(No Model.)

W. A. & A. F. HAWKES.

EXTENSION LADDER.

No. 371,453. Patented Oct. 11, 1887.

Fig. 1.

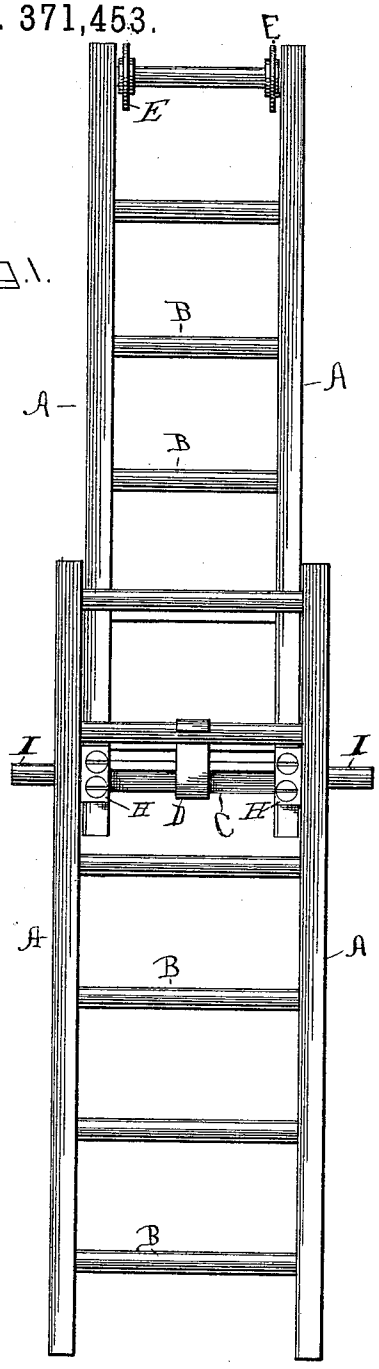
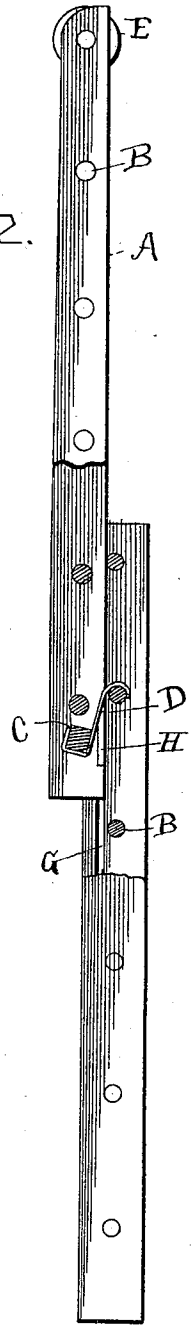


Fig. 2.



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UNITED STATES PATENT OFFICE.

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EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 371,453, dated October 11, 1887.

Application filed December 7, 1885. Serial No. 184,966. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. HAWKES and ADOLPHUS F. HAWKES, citizens of the United States, residing at Sandy Hill, in the county of Washington and State of New York, have invented certain new and useful Improvements in Extension-Ladders, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to extension-ladders, and has for its object to provide such a device as can be easily separated into separate ladders, each complete in itself, and which can be as easily put together and used as an extension-ladder.

With these ends in view the invention consists in the improved construction and combination of parts, as will be hereinafter more particularly described, and pointed out in the claim.

Referring to the accompanying drawings, in which Figure 1 is a front view, and Fig. 2 is a side view, partly in section, and in which the same letters of reference indicate corresponding parts in both of the figures, A represents the side pieces, and B the rungs or rounds of the different sections. The lower section is wide enough for the upper section to fit between its side pieces, and the inner or facing sides of these side pieces are provided their entire length with the longitudinal grooves G G. The lower end of the upper section is provided with the short laterally-projecting plates H H, which fit and slide within the grooves G G. A cross-piece, C, having its ends rounded and loosely secured in holes in the lower ends of the side pieces of the upper section, projects beyond said side pieces sufficiently to form handles I, by which it can be held or rotated. A metallic plate, D, is secured to the middle portion of this cross-piece, and is provided upon its free end with a hook, which engages with the different rungs of the lower section when the ladder is extended. The top rung of the upper section is provided with the rollers E E, loosely journaled upon each end, and one side of the side pieces is cut off rounded or sled-shaped. These rollers and sled-shaped ends enable the upper section to be easily pushed up the side of a wall, even though it be somewhat rough and uneven.

In shops and buildings it is often desirable to climb to a greater height than can be done with the ordinary short ladders which are used, and as long and heavy ones cannot be used to advantage in such a limited space, it is very desirable to have such a device as can be readily made into a ladder long enough to reach such places, and afterward taken apart and used as single ladders. Such a device we have invented and have described above. To convert our ladders into an extension-ladder the upper section is placed against the wall with the plates H H facing outward and the rounded portion at the top toward the wall. The lower section is then placed upon the outside of the upper section and lifted up until the plates H enter the lower ends of the grooves G. The upper section is then raised upwardly until the ends or handles I of the cross-piece C can be grasped in the hands of the operator, who then takes hold of them and walks up the lower section, pushing the upper section up ahead of him. After the upper end of the upper section has been pushed up as far as desired, the operator gives the cross-piece a partial rotation, which causes the hook upon the end of the plate D to engage with one of the rungs of the lower section. As the lower section is upon the outside or top of the upper section, and the weight presses down upon them, the plates at the bottom of the lower section are sufficient to support it, as the upper end of the lower section bears against the rungs of the upper section.

To disengage the ladders the operator grasps the ends of the cross piece, and by giving it a partial rotation disengages the hook on the plate D from the rung of the lower section, and then walks down to the ground, bringing the upper section with him. The parts are then readily taken apart, and each section makes a strong and convenient ladder of itself without the least change whatever.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

In a separable extension-ladder consisting of sections, one of which is provided with grooves

and the other with plates for securing them together in the usual manner, the combination, with the upper section, the lower end of which is provided with holes, of a cross-piece the ends of which are loosely journaled in said holes and project beyond the sides of the ladder to form handles, a plate secured to the middle of the cross-piece, the free end of which is formed into a hook, and a pair of wheels loosely journaled upon the upper round of said section, substantially as shown, and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM A. HAWKES.
ADOLPHUS F. HAWKES.

Witnesses:
H. L. BROUGHTON,
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