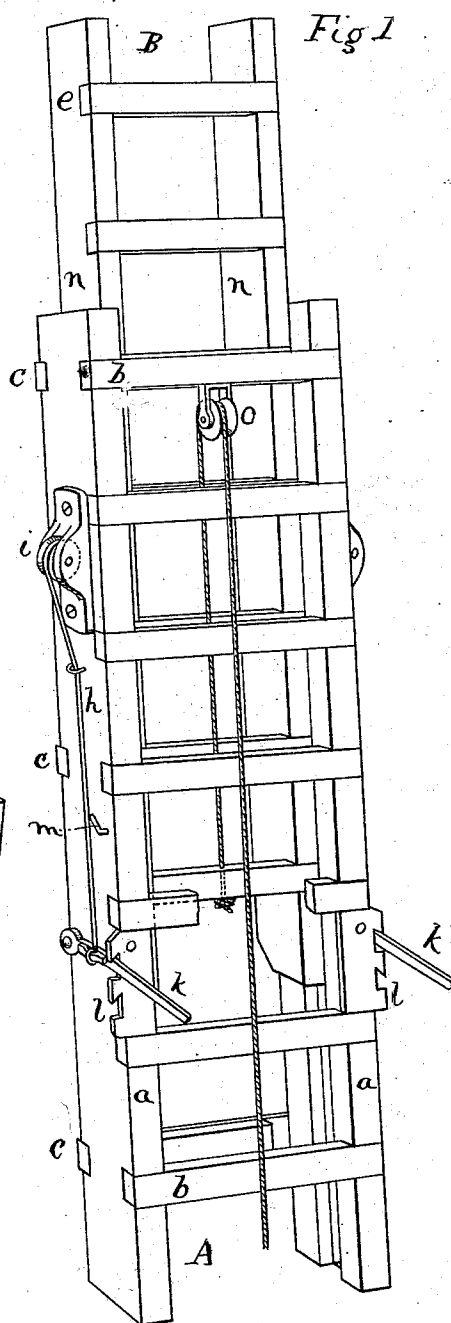
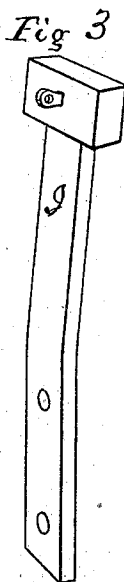
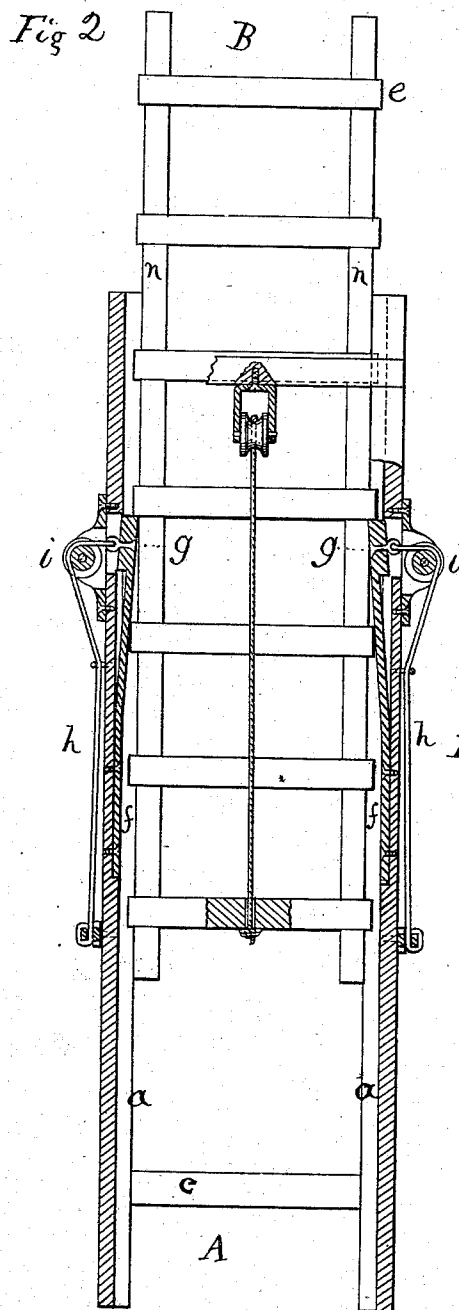


(Model.)

E. CAUBLE.
Extension Ladder.

No. 239,727.

Patented April 5, 1881.



WITNESSES

Villette Anderson
James Fullerton

INVENTOR

Edward Cauble

By [Signature] ATTORNEY

UNITED STATES PATENT OFFICE.

EDWARD CAUBLE, OF SALISBURY, NORTH CAROLINA.

EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 239,727, dated April 5, 1881.

Application filed September 7, 1880. (Model.)

To all whom it may concern:

Be it known that I, EDWARD CAUBLE, a citizen of the United States, residing at Salisbury, in the county of Rowan and State of North Carolina, have invented certain new and useful Improvements in Extension-Ladders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to ladders composed of two or more sections sliding one within the other, and occupying, when closed, no more space than would be required for a single section.

It consists of such an arrangement of parts and combination of springs and pulleys as facilitate a rapid extension with perfect security in the position to which it may be extended, and an easy and quick contraction.

Figure 1 of the drawings, is a perspective view of the ladder partially extended. Fig. 2 is a longitudinal section. Fig. 3 is a detail of the spring.

My ladder, as shown, is in two sections, A and B. Either section forms in itself a complete ladder, and may be used separately without damage to the whole as an extension-ladder.

The outer or lower section, A, consists of two broad and strong side pieces, *aa*, in which the rungs *bb* are let in by square or dovetailed joints upon the upper or front edge. Three or more strong braces, *cc*, or cross-pieces, secure the rear edges and make a secure frame. These braces are also let into the side pieces, and are slotted so as to guide the passage of the side pieces of the inner section. The insides of these side pieces are grooved longitudinally for the reception of the projecting ends *e* of the rounds of the inner section, B. In these grooves *ff*, and near the upper end of this section A, are secured strong flat springs *g*, with a T-head, Fig. 3. These springs offer no obstruction to the hoisting of the ladder, as the projecting ends of the rungs of the inner section force them back in the ascent, but the heads immediately catch the same rungs on the under side when the ladder is drawn out and prevent the

descent of the upper section. This upper section can therefore be held at any height that may be desired. When the ladder is to be contracted or lowered, the springs *g*, by means of the cord *h*, attached to them and passing over the pulleys *i*, on the outer side pieces, may be drawn back, and the inner section will then descend of its own weight. A lever, *k*, and ratchet *l*, attached to the sides of section A and the ends of the cords, will hold back the springs within the groove. A pin, *m*, on the outer side pieces of this section will hold the lever out of the way of the operator when the ladder is extended.

The inner or upper section, B, is also constructed of two flat side pieces, *nn*, of sufficient width to fit within the outer section. The rungs *e* are let into square slots on the front edge of these side pieces, and project beyond them a short distance, but far enough to fill easily the grooves *ff* in the inner sides of the lower section. These projections of the rungs serve, when raising the ladder, to press back the springs *g*, and their lower edges resting on the head of the spring when passed, to prevent the descent of the upper section. The lower edge of these projections may be armored with metallic plates when necessary, to protect the corners from wear.

Any device may be used for hoisting the section. I use a pulley, *o*, attached to the upper rung of the section A, over which is passed a cord attached to the lower rung of section B. An extension of this cord may be used to pull down the inner section should it become swelled or fit so tight as not to descend of its own weight when the springs are drawn back.

It will be seen that my ladder can be extended or lowered while the operator stands upon the ground, and that it is not necessary to adjust, by hand, any pins, hooks, or levers to hold the ladder in a desired position, or to lower it when extended.

I am aware that extension-ladders have been constructed in which a spring and pawl are used to support the upper section.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. An extension-ladder of two or more sections, with springs set in longitudinal grooves in the rails of the lower section, the said springs being operated by means of cords attached di-

rectly to them, and arranged to engage with the projecting rungs of the upper or inner section, substantially as specified, and for the purposes set forth.

5 2. An extension-ladder of two or more sections, the inner or upper section of which has rungs projecting beyond the side pieces, and running in the longitudinal grooves of the outer or lower section, and resting upon the springs
10 in the said grooves, substantially as described and shown, and for the purposes set forth.

3. An extension-ladder of two or more sections, the lower section being provided with longitudinal grooves on the inner sides, with
15 springs in said grooves, and pulley, cord,

ratchet, and lever on the outer sides, in combination with the projecting rungs of the upper section, substantially as shown, and for the purposes mentioned.

4. In an extension-ladder, the combination 20 of the springs, cord, pulley, lever, and ratchet with the longitudinal grooves of section A and projecting rungs of section B, substantially as specified, and for the purposes claimed.

In testimony whereof I affix my signature 25 in presence of two witnesses.

E. CAUBLE.

Witnesses:

H. N. WOODSON,
JOHN S. HENDERSON.