Dec. 11, 1962 W. J. CARNICELLI 3,067,836

ADJUSTABLE STEP FOR LADDERS

Original Filed Sept. 18, 1958

Fig. 2.

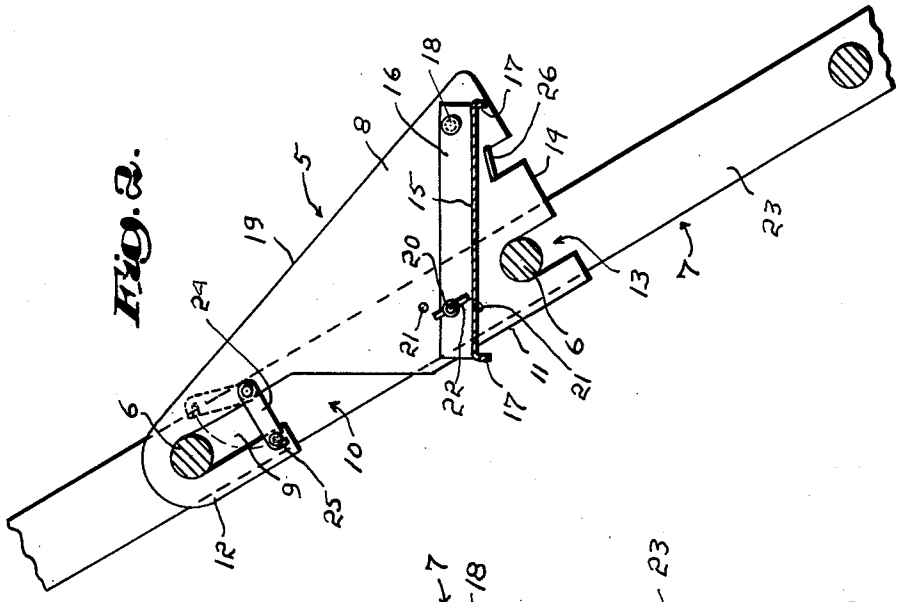
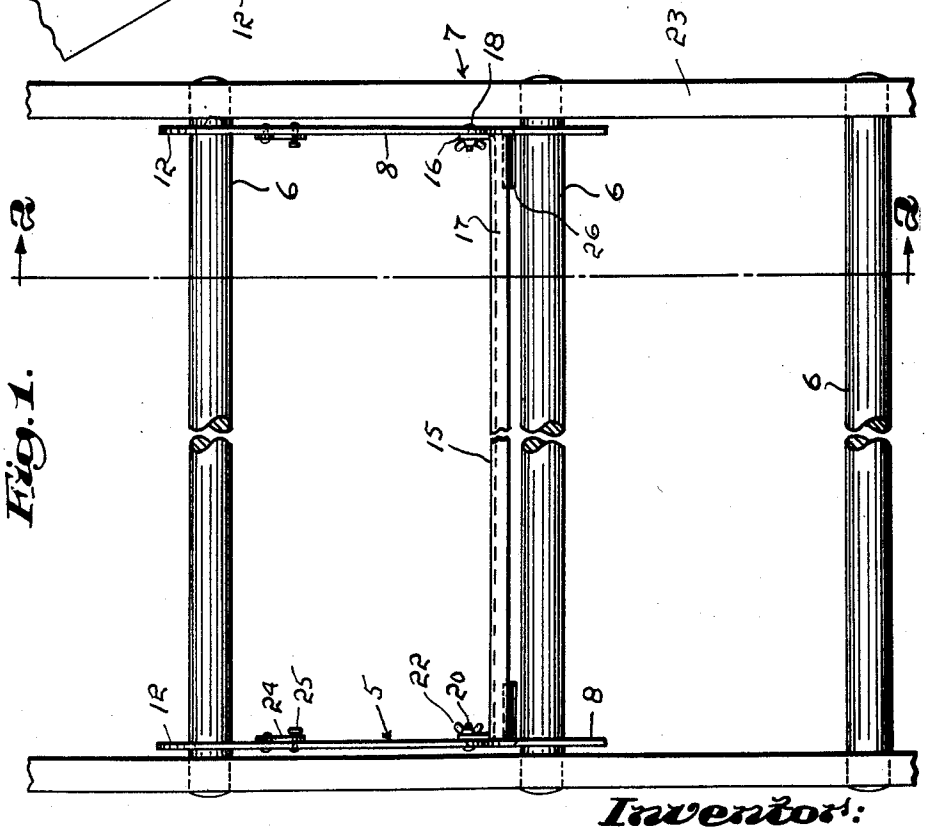


Fig. 1.



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ADJUSTABLE STEP FOR LADDERS

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Continuation of application Ser. No. 761,757, Sept. 18, 1958. This application May 1, 1961, Ser. No. 107,621
3 Claims. (Cl. 182—121)

My present invention relates to a step for attachment to the rungs of a ladder and the object of the invention is to improve and perfect devices of this kind, and the present application is a continuation of my co-pending application, Serial No. 761,757, filed September 18, 1958, now abandoned.

The standard type of ladder has narrow rungs appropriately spaced, on which the worker steps and stands and these are both slippery and tiring to any person standing thereon for any considerable length of time. Numerous devices have been proposed to overcome this difficulty but none have been acceptable as ensuring safety under all conditions of use.

My present invention obviates objections to prior devices and, in accordance with it, I provide an adjustable step having a pair of side members, each having a straight rear edge for sliding contact with a pair of rungs and an elongated slot downwardly opening through the straight rear edge, between the ends thereof, to provide a hook with a rung receiving pocket. Each side member also has a slot opening through its lower end and in alinement with but shorter than the pocket. Each hook is proportioned to catch over the upper rung of a selected pair thereof before the lower rung of that pair enters the lower end slots. Pivot means carried by the front part of a foot support interconnect the side members forwardly of their slots and means are also provided for detachably locking the rear part of the foot support to the side members in any one of a series of vertically spaced positions selected to position the foot support horizontally in spite of the inclination of the ladder relative to the ground, when in use. Each side member includes flanges inturned and disposed to underlie the foot support, preferably adjacent the pivot means.

Other important features of adjustable steps in accordance with my invention are automatic locking means, the ease of its attachment and removal, the fact that it is a firm braced unit, and yet extremely light in weight, being capable of being stamped out of aluminum or similar light sheet material.

In the accompanying drawings, there is shown an illustrative embodiment of the invention from which these and other of its objectives, novel features, and advantages will be readily apparent.

In the drawings:

FIG. 1 is a fragmentary front view of a typical type of ladder with my improved adjustable and self-locking step attached thereto between adjacent rungs,

FIG. 2 is a section taken approximately along the indicated lines 2—2 of FIG. 1.

In accordance with the invention, an adjustable step, generally indicated at **5**, is provided for attachment to and support by a pair of adjacent rungs **6** of a generally indicated ladder **7**.

The step **5** has a pair of side members **8**, shown as plates of a generally triangular shape. Each plate **8** has a slot **9** downwardly opening, as at **10**, through its straight rear edge **11** intermediate the ends thereof which is dimensioned for sliding engagement with a pair of rungs **6**. A relatively deep hook **12** is thus provided whose pocket is in alinement with a somewhat shorter slot **13** opening through the bottom edge **14**.

A foot support **15** has side flanges **16** and downwardly turned end flanges **17**. A pivot **18** extends through each

side flange **16** adjacent the front end thereof and through the proximate side member **8** near the apex defined by its bottom edge **14** and its front edge **19**. The pivots **18** are transversely alined and serve both to interconnect the foot support and the side members **8** and to enable the foot support **15** to be swung upwardly and downwardly so that it may be brought into an approximately horizontal position regardless of the inclination of the ladder **7** relative at the ground when in use. In order that the foot support may be detachably locked in whichever position will render it suitable when the ladder is in use, bolts **20** are provided, one for each side flange **16** and extending through a hole in the rear part thereof and through one of a series of vertically spaced holes **21** that are arranged arcuately with respect to the axis of the pivots **18**. The bolts **20** are shown as provided with wing nuts **22**.

With the adjustable step described, it is only necessary to place it between the side rails **23** of the ladder **7** and to slide it upwardly until its opening **10** receives the upper of the two rungs **6** that are to be used in its support. As the step **5** slides downwardly, the upper of the two rungs enters into the slots **9** before the lower of the two rungs **6** enters the slots **13** so that the step **5** becomes securely attached to and supported by both of the rungs **7**.

It is preferred that there be a lock that will make impossible accidental detachment of the step **5** from the ladder **7**. To accomplish that end, a latch **24** is pivoted to one side of each hook **12** to swing into and out of engagement with a pin **25** on the other side thereof. It will be noted that the latches **24** engage their pins **25** under the influence of gravity in any position of use of the ladder **7** but open readily when engaged by a rung **6** to admit that rung when the step **5** is being attached in place.

It will also be noted that each side member **8** has an inturned flange **26** extending under the foot support **15** between its pivots **18** and the bolts **20**. It will also be noted that the foot support **15** overlies the lower of the two rungs **6** and that even if the pivots **18** and the bolts **20** should break, the foot support **15** would be supported by the flanges **26** and said lower rung with the end flanges **17** serving as positive stops.

It will be appreciated that I have devised an improved safety step for combination with a standard type of ladder wherein the adjustable foot support is locked in and securely held in an approximately horizontal foot receiving position. My improved device eliminates the danger to the user or worker of slipping or displacement, eliminates the necessity of insurance against same, and stays securely fixed in position during shifting the ladder from one location to another.

I claim:

1. In a removably mounted, angularly adjustable foot support for attachement on a pair of ladder rungs the combination comprising a pair of substantially right triangularly shaped side members and a pivotally mounted foot support adjustably secured therebetween, each of said side members of said pair including a bottom edge and a pair of upwardly extending side edges, one of said side edges extending upwardly at right angles to said bottom edge and said other edge extending angularly upwardly from said bottom edge to converge with said right angularly disposed edge at a point above said bottom edge, each of said side members including first and scond rung engaging hook means, said first hook means on each of said pair of side members disposed adjacent the convergence of said bottom edge and said right angularly disposed edge, said second hook means disposed adjacent the convergence of said upwardly extending right angularly disposed edge portion and said angularly upwardly extending edge portion, said second hook means having its

opening extending through said right angularly disposed edge portion, said foot support including a base portion, a pair of upwardly directed side flange portions, and a pair of downwardly directed end flange portions, pivot means extending through complementary ends of each of said side flange portions of said foot support to pivotally secure said foot support between complementary faces of each of said triangular side members at a point adjacent the convergence of said bottom edge and said angularly upwardly extending edge of each of said side members, and foot support adjustment locking means extending through each of side flanges on said foot support and each of said triangular side members at a point adjacent the end of said side flanges opposite said pivot and at a point on a straight line extending between the closed ends of said first and second hook means, to secure said foot support from movement when the same is in the desired position.

2. The structure defined by claim 1 wherein each of said triangular side members includes an inwardly extending flange portion positioned adjacent the base portion of said foot support at a point between said first hook means and said foot support pivot.

3. The structure defined in claim 1 wherein said second hook support means is provided with pivotally mounted latch means for precluding the removal of said second hook means from the rung upon which it is mounted.

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