S. B. ADAMS.

Extension-Ladder.

No. 224,374. **Patented Feb. 10, 1880.**

Fig. 1.

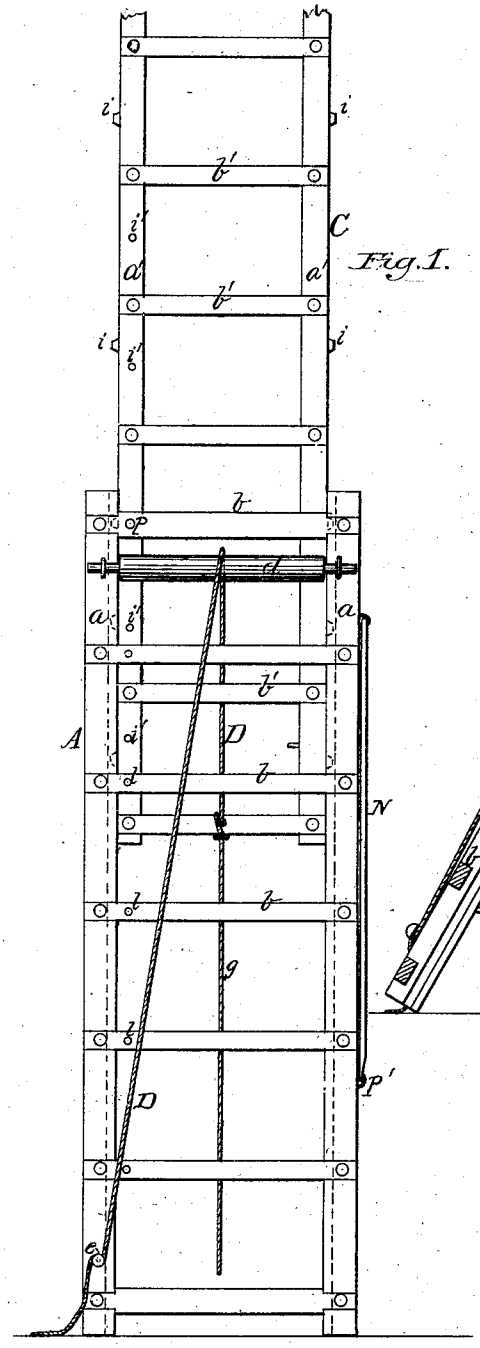


Fig. 2.

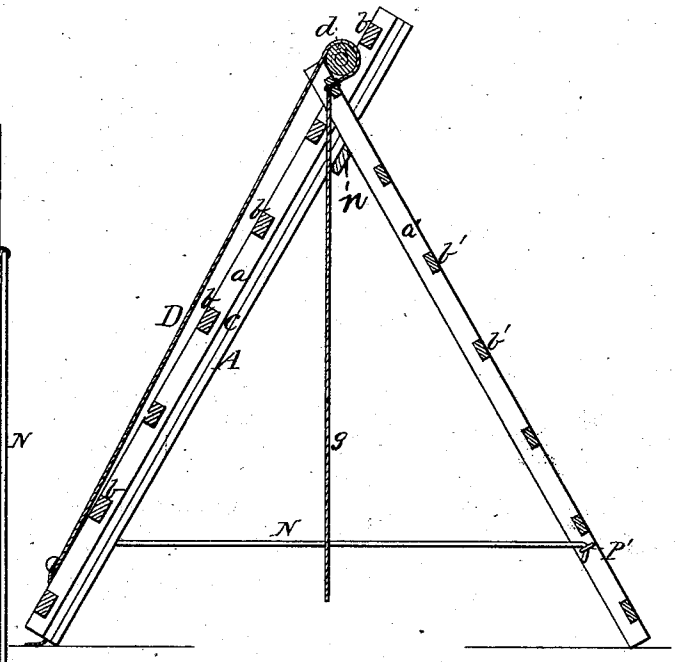
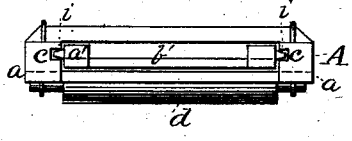


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

STEPHEN B. ADAMS, OF DUNREITH, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO HENRY J. ADAMS AND JAMES W. ADAMS, OF NEW LANCASTER, INDIANA.

EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 224,374, dated February 10, 1880.

Application filed November 22, 1879.

To all whom it may concern:

Be it known that I, STEPHEN B. ADAMS, of Dunreith, in the county of Henry and State of Indiana, have invented a new and valuable Improvement in Extension-Ladders; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a front view of the ladder extended. Fig. 2 is a sectional view of the ladder, showing the sections arranged as a step-ladder. Fig. 3 is a detail.

This invention has relation to improvements in extension-ladders.

The object of the invention is to improve this class of ladders generally, and to devise means whereby it may be converted into a step-ladder for various purposes.

The nature of the invention will be fully set forth hereinafter.

In the annexed drawings, the letter A designates the lower section of my improved ladder, composed of the rails *a* and tread-bars *b*, let into the same, preferably, but, if desired, bolted to the rails *a* in any suitable way.

The rails *a* are longitudinally grooved, as shown at *c*, and afford bearings below the top round, *b*, to a roller, *d*, the object of which will be hereinafter more fully set forth.

C indicates the upper or extensible section of my improved ladder, composed of the rails *a'* and rounds *b'*. This section is of a width to fit snugly within the rails *a* of the lower section, A, and its side rails, *a'*, are provided with spaced projecting spurs *i*, fitting into the grooves *c*, and serving to guide section C in its ascent or descent.

D indicates a pull-cord secured to the lower round of section C, passing up between the rounds of both sections and over roller *d*, thence reaching to the ground. By drawing forcibly upon this cord the section C is extended and the length of the ladder increased by such extension.

The rounds of the lower section, A, are provided near the rails *a* with perforations *l*, and the rails of section C with similar perforations, *i'*, the object of which is to provide means to take the strain off of the rope D by passing a pin, *p*, through the perforations *l* and *i'*, and hold the upper section to its adjustment.

The ladder-section C is let down by loosening rope D from its cleat *e* on the side rail, *a*, of the lower ladder-section, and in the event of the upper section failing to descend through gravitation, a hitch having occurred, by pulling upon a down-haul cord or rope, *g*, secured to the lower round of the upper section and extending down to the ground.

This device is converted into a step-ladder by extending the upper section to its full play, and then throwing it into the position shown in Fig. 2, wherein the lowest pin *i* is still engaged in the groove of the lower section, and the upper end of the upper section is engaged between a transverse brace, *n*, of the lower section and the roller *d* aforesaid, and prevented from spreading by means of the hook-rods N, secured to the lower section and engaged in staples P' on the extensible section.

It will be readily seen that the ladder above described is of great advantage in use for house-carpenters, paper-hangers, and mechanics generally, and will be of great service to farmers in building hay-stacks, and in general repairs of buildings.

I am aware that extension-ladders have heretofore been constructed wherein the lower section is grooved to receive an upper section having pins at its sides and sliding in said groove, the parts being operated by a tackle attached to one of the rounds of the lower ladder-section; and I do not claim such devices, broadly.

What I claim as new, and desire to secure by Letters Patent, is—

The combination, in an extension and step ladder, of the grooved section A, provided with brace *n* and roller *d* at its top portion, and hook-rods N at its sides, with the section C, provided with spurs *i*, adapted to travel in the grooves *c* in such manner that when the

section C is drawn out to its full extent the two parts A C can be converted into a step-ladder, the lower end pin, *i*, of the section C engaging said groove *c*, whereby the adjacent ends of the sections are interlocked by means of the brace *n* and roller *d*, and prevented from spreading by the hook-rods N engaging staples P′ of the lower section, the whole constructed and arranged to operate as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

STEPHEN B. ADAMS.

Witnesses:
WILLIAM N. NICHOLSON,
JESSE HARROLD.