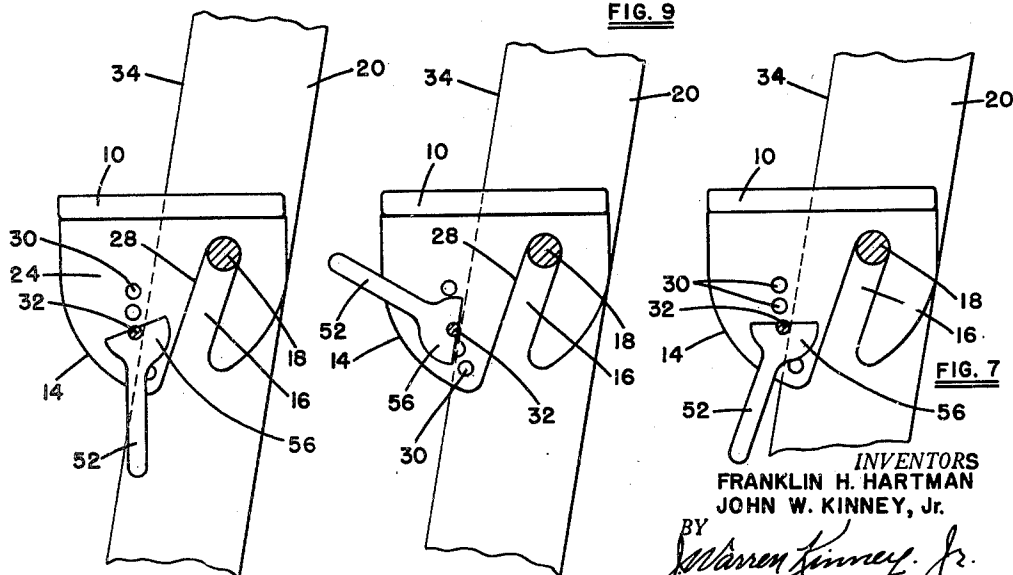


FIG. 5

FIG. 6

FIG. 7

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3 Sheets-Sheet 3

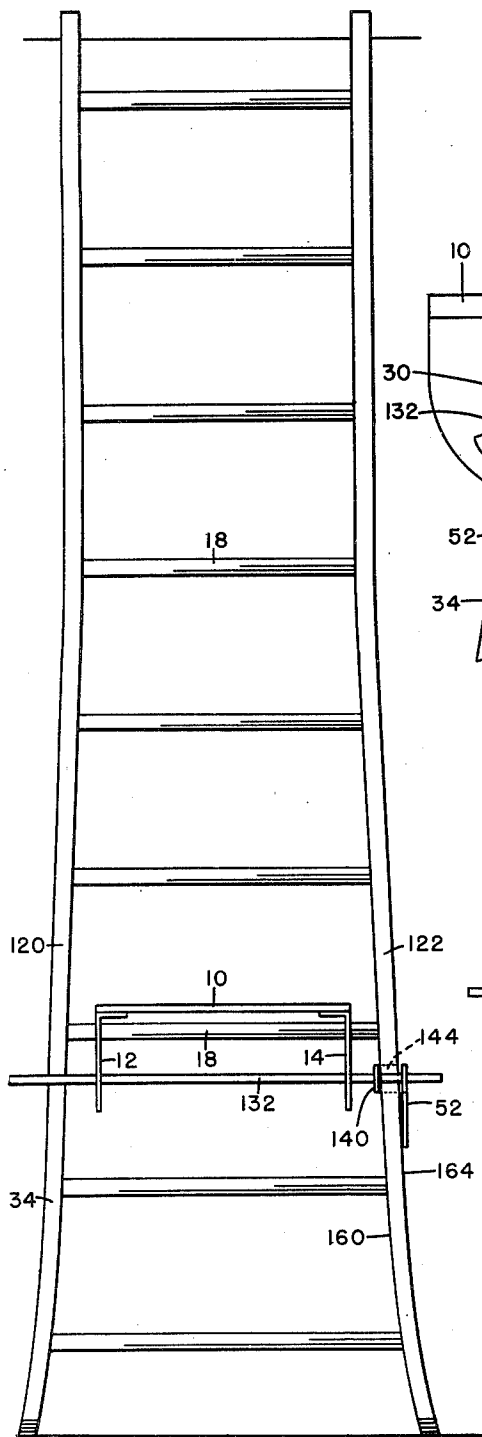


FIG. 11

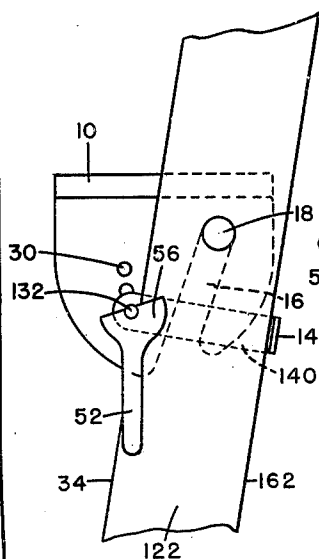


FIG. 12

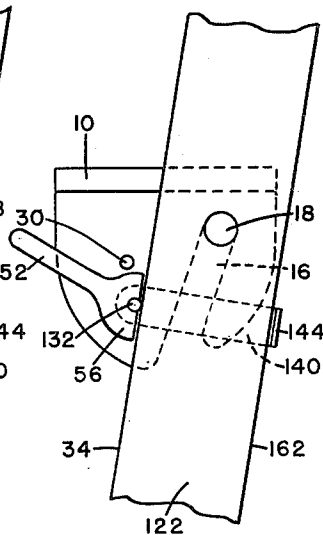


FIG. 13

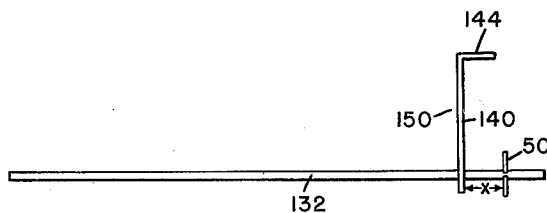


FIG. 14

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STEP PLATFORM ATTACHMENT FOR
RUNG-TYPE LADDERS

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10 Claims. (Cl. 304—31.5)

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This invention relates to a ladder attachment, and more particularly to a step platform attachment for a rung-type ladder.

An object of the invention is to provide a platform attachment for rung-type step ladders whereby the user of the ladder may stand upon an enlarged support member instead of on a comparatively narrow rung. Our platform attachment will lessen the fatigue of the user of a ladder without impairing the usefulness of the ladder in any way.

Another object of the invention is to provide a platform attachment for rung-type ladders, which is characterized by its ease of adjustability not only for attachment to various rungs of a ladder, but adjustability relative to the longitudinal axis of the ladder.

Another object of the invention is to provide a platform attachment for rung-type ladders which includes positive acting means for anchoring the platform against tipping.

A further object of the invention is to provide a platform attachment for rung-type ladders which includes simple yet positive acting means for precluding accidental or unintentional disengagement of the platform from a ladder.

Still a further object of the invention is to provide a platform attachment for rung-type ladders having the hereinabove described characteristics, and which embodies means for automatically locking the platform relative to a ladder in any desired position.

Still another object of the invention is to provide a device having the hereinabove described characteristics which is adapted to be manufactured by means of modern mass production methods.

These and other objects are attained by the means described herein and as disclosed in the accompanying drawings, in which:

Fig. 1 is a side elevation of a rung-type ladder provided with a platform attachment of the present invention.

Fig. 2 is a front view of the device disclosed in Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a view taken on line 4—4 of Fig. 2.

Fig. 5 is a sectional view taken looking toward the left and taken immediately to the left of side rail 22 of Fig. 2.

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Figs. 6 and 7 are views similar to Fig. 5, but differing therefrom in that they show various operative positions of the automatic locking device 50.

Fig. 8 is a front view of a side rail engaging member, which comprises a detail of the present invention.

Fig. 9 is an enlarged front view of an automatic locking device comprising a detail of the invention.

Fig. 10 is a front view of a modified form of a side rail engaging member, which comprises a detail of the present invention.

Fig. 11 is a front view of a modified form of the device secured to a ladder wherein the side rails flare outwardly as illustrated.

Fig. 12 is a side view looking toward the left of side rail 22 of Fig. 11.

Fig. 13 is similar to Fig. 12, differing therefrom in that the locking device has been moved to a released or non-operative position.

Fig. 14 is a top view of a modified form of side rail engaging member, which comprises a detail of the present invention.

With reference now to Figs. 1 and 2, it will be observed that the platform attachment comprises, generally speaking, a platform or support member 10, the opposite ends of which are secured to and carried by a pair of brackets 12 and 14, which brackets include a slotted portion 16 which is adapted to slidably engage rungs 18 which are secured to and carried by side rails 20 and 22.

As disclosed in Fig. 2, brackets 12 and 14 are spaced apart by a dimension less than the spacing between side rails 20 and 22 for facilitating introduction of the brackets onto a rung 18 and between the side rails of a ladder.

If desired, each of brackets 12 and 14 may be fabricated from a single piece of material, such as, by way of example, sheet metal, whereby to provide a depending portion 24 in which the rung receptive slot 16 is provided, the upper end of which is bent at substantial right angles thereto for providing a flange 26 to which support member 10 may be fastened, by any suitable means, as illustrated.

In the preferred embodiment of the invention the slotted portion 16 is provided rearwardly of the downwardly depending portion 24 in such a manner as to dispose substantially half of said depending member forwardly of forward edge 28

of slot 16. A plurality of apertures 30 are provided through brackets 12 and 14, as best disclosed in Figs. 3 and 5.

The step platform may be secured to a ladder by means of a side rail engaging member 32 which extends through aligned apertures 30 of brackets 12 and 14 for disposing portions of said member in contact with the forward face 34 of side rails 20 and 22.

At this point it will be observed that the angle which support member 10 makes with the vertical axis of a ladder will be determined by the particular aperture of brackets 12 and 14 through which member 32 is inserted. In this manner it is possible to locate support member 10 in a substantially horizontal plane regardless of the angle which side rails 20 and 22 of the ladder make with a reference surface such as face 38 of a supporting structure.

As disclosed in Fig. 8, side rail engaging member 32 is provided at one end with a U-shaped formation which includes an end portion 40 disposed at substantial right angles with front portion 42, and a short rear portion 44 which is disposed in substantial parallelism with front portion 42.

As disclosed in Fig. 4, end portion 40 is so dimensioned as to locate rear portion 44 to the rear of rear face 46 of side rails 20 and 22, whereby the U-shaped end of side rail engaging member 32 will extend around three sides of side rail 22.

It will be observed that this construction of member 32 will securely anchor support member 10 relatively to rung 18 in such a manner as to positively preclude any rocking or tilting motion of member 10 relative to rung 18.

With reference now to Figs. 2, 4, 5, 6, and 7, the numeral 50 denotes an automatic locking device which is pivotally secured to and carried by the side rail engaging member 32. As disclosed in Fig. 9, the automatic locking device may comprise an elongated handle portion 52 which is located in axial alignment with the center of a bearing opening 54 by which said device is pivotally secured to reduced portion 560 of member 32. In the preferred embodiment of the invention the automatic locking device includes an enlarged interference plate 56 which is adapted to normally extend between the adjacent faces of bracket 14 and side rail 22. If it be assumed that the weight of handle portion 52 is sufficient to cause the automatic locking device 50 to normally assume the position disclosed in Fig. 5, wherein handle 52 hangs directly beneath member 32, it will be seen that the enlarged interference plate 56 will effectively preclude accidental or unintentional disengagement of the U-shaped end of the side rail engaging member 32 from side rail 22. Member 32 may only be shifted relative to brackets 12 and 14 and side rails 20 and 22 during those periods of time when handle 52 of the automatic locking device has been elevated, by means of an intentional act on the part of the user of the ladder, to the position disclosed in Fig. 6. When thus elevated, it will be observed that interference plate 56 has been moved to a non-interfering relationship relative to side rail 22 whereby it will be possible to effect a disengagement of the U-shaped portion of the side rail engaging member from the side rail 22. When thus disengaged, platform 10 may be readily associated with any other rung of the ladder simply by causing slot 16 of brackets 12 and 14

to engage another rung, after which the U-shaped end of member 32 may be caused to engage side rail 22 incident to movement of the interference plate 56 to the non-interfering position disclosed in Fig. 6. It should be understood that the locking device will automatically drop to the position indicated in Fig. 7 and then come to rest as disclosed in Fig. 5 each time handle 52 is released by the user of the device.

In the preferred embodiment of the invention, stop means are provided on that end of the side rail engaging member 32 remote from its U-shaped end. If desired, such stop means 58 may comprise a suitable length of resilient material shaped to provide an abutting surface 60 which will normally engage the outer face 62 of bracket member 12 for precluding withdrawal of member 32 through bracket 12. By thus providing stop member 58, member 32 cannot be accidentally or unintentionally withdrawn from bracket 12, even during those periods of time when member 32 has been shifted to the right by an amount sufficient to effect a disengagement of its U-shaped end from side rail 22. It will require a deliberate act on the part of an operator to depress stop member 58 for disposing abutment face 60 within a suitable slot 64 before the side rail engaging member 32 may be withdrawn from brackets 12 and 14.

From the foregoing it will be observed that we have provided an inexpensive and simple, yet foolproof device for releasably securing a step platform to the rungs of a rung-type ladder. If desired, the automatic locking device disclosed in Figs. 5, 6, and 7 may be replaced by the spring latch device indicated generally by the numeral 80 of Fig. 10. This spring latch may comprise an abutment face 82 which will normally engage face 114 of bracket 14 for precluding accidental or unintentional withdrawal of member 32 relative to bracket 14. By providing an inclined shape to body portion 84 of spring latch member 60, it will be observed that said latch member will automatically snap open to the position illustrated in Fig. 10 each time it has been inserted to the left through aperture 30 of bracket 14.

Preferably, though not necessarily, the material of the depending portion 24 of each of flanges 12 and 14 is formed at substantial right angles relative to the plane of depending portion 24, as illustrated in Fig. 3, for the purpose of augmenting or increasing the effective bearing area of slot 16 on rungs 18 of a ladder.

With reference now to Fig. 11, it will be observed that the ladder structure comprises side rails 120 and 122, the lower portions of which flare outwardly, as disclosed. Brackets 12 and 14 are spaced apart by a dimension less than the minimum spacing between side rails 120 and 122 for facilitating introduction of said brackets onto a rung 18 and between the side rails of the ladder.

The step platform may be secured to the ladder by means of side rail engaging member 132 which extends through aligned apertures 30 of brackets 12 and 14 and which is of a length sufficient to overlappingly engage the forward face 34 of side rails 120 and 122, throughout substantially their entire length.

Side rail engaging member 132 is provided with a substantially L-shaped rail engaging member, denoted generally by the numeral 150, see Fig. 14, which includes a rearwardly extending portion 140 disposed at substantial right angles with

member 132, and a short rear portion 144 which is disposed in substantial parallelism with rail engaging member 132. Member 150 is secured to rail engaging member 132 by means of welding and the like, or it may be rotatably secured to the rail engaging member but fixed against sliding motion relative thereto.

An automatic locking device 50 may be pivotally secured to and carried by the side rail engaging member 132 in the same manner in which the locking device is secured to rod 32, as hereinabove described.

Preferably the lateral distance X (Fig. 14) between adjacent faces of member 140 and locking device 50 is of a dimension somewhat greater than the overall width of side rail 122 of a ladder in order to receive and facilitate engagement with side rail 122.

With reference now to Figs. 11, 12 and 13, it will be observed that member 140 is adapted to extend rearwardly along the inner face 160 of rail 122 with end portion 144 engaging the rear face 162 of rail 122. Member 150 may be releasably secured in locking engagement with rail 122 by means of the automatic locking device 50, interference plate 56 of which is adapted to engage outer face 164 of rail 122 for precluding accidental or unintentional disengagement of member 150 with the side rail.

As illustrated in Fig. 11, the step platform may be laterally shifted between the diverging side rails 120 and 122, however the locking mechanism just described will effectively retain member 150 in locking engagement with side rail 122 regardless of the lateral spacing between the side walls of a ladder.

The step platform may be quickly and easily moved to another rung of the ladder after handle portion 52 of locking member 50 has been elevated to the non-interfering position illustrated in Fig. 13, for facilitating movement of rod 132 to the left for effecting a disengagement of rear portion 144 of member 150 from rear face 162 of rail 122.

It will be observed that platform member 10 will be positively associated with a ladder for providing a dependable non-tipping enlarged step using either the rail engaging devices shown in Figs. 8, 10 or 14.

It has been observed that if a pair of laterally spaced ladders be provided with our step platform attachments a very efficient and dependable scaffold supporting structure will be provided.

Various changes in the structural details of the device may be made, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed is:

1. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and an aperture located forwardly thereof, means dimensioned for insertion through and slidable engagement with said apertures and of a length sufficient to span the side rails of a ladder, one end of said means terminating in a U-shaped member dimensioned to engage the front, outer and rear faces of the side rail of the ladder.

2. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and an aperture located forwardly thereof, means dimensioned for insertion through and slidable engagement with said apertures and of a length sufficient to span the side rails of a ladder, one end of said means terminating in a U-shaped member dimensioned to engage the front, outer and rear faces of the side rail of the ladder, and locking means pivotally secured to said first mentioned means for precluding accidental or unintentional withdrawal of said means from engagement with said brackets.

3. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and an aperture located forwardly thereof, means dimensioned for insertion through and slidable engagement with said apertures and of a length sufficient to span the side rails of a ladder, one end of said means terminating in a U-shaped member dimensioned to engage the front, outer and rear faces of the side rail of the ladder, locking means comprising a handle and an interference plate pivotally secured to said means at a location whereby said interfering plate will be normally disposed between the adjacent faces of a bracket member and the inner face of a side rail when said U-shaped member engages said side rail, said interference plate precluding withdrawal of said means from said brackets and for preventing accidental or unintentional disengagement of said U-shaped member from said side rail, said interference plate movable to a non-interfering relationship with said side rail for effecting a withdrawal of said means from said brackets and disengagement of said U-shaped member from said side rail.

4. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and a plurality of spaced apertures disposed forwardly thereof and located on an arcuate center line, a rod like member dimensioned for insertion through and slidable engagement with corresponding apertures of said brackets, and of a length sufficient to span the side rails of a ladder, and means secured to and carried by said member to engage the rear face of the side rail of a ladder.

5. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion dis-

posed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and a plurality of spaced apertures disposed forwardly thereof and located on an arcuate center line, a rod-like member dimensioned for insertion through and slideable engagement with corresponding apertures of said brackets, and of a length sufficient to span the side rails of a ladder, and means secured to and carried by said member to releasably engage the rear face of the side rail of a ladder for precluding tipping of said brackets relative to a supporting ladder rung.

6. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and a plurality of spaced apertures disposed forwardly thereof and located on an arcuate center line, a rod-like member dimensioned for insertion through and slideable engagement with corresponding apertures of said brackets, and of a length sufficient to span the side rails of a ladder, and means secured to and carried by said member to releasably engage the rear face of the side rail of a ladder for precluding tipping of said brackets relative to a supporting ladder rung, and locking means secured to and carried by said rod-like member and engageable with the side rail of a ladder for precluding accidental or unintentional disengagement of said means releasably engaging the rear face of a side rail.

7. A step platform for rung-type ladders, comprising in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion provided with an open bottomed rung receptive slot and a plurality of spaced apertures located forwardly thereof, means for securing said platform to said brackets, a member dimensioned for slidable engagement with corresponding apertures of said brackets and of a length sufficient to span and overlappingly engage the front face of the side rails of a ladder for precluding forward turning of said brackets about a rung, and means secured to and carried by said member for engaging the rear face of a side rail for precluding rearward turning of said brackets about a rung.

8. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and an aperture located forwardly thereof, a rod dimensioned for insertion through and slidable engagement with said apertures and of a length sufficient to span and overlappingly engage the front face of the side rails of a ladder, an L-shaped member secured to said rod adjacent an end thereof, said member dimensioned to engage the inner side and rear face of the side rail of a ladder, said

rod and L-shaped member engaging the front and rear faces respectively of the side rail of a ladder for precluding turning of said brackets about a supporting rung, and locking means secured to and carried by said rod and located intermediate said L-shaped member and the end of said rod for releasably engaging the outer side face of the side rail of a ladder for precluding accidental or unintentional lateral shifting of said rod relative to the side rails of a ladder.

9. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and an aperture located forwardly thereof, a rod dimensioned for insertion through and slidable engagement with said apertures and of a length sufficient to span and overlappingly engage the front face of the side rails of a ladder, an L-shaped member secured to said rod adjacent an end thereof, said member dimensioned to engage the inner side and rear face of the side rail of a ladder, said rod and L-shaped member engaging the front and rear faces respectively of the side rails of a ladder for precluding turning of said brackets about a supporting rung, and locking means secured to and carried by said rod and located intermediate said L-shaped member and the end of said rod, said locking means comprising an interference plate pivotally secured to said rod for normal overlapping engagement with the outer face of the side rail of a ladder for precluding lateral shifting of said rod relative to said rails and disengagement of said L-shaped member from the rear face of a side rail, said interference plate rotatable to a non-interfering relationship with a side rail for effecting a lateral shifting of said rod relative to the side rails for disengaging the L-shaped member from a side rail.

10. A step platform for rung-type ladders comprising, in combination, a support platform dimensioned for insertion between the side rails of a ladder, a pair of brackets each including a depending portion and a flanged upper portion disposed at substantial right angles relative thereto, said platform secured to and carried by the flanged portions of said brackets, the depending portion of each bracket including an open bottomed rung receptive slot and an aperture located forwardly thereof, a rod dimensioned for insertion through and slidable engagement with said apertures and of a length sufficient to span and overlappingly engage the front face of the side rails of a ladder, an L-shaped member secured to said rod adjacent an end thereof, said member dimensioned to engage the inner side and rear face of the side rail of a ladder, said rod and L-shaped member engaging the front and rear faces respectively of the side rails of a ladder for precluding turning of said brackets about a supporting rung, and locking means secured to and carried by said rod and located intermediate said L-shaped member and the end of said rod, said locking means comprising an interference plate pivotally secured to said rod for normal overlapping engagement with the outer face of the side rail of a ladder for precluding lateral shifting of said rod relative to said rails and disengagement of said L-shaped member from the rear face of a side rail, said interference plate

rotatable to a non-interfering relationship with a side rail for effecting a lateral shifting of said rod relative to the side rails for disengaging the L-shaped member from a side rail, and a handle secured relative to said interfering plate for normally overbalancing said interference plate to an interfering position relative to the side rail of a ladder. 5

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10

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