Dec. 9, 1924. 1,518,303

J. J. BYBERG

LADDER

Filed Aug. 1, 1923 2 Sheets-Sheet 1

Fig. 1.

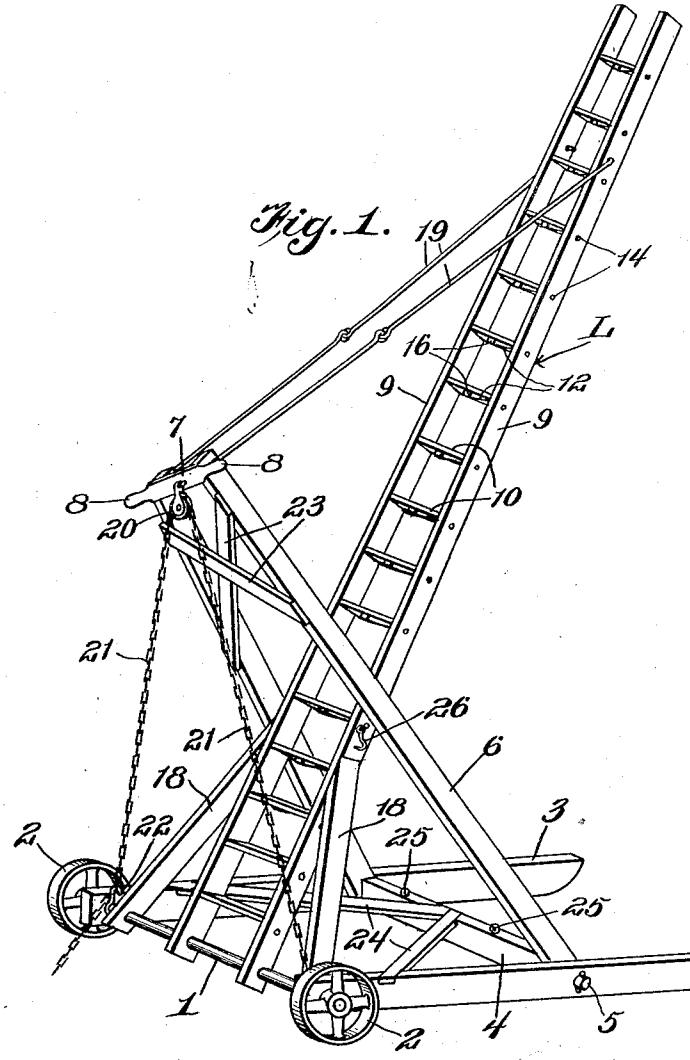


Fig. 6.

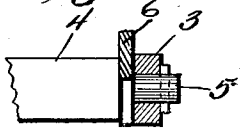


Fig. 2.

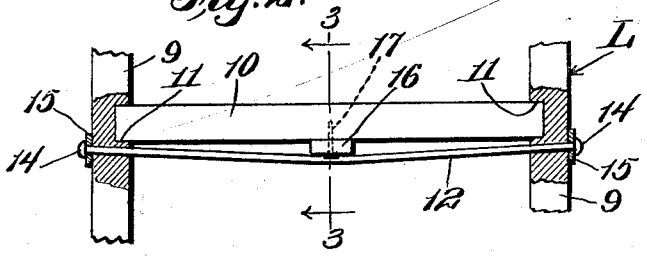
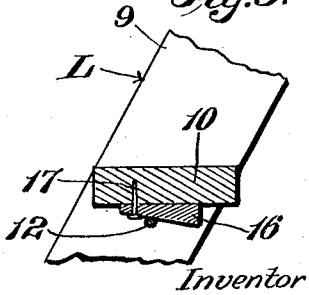


Fig. 3.



Inventor
Jonas J. Byberg

Watson E. Coleman

ATTORNEY

Dec. 9, 1924. 1,518,303

J. J. BYBERG

LADDER

Filed Aug. 1, 1923 2 Sheets-Sheet 2

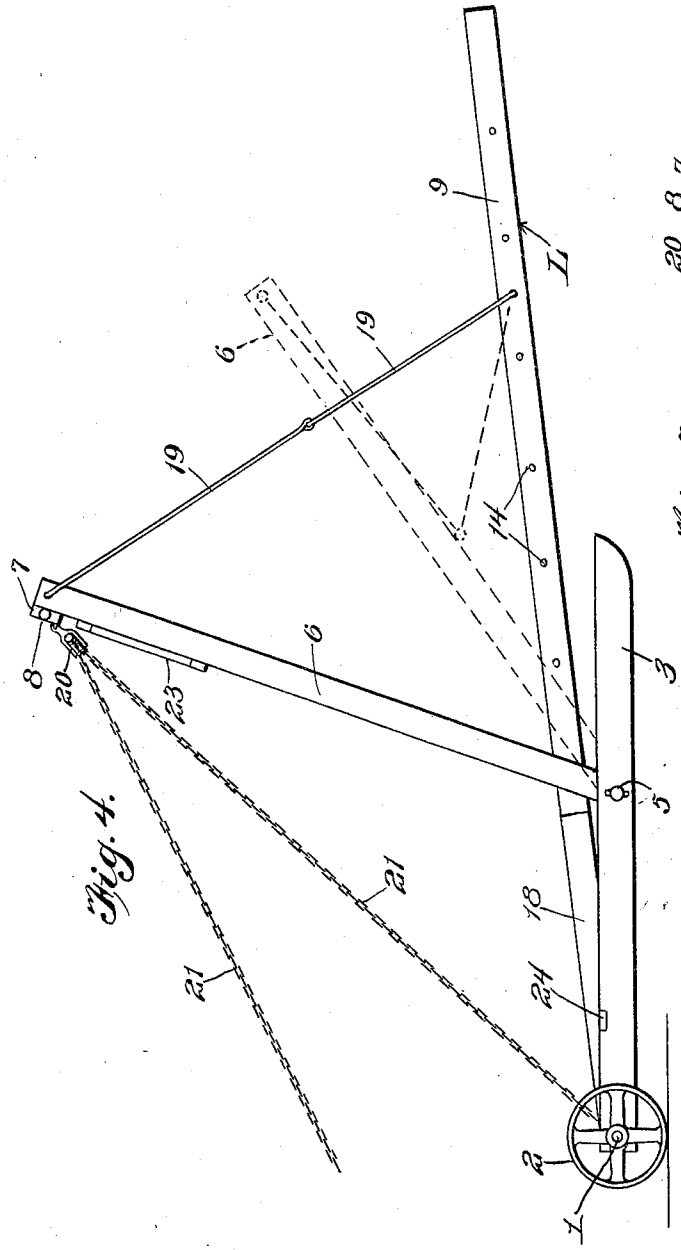


Fig. 4.

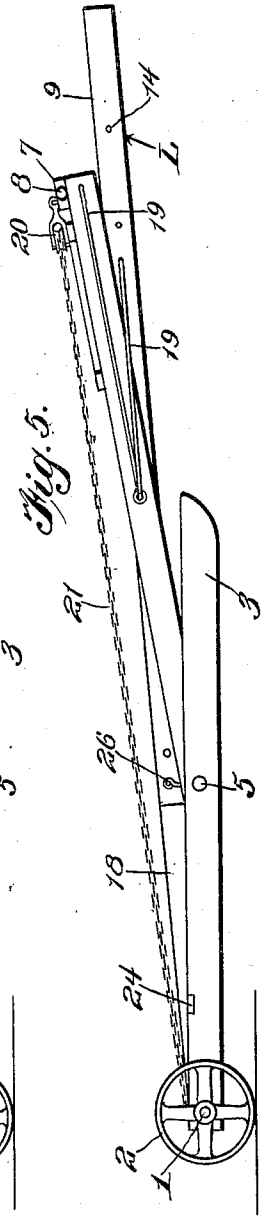


Fig. 5.

Inventor
Jonas J. Byberg
Watson & Coleman
Atty

Patented Dec. 9, 1924. 1,518,303

UNITED STATES PATENT OFFICE.

JONAS J. BYBERG, OF SILVERTON, OREGON.

LADDER.

Application filed August 1, 1923. Serial No. 655,085.

To all whom it may concern:

Be it known that I, JONAS J. BYBERG, a citizen of the United States, residing at Silverton, in the county of Marion and State of Oregon, have invented certain new and useful Improvements in Ladders, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in ladders and it is primarily an object of the invention to provide a novel and improved device of this general character especially designed and adapted for use in orchards.

It is also an object of the invention to provide a novel and improved device of this general character which may be readily transported as desired and wherein the ladder proper may be adjusted to any desired angle and supported in a manner whereby the liability of tipping is substantially eliminated.

Another object of the invention is to provide a novel and improved device of this general character wherein the ladder proper has associated therewith means for raising and lowering the ladder and wherein a portion of said means serves to prevent a person from falling sideways from the ladder and particularly when leaning to pick fruit from a tree.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved ladder whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:—

Figure 1 is a view in perspective of a ladder constructed in accordance with an embodiment of my invention;

Figure 2 is an enlarged fragmentary view partly in section and partly in elevation of the ladder proper showing means for holding a rung or step in applied position;

Figure 3 is a fragmentary sectional view taken substantially on the line 3—3 of Figure 2;

Figure 4 is a side elevational view showing the ladder proper in a lowered position, a second position of certain of the parts being shown by broken lines;

Figure 5 is a view in side elevation showing the ladder in its lowered position and the associated structure in folded or compacted relation; and Figure 6 is a fragmentary view partly in section and partly in elevation illustrating the operative connection of an elongated member or standard with a reduced end portion of the cross pin connecting the sill.

As disclosed in the accompanying drawings, 1 denotes an axle formed of piping or otherwise as may be desired and which has loosely mounted upon its extremities the relatively small supporting wheels 2 each of said wheels preferably having a broad or wide tread. Freely engaged with the axle 1 adjacent to the wheels 2 are the forward end portions of the elongated sills or side members 3. The side members 3 at substantially midway their length are connected by the cross member 4, each end portion of which is reduced as at 5 and extending through a sill or side member 3. Freely engaged with each reduced portion 5 inwardly of a sill 3 is the lower end portion of an elongated member or standard 6. The upper extremities of the members or standards 6 are connected by the block or strip 7. This block or strip 7 extends outwardly beyond the members or standards 6 to provide the hand grasps 8, said hand grasps 8 providing means whereby the device may be readily transported and especially when in a raised or working condition as illustrated in Figure 1 of the accompanying drawings.

L denotes a ladder of desired length having the lower portions of its side members 9 engaged with the axle 1. Interposed between the side members 9 of the ladder L are the steps 10. Each of the steps 10 has its end portions extending within mortises 11 provided in opposed faces of the members 9. Underlying the step 10 is a rod 12 the extremities of which being disposed through the side members 9 and terminating in the riveted heads 14 preferably in direct contact with the washers 15 surrounding the rod 12 and in direct contact with the outer faces of the side members 9.

Interposed between the central portion of the rod 12 and the step 10 is a wedge member 16, said wedge member coacting with the rod 12 and the step 10 to hold the side

members 9 from spreading and the step 10 from displacement. Any stretching of the rod 12 may be taken up by driving the wedge further in. As herein disclosed the wedge is prevented from slipping out by means of a small nail 17 or the like disposed through the wedge and penetrating the step 10 from below.

Associated with each of the side members 9 of the ladder L and the axle 1 is a brace member 18, said member 18 being engaged with the axle 1 at a point in relatively close proximity to the adjacent side member or sill 3.

Interposed between the upper or outer end portion of each of the members or standards 6 and the side members 9 of the ladder L is an articulated rod 19 the same being herein disclosed as comprising two sections. These rods 19 provide means coacting with the standards or members 6 for supporting the ladder L in working position and the desired angle of inclination of the ladder L may be readily effected by raising or lowering the standards or members 6. As herein disclosed the block or strip 7 has engaged therewith a pulley 20 over which passes a chain 21. One end portion of the chain 21 is engaged or secured to the axle 1 at a point in close proximity to a sill or side members 3, while the opposite end portion of said chain is adapted to be adjustably connected, through the instrumentality of its links, with the hook member 22 engaged with the opposite portion of the axle 1.

The upper portions of the members or standards 6 are braced or reinforced by the cross members 23 and the central portion of the cross member 4 hereinbefore referred to is connected with the forward portions of the side members or sills 3 by the brace members 24.

Extending upwardly from the opposite end portions of the cross member 4 are the eye members 25 to each of which is adapted to be engaged, when the ladder L is in its lowered position, a hook member 26 carried by a side member 9 of the ladder L whereby the structure is effectively held in its compacted or folded position as illustrated in Figure 5 of the accompanying drawings and in which condition the device may be readily transported from one location to another and also to occupy a minimum of space when not in use.

With the ladder in working position as illustrated in Figure 1 it will be noticed that the major portion of the weight of the structure is on the sills or side members 3 and not directly over the axle 1. In view of this fact the structure will not roll after being placed in position. The angle of the ladder L proper in relation to the ground or other supporting surface can be adjusted by slipping any desired link of the chain 21 over the hook 22.

Upward swinging movement of the ladder L proper in Figure 1 is limited by contact of the braces 18 and 23 it being understood that as the ladder L moves upwardly the standards or members 6 will swing downwardly. When the ladder L is at the limit of its upward movement it assumes a position slightly beyond the vertical and in which position a balance is obtained directly above the wheels, the tilt of the ladder L beyond the axle 1 being sufficient to overcome the wieght of the sills or side members 3 and the parts concomitant thereto. In this position the structure can be readily moved and by having the ladder L nearly in a vertical position, the ladder will not catch in the out-spreading branches of the tree.

Figure 4 illustrates the derrick action which takes place when the ladder L is raised or lowered. In raising the ladder L a foot may be placed against the axle 1 to prevent the device moving when a requisite pull is imposed upon the chain 21.

The sills or side members 3 are spaced apart a considerable distance whereby the liability of tipping is prevented and it is to be particularly noted that the construction comprised in the present invention is such that no third leg is required and which permits the structure to be readily positioned where desired so that all the fruit can be readily picked from a tree with ease and rapidity.

The ladder L is supported in such a place and manner that there is very little strain on it and it therefore can be built to almost any desired length and any angle to conform with any desired shape of tree can be obtained. With the mechanical advantage gained by use of the pulley 20 and the upward pull being at the outer or upper end portion of the ladder L, long and heavy ladders can be easily raised and lowered.

Another desirable feature afforded by the device as herein disclosed resides in the fact that the rods 19 will be, in practice, positioned on opposite sides of the picker and thereby add to his safety by preventing him from accidentally falling to the side and allowing the picker to lean against either of the rods 19 when stretching for fruit thus putting a greater amount of fruit within his reach. In other words a considerable area can be covered from each position of the ladder and therefore the ladder does not need to be moved as often for each tree as is necessary with ordinary ladders.

When the device is not in use it is adapted to be compacted in the manner as particularly illustrated in Figure 5 and which relative arrangement of the various parts can be easily effected by releasing the chain 21

from the hook 22 and swinging the members or standards 6 rearwardly resulting in the ladder L dropping and the members or standards 6 assuming a lowered position and during which operation the opposite ends of the articulated rods 19 readily assume an overlying relation.

From the foregoing description it is thought to be obvious that a ladder constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. A device of the class described comprising a portable axle, sills engaged therewith and extending in the same direction from the axle, a ladder mounted on the axle for swinging movement, standards pivotally engaged with the sills rearwardly of the ladder and of a length to extend forwardly of the ladder at opposite sides thereof when the ladder is raised, flexible means connecting the outer end portions of the standards and the outer portion of the ladder, means for connecting the standards for unitary rotation, said means including brace members connecting the standards, braces coacting with the axle and the opposite sides of the ladder, means for holding the standards against swinging movement under the influence of the weight of the ladder when the ladder is in raised position, the brace members connecting the standards and the braces associated with the ladder contacting to limit the swinging movement of the ladder in the opposite direction.

2. A device of the class described comprising a portable axle, sills engaged therewith and extending in the same direction from the axle, a ladder mounted on the axle for swinging movement, standards pivotally engaged with the sills rearwardly of the ladder and of a length to extend forwardly of the ladder at opposite sides thereof when the ladder is raised, flexible means connecting the outer end portions of the standards and the outer portion of the ladder, means for connecting the standards for unitary rotation, said means including brace members connecting the standards, braces coacting with the axle and the opposite sides of the ladder, means for holding the standards against swinging movement under the influence of the weight of the ladder when the ladder is in raised position, the brace members connecting the standards and the braces associated with the ladder contacting to limit the swinging movement of the ladder in the opposite direction, said brace members and braces contacting when the ladder is swung upwardly to a distance beyond the vertical.

In testimony whereof I hereunto affix my signature.

JONAS J. BYBERG.