J. L. ISAACS & R. HALLIDAY.

Step-Ladder.

No. 163,205. Patented May 11, 1875.

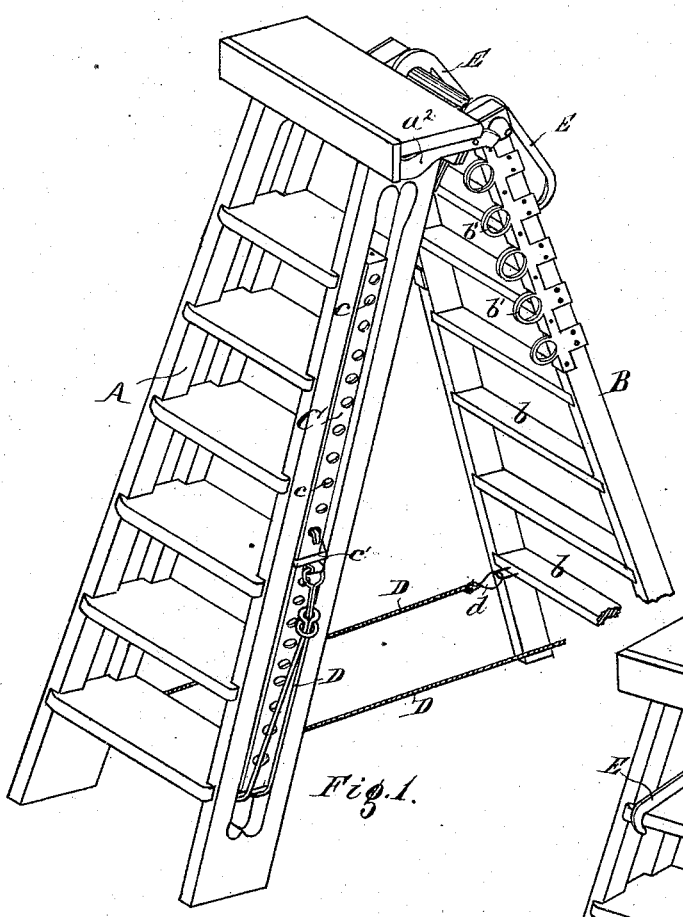

Fig. 1.

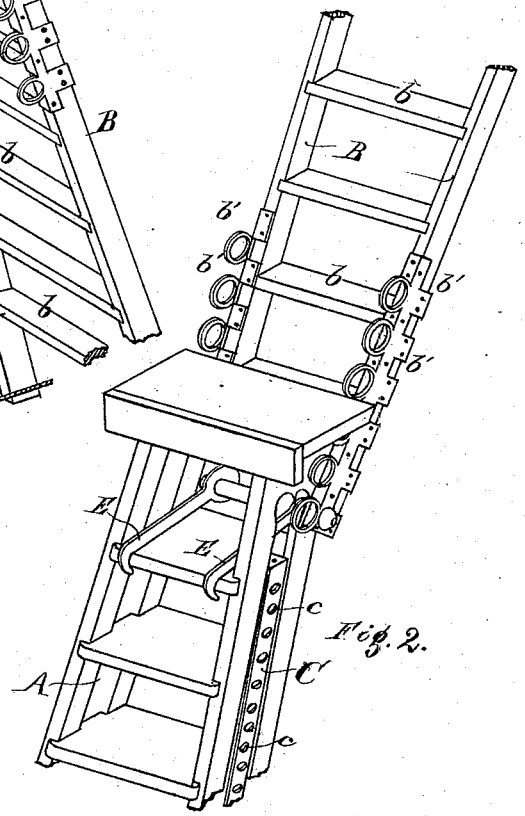

Fig. 2.

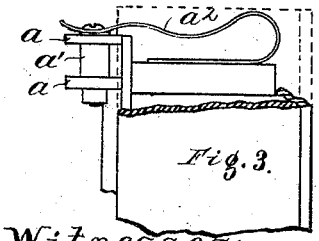

Fig. 3.

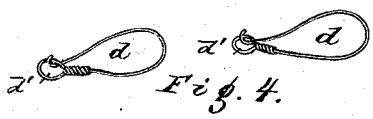

Fig. 4.

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UNITED STATES PATENT OFFICE.

JACOB L. ISAACS AND RICHARD HALLIDAY, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN STEP-LADDERS.

Specification forming part of Letters Patent No. **163,205**, dated May 11, 1875; application filed April 1, 1875.

To all whom it may concern:

Be it known that we, JACOB L. ISAACS and RICHARD HALLIDAY, both of St. Louis, Missouri, have invented an Improved Step-Ladder, of which the following is a specification:

This invention is an improvement on step-ladders for which application for patent was filed by us dated February 23, 1875.

The improved features of this invention consist, first, in the manner of connecting the ladder parts together, so as to adapt same for level or inclined surfaces, and also for extension-ladder purposes; secondly, to the manner of securing the rope attachment so as to secure the ladder parts in the required positions apart from each other; lastly, to detailed construction of parts, all of which will more fully appear.

Of the drawing, Figure 1 is a perspective view of the ladder when used as an ordinary step-ladder. Fig. 2 is a perspective view, showing the ladder as an extension-ladder. Fig. 3 is a detail top plan, showing the journals of the front ladder part with spring-bolt passed between. Figs. 4 are details, showing hooks used to secure the cord to back support.

A is the front ladder; B, the back support for that of A. We provide this back support with the steps *b*, so as to form a distinct ladder, also enabling a person to ascend on either side thereof. At the top the front ladder has the journals *a*. (See Fig. 3.) In these journals *a* engages a spring-bolt, a^1, the spring a^2 of which (see Figs. 1 and 3) is properly secured to the ladder A. Likewise, the ladder part B we provide with journals *b'*, of which there can be any number, as shown in Figs. 1 and 2. Any of the journals *b'* can, therefore, be secured to those of *a* by placing the former between the latter after withdrawing the spring-bolts a^1. To secure the connection, allow the spring-bolts to pass between said journals, as shown clearly in figures. By this manner of securing the ladder parts, when the top journals are united (see Fig. 1) the ladder proper is serviceable for level planes. For stairs and similar raised parts or inclined surfaces the ladder parts can readily be adapted, it being but necessary to secure the back support B to that of A in the required corresponding journal. In either positions or adaptations either part or both ladder parts together can be used. Therefore, to connect or disconnect the ladder parts, it is but necessary to withdraw the spring-bolts or permit the same to engage the journals. Disconnected, the ladders can, as apparent, be also used.

Our improved manner of arranging the rope attachment is as follows: On one side of the ladder A we secure a metal strip, C. (See Figs. 1 and 2.) This strip has slots *c*, for the engagement of a buckle, *c'*, which is secured to one end of the rope or cord D. (See Fig. 1.)

In Figs. 1 and 4, *d* are hooks. These are made of the constructive shape shown—that is, to have a ring end, *d'*, and loose hook end. The purpose of these hooks is to rapidly secure the rope ends to the back support. Said hooks can be merely hooked in the staples, or, still further, safely secured by hooking their hook ends to their ring ends, as shown in Fig. 4. The cord D is, therefore, secured by the hooks *d* to back support B; from thence said cord is passed through staples on the under side of a lower step of ladder A, and, finally, to both cord ends at the top the buckle *c'* is looped or secured. It is therefore but necessary to disengage the buckle from its hold in the strip C to permit the ladder parts to separate from each other or be drawn in to each other, as the case may require, and to secure the buckle.

In Fig. 2 we show our improvement as an extension-ladder. For this purpose the top rod of the ladder B we provide with the catch-hooks E. (See Figs. 1 and 2.) These hooks turn loosely, so that the operator can bring same to engage a step of the ladder A, or, when not used, to be swung out of the way. The ladder B, being reversed, is raised to the top of the ladder A, and the hooks E being swung over the first step of A, it remains to secure the journals of each ladder in the same manner as above described. This done, the hooks E are made to engage the step, as shown in Fig. 2. Thus the weight and strain are borne by both journals and hook-fastenings, forming conjointly a safe and secure bracing of the ladder parts. The extension thus formed

gives us virtually the height of two separate ladders, A B, less one step. Of course the extension can be made with any lower step.

What we claim is—

1. The herein described and shown combination of parts—that is, the journals *a* and *b'*, the spring-bolt a^1, and ladders A B, as and for the purpose set forth.

2. The combination of parts—that is, the journals *a b'*, the spring-bolt a^1, and catch-hooks E—with ladder parts A B, by means whereof an extension for ladders is formed, as herein shown and described.

3. In combination with the ladder parts A B, the strip C, having slots *c*, buckle *c'*, cord D, and hooks *d*, for adapting the cord attachment to secure said ladders in varying positions, and as herein shown and described.

4. The hooks *d*, constructed as herein shown and described, to obtain a double fastening, as and for the purpose set forth.

5. The combination of the ladder parts A B, journals *a b'*, spring-bolt a^1, cord D, hooks *d*, buckle *c'*, slotted strip C, to operate in the manner herein shown and described.

In testimony of said invention we have hereunto set our hands.

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Witnesses:
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