(No Model.)

C. NAPIER.

STEP AND EXTENSION LADDER.

No. 601,714. Patented Apr. 5, 1898.

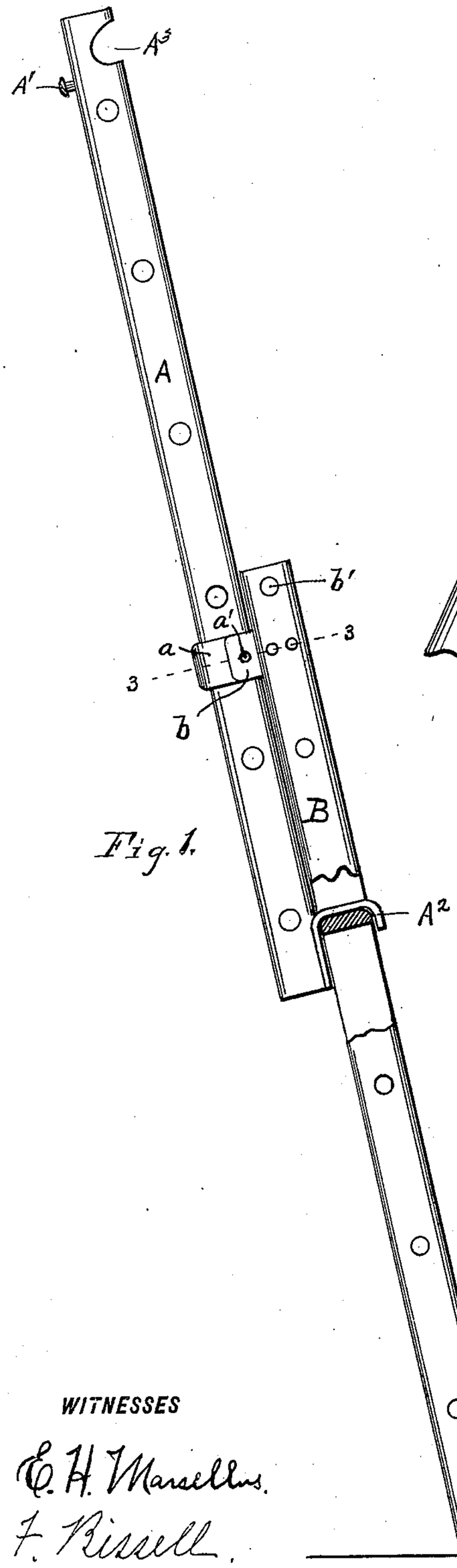


Fig. 1.

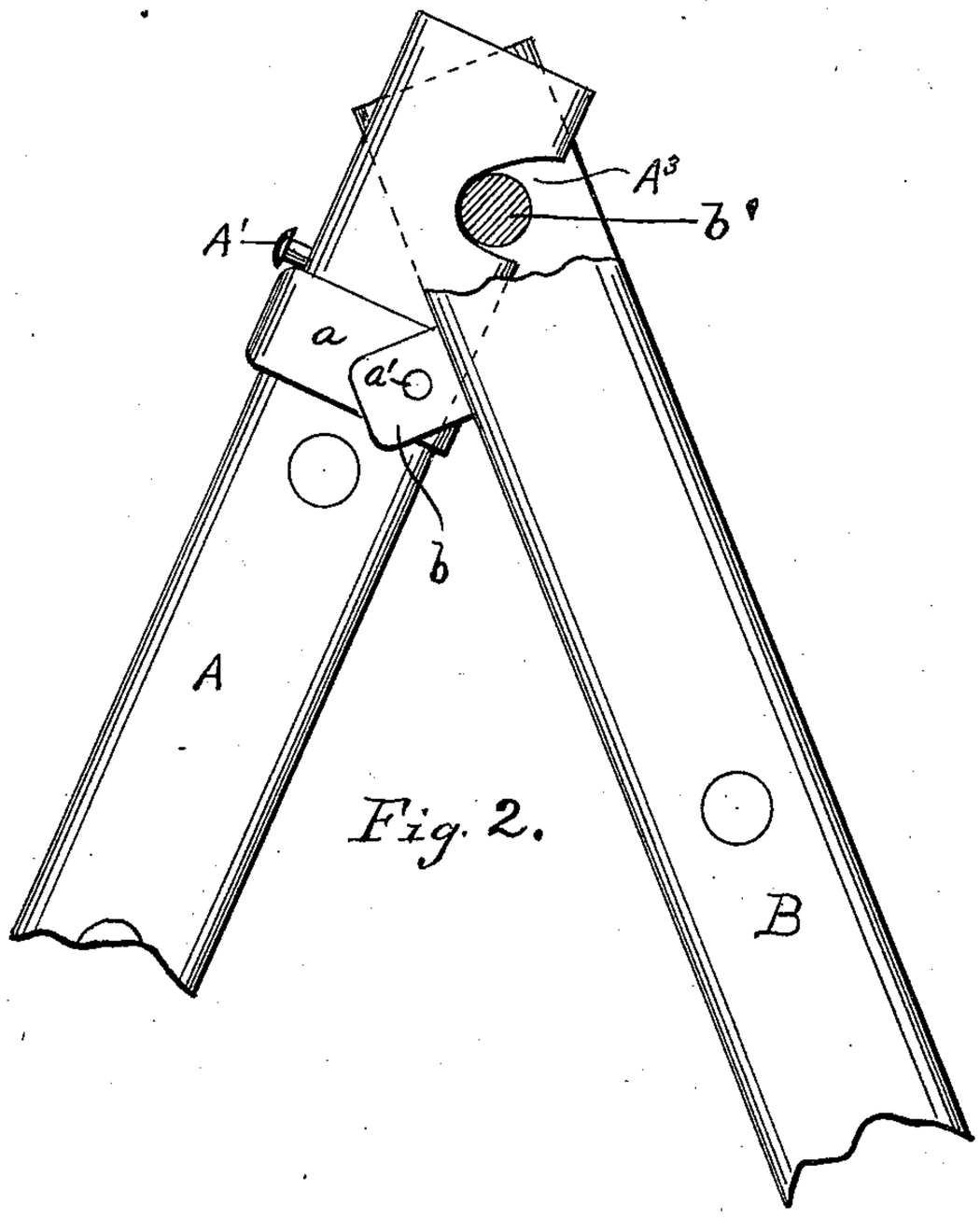
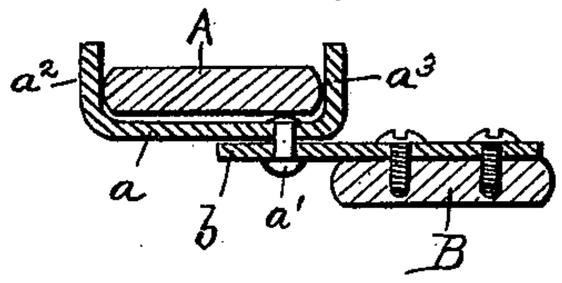


Fig. 2.

Fig. 3.



WITNESSES

E. H. Marsellus.

F. Bissell.

INVENTOR

Charles Napier

BY

Howard L. Osgood

his ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES NAPIER, OF ROCHESTER, NEW YORK, ASSIGNOR TO ISAAC H. DEWEY, OF SAME PLACE.

STEP AND EXTENSION LADDER.

SPECIFICATION forming part of Letters Patent No. 601,714, dated April 5, 1898.

Application filed September 25, 1897. Serial No. 653,047. (No model.)

To all whom it may concern:

Be it known that I, CHARLES NAPIER, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Step and Extension Ladders, of which the following is a specification.

My invention refers to that class of ladders which are capable of extension and are also convertible into step-ladders.

The objects of my invention are to provide a simple and safe means for adjusting and securing one section of the ladder above the other when used as an extensible ladder, and also to provide means for locking together the two sections at their upper ends, so as to prevent their spreading when spread apart for use as a step-ladder.

In the accompanying drawings, Figure 1 is a side elevation of my improved ladder when arranged as an extension-ladder and showing a portion of the side bar of one of the sections removed. Fig. 2 is a side elevation of the upper ends of the ladders, showing the sections locked together for use as a step-ladder, a portion being removed to show the construction and position of certain of the parts. Fig. 3 is a cross-section on the line 3 3 in Fig. 1.

In the drawings, A and B represent, respectively, the two sections of the ladder, one section being of less width than the other, so that it may lie within the side bars of the latter. These sections are composed, as usual, of side bars connected by rounds or steps at regular intervals. From the outer faces of the bars of section A, at their upper ends, two stops or pins A′ project at corresponding points, and firmly attached to the rear faces of said bars of section A, at their lower ends, are two hooks A^2, extending upwardly and adapted to fit over the rounds or steps of section B. Notches or recesses A^3 are cut at corresponding points into the inner sides of the upper ends of the side bars of section A, above the said pins A′.

To the inner faces of the side bars of section B, at corresponding points just below the upper round, inwardly-projecting plates or brackets *b* are rigidly secured. Guides *a* are pivoted to the projecting ends of the plates by means of pins *a*′. These guides have parallel flanges a^2 a^3 at a suitable angle to the middle portion of the guide, so that each guide fits around three sides of one side bar of section A, and thus the two guides retain said section within them, but permit it to slide freely up and down in the guides. The section A is permanently retained in the guides by the pins A′ and the hooks A^2, which act as stops if the section is moved far enough in either direction.

When the ladder is to be used as an extension-ladder, the section A is slid up within the guides *a* to the desired height and the hooks A^2 are slipped over a round or step of the section B. In this position said hooks support the section A in place and also hold its lower end in against the lower section B, thus preventing it from turning upon the pivots of the guides.

To use the device as a step-ladder, the lower ends of the sections are separated and the upper round *b*′ of section B is set into the recesses A^3 in the upper ends of the side bars of section A, and the sections are spread apart until the outer flanges a^2 of the guides *a* lie under and against the pins A′. The engagement of the rounds *b*′ in the notches A^3 and the supporting action of the guides *a* will prevent further separation of the lower ends of the ladder.

In my device long and heavy ladder-sections may be employed and may be easily adjusted for use either as an extension-ladder or as a step-ladder. The parts do not require reversal for changing them from one of their uses to the other, and in either use the parts are securely braced and supported. The guides are made to fit closely upon the said side rails of the ladder-section which they guide, and in using the ladder as an extension-ladder the sections are secure and without shake.

What I claim is—

1. In a ladder, the combination of two ladder-sections, one of which has an upper stop A′ and lower stops or hooks A^2 thereon, there being a notch A^3 in each side rail, a pair of stationary brackets *b* upon the other section B, guides *a* fitting upon the outer side and both edges of each side rail of the section A,

and a pivot a' connecting each guide and its bracket.

2. In a ladder, the combination of two ladder-sections, one of which, A, has stops thereon and a notch A^3 in each side rail for engaging a round of the other section B and thereby supporting said section B, a pair of stationary brackets b upon the other section, a guide a fitting upon each side rail of the section A and a pivot a' connecting each guide and its bracket.

3. In a ladder, the combination of two ladder-sections, one of which, A, has stops thereon, and is provided with means for engaging and thereby supporting the other section B, a pair of stationary brackets b upon the section B, a guide a fitting upon the outer side and both edges of each rail of the section A, and a pivot a' connecting each guide and its bracket.

4. In a ladder, the combination of two ladder-sections, one of which, A, has stops comprising hooks A^2 thereon, a pair of stationary brackets b upon the other section B, a guide a fitting upon the outer side and both edges of each side rail of the section A, and a pivot a' connecting each guide and its bracket.

CHARLES NAPIER.

Witnesses:
GERTRUDE C. BLACKALL,
I. H. DEWEY.