Dec. 25, 1956 C. O. WINGROVE 2,775,488

WALKING LADDER CONSTRUCTION

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Fig. 1

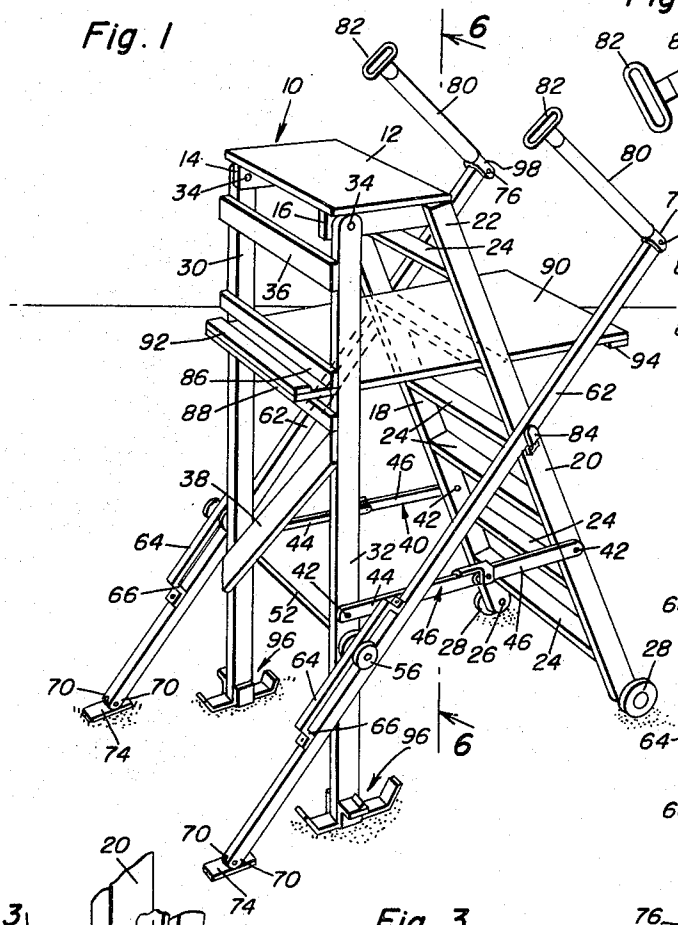


Fig. 5

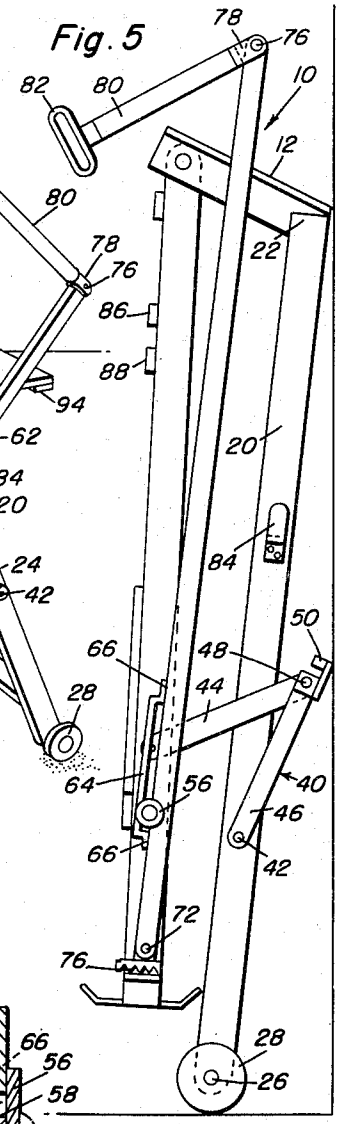


Fig. 2

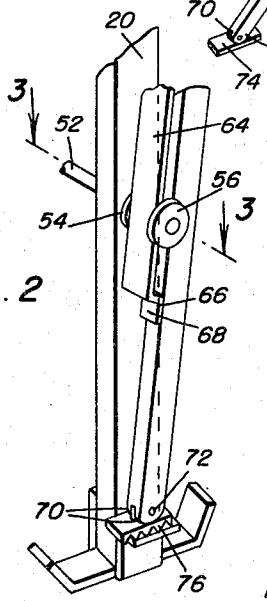


Fig. 3

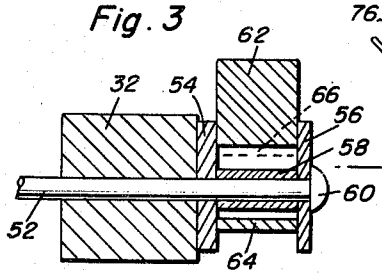
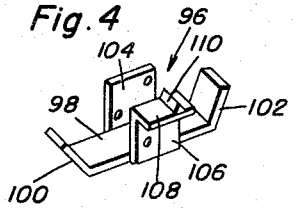


Fig. 4



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Fig. 6

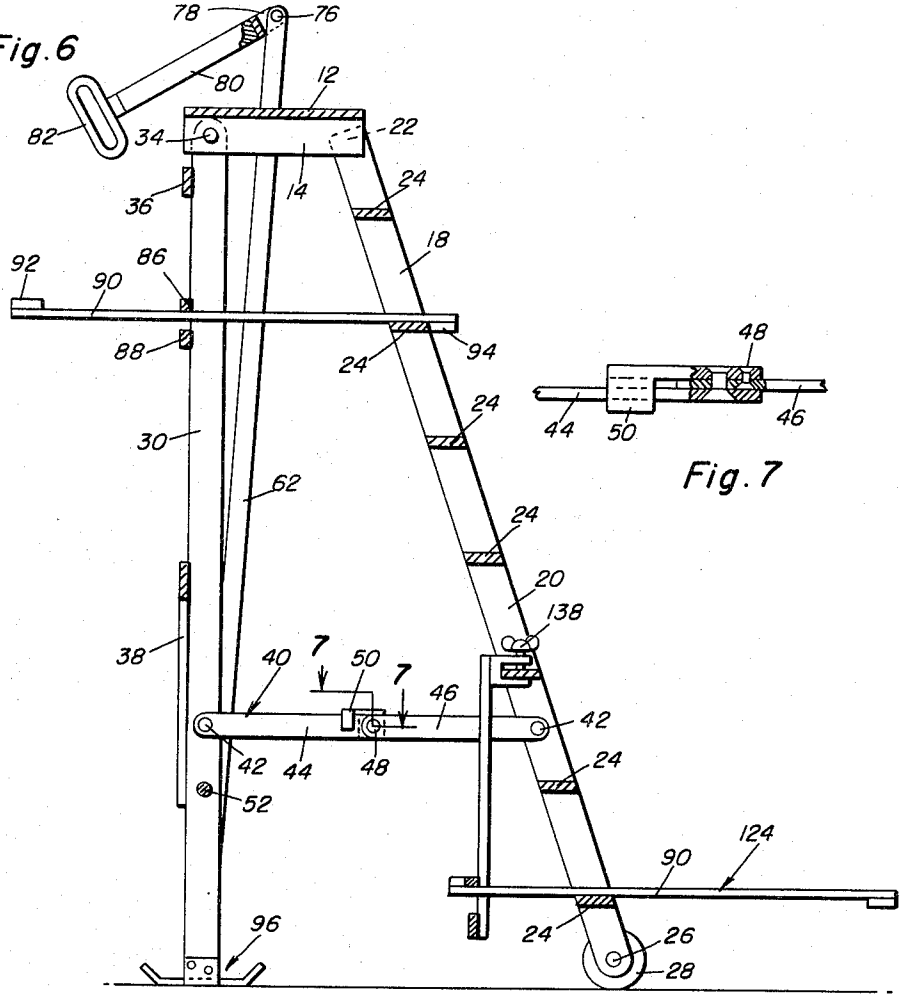
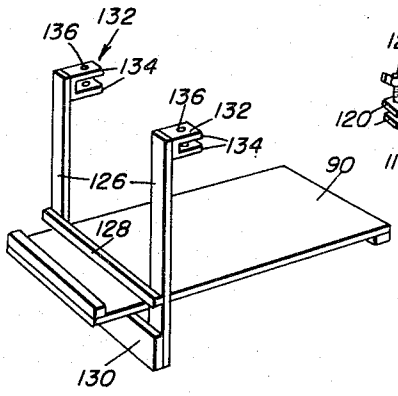


Fig. 7

Fig. 8



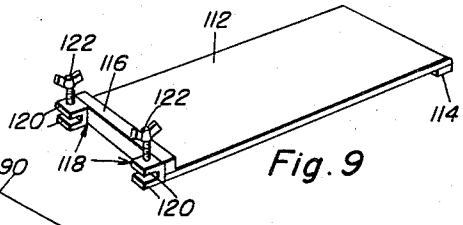


Fig. 9

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WALKING LADDER CONSTRUCTION

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Application June 8, 1955, Serial No. 513,999

10 Claims. (Cl. 304—9)

This invention relates generally to step-ladder constructions and is more particularly concerned with a convertible step-ladder construction whereby by the incorporation of wheels and manipulable lever members a ladder may be moved to various positions by a person mounted on said ladder facilitating the usage thereof in picking fruit, painting etc.

A further object of invention in conformance with that set forth above is to provide on a conventional step-ladder construction an auxiliary platform for accommodating the user of the ladder thereon and providing on oppositely disposed sides of vertical pivotal supports of a step-ladder manipulable force transmitting levers which when manipulated by the user of said ladder will provide a walking motion and permit ready maneuvering of said ladder.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view illustrating the step-ladder having provided thereon the novel structure permitting ready mobility of said ladder;

Figure 2 is an enlarged fragmentary perspective view of a lower support foot portion of said ladder illustrating a sliding shoe and means for positioning the friction foot of the force transmitting lever thereon;

Figure 3 is a further enlarged sectional view taken substantially on line 3—3 of Figure 2;

Figure 4 is a perspective view illustrating the sliding shoe attachable to the bottom portion of a support leg of a ladder;

Figure 5 is a side elevational view of the novel ladder when folded illustrating how the novel ladder is readily stored;

Figure 6 is a transverse sectional view taken substantially on line 6—6 of Figure 1 illustrating a platform attachment thereon;

Figure 7 is an enlarged sectional view taken substantially on line 7—7 of Figure 6;

Figure 8 is a perspective view of the platform attachment shown in position in Figure 6; and

Figure 9 is a perspective view of a platform attachment for replacing the slidable platforms of Figures 1 and 6.

A ladder as indicated generally at 10 includes a support platform 12 having downwardly extending mutually parallel flange portions 14 and 16 suitably secured on the underside. A pair of relatively parallel fixed support standards 18 and 20 are secured at their upper ends 22 to one end of the flanges 14 and 16, respectively, in any suitable manner. A plurality of horizontally disposed steps 24 extend between the fixed supports 18 and 20 being secured therebetween in any suitable manner. Each of the supports 18 and 20 include on suitable shaft members 26, wheels 28.

The flanges 14 and 16 include on the ends opposite to

those which the ends 22 of the fixed standards are secured pivotally mutually parallel legs 30 and 32 which are pivoted on the flanges 14 and 16 by means of suitable pivot pins 34. Extending between the pivotal legs 30 and 32 and being secured thereon in any suitable manner are transverse brace elements 36 and 38.

Extending between legs 18 and 30 and 20 and 32 are folding braces 40 which are pivoted on suitable pivot pins 42 on each of the legs, including two links 44 and 46 which are pivoted together at 48, the link 46 including an overlying stop flange portion 50 which engages the upper portion of the link 44 and retains the legs 30 and 32 in a relatively fixed position relative to fixed legs 18 and 20, respectively.

The heretofore described structure, with the exception of the wheels 28 is conventional and that structure subsequently described including the wheels 28 heretofore mentioned constitutes applicant's invention.

A transverse support shaft 52 extends through the pivotal legs 30 and 32 having suitably journalled on opposite ends thereof spaced washers 54 and 56 spaced by a suitable spacer sleeve 58 therebetween. The shaft 52 including on the end thereof a suitable flange retaining portion 60. As seen in Figure 3, only one end of the shaft 52 is disclosed in detail, however, the other end includes identical structure with the exception that the end of the transverse support shaft 52 may include thereon a suitable conventional fastener (not shown). An elongated force transmitting leg 62 is provided on opposite sides of the ladder, each including on the upper side thereof an elongated bracket which includes a top portion 64 parallel to the force transmitting leg being connected thereto on the upper edge of the force transmitting leg by means of a downwardly and outwardly extending flange portion 66 being secured thereon by a suitable fastener 68. As most clearly seen in Figures 2 and 3 the force transmitting leg 62 and the parallel flange 64 are retained in position between the washers 54 and 56 with the transverse support shaft 52 extending between the space formed by the force transmitting legs and the top portion 64 of the bracket element. Thus the force transmitting legs 62 may reciprocate relative to the transverse support shaft 52 within the limits of the attaching flange portion 66.

Each of the force transmitting legs include on their lower end portions bifurcated attaching ears 70 which pivotally support therebetween on a pivot pin 72 a shoe element 74 having a serrated undersurface 76 for providing good frictional contact with the ground. The opposite ends of the force transmitting legs have pivotally secured thereon by means of a pivot pin 76 bifurcated ear portions 78 of a pivotal lever 80 having suitable handles 82 attached on the end opposite the pivot 76. Secured on the outer sides of the legs 18 and 20 (only one being shown) are suitable outwardly opening bracket elements 84 which are engageable with the underside of the force transmitting legs providing a suitable support for the same to rest therein.

A pair of vertically spaced transverse elements 86 and 88 are disposed on the rear edge of the pivot legs 30 and 32 supporting therebetween a reciprocable platform 90 which includes on the upper side a transverse raised edge member 92 and on the underside a similar transverse brace member 94 as seen in Figures 1 and 6. The platform 90 may be positioned as shown in Figure 1 wherein the transverse element 92 will be in juxtaposition with the transverse brace element 86 on the ladder, the platform 90 providing an available space whereby the user of the ladder may face in the direction of the handles and by pulling alternately or simultaneously on one or both of the handles may move the same forward in a simulated walking motion. The platform 90 of course may be

moved into the position shown in Figure 6 when the ladder is not being moved as heretofore described. The platform **90** provides an available space as to the steps **24** whereby a person painting, picking fruit, etc., may use the same.

To facilitate the movement of the ladder in the manner just mentioned, the pivotal legs **30** and **32** thereof include on the bottom end portion suitable slidable foot members **96** which include a lower slide portion **98** having upturned ends **100** and **102** and side flange portions **104** and **106** for accommodating therebetween the lower portion of the heretofore mentioned legs **30** and **32**. The foot members may be secured by suitable screws extending therethrough and into the bottoms of the legs. The flange **106** includes an outwardly extending flange portion **108** having an upwardly extending raised portion **110** for extending between the serrations **76** on the friction members **74** on the bottom of the force transmitting legs.

The platform **90** rests on the horizontal step **24** in alignment with the transverse support members **86** and **88**, said platform **90** may be replaced by the platform member **112** which includes on the underside adjacent the forward edge a brace element **114** similar to brace **94** on the platform member **90**, and includes on the rear edge secured to a transverse brace **116** on the upper side adjacent the rear edge thereof rearwardly facing U-shaped elements **118** having spaced leg portions **120** receiving therebetween the brace element **86** on the pivotal legs **30** and **32**. A suitable fastening screw **122** is suitably secured in one of the leg portions **120** for clamping down upon the top of the transverse brace **86**.

An auxiliary support platform **124** may be supported at any desired interval on the horizontal steps **24**, said support platform **124** including a reciprocable support platform which may be the same as that indicated at **90** being supported by vertical support legs **126** having upper and lower transverse support elements **128** and **130** operable to transverse elements **86** and **88** secured directly on the ladder, said legs **126** including a pair of spaced clamping brackets **132** which have leg portions **134** to extend over the rear portion of the horizontal steps **24**, as seen in Figure 6, said bracket portions **132** having transverse apertures **136** extending therethrough threadedly accommodating fastening screws **138**.

Various positional directional terms such as "front," "top," "rear," etc., are utilized herein to have only a relative connotation to aid in describing the device and are not intended to be interpreted as requiring any particular orientation with respect to any external elements.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination with a ladder having a top platform, a first pair of downwardly extending mutually parallel support legs secured on one side of said top platform, a plurality of mutually horizontal steps extending between said support legs, a second pair of mutually parallel downwardly extending supporting legs secured on an opposite side of said top platform, wheels rotatably carried on the lower ends of said first pair of support legs; a pair of elongated force transmitting levers pivotally and slidably supported on said second pair of mutually parallel support legs, said force transmitting levers each including a lower portion engageable with the ground surface and an upper end portion pivotally secured to a handle portion, and a horizontal platform member supported in extending relationship between the first and second pairs of downwardly extending legs adjacent said handle portions.

2. In a combination as set forth in claim 1 wherein said force transmitting levers are pivotally and slidably supported on said second pair of support legs on an outwardly extending portion of a support shaft, each of said force transmitting levers including an elongated bracket slidably and pivotally receiving said outwardly extending portion of the support shaft.

3. A combination as set forth in claim 2 wherein said force transmitting levers each include a foot portion on the lower end thereof having a lower serrated surface for engaging the ground.

4. In the combination as set forth in claim 3 wherein said second pair of downwardly extending support legs each include a shoe element on the lower end thereof for slidably engaging the ground surface.

5. In the combination as set forth in claim 2 wherein said horizontal platform includes means thereon for clampingly engaging a transverse support portion extending between a pair of said downwardly extending support legs.

6. In combination with a ladder having a top platform, a first pair of downwardly extending mutually parallel support legs fixedly secured on one side of said top platform, a plurality of mutually horizontal steps extending between said support legs, a second pair of mutually parallel downwardly extending support legs pivotally supported on an opposite side of said top platform, movable legs pivotally supported between the fixed and pivotally supported support legs, and wheels rotatably carried on the lower ends of said first pair of support legs; a pair of elongated force transmitting levers pivotally and slidably supported on said second pair of mutually parallel support legs, said force transmitting levers each including a lower portion engageable with the ground surface and an upper end portion pivotally secured to a handle portion, and a horizontal platform member supported in extending relationship between the first and second pairs of downwardly extending legs adjacent said handle portions.

7. In a combination as set forth in claim 6 wherein said force transmitting levers are pivotally and slidably supported on said second pair of support legs on an outwardly extending portion of a support shaft, each of said force transmitting levers including an elongated bracket slidably and pivotally receiving said outwardly extending portion of the support shaft.

8. A combination as set forth in claim 7 wherein said force transmitting levers each include a foot portion on the lower end thereof having a lower serrated surface for engaging the ground.

9. In the combination as set forth in claim 8 wherein said second pair of downwardly extending support legs each include a shoe element on the lower end thereof for slidably engaging the ground surface.

10. In the combination as set forth in claim 6 wherein said horizontal platform includes means thereon for clampingly engaging a transverse support portion extending between a pair of said downwardly extending support legs.

No references cited.