

July 7, 1936.

O. W. JOHNSON

2,046,516

LADDER SUPPORT

Filed Aug. 8, 1933

4 Sheets-Sheet 1

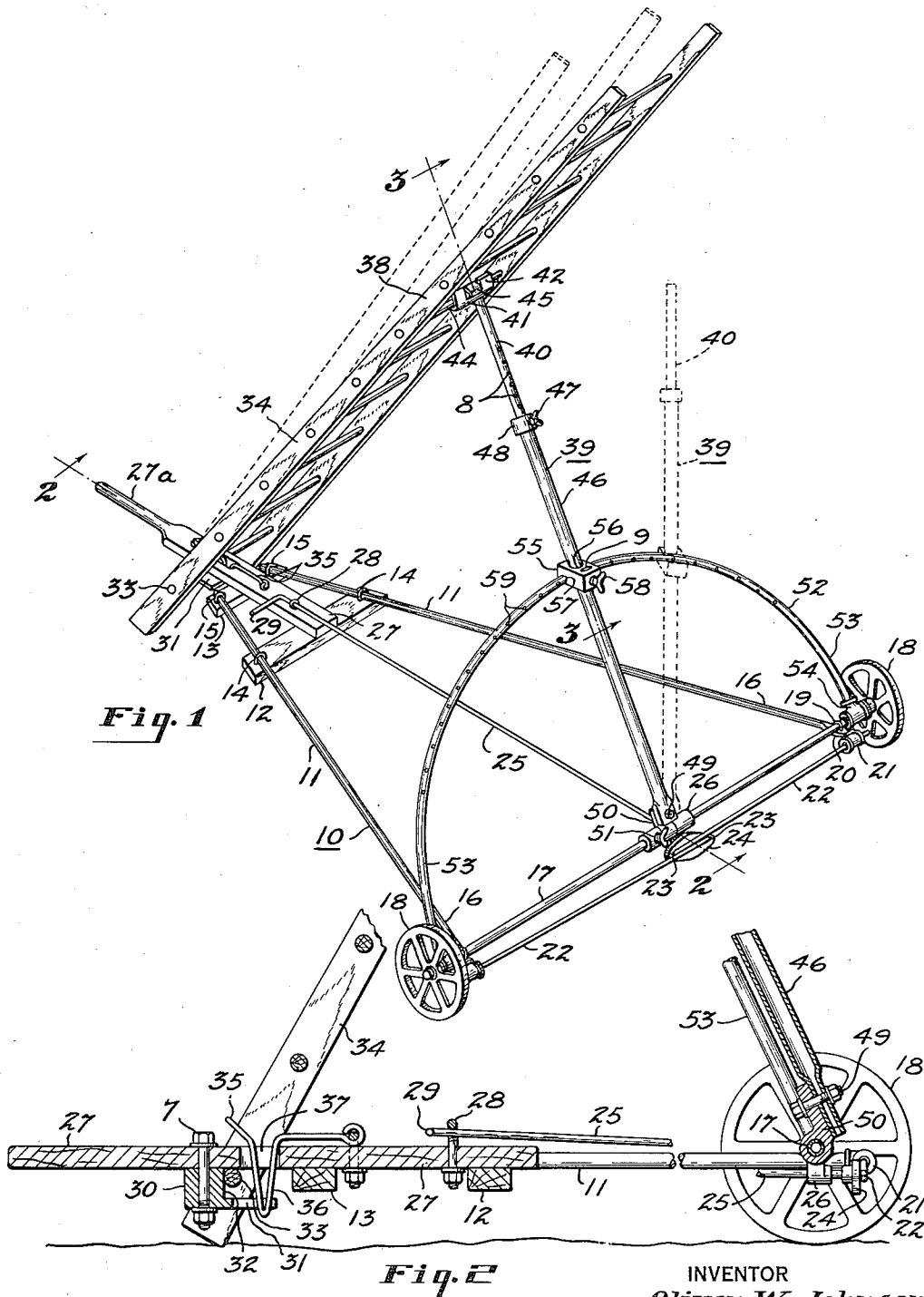


Fig. 2

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4 Sheets-Sheet 2

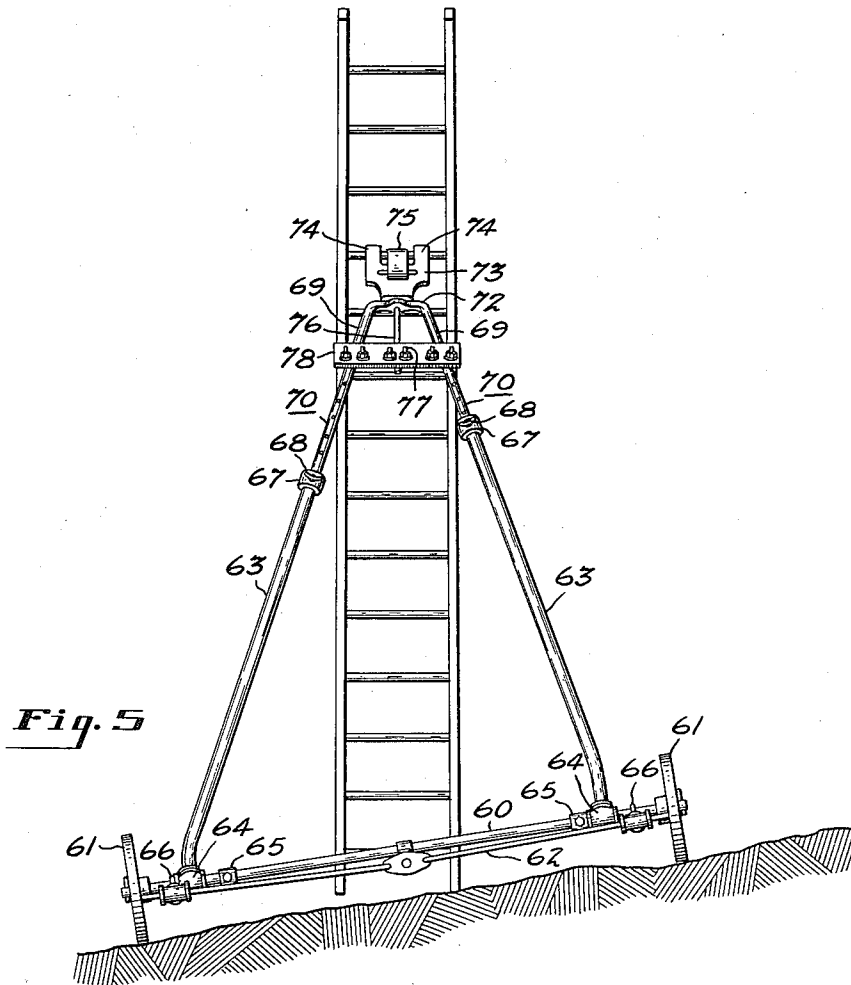


Fig. 5

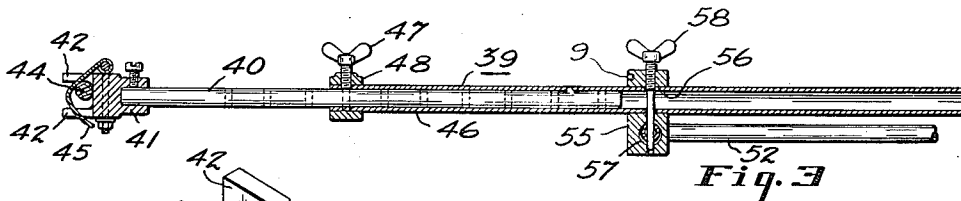


Fig. 3

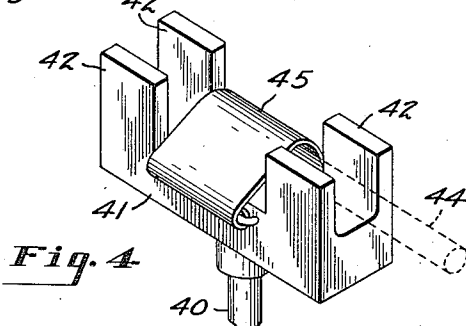


Fig. 4

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4 Sheets-Sheet 3

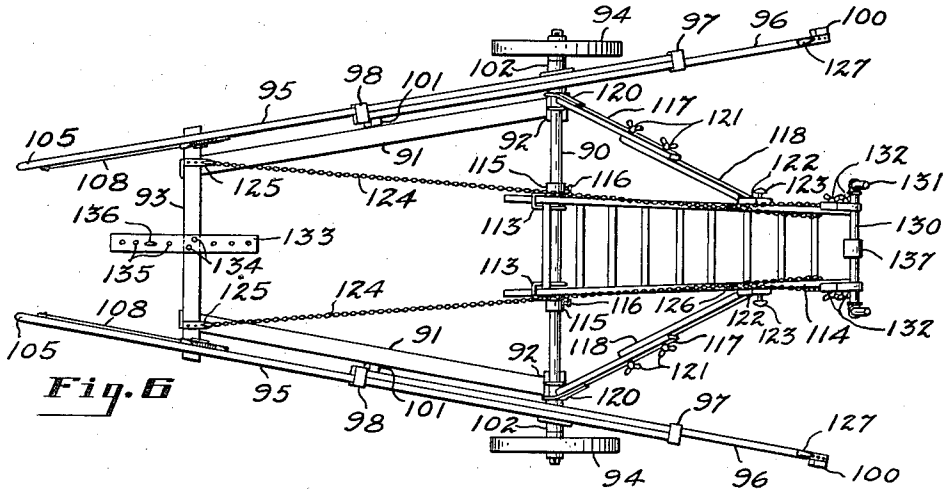


Fig. 6

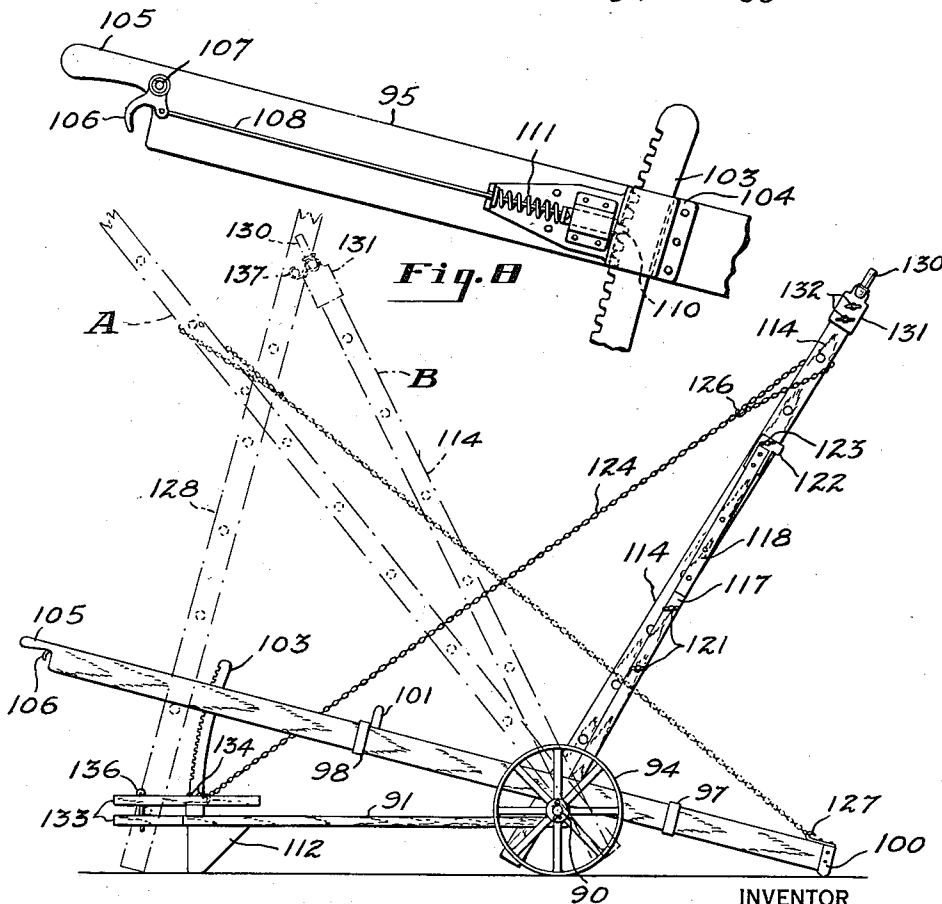


Fig. 7

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4 Sheets-Sheet 4

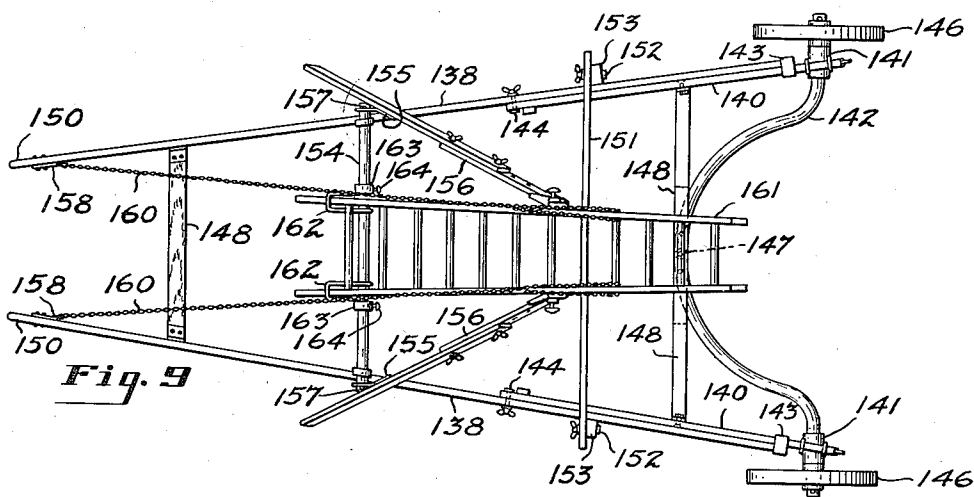


Fig. 9

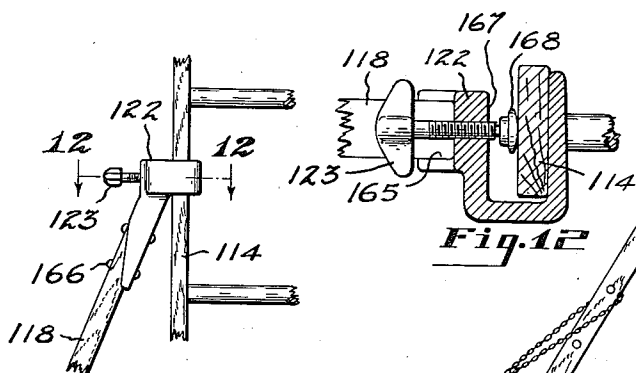


Fig. 11

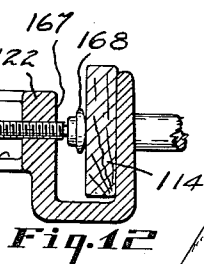


Fig. 12

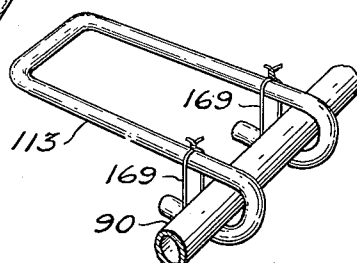


Fig. 13

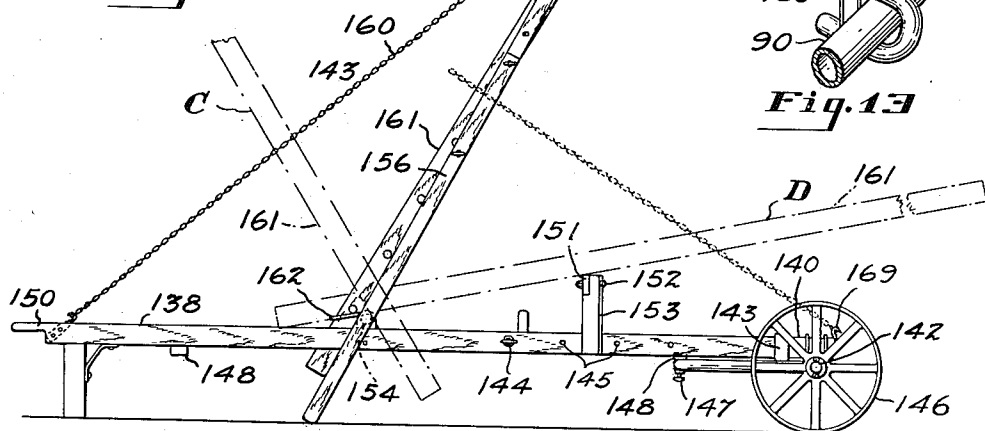


Fig. 10

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UNITED STATES PATENT OFFICE

2,046,516

LADDER SUPPORT

Oliver W. Johnson, Geneva, Ohio

Application August 8, 1933, Serial No. 684,184

20 Claims. (Cl. 228—5)

This invention relates to new and useful improvements in portable ladder supporting apparatus, particularly adapted for use in orchards, and in other situations where such an apparatus may prove useful. This application is a continuation in part of my copending application for U. S. Letters Patent, Serial No. 484,775, filed September 27, 1930 for Portable ladder supporting apparatus.

10 An object of the invention is to provide means for adjustably disposing any conventional ladder in various angular positions, and firmly holding the ladder in any one of numerous positions of use regardless of the slope or irregularity of the
15 ground, together with a wheeled frame for carrying said means and thereby providing for easy and quick transportation of the ladder from place to place.

20 Another object of the invention is to provide a portable, ladder-supporting apparatus of this character in which the ladder may readily and quickly be attached and detached with reference to said apparatus, permitting use of ladders of different sizes as required and also permitting
25 the ladder and upstanding portions of the ladder-supporting means to be folded to inoperative position when the ladder is not in use or when it is desired to move the apparatus.

30 Another object of the invention is to provide new and improved means for firmly locking the wheels of the apparatus to prevent accidental dislodgment thereof when in use.

35 With these and other objects in view, the invention consists in the novel construction, arrangement and combination of parts, hereinafter illustrated and described in some of its embodiments in the accompanying drawings, and particularly pointed out in the appended claims.

40 In the drawings accompanying this specification and forming part of the application, I have shown certain embodiments which my invention may assume, and in these drawings:

45 Figure 1 is a perspective view of an embodiment of the invention showing a conventional ladder in one position of adjustment in full lines, and in another position of adjustment in dotted lines;

50 Figure 2 is an enlarged, fragmentary, broken, vertical sectional view, corresponding substantially to line 2—2 of Figure 1.

Figure 3 is an enlarged, fragmentary, sectional view, corresponding substantially to line 3—3 of Figure 1.

55 Figure 4 is an enlarged perspective view of a

ladder clamping device used in connection with the invention.

Figure 5 discloses a different embodiment of the invention.

Figure 6 is a plan view of a ladder support 5 illustrating a different embodiment of the invention.

Figure 7 is a side elevational view of the ladder support shown in Figure 6.

Figure 8 is an enlarged detail view of the extensible frame adjusting device used in connection with the form of the invention shown in Figures 6 and 7.

Figure 9 is a plan view of a ladder support disclosing yet another embodiment of the in- 15 vention.

Figure 10 is a side elevational view of the ladder support shown in Figure 9.

Figure 11 is an enlarged detail view of the adjustable strut clamp used in connection with the support shown in Figures 9 and 10.

Figure 12 is a sectional view taken on line 12—12, Figure 11; and

Figure 13 is an enlarged perspective view of the stirrups used in connection with the ladder supports shown in Figures 6 and 7 and 9 and 10. 25

Referring first to Figures 1 to 4 inclusive, the apparatus comprises a substantially triangular frame 10 having reach rods 11 connected at their forward ends by cross bars 12 and 13, the bar 12 30 being affixed to the reach rods by staples 14 and the bar 13 by staples 15. The rear ends 16 of the reach rods 11 are supported by an axle 17, carrying wheels 18, and said ends 16 are rigidly connected to the axle 17 by means of U-bolts 35 19, and are provided with extensions 20 having curled eye members 21.

The curled eye members each slidably support the outer end of one of the locking members 22, the inner ends of which are pivotally secured 40 as at 23 to a crank 24 fixedly connected to an operating shaft 25. This shaft is supported by a stirrup 26 carried by the axle 17 and extending forwardly and supported by a tongue member 27, pivotally held in position thereon by a staple 45 28 loosely disposed thereabout, and having an angular operating finger piece 29. The tongue member 27 is rigidly bolted to the cross bars 12 and 13, projects forwardly of the reach rods 11 and is tapered at 27^a to provide a convenient 50 gripping portion by means of which the triangular frame 10 may readily be maneuvered.

Secured to the under surface of the member 27, by means of a securing bolt 1, is a block 30, provided with an inwardly disposed bifurcated 55

extension 31 spaced from the under surface of the tongue member 27 and defining a recess 32 adapted for the reception of a lower rung 33 of a ladder 34, the latter being detachably held within the recess 32 by means of a latch member 35 pivotally secured to a staple attached to the upper surface of the tongue member 27.

The latch member 35 has an angular portion 36 extending through a slot 37 in the tongue member 27 and adapted under influence of gravity in one position to project between the furcations of the bifurcated extension 31 thereby securing the rung 33 and the ladder 34 against detachment with respect to the forward end of the frame 10.

The upper end portion 38 of the ladder 34 is adapted to be supported by a movable angularly adjustable telescopic strut 39, comprising a slidable section 40, the outer end of which carries a block 41 having pairs of spaced fingers 42 adapted for the reception of one of the upper rungs 44 of the ladder 34 therebetween, and held in position by a hooked latch 45 pivotally carried by the block 41, serving to retain the rung 44 in engagement with the fingers 42.

The sliding section 40 is telescopically engaged with a sleeve 46 and adjustably held in various adjusted positions with reference to said sleeve by a set screw 47 tapped through a block 48, secured to the outer end of the sleeve 46, and adapted to extend into any one of the apertures 9 provided in the section 40. The opposite end of the sleeve 46 is pivotally secured by a pivot pin 49 to a bearing member 50, pivotally connected to the axle 17, and held against lateral movement through abutment on one side with the stirrup 26 and upon the opposite side with a collar 51, whereby the sleeve 46 is freely swingable in directions at right angles to each other.

The sleeve 46 is adapted to be supported in various angular positions laterally of the frame 10 and such adjustment is effected through cooperation with an arcuate guide member 52 having its opposite ends 53 pivotally secured to the axle 17 by T members 54 located between the extensions 20 and wheels 18. Adjustable connection between the sleeve 46 and the arcuate guide 52 is effected by means of a connector 55 having bores 56 and 57 extending at right angles to each other and out of registry with each other.

The bore 56 slidably accommodates the sleeve 46, while the bore 57 slidably accommodates the arcuate guide member 52, and the sleeve 46 and guide member 52 may be secured in any adjusted position by a set screw 58 extending through connector 55, an aperture in the sleeve 46 and any one of the apertures 59 in the guide member 52. The connector 55 carries a spirit level 9 which may be employed to find the proper vertical position of the strut when the apparatus is used on a hillside.

When the ladder-supporting apparatus is in set-up condition, with a ladder in position thereon, as illustrated in Figure 1 of the drawings, for instance, the apparatus may readily be transported from place to place by lifting the frame through manipulation of the tongue member 27 transferring the weight of the apparatus to the wheels 18. Inclination of the ladder 34 longitudinally of the frame 10 may readily be effected by sliding movement of the section 40 with respect to the sleeve 46 and adjustment effected by engaging the set screw 47 with any one of the

apertures in the section 40 depending upon the inclination desired.

When it is necessary to employ the apparatus on an uneven surface so that one wheeled side of the frame is elevated and the opposite side depressed, adjustment of the position of the ladder may be effected by swinging the sleeve 46 laterally of the frame along the arcuate guide member 52 by manipulation of the set screw 58 engageable with any one of the apertures 59 in the arcuate guide member 52, depending upon the position desired. One adjusted position of the sleeve 46 with reference to the arcuate member 52 is shown in full lines in Figure 1 and another adjusted position is shown in dotted lines in said figure.

The ladder 34 is readily attachable and detachable with respect to the supporting apparatus, and when it is desired to detach the ladder 34 from the apparatus the latch member 35 is elevated sufficiently to permit the lower rung 33 to be removed from the confining recess 32, the tongue member 27 slightly elevated and the lower end of the ladder 34 moved outwardly beyond the end of the tongue member 27 a sufficient distance to permit the strut 39 and the arcuate guide 52 to be folded or lowered onto the forward end of the frame 10. The hook latch 45 may then be disengaged thereby completely freeing the ladder 34 with respect to the supporting apparatus.

The supporting apparatus in its inoperative position is exceedingly compact and occupies very little space and in addition may readily be handled and stored, differing in this respect from those constructions in which the ladder forms a permanent part of the equipment.

This equipment is especially useful in orchards since the ladder, when mounted upon the apparatus, may readily be transported, and tilted in various directions to the best advantage so as to enable workers to pick fruit from the trees without danger of injuring either the trees, fruit, or themselves, and particularly is this true in connection with trees whose branches are too fragile to bear the unsupported weight of a ladder placed thereagainst.

Referring to Figure 5 a somewhat different embodiment of the invention is disclosed, comprising a triangular frame identical to the frame 10 heretofore referred to, including axle 60 carrying wheels 61, and having reach rods, tongue member, bifurcated extension and latch, identical with the reach rods 11, tongue member 27, bifurcated extension 31 and latch 35 heretofore described. A brake mechanism 62 is also provided identical with the brake mechanism heretofore described in connection with Figures 1 to 4 inclusive.

The ladder supporting strut means disclosed in this embodiment comprises a pair of sleeves 63 each having at their lower ends a connecting T-fitting 64 rotatably and slidably carried by the axle 60, the sliding movement of the T fitting 64 being limited at one side thereof by a collar 65 affixed to the axle 60 and at the opposite side by a U-bolt 66 which serves to secure the adjacent reach rod to the axle 60. The sleeves 63 are so formed as to converge toward their outer ends and each sleeve is provided with a fitting 67 affixed thereto through which extends a set screw 68. Telescopically engaged with the sleeves 63 are the legs 69 of a slidable section 70, each leg 69 being provided with a series of apertures spaced at intervals therealong provided for the

reception of the set screws 68 in various adjusted positions of the parts.

Secured to the bight portion 72 of the slidable section 70 is a block 73 having two pairs of spaced fingers 74 adapted to accommodate an upper rung of the ladder therebetween and a pivoted latch 75 similar to the latch 45 heretofore described, adapted to be swung over and secure the rung disposed between said fingers. The block 73 is held in position by means of a stem 76 extending through the bight portion 72 and clamped by a U-bolt 77 to a cross piece 78, secured to the legs 69 of the slidable section 70.

The operation of the embodiment shown in Figure 5 is identical with that heretofore referred to, with the exception that movement of the strut means during the lateral adjustment of the same is effected through the relative sliding displacement of the legs 69 of the slidable section 70 with reference to the sleeves 63; when one side of the frame is tilted one of the legs 69 slides into the adjacent sleeve 63 while the other leg 69 slides outwardly with reference to the other sleeve 63, such movements being permitted by the slidable connections of the T-members 64 and the axle 60. The legs 69 of the slidable section 70 may be adjustably fixed with reference to the sleeves 63 through manipulation of the set screws 68 adapted to enter the apertures in the legs 69.

The form of the invention illustrated in Figures 6, and 7 comprises a generally triangular frame formed from an axle 90 and a pair of side members 91 which are fixedly secured at 92 to the axle 90. The opposite ends of the frame members are fixedly secured to each other by a relatively short cross member 93. A pair of wheels 94 are journaled for rotation on the outer ends of the axle 92.

The ladder supporting frame also includes a pair of reach rods 95 one at each side of the frame. Each of these rods has an extensible section 96 guided for longitudinal movement by a pair of rectangular guide members 97 and 98, the first of which is rigid with its corresponding reach rod and slidably receives the extensible section, and the other of which is rigid with the extensible section and slidably receives the reach rod. The forward ends of the extensible members are provided with downwardly directed pointed pins 100 which are adapted for contact with the ground in the use of the apparatus. Pegs 101 are provided to facilitate the movement of the extensible sections of the reach rods.

Fixedly secured to the forward ends of the reach rods 95 are bearing members 102 within which the axle 90 is loosely received. An up-standing curved rack or ratchet segment 103 is fixedly secured at its lower end to the frame members 95 at a point adjacent to the cross member 93. The rack members 103 project above the frame of the apparatus and they are received in a guide 104, one of which is carried by each of the reach rods 95. Adjacent to the handle 105, formed on the outermost ends of each of the reach rods there is carried a trigger or latch member 106 which is pivoted at 107 to its corresponding reach rod.

A rod 108 is pivoted to the latch member and secured to its opposite end is a pin 110 slidably carried in the guide member 104 for engagement with the teeth of the ratchet 103. The pin member 110 is normally held in engagement with the teeth of the ratchet member by means of a spring

111 and removed from such engagement by manual manipulation of the latch or trigger member 106, whereupon the members 95 and 96 can be adjusted angularly with respect to the frame proper.

A pair of ground contacting blocks 112 are secured to the frame at a point adjacent to the intersections of the side members 91 and the cross member 93. The ratchet adjustment just described is provided for insuring the supporting structure contacting the ground at a number of widely spaced points so that regardless of the unevenness of the ground upon which the support is used it provides a fixed and firm supporting base.

The intermediate portion of the axle 90 carries a pair of rectangular guides or stirrups 113 for the accommodation of the side rails of a ladder 114. Movement of the stirrups on the axle is prevented by a pair of collars 115, 115 which loosely receive the axle and which are adjustably held in position thereon by set screws 116, 116. A pair of ladder supporting struts comprising fixed sections 117 and extensible sections 118, are secured to the frame by bearing members 120 at the lower ends of the fixed sections in which the axle 90 is loosely received. The sections of the adjustable struts are secured to each other by a pair of bolts having winged nuts 121. The strut sections 118 have a plurality of properly spaced holes for such bolts by means of which the section can be adjusted to extend at different distances beyond the ends of the sections 117.

At the upper end of each of the strut sections 118 there is provided a clamping device 122 having a clamping screw 123 by means of which the side rails of the ladder are firmly secured to the supporting struts. A pair of chains 124 having one end looped over one of the upper rungs of the ladder and having one of the links of their other end in engagement with hooks 125 carried by the cross member 93, are provided for holding the ladder in place when it is used in the position shown in Figure 7. The upper end of each chain has a hook 126 by means of which the effective length of the chain can be adjusted to change the angle of the ladder.

A high degree of rigidity is imparted to the ladder by reason of the fact that the chains are secured to the upper end of the ladder rather than at some point nearer to the bottom of the ladder. The adjustable clamps provided on the ladder supporting struts and the extensible feature of the struts, permit the tilting of the ladder to one side or the other as may be necessary to keep the side of the ladder in a vertical plane when it is used on uneven or hilly ground.

If the ground is extremely uneven the ladder and its stirrups can be slid along the axle 90 upon the loosening of the set screws 116 of the collars 115 and the more remote strut can then be used to take most of the load. Under such conditions it might be advisable to lean the ladder sideways a slight degree in the direction of the more remote strut.

In Figure 7 of the dotted line position A of the ladder indicates another position to which the ladder can be readily adjusted by simply securing the ends of the chains in the hooks 127 and then tilting the ladder to the position shown.

When it is desired to move the ladder from one place to another, the latch 106 is pulled toward the operator to release the pins 110 from engagement of the teeth of the segment 103, whereupon the reach rods are dropped to a position substan-

tially parallel with the frame members 91, and the ladder and its support can then be moved. In moving the apparatus any considerable distance the ladder is ordinarily lowered to a substantially horizontal position where it rests upon the cross member 93.

In Figure 7 of the dotted line position B shows another manner of using the ladder support. In this use of the apparatus a second ladder 128 is leaned against the top of the ladder 114 which is tilted to the position shown at B. The top of the ladder 114 is provided with a U-shaped support 130 for engagement with the ladder 128. The support 130 is secured to the ladder 114 by a pair of clamps 131 which embrace the side rails of the ladder and are detachably secured thereto by the clamping screws 132.

The lowermost rung of the ladder 128 is received between bars 133 which are bolted at 134 to the cross bar 93. Holes 135 are drilled in the bars 133 for a pin 136 which is provided for preventing the ladder 128 from escaping from between the bars 133. A hook 137 carried by the support 130 engages with one of the rungs of the ladder 128 to secure this ladder to the ladder 114. The arrangement just described permits two persons to use the support at the same time, in which case a person on the ladder 114 could be picking fruit from the lower branches of a tree while a person on the ladder 128 was picking fruit from the upper branches of the tree. The holes 135 are provided to permit the adjustment of the base of the ladder 128 towards and away from the base of the ladder 114.

The form of the invention shown in Figures 9 and 10 comprises a supporting frame having diverging longitudinal members 138 with extensible sections 140, the ends of which are fixedly secured at 141 to an axle 142. The sections 140 are slidably received in guides 143 carried by the ends of the members 138 and these sections of the frame are locked to each other by a bolt 144 which is received in one of the holes 145.

The ends of the axle rotatably carry the supporting wheels 146. The axle 142 is curved to the rear of the frame and at its rearmost part it is secured by a bolt 147 to an adjustable cross brace 148. The brace 148 is made in two parts which are slotted at their contacting ends for receiving the bolt 147. The other end of the brace sections are bolted to the extensible frame sections 140. The rearmost ends of the frame members 138 have hand grips 150 formed thereon.

A second reinforcing cross member 151, extending above the level of the frame is provided rearwardly of the brace 148. The top edge of the cross member 151 is at a level above the uppermost part of the frame. The end parts of the member 151 are longitudinally slotted for receiving the bolts 152 by means of which it is adjustably secured to posts 153 carried by the member 138. A second cross member 154 is connected to the side members 138 at a point intermediate the cross members 148 and 151.

The length of the cross braces 148 and 151 is made adjustable to compensate for the lateral movement of the side members of the frame when the axle is adjusted longitudinally of such members. The axle is rearwardly curved to permit the use of the ladder as closely as possible to the trunk of the tree as is necessary when working on small trees.

The member 154 may be in the form of a piece of steel pipe or tubing. The outermost ends of this tube project through the side members 138

there to receive bracket members 155 which are fixedly secured to the extensible ladder supporting struts 156. The members 155 are held in position on the tube by means of pins 157 which extend through the outermost end parts of the tube. The extensible part of these struts and their securement to the ladder are the same as for the struts described in connection with Figures 6 and 7.

At a point adjacent the handles 150 a pair of hooks 158 are provided for engagement with one of the links of the chains 160. The other ends of the chains are looped about one of the upper rungs of a ladder 161 as in the case of the ladder shown in Figures 6 and 7. The lowermost rung of the ladder rests upon a pair of spaced stirrups 162 which are adjustably carried by the tube or pipe 154. Loosely fitted collars 163 having set screws 164 hold the stirrups in place as previously described.

The clamps 122 may be formed from either a casting or a forging, one side of which has a channel 165 for receiving the corresponding strut member which may be secured thereto by means of bolts or rivets 166. At the other side of the bracket member there is formed an open U-shaped channel or guideway 167 for receiving one of the side rails of the ladder. The clamping screw 123 is provided with an enlarged head 168 for engagement with the side rail of the ladder whereby the strut and ladder are securely clamped to each other. The stirrups 113 may be in the form of bent rods as shown in Figure 13, with the rod ends forming hooks for reception of the tubes 90 or 154. Wire loops 169 may be used to prevent removal of the stirrups from the tubes.

In the form of the device shown in Figures 9 and 10 the struts 156 rest upon the ground and provide supports for the ladder that can be adjusted to tilt the ladder laterally to one side or the other upon adjustment of the strut length or changing the position of the ladder gripping strut clamps. The angle of the ladder with respect to the work can also be adjusted by lengthening or shortening the chains 160 as will be readily understood. The ladder can also be swung to the position shown in dotted lines at C in Figure 10, in which case the lower ends of the chains are secured to the hooks 170. When the ladder is not in use it can be dropped to the dotted position D shown in Figure 10 whereupon it may be readily moved for use at some other place.

Furthermore it is to be understood that the particular forms of apparatus shown and described, and the particular procedure set forth are presented for purposes of explanation and that various modifications of said apparatus and procedure can be made without departure from this invention as described in the appended claims.

Having thus described my invention what I claim is:

1. A relatively light, portable ladder support having an ambulant wheeled frame adapted to be handled by one person and arranged so that it may be pushed into working position under the boughs of a small tree, and means including a flexible tension member for adjustably supporting a ladder thereon for angular movement through a vertical plane to working positions inclining toward or away from the work, said frame having ground engaging portions extending a considerable distance forwardly and rearwardly of the bottom of the ladder with means adjacent the ends of the frame for the attachment of said

member in supporting said ladder in its various adjusted positions.

2. A relatively light, portable ladder support having an ambulant wheeled frame adapted to be handled by one person and arranged so that it may be pushed into working position under the boughs of a small tree, and means including a chain for adjustably supporting a ladder thereon for angular movement through a vertical plane to working positions including toward or away from the work, said frame having ground engaging portions extending a considerable distance forwardly and rearwardly of the bottom of the ladder with means adjacent the ends of the frame for the attachment of said chain in supporting said ladder in its various adjusted positions.

3. A small manually transportable ladder support comprising an ambulant wheeled frame having side members and reinforcing cross members, struts fastened to said frame and engaging the ground at points laterally outside said frame, said struts having means for detachably gripping the side rails of an ordinary ladder at different points along their length for supporting and adjusting the ladder sideways, and means engaging said frame and ladder for adjustably supporting the ladder for angular movement to limiting positions of adjustment with said frame in a fixed position in which the ladder inclines in one case towards the work and in the other case away from the work.

4. A ladder support comprising a frame with members extending in a generally horizontal direction and having ground engaging portions, at least one of the members of said frame being extensible and angularly adjustable about a horizontal axis with respect to the rest of the support.

5. The combination with a work ladder, of a small manually transportable frame having fore and aft ground engaging portions adjustably supporting the ladder for angular movement to different operative positions with said frame in a fixed position, inclining in one position towards the work and in another position away from the work, ground engaging struts, means for adjustably and detachably securing the upper ends of said struts to selected points along the sides of said ladder so as to laterally support the load of the ladder, and means for securing said struts to said frame at a point between the fore and aft ground engaging portions thereof.

6. The combination with a work ladder, of a small manually transportable frame having fore and aft ground engaging portions for supporting the ladder from a point intermediate such portions in an operative position adjacent to and out of contact with the work, ground engaging struts, means for adjustably securing the upper ends of said struts to the sides of said ladder at different points along their length so as to laterally support the load of the ladder, means for securing said struts to said frame at a point between the fore and aft ground engaging portions thereof, and means adjustably holding the ladder for angular movement to various working positions with said frame in a fixed position between a position in which the ladder inclines towards one end of the frame and a position in which the ladder inclines towards the other end of said frame.

7. A ladder in combination with a small manually transportable supporting structure for holding the ladder in working position in a stable manner, said structure comprising frame members extending a substantial distance forwardly

and rearwardly of the ladder and arranged at their forward end to contact with the ground at a point beyond the trunk of a tree and means adapted for engaging the ladder at different points along its length whereby the ladder first may be adjusted and safely used for work over the center of a tree and then adjusted to a position inclining away from such tree without reversing the position of the frame members of said ladder supporting structure.

8. A relatively light, portable ladder support having an ambulant wheeled frame adapted to be handled by one person and arranged so that it may be pushed into working position under the boughs of a small tree with certain of its ground engaging parts extending substantial distances both forwardly and rearwardly of the bottom of the ladder, and means for adjustably securing a ladder to said support for angular movement to different working positions with said frame in a fixed position in which the ladder may be inclined toward or away from the work, said means being attached to said frame and engaging the ladder at its upper and lower ends only.

9. A relatively light, portable ladder support having an ambulant wheeled frame adapted to be handled by one person and arranged so that it may be pushed into working position under the boughs of a small tree with certain of its ground engaging parts extending substantial distances both forwardly and rearwardly of the bottom of the ladder, and means for adjustably securing a ladder to said support for universal angular adjustment whereby the ladder may be adjusted to different working positions with said frame in a fixed position in which it may be inclined to one side or the other of said support and toward or away from the work, said means being attached to said frame and engaging the ladder at its upper and lower ends only.

10. A relatively light, portable ladder support having an ambulant wheeled frame adapted to be handled by one person and arranged so that it may be pushed into working position under the boughs of a small tree with certain of its ground engaging parts extending substantial distances both forwardly and rearwardly of the bottom of the ladder, and means including relatively rigid compression members and flexible tension members for adjustably supporting a ladder thereon for universal angular adjustment whereby the ladder may be adjusted to different working positions with said frame in a fixed position in which it may be inclined to one side or the other of said support and toward or away from the work, said means being attached to said frame and engaging the ladder at its upper and lower ends only, said compression members supporting the ladder from points laterally spaced a substantial distance from the bottom of the ladder.

11. A relatively light, portable ladder support having an ambulant wheeled frame adapted to be handled by one person and arranged so that it may be pushed into working position under the boughs of a small tree with certain of its ground engaging parts extending substantial distances both forwardly and rearwardly of the bottom of the ladder, and means including struts and a chain for adjustably supporting a ladder thereon for universal angular adjustment whereby the ladder may be adjusted to different working positions with said frame in a fixed position in which it may be inclined to one side or the other of said support and toward or away from the work, said means being attached to said frame

and engaging the ladder at its upper and lower ends only, said struts supporting the ladder from points laterally spaced a substantial distance from the bottom of the ladder.

- 5 12. In a portable ladder support, the combination with an ordinary ladder of a portable framework having widely spaced ground engaging portions, and means for detachably and adjustably securing the ladder to said framework including
- 10 securement devices carried solely by said framework detachably engaging a rung of the ladder at the bottom thereof, other devices attached to said framework detachably engaging a rung of the ladder at the upper part thereof, and means
- 15 for varying the inclination of the ladder with respect to said framework and for holding it in such positions.
13. In a portable ladder support, the combination with an ordinary ladder of a portable framework having widely spaced ground engaging portions including wheels and an axle therefor, and means for detachably and adjustably securing the ladder to said framework including devices
- 20 journaled on said axle and detachably engaging the bottom part of the ladder, other devices journaled on said axle detachably engaging the upper part of the ladder, and means attached to said framework for varying the inclination of the ladder with respect to said framework and for
- 25 holding it in such positions.
14. A ladder support comprising a frame with members extending in a generally horizontal direction and having ground engaging portions, at least one of the members of said frame being
- 30 extensible and angularly adjustable about a horizontal axis with respect to the rest of the support, and handle means provided for the angularly adjustable member of said frame at the end of said member remote from the ground engaging
- 35 portion thereof.
15. A ladder support comprising a frame with members extending in a generally horizontal direction and having ground engaging portions, at least one of the members of said frame being extensible and angularly adjustable about a horizontal axis with respect to the rest of the support, and means at the end of the angularly adjustable member of said frame remote from the ground engaging portion thereof for locking such member
- 40 in its various adjustment positions.
- 45
- 50

16. A ladder support comprising, an ambulant supporting frame having wheels at one end and a handle at the other whereby the frame may be moved about from place to place, means associated with said frame for securing a work ladder in an upright and supported position, and locking means for the wheels of said frame having an operating member adjacent to the handle of said frame.

17. A ladder support comprising, a generally triangular frame having support wheels at opposite corners of the frame and a handle at the third corner thereof for moving the support about from place to place, means associated with said frame for securing a work ladder in an upright and supported position, and locking means for the wheels of said frame having an operating member adjacent to the handle of said frame.

18. A ladder support comprising in combination with an ordinary work ladder, a portable framework having widely spaced ground engaging portions, and means for detachably and adjustably securing the ladder to said framework including devices detachably engaging a lower rung of the ladder and other devices selectively attachable to the upper rungs of the ladder for varying the inclination of the ladder with respect to said framework.

19. A ladder support comprising in combination with a work ladder, a portable framework having widely spaced ground engaging portions and notched parts and displaceable keepers cooperating with the rungs of the ladder for detachably and adjustably securing the ladder at different points along its length to said framework.

20. A ladder support comprising in combination with a work ladder, a frame having supporting wheels located at widely spaced lateral portions thereof, and telescoping struts pivotally connected to opposite lateral sides of said frame at their lower ends and having means including a notched member and displaceable keeper for selectively and detachably securing their upper ends to a rung of the ladder whereby fore and aft and sidewise adjustments of the upper end of the ladder may be effected.

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