Nov. 5, 1963 A. R. TILTON 3,109,512

STEPLADDER

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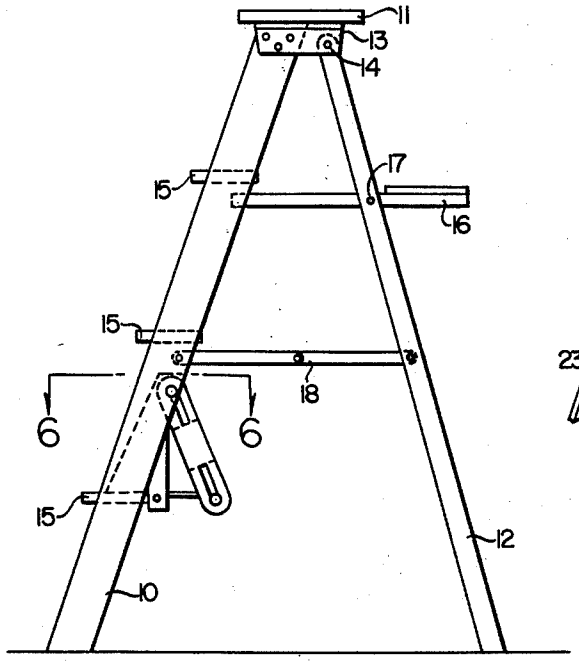

FIG 1

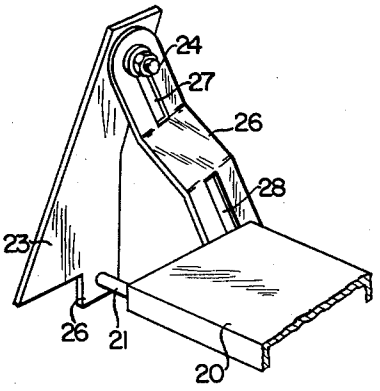

FIG 2

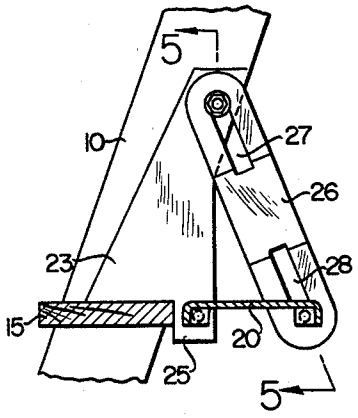

FIG.3

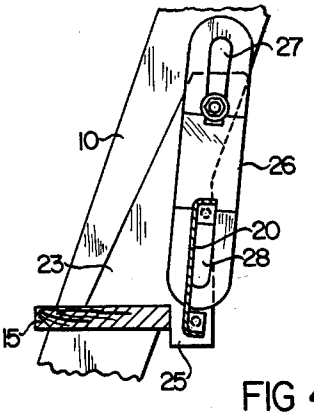

FIG 4

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STEPLADDER

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FIG 5

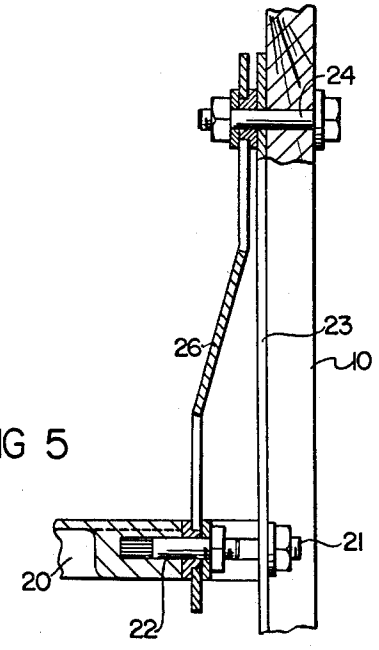


FIG 6

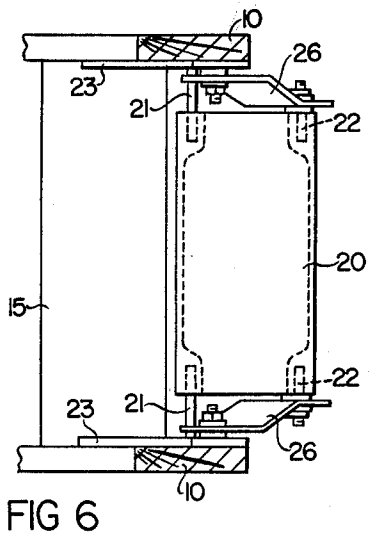


FIG 7

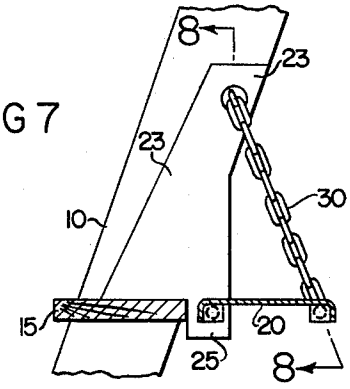
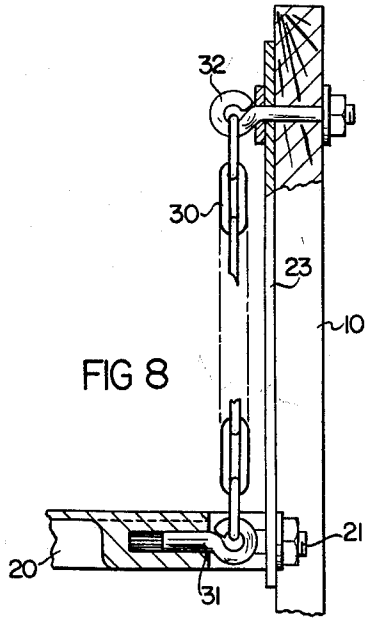


FIG 8



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STEPLADDER

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5 Claims. (Cl. 182—120)

The present invention relates to stepladders and, more particularly, to an auxiliary or supplemental step designed to supplement a usual stationary step, thereby to provide a wider surface for the support of a user.

Supplemental steps of this nature are generally disposed to constitute rear extensions of the stationary steps when the ladder is in its open operative condition and, in order not to prevent or unduly interfere with normal folding of the ladder, these extensions must themselves be foldable into the space occupied by the ladder when collapsed. The prior constructions of this type with which I am familiar relay on complicated systems of levers thus to foldably support supplemental steps, thereby adding considerably to the cost of the stepladder and often compromising the strength of the support to obtain the desired folding action.

It is a primary object of my invention to provide a foldable supplemental step in a ladder supported in a relatively inexpensive but extremely secure and rugged manner.

Another object of the invention is to provide a supplemental step construction of this nature which can readily be applied to existing ladders as well as incorporated, if desired, in the manufacture of new ladders and which can easily be removed therefrom when their presence is not desired.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail certain illustrative embodiments of the invention, these being indicative, however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawings:

FIG. 1 is a side elevational view of a stepladder incorporating one form of my improved supplemental step construction;

FIG. 2 is a fragmentary perspective view of the supplemental step assembly shown on the ladder of FIG. 1;

FIG. 3 is an end sectional view of the assembly of FIG. 2 shown attached to a stationary step and leg of the ladder of FIG. 1;

FIG. 4 is an end sectional view of the assembly of FIG. 3 showing the supplemental step in its folded or withdrawn position;

FIG. 5 is a sectional view taken along line **5—5** of FIG. 3;

FIG. 6 is a sectional plan view taken along line **6—6** of FIG. 1;

FIG. 7 is an end sectional view similar to FIG. 3 showing another form of the invention; and

FIG. 8 is a sectional view similar to FIG. 5 taken along line **8—8** of FIG. 7.

Referring now to the drawings in detail and, in particular, to FIGS. 1 through 6, the structure there illustrated comprises a standard stepladder having two front legs **10**, an upper platform **11** and two rear legs **12**. The legs **10** are securely attached to the platform by means of the angle members **13**, while the rear legs **12** are pivotally attached by pins **14** to the angle members. The rear legs can, therefore, be moved toward and away from the front legs, respectively, to close and open the ladder in the usual manner.

The ladder also has a plurality of conventional stationary steps **15** extending between the two front legs, and a folding shelf **16** pivotally connected at **17** to the rear legs and adapted to abut the underside of the uppermost step **15** in the open condition of the ladder as shown. Center braces **18** are provided between the front and rear legs having two metal straps pivotally attached to the front and rear legs and interconnected centrally by a pivot pin.

Supplemental step **20** is shown as an inverted flat channel member having its longitudinal front edge adjacent the rear edge of one of said stationary treads **15**. The supplemental step has a pair of pins **21** projecting from the ends of its longitudinal front edge and the rear longitudinal edge of the supplemental step **20** also has a pair of pins **22** projecting therefrom; these pins, of course, may be replaced by rods extending through the entire length of the step. Two attaching plates **23** are connected respectively to the inner sides of the front legs **10** by bolts **24**. Each attaching plate has a notch in its bottom edge terminating at the rear by a lower depending portion **25**. When a plate **23** is mounted, the notch engages the stationary step **15** along the rear edge of the latter with the portion **25** extending therebelow. The front edge pins **21** are pivotally connected to the plates **23** through these rear portions **25**. Two links or bars **26** are provided having laterally off-set halves in which slots **27** and **28** are formed. Rear edge pins **22** extend through the lower slots **28** of the links and are pivotally connected therein and also for sliding movement throughout the length of the slot. Upper slots **27** are engaged by the bolts **24** for similar sliding and pivotal action. When the supplemental step **20** is to be folded or withdrawn, as shown in FIG. 4, the rear edge pins **22** slide up the slots **28** and the bars **26** move upwardly with bolts **24** sliding in upper slots **27**. The above described lateral offset of the bars **26** permits the projecting portions of the pins **22** to pass within and between the plates **23** to effect a complete retraction of the supplemental step assembly between the front legs **10**.

FIGS. 7 and 8 illustrate an alternative embodiment of the invention wherein a chain **30** is substituted for each slotted link or bar **26**. In this embodiment, the rear edge pins **22** will be replaced by rear edge hooks **31** which are connected to the lower links of the chains. In the same manner, bolts **24** will be replaced by hook bolts **32** attached to the upper links of the chains **30**. When the supplemental step of this embodiment is folded or withdrawn, the chains **30** become slack permitting full retraction of the step.

Desirably, the supplemental step assembly of this invention will be sold as a unit consisting of a supplemental step connected to a pair of attaching plates and supporting members as shown in the drawings. The unit may be attached by the purchaser to any conventional stepladder by merely boring a single hole through each front leg of the ladder and mounting the attaching plates thereto with bolts as described above.

Through the use of the above described supplemental step assembly, the objects of this invention have been achieved in an efficient and economical manner which provides for simplicity of installation and operation.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivalent of such be employed.

I therefore, particularly point out and distinctly claim as my invention:

1. A supplemental tread assembly for use on a stepladder comprising a pair of attaching plates adapted to

be connected to the front legs of such stepladder, a supplemental tread pivotally connected between said plates along a front edge of said tread, and a pair of supporting members each pivotally connected at one end to one of said plates and at its other end to said supplemental step along the rear edge thereof, whereby said step is adapted to be folded upwardly.

2. A supplemental tread assembly according to claim 1 wherein said supporting members are bars having longitudinal slots through which the said connections are made.

3. A supplemental tread assembly according to claim 2 wherein the lower portions of said bars are laterally offset inwardly with respect to said plates.

4. A supplemental tread assembly according to claim 1 wherein each of said attaching plates is notched along its base to provide a rearwardly downwardly extending portion through which the pivotal connection to said front edge of said supplemental step is made.

5. In a folding stepladder having front and rear legs pivotally related in conventional manner and a plurality of stationary treads supported by the front legs thereof; an attaching plate connected to one of said front legs,

said attaching plate being notched along its base, said notched portion engaging one of said stationary treads along its rear edge, said plate having a portion extending partially below the rear edge of said one stationary tread, a supplemental tread having a longitudinal front edge adjacent the rear edge of said one stationary tread pivotally connected to said attaching plate through said portion thereof extending partially below said rear edge of said one stationary tread, and a supporting member pivotally connected at one end to said plate and at its other end to said supplemental step along the rear edge thereof whereby the latter is adapted to be folded upwardly.

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