

July 7, 1925.

1,545,348

G. F. NALDER

LADDER

Filed March 14, 1925

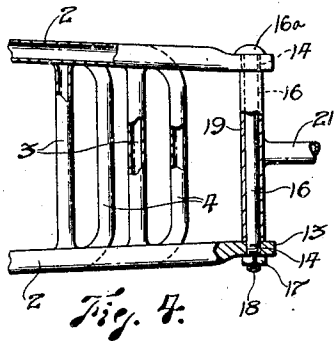
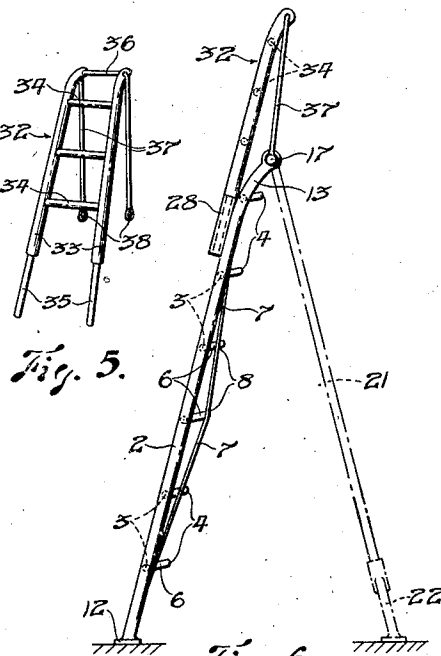
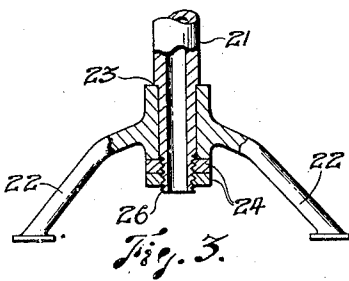
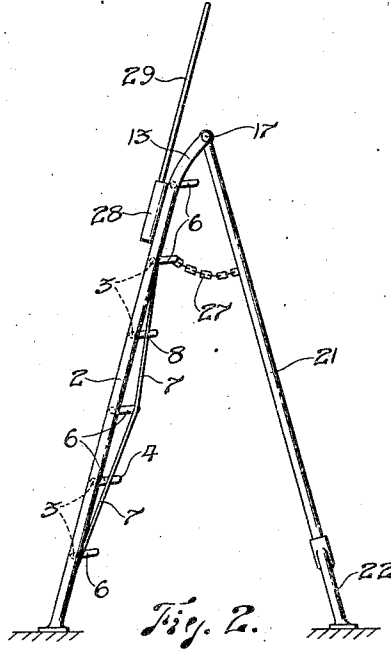
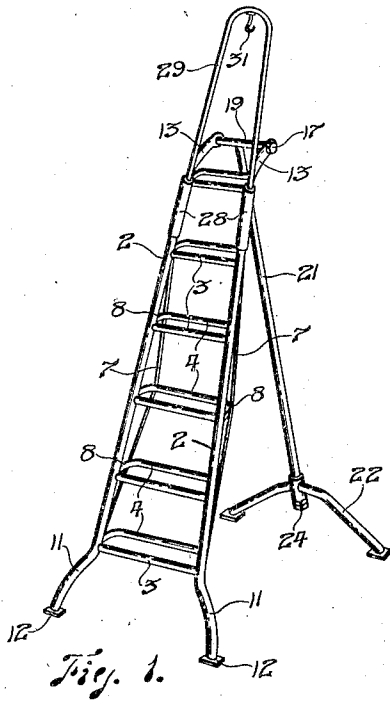


Fig. 6. Inventor
G. F. Nalder
by J. M. Juure
ATTY.

Patented July 7, 1925.

1,545,348

UNITED STATES PATENT OFFICE.

GEORGE FREDERICK NALDER, OF CASTLEMAINE, VICTORIA, AUSTRALIA.

LADDER.

Application filed March 14, 1925. Serial No. 15,816.

To all whom it may concern:

Be it known that I, GEORGE FREDERICK NALDER, a subject of the King of Great Britain and Ireland, residing at Castle-
5 maine, in the county of Talbot, State of Victoria, Commonwealth of Australia, have invented certain new and useful Improve-
ments in and Relating to Ladders (for which I have filed an application in the Common-
10 wealth of Australia Dec. 19, 1923, Number 15,689), of which the following is a specification.

This invention relates to ladders such as are used by orchardists, farmers and others
15 for outdoor service. When exposed to the weather, wooden ladders deteriorate to such an extent that they are liable to become unsafe and any attempt at repair does not materially prolong their utility.

20 One of the objects of the present invention is to provide a strong and durable and relatively light ladder which will not be affected by exposure to the weather and to this end the ladder is constructed of metal preferably
25 in the form of tubing, the various tubular members being secured to each other at their intersections by brazing, welding or other suitable means.

30 It is well recognized that standing for any extended period upon a single rung of a ladder becomes arduous and causes fatigue to the feet. In order to obviate this objection a ladder in accordance with the present
35 invention is preferably provided with additional or secondary rungs which are located parallel to and approximately in the same horizontal plane as the main rungs and thus form wider and more satisfactory rests for
40 the feet.

Provision is also made whereby a rear supporting strut or leg may be pivotally and detachably connected to the ladder as
45 occasion requires.

Other features of the invention will be evident from the following description and the appended claims.

Referring to the drawings which form part of this specification:—

50 Figure 1 is a perspective view of a ladder constructed in accordance with the invention. A rear supporting leg and a detachable extension forming a safety holding device or guard are included.

55 Figure 2 is a side elevation of the ladder shown in Figure 1.

Figure 3 is an enlarged fragmentary de-

tail view partly in section and shows the lower portion of the rear supporting leg and a rotatable foot which may be mounted
60 thereon if desired.

Figure 4 is a part sectional plan view of the upper part of the ladder and showing the pivotal connections of the rear support-
65 ing leg.

Figure 5 is a perspective view of a detach-
able extension which may be applied to the ladder when desired to increase its height.

Figure 6 is a side elevation of the im-
proved ladder showing the detachable ex-
70 tension seen in Figure 5 applied thereto. The rear supporting leg is indicated by broken lines.

According to the invention the upstand-
ing or longitudinal side members 2 and the
75 horizontal rests or rungs 3 of the ladder are preferably composed of metal tubing al-
though solid but light metal rods or bars may be employed in some circumstances. In
addition to the previously mentioned main
80 rungs 3 secondary rungs 4, also preferably of tubular metal and having forwardly bent
end portions 6, are provided, said rungs 4
being located behind and parallel with the
main rungs 3 in approximately the same
85 horizontal plane as the main rungs to there-
by afford a better and less tiresome support
for the feet than the usual single rungs of
this type. The duplex rungs 3 and 4 are
preferably secured to the side members 2 by
90 welding or brazing.

For the purpose of strengthening the lad-
der, metal tie rods 7 are suitably secured at
their extremities to the upstanding side
members 2 and are bowed rearwardly and
95 secured by welding or the like at interme-
diate points to certain of the secondary
rungs 4 adjacent each end of the latter as
indicated at 8 in Figures 1, 2 and 6.

The lower extremities of the side mem-
bers 2 are preferably splayed outwardly as
100 at 11 and terminate in flat feet 12. The
upper extremities of the upstanding side
members may be flattened and curved rear-
wardly as shown at 13 and are provided with
coinciding apertures 14 (Figure 4) to ac-
105 commodate a transverse pivot pin or spindle
16 which may be retained in position by a
nut 14 engaging the threaded end portion 18
thereof. When the contrivance is to be used
as a step ladder the intermediate portion of
110 said transverse pivot 16 is encircled by a
sleeve 19 which is carried at the upper end

of a rear supporting strut or leg 21, also constructed of metal preferably of tubular cross section.

The supporting leg 21 is provided at its lower end with a foot 22 which is preferably of substantially inverted U shape and rotatably mounted on the leg 21. The said lower portion of the leg 21 may be reduced in diameter to provide a shoulder 23 which, with nuts 24 engaging the threaded extremity 26 of the supporting leg 21 prevents longitudinal movement of the foot 22 thereon. By this rotatable foot 22 the ladder may be used with safety on uneven ground the foot being turned about the leg 21 to obtain a satisfactory footing as will be readily understood.

A chain 27 or its equivalent may be employed as shown in Figure 2 to limit the angular inclination of the side members 2 and the rear supporting leg 21. The longitudinal side members 2 may be provided adjacent their upper ends with longitudinally disposed tubular sockets or the like 28 adapted to receive the lower ends of a pair of subsidiary side members or legs of an arch shaped or like extension piece 29 which forms a detachable safety holding device. This extension piece extends above the top of the ladder and acts as a guard and a body rest to the user when standing upon the higher rungs of the ladder. It may also carry a hook or like connection 31 so that a person gathering fruit may suspend a basket, bucket or receptacle therefrom and thus have free use of both hands.

In instances where it is desirable to increase the height of the ladder an extension piece 32 as seen in Figure 5 may be employed. This extension piece which is also preferably of tubular metal construction, includes subsidiary side members or legs 33 adapted at their lower ends 35 to engage in the aforesaid sockets 28 on the side members 2, and rungs 34 extending between and secured by welding or the like to said legs 33. This extension of the ladder is provided with a pivoted stay member comprising struts or stays 37 which may be connected at their upper ends by a cross member 36 extending freely through holes in the upper ends of the extension piece side members or legs 33. The lower ends of the struts 37 are provided with eyelets 38. In applying this

extension piece to the ladder the eyelets 38 embrace the aforesaid transverse pivot pin 16 adjacent each extremity thereof as indicated in Figure 6 and are detachably retained in such position by the heads 16^a of the pin 16 and the nut 17 at the other end of the pin 16. The ladder extension is thus firmly supported so that the operator may stand upon the rungs 34 thereof with safety.

The invention is not limited in its application to a step ladder nor is it limited to orchard or farm work but may be employed with advantage for general domestic or industrial purposes. When not required for use as a step ladder the rear supporting leg 21 may be removed so that the ladder may rest or lean against a wall, tree or the like.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A metallic ladder comprising side bars and connecting steps, both of tubular form, a tubular socket secured to each side bar near the upper end and extending longitudinally and on the front face of such side bar and an extension section having its terminals slidably fitting in said sockets to support the extension in substantial alignment with the ladder, means for supporting the upper end of the extension from the upper ends of the side bars.

2. A metallic ladder comprising side bars, steps connecting the side bars, the upper ends of the side bars being rearwardly curved, a ladder extension section, means carried by the side bars to removably receive and support such section substantially in the plane of the side bars, and a brace extending from the upper end of the section and removably connected to the curved ends of the side bars.

3. A metallic ladder comprising tubular side bars having their ends rearwardly curved, steps connecting the side bars, a spindle connecting the free terminals of the curved ends of the side bars, a supporting leg pivotally mounted on said spindle and a rotatable foot carried by the supporting leg.

In testimony whereof I affix my signature.

GEORGE FREDERICK NALDER.

Witness:

VICTOR J. KELSON.