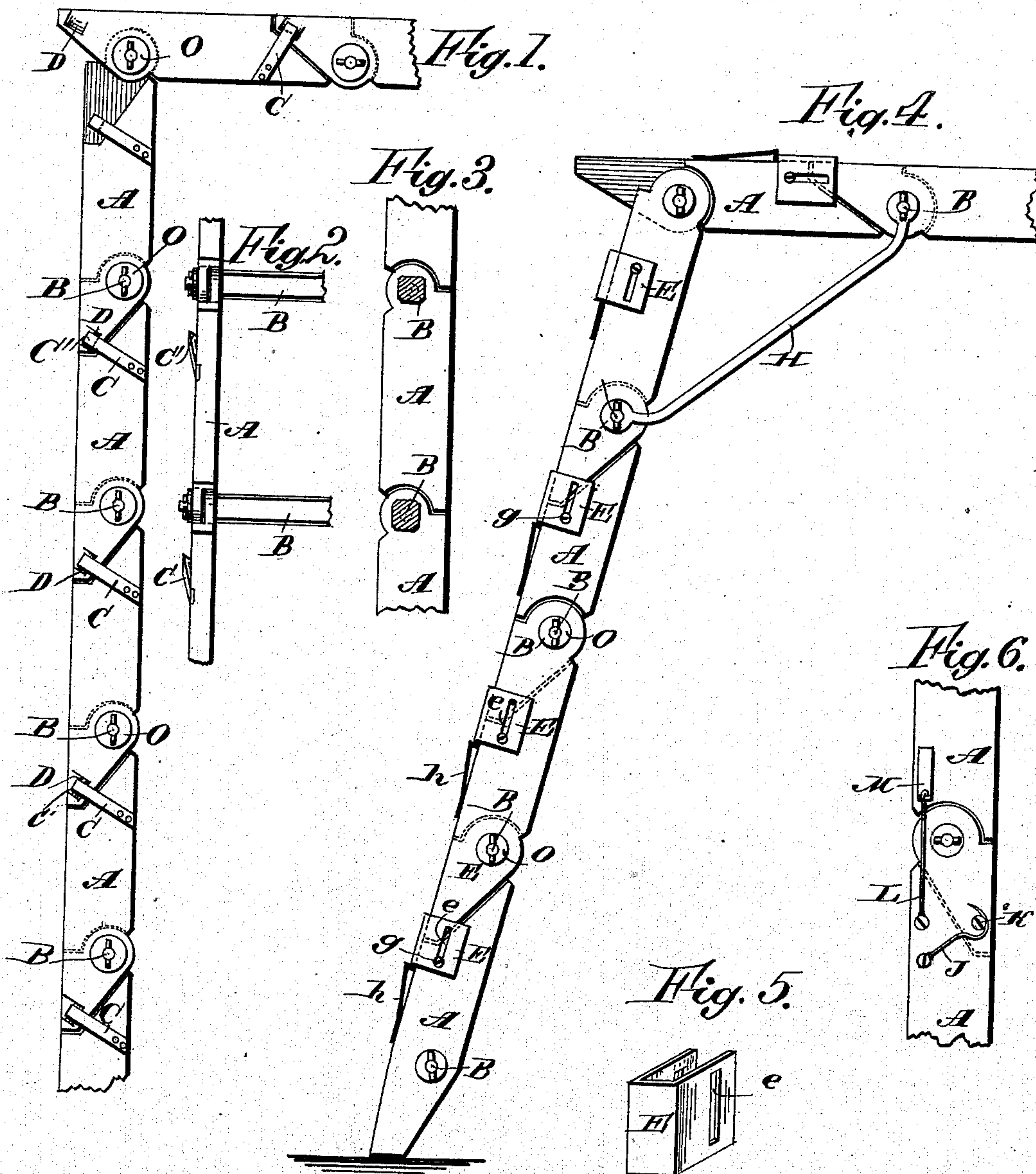


(No Model.)

J. K. LANDES.
FOLDING LADDER.

No. 288,455.

Patented Nov. 13, 1883.



WITNESSES:
Huber
C. Sedgwick

INVENTOR:
J. K. Landes
BY *Mum & Co*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN K. LANDES, OF CALEDONIA, OHIO.

FOLDING LADDER.

SPECIFICATION forming part of Letters Patent No. 288,455, dated November 13, 1883.

Application filed March 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. LANDES, of Caledonia, in the county of Marion and State of Ohio, have invented a new and Improved Folding Ladder, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved ladder which can be folded very compactly, so as to occupy very little space, which can be erected to the desired length very rapidly, and can be adjusted to various shapes and forms to make scaffolding, &c.

The invention consists in a ladder formed of a series of sections pivoted to each other by the rungs, which sections have their ends rabbeted, so as to overlap each other, and to hold the ladder stiff when the ends rest on the ground and against a wall, &c. The sections are provided with spring-hooks or with clamping-frames for locking the several sections together to form a stiff ladder.

The invention also consists in various parts and details and combinations of the same, as will be fully described and set forth hereinafter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal side elevation of part of my improved folding ladder, showing it bent rectangularly. Fig. 2 is a longitudinal front elevation of a part of one side bar and parts of the rungs. Fig. 3 is an inside longitudinal elevation of the same. Fig. 4 is a longitudinal side elevation of part of my improved ladder, showing the same adjusted for use as a scaffolding, and showing a modification in the construction of the ladder. Fig. 5 is a perspective view of the clamp for locking the sections of the ladder in place. Fig. 6 is a longitudinal elevation of two links or sections of the ladder, showing the braces and latch for locking them together.

The ladder is composed of a series of sections, A, pivoted to each other by the rungs B, which pass through the overlapping ends of the sections, each section having the length of the distance from one rung to the other. The ends of the sections are rabbeted on opposite surfaces—that is, the lower rabbets are

on the inner surface and the upper rabbets are on the outer surface of each link or section. The upper ends of the sections are rounded, so as to fit closely against the upper rounded edges of the lower rabbets on the inner surfaces of the sections, as shown in Fig. 3, and the lower end of each section is tapered or beveled off to fit against the tapered or beveled edge of the upper rabbet in the upper end and outer surface of the corresponding adjoining section. If the lower end of the ladder rests on the ground, the upper end rests against a building, and a weight rests on the ladder in the middle, the beveled lower ends of one section will rest against the beveled edge of the rabbet at the upper end of the next lower section, and will prevent further turning of the sections, so that a straight and stiff ladder will be formed. So that the ladder will not collapse when removed from the house or wall, it is necessary that the sections be locked in the above-named position. For this purpose I have attached a spring, C, to the outer surface of each section, at the upper end, which spring is provided on the free end with a hook, C', on its inner surface, which hook snaps into a notch or recess, D, in the outer surface of the corresponding section in the lower beveled end of the said section—that is, as soon as the ladder is straightened out the hook-heads C' of the several springs C snap into the notches or recesses D of the sections, and thus lock the several sections together, forming a straight stiff ladder, which can only be folded or bent by withdrawing one or all of the hook-heads C' from the notches D. For instance, if at any point the ladder is to be bent rectangularly, the corresponding hook-head C' will be withdrawn from the notch D, and the ladder will be bent over at right angles, as shown in Fig. 1. In the modification shown in Fig. 4 the beveled ends are always at the lower end of each section, but are alternately on the inner and outer surfaces, and the rounded ends are always at the upper end of each section, and are also alternately on the inner and outer surfaces of the sections. In this case the sections are locked in the desired position by means of a U-shaped clamp, E, provided with vertical slots e, through which screws g pass into the sections A, near the upper ends of the outer edges, thus permitting

the said clamps E to be moved from the outer edges of the sections in the direction of the length of the same. When raised, the said clamps are held in position by springs *h*, attached to the outer edges of the sections below the clamps, the upwardly-bent edges of the springs resting against the lower edges of the clamps. The edges are provided with longitudinal recesses, into which the springs *h* can be pressed in case the clamps are to move downward. When the clamps are raised, as shown in Fig. 4, they unite the ends of the sections to form one stiff ladder. If the sections are to be folded together, the springs *h* can be pressed inward, and the clamps E are moved downward.

If a scaffolding is to be formed, as shown in Fig. 4, the top piece and the legs can be braced by means of a brace, H, secured in some suitable manner to the rungs B, adjoining the rung at which the ladder is bent.

If desired, the sections can be locked to each other by means of a hook-latch, J, pivoted to one section, and a pintle or stud, K, on the corresponding section, as shown in Fig. 6. Braces L can be pivoted to one section and passed through a loop or staple, M, on the other. The ladder shown in Figs. 1, 2, and 3 is so constructed that when extended to form a straight ladder the several parts lock themselves together automatically, whereas in the ladder shown in Figs. 4 and 6 each two sections must be locked together by means of a clamping-frame, E. The rungs B are preferably provided at the ends with washers O, which rest against the outer surface of the sections.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A ladder made substantially as herein shown and described, and consisting of a series of sections pivoted to each other by the rungs, which sections are provided with spring-latches for locking them together automatically, as set forth.

2. A ladder composed of sections pivoted to each other by the rungs, which sections are rabbeted on the outer surface at the upper end and on the inner surface at the lower end, substantially as herein shown and described, and for the purpose set forth.

3. A ladder composed of a series of sections pivoted to each other by the rungs, which sections are rabbeted at the upper end on the outer surface and at the lower end on the inner surface, the lower ends of the sections being tapered and the upper ends rounded, substantially as herein shown and described, and for the purpose set forth.

4. In a ladder, the combination, with a series of sections, A, provided at the lower end with a notch, D, of the rungs B, pivoting the sections to each other, and the spring-hooks C, attached to the upper ends of the sections, substantially as herein shown and described, and for the purpose set forth.

JOHN K. LANDES.

Witnesses:

E. F. UNDERWOOD,
A. S. HART.