J. A. THOLLANDER.

SECTIONAL TUBE LADDER.

APPLICATION FILED DEC. 15, 1919.

1,340,688. Patented May 18, 1920.

Fig. 1

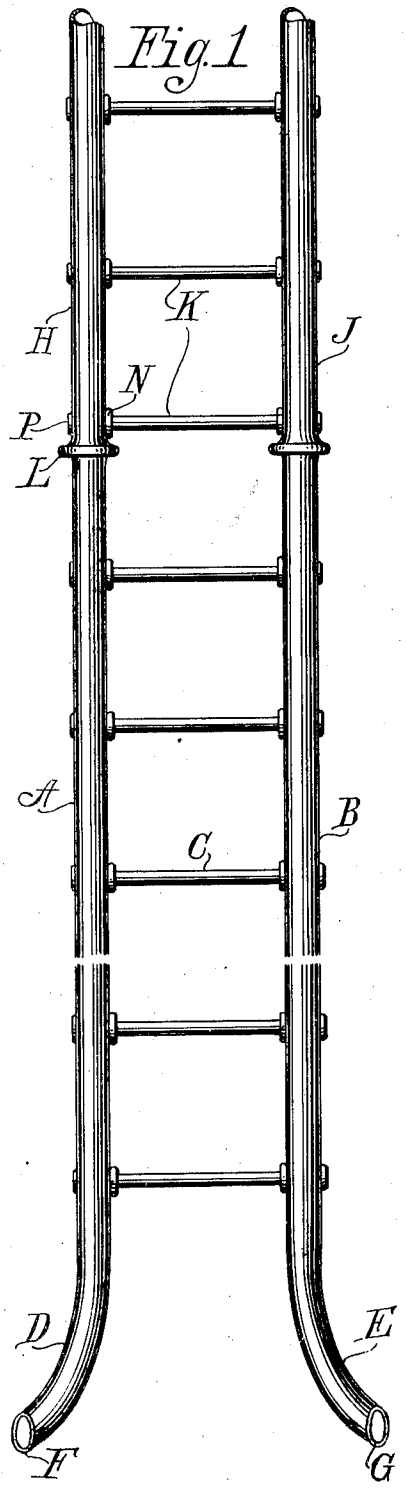


Fig. 2

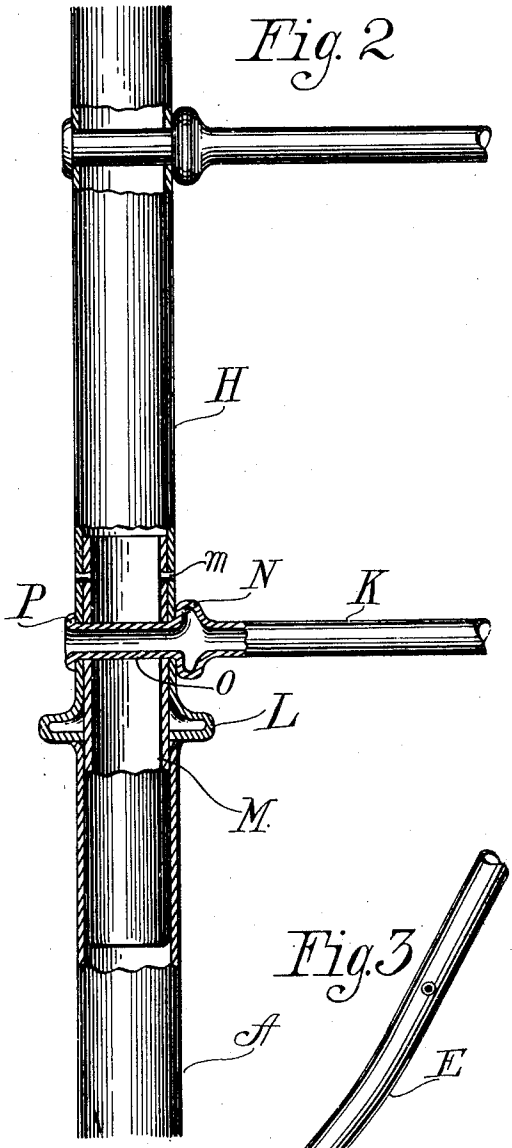


Fig. 3

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SECTIONAL TUBE-LADDER.

1,340,688. Specification of Letters Patent. Patented May 18, 1920.

Application filed December 15, 1919. Serial No. 344,824.

To all whom it may concern:

Be it known that I, JOHN A. THOLLANDER, a citizen of the United States, residing at Piedmont, in the county of Orange and State of Florida, have invented certain new and useful Improvements in Sectional Tube-Ladders, of which the following is a specification.

This invention relates to sectional tube ladders, and belongs to that class of ladders whereof the uprights, and rounds or rungs are made of metal tubes in sections which may be removably joined together end to end to form a ladder of the desired length.

This invention is to be made of light metal tubes, and the metal aluminum may be utilized in its construction. The reason for using that metal is on account of its lightness and durability. The applicant has been an orange grower for many years, and in the older orange groves there is need for relatively long ladders, and although they may be made of light wood, they are still heavy, especially when they run up to about thirty feet or so in length. It takes a strong man to handle them particularly in windy weather, when they very easily become overbalanced. Under such conditions sometimes the picker is not able to control the ladder, and has to let it go, and it quite often falls upon the tree doing damage in breaking the limbs. When picking fruit the ladder has to be moved repeatedly, which is laborious for the pickers to do. Another thing is that in rainy weather the porous wood of the ladders takes in a good deal of water, making the ladder still heavier.

The objection to wooden ladders is believed to be very largely overcome by the use of this invention, and the object of this invention is the production of a sectional tube ladder having parts of special construction and arrangement.

To illustrate the forms and disposition of the parts, the accompanying drawings are made a portion of this application. Figure 1 represents a front view of a ladder showing portions of two sections thereof constructed in accordance with this invention. Fig. 2 is a view on a somewhat enlarged scale of drawing, showing the construction and arrangement of the parts forming the junctions of the sections, and showing also the forms and engagement between the ends of the rungs and the uprights. Fig. 3 is an explanatory view showing the side of one of the lower uprights which is provided with a sharp foot or toe for engaging the ground, by cutting the tube in a slanting direction.

Throughout the description and drawings the same letter is employed to refer to the same part.

Considering the drawings, the lower section of the ladder has the tubular uprights A and B connected by rungs or rounds C which are also tubes. The lower ends of the uprights A and B are in practice usually bent outwardly. Those ends in Fig. 1 are marked D and E, and the terminations of those ends are formed by cutting the tubular uprights in a plane inclined to the axis of the tubes, resulting in relatively sharp feet or toes F and G. When the ladder is set up, these toes or feet engage the ground as illustrated in Fig. 3, and maintain the bottom of the ladder in place and prevent it from slipping even when the earth is moist.

Joined to the lower section at the top is a second section comprising the tubular uprights or sides H and J and they are connected by rounds K which are like rounds C mentioned. The lower ends of the uprights H and J have expanded annular terminations such as the extension L which rest as shown in Figs. 1 and 2, upon the upper ends of the sections of the uprights A and B. Within the ends of the uprights H and J thus provided with the expanded portions there are located short tubes such as the tube M. The short tubes are secured in the said ends of the uprights H and J by rivets or spot welds such as *m* in Fig. 2, and the short tubes are additionally secured by passing the end of the rung K through the upright H and through the short tube M in the upright until the enlargement N strikes against the side of the upright. Then the end O of the rung K thus passed through the two tubes is formed into the expansion P on the outer side of the upright H. This construction and arrangement not only secures the short tube M in place, but prevents the displacement lengthwise of the rung K, and it will be understood that all the rungs C and K are thus formed and secured.

In the operation of this invention, when it is desired to place two sections together, the short tubes M are introduced into the ends of the uprights below them. This invention is not confined to any number of sections or size of tubes.

Having now described this invention and

explained the mode of its operation, what I claim is:—

1. In a sectional tube ladder, the combination with tubular uprights, of rungs comprising tubes passing through the uprights and having their ends expanded on the outer sides of the uprights, the said tubular rungs having also expanded portions arranged against the other sides of the said uprights whereby the rungs are secured against endwise displacement.

2. In a sectional tube ladder, the combination with tubular uprights divided into sections, of rungs engaging the uprights at intervals, the uprights of one section each having at one end an expanded annular portion, short tubes located within the said ends of the upright tubes having said expanded portions and projecting beyond the said ends, means for securing the said short tubes in the said ends of the uprights, and the said short tubes being constructed to fit movably in the ends of the next sections of the uprights.

3. In a sectional tube ladder, the combination with tubular uprights divided into sections, of rungs engaging the uprights at intervals, the uprights of one section having at their lower ends expanded annular portions, short tubes located in the said ends of the uprights having the expanded portions and extending beyond said ends, the said short tubes being constructed to fit movably within the ends of the next sections of the uprights to join them together, and means for securing the short tubes in the said ends of the uprights including a tubular rung passing through the uprights and through the said short tubes in the uprights, the said rung having its ends expanded against the outer sides of the uprights and having expanded portions arranged against the uprights on the other sides of the uprights to prevent endwise displacement of the rung.

4. In a sectional tube ladder, the combination with tubular uprights, of rungs connecting the said uprights at intervals, the lower ends of the lower sections of the said uprights being cut transversely in a plane inclined to the axis of the tubular upright whereby a sharp foot is provided for engaging the ground.

In testimony whereof I affix my signature.

JOHN A. THOLLANDER.