C. G. UDELL.
Step-Ladders.

No. 199,004. Patented Jan. 8, 1878.

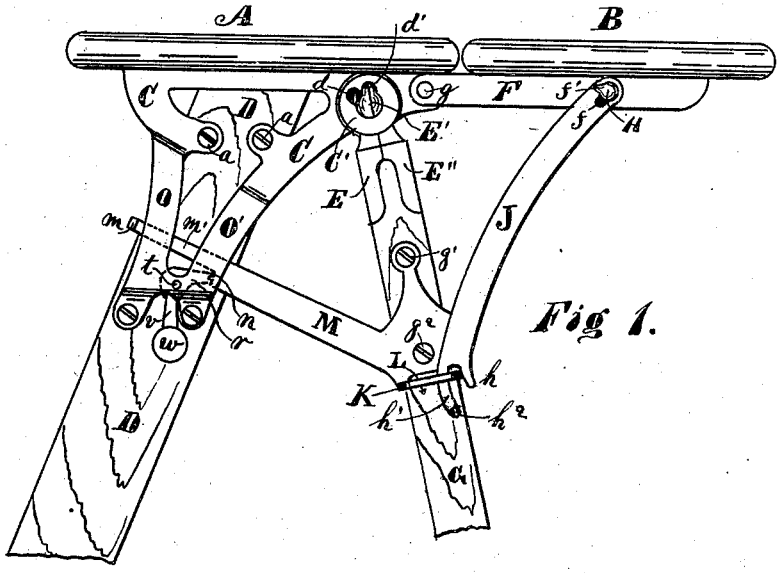

Fig 1.

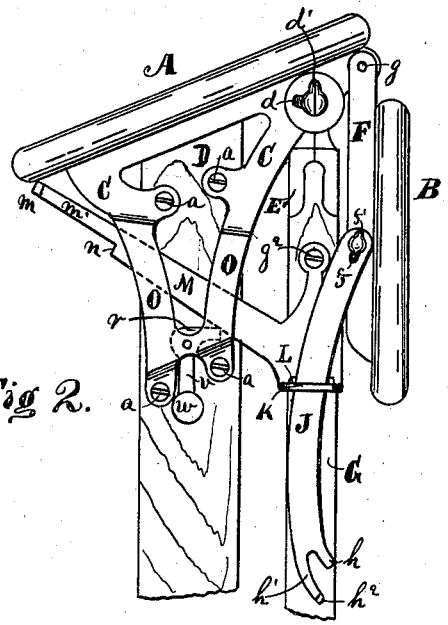

Fig 2.

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UNITED STATES PATENT OFFICE.

CALVIN G. UDELL, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN STEP-LADDERS.

Specification forming part of Letters Patent No. **199,004**, dated January 8, 1878; application filed June 7, 1877.

To all whom it may concern:

Be it known that I, CALVIN G. UDELL, of Indianapolis, county of Marion, and State of Indiana, have invented a new and useful Improvement in Step-Ladders, of which the following is a description:

The object of my invention is a step-ladder with an adjustable self-supporting top extension-step, and with a gravity-catch that shall operate automatically to hold and release the bracing-frame.

My invention consists, first, in providing at the sides of the rear bracing-frame a loop or staple, which may form part of the main brace, or be attached to the bracing-frame, and in which operates a brace that is pivoted to the hinged bracket forming the adjustable extension-step. The sliding brace is forked at the lower end, so as to catch the sides of the staple or loop, and thus supports the extension-step. When lowering the extension the staples or loops serve as guides, and allow the braces to fold up alongside of the bracing-frame.

My invention further consists in attaching a swinging gravity weight-catch either to the stiles, or to the lower part of the main bracket-plate secured to the stiles, in such a manner that when the bracing-frame is extended the gravity-catch will engage with a notch framed in the end of the brace attached to the bracing-frame, and hold the ladder extended. The gravity-catch automatically releases the brace when the ladder is tipped forward at the top, and thus allows the bracing-frame to be closed up against the stile.

In the drawing, Figure 1 is a side elevation of a step-ladder embodying my improvement, and shows the ladder ready for use, with the extension elevated. Fig. 2 is a side elevation of the same, showing the ladder closed up and extension down.

A is the top step, secured to the stiles D by the bracket-plate C C, in the usual manner, and supported in an inclined position by the bracing-frame G, secured by the socket-hinge E′ E E″ and brace M.

The bracket-plate C C is provided with offset sides O O, so as to allow the brace M to slide between the plate and stile, as usual. At or near the lower part of the bracket-plate C O is hung the gravity-catch *w*, with the arm *r* of which engages a shoulder, *n*, at the under side of the main brace M.

When the ladder is tilted back the catch will assume the position shown in Fig. 1, and hold the bracing-frame G extended; but when the ladder is tipped forward at the top the weight *w*, holding its perpendicular position, causes the shoulder *n* to fall below the arm *r* of brace M, and automatically release the bracing-frame, which then can be folded up against the stile.

To the rear end of the brasket-plate C O, which is extended to near the rear edge of the front top step, are pivoted brackets F, carrying an extension piece or step, B, which may be raised or lowered at will, and to the sides of the bracket F are pivoted sliding braces J, in the manner shown.

The lower end of each brace J is formed with a fork, the prong *h* being shorter than the prong h^1, and being provided with a lug, h^2, to prevent the brace J from being drawn out of a loop or staple, K, on the frame G.

When the step B is elevated, as in Fig. 1, the prong *h* of brace J slips over the side of the staple or loop K, and supports the step, as shown.

When the brace J is released from its bearings on the side of the loop or staple K, it will slide downward, guided by the staple, and the step B will be lowered, as shown in Fig. 2.

The loop or staple K may form part of the main brace M, as shown in the drawing, or may be separate and attached to the sides of the bracing-frame G.

It will be seen that the arms M may be secured to the step-frame D, and the automatic catches to the frame G, and that other devices may be used for tracing the steps B.

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

1. The combination of the step-frame, the bracing-frame G, arms M, extending from one frame past the other, and a weighted catch, automatically securing the arm when the ladder is tilted back, and automatically releasing it when tilted forward, substantially as set forth.

2. The extension-piece B, hinged to and hanging downward from the rear edge of the

top piece A, and adjustably supported by braces, to form a rearward extension of said top piece, as set forth.

3. The combination, in a step-ladder, of extension-step B, sliding brace J, having forked prongs *h h* at the lower end, and a loop or staple, K, on the frame, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CALVIN G. UDELL.

Witnesses:
E. O. FRINK,
JOHN SHELLENBERGER.