

J. S. Lash  
Step Ladder

No 50,957.

Patented Aug. 7. 1866.

Fig. 2

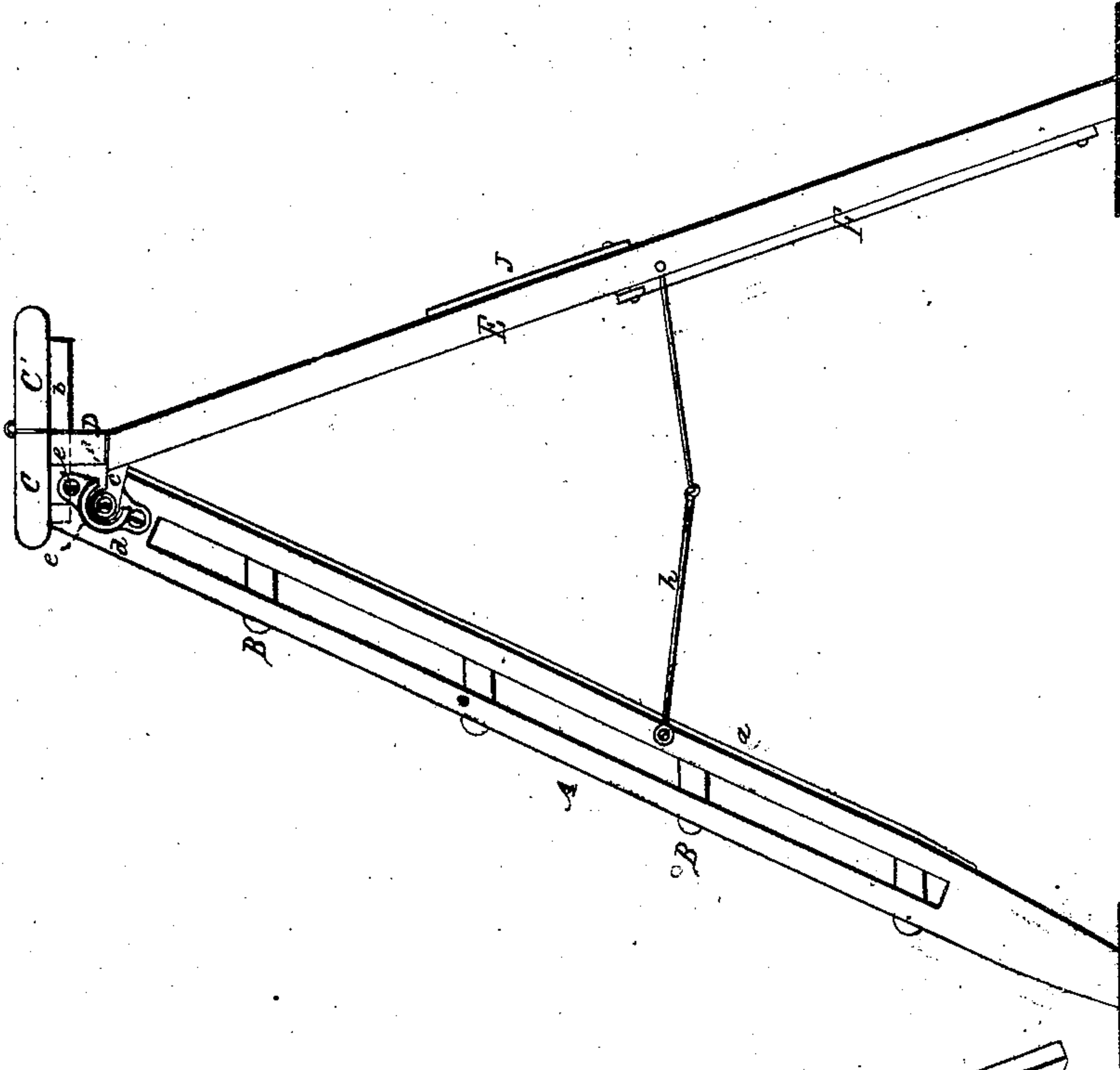
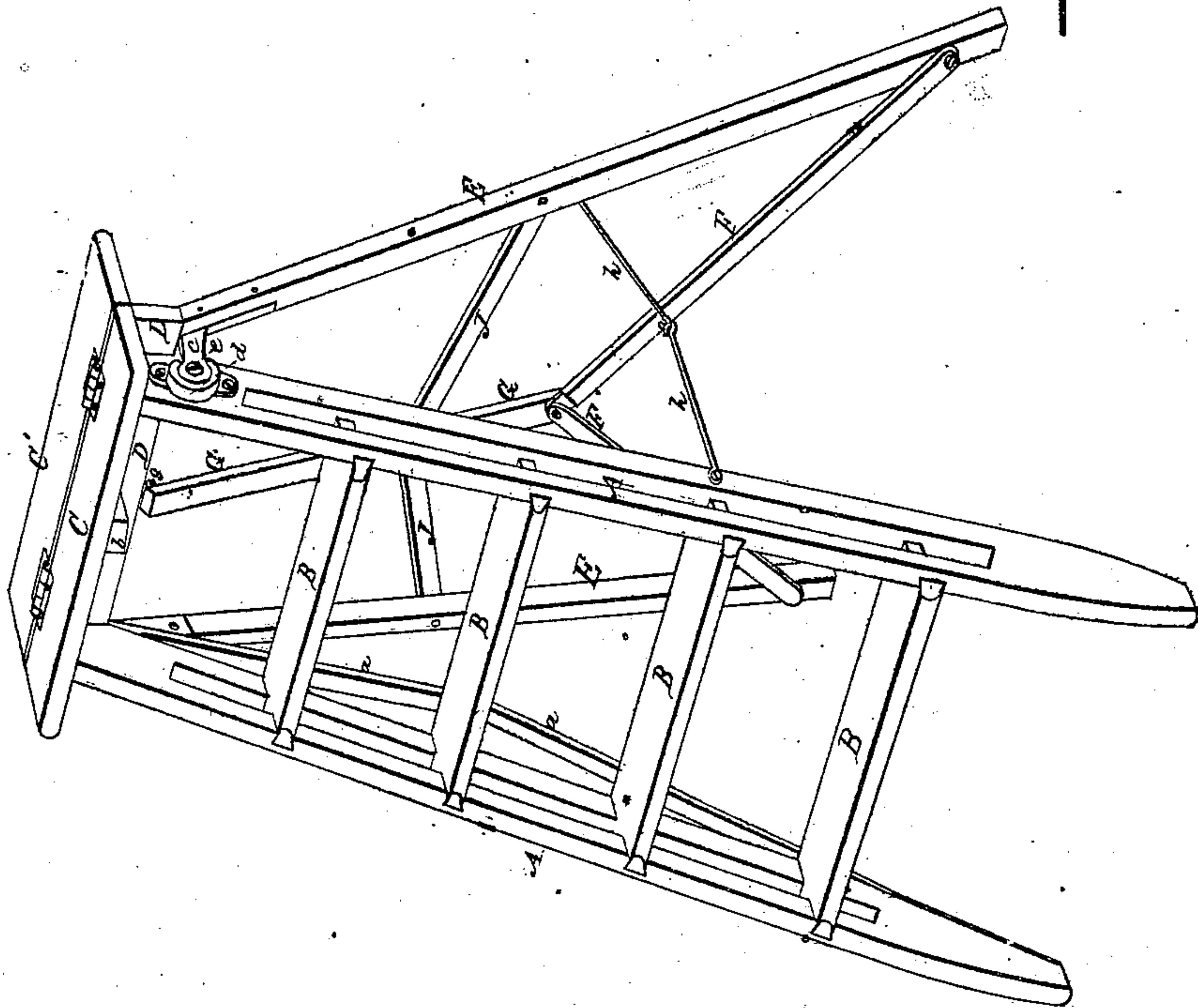


Fig. 1



Witnesses:

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C. H. Schaefer

Inventor:

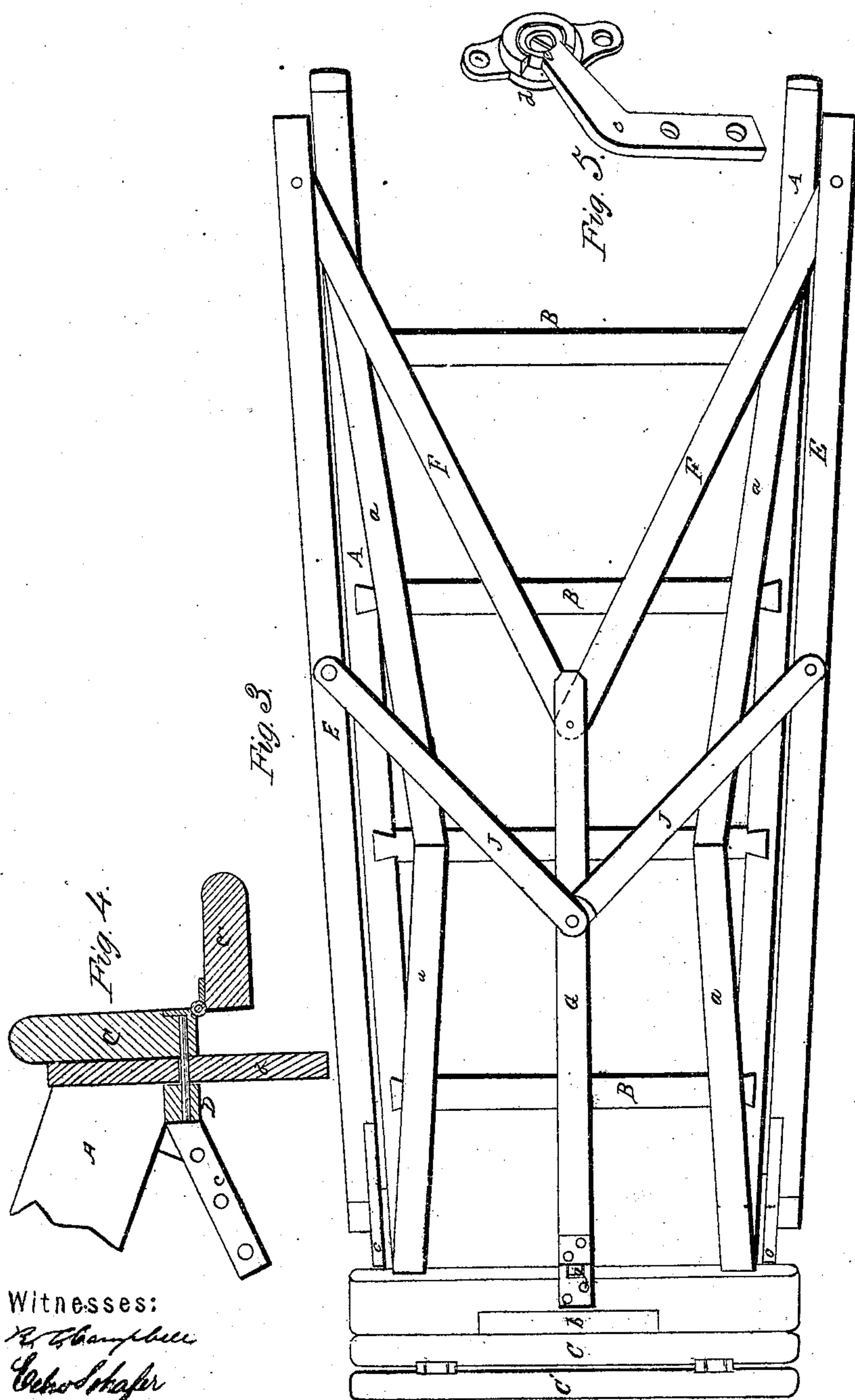
John S. Lash  
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*J. S. Lash.*  
*Step Ladder.*

*3 Sheets.*  
*Sheet 2*

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*Patented Aug. 7. 1866.*



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# UNITED STATES PATENT OFFICE.

JOHN S. LASH, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVED STEP-LADDER.

Specification forming part of Letters Patent No. 56,957, dated August 7, 1866.

*To all whom it may concern:*

Be it known that I, JOHN S. LASH, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and Improved Step-Ladder; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved step-ladder. Fig. 2 is an elevation of one side of the ladder. Fig. 3 is a back view of the ladder when folded up. Fig. 4 is a vertical section of the upper end of the ladder. Fig. 5 is a perspective view of one of the hinges for connecting the legs to the ladder.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved mode of applying extension-legs to step-ladders, whereby the legs are caused to expand laterally in the act of opening them to erect the ladder, for the purpose of affording it a very wide and firm base and keeping it in a steady position, as will be hereinafter described.

My invention also consists in securing the ends of the steps to the sides of the ladder by means of dovetail tenons and grooves, for the purpose of affording a permanent connection and rendering the parts of the ladder very firm and substantial, as will be hereinafter described.

The invention also consists in applying a folding step to the upper end of the ladder, so that the width of this step can be increased at pleasure, or diminished when a very wide step would be objectionable, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A A represent the sides of the step-ladder, which may be constructed so as to possess great strength and lightness, and B B are the steps, which have dovetail tenons formed on their ends, that are fitted into corresponding grooves formed in the sides of the ladder, as shown in Figs. 1 and 3. To the back of this ladder I apply diagonal bracing-strips *a a*, which extend from end to end of the ladder and project inward, so that they can be nailed to the

back edges of the several steps, and also to the back edges of the side pieces A A.

To the top of the ladder I apply a step or shelf, C, to the back edge of which a leaf, C', is hinged, so that it can be opened, as shown in Figs. 1 and 2, and the width of the step thereby increased. A swiveling piece, *b*, is used for supporting the leaf C' when opened, and when this leaf is closed or folded over on the fixed portion of the step the piece *b* is turned so as to be brought within its slot in the cross-piece D, as shown in Fig. 3.

The legs E E of the ladder are hinged to the sides A A, near the upper ends of the ladder, by means of hinges, which will allow the legs to be spread out, as shown in Fig. 2, and also to be separated laterally, as shown in Fig. 1, for the purpose of increasing the base of the ladder, and thereby rendering it very firm when erected.

The mode of constructing the hinges is shown in Fig. 5, in which *c* is an obtuse-angular plate, having an eye formed on one end, which eye is fitted into a socket in a plate, *d*. This plate *d* is secured rigidly to the side of the ladder near the top step, C, and the plate *c* is secured to the leg of the ladder. The two parts of the hinge are pivoted together by a screw-pin, *e*, the head of which is countersunk, as shown. The hinges of the two legs are constructed alike, and their pivots should coincide.

Near the lower ends of the legs E E, I pivot two braces, F F, the upper ends of which are pivoted to the lower end of a central bar, G, that is hinged to the rear edge of the cross-piece D, as shown in Figs. 1 and 3. Two more braces, J J, are pivoted to the legs E and bar G, for preventing lateral motion of this bar and strengthening the legs.

The hinge *g*, which connects the central bar, G, to the cross-piece D, is arranged in such relation to the hinges which connect the legs E to the side pieces of the ladder that, in the act of erecting this ladder and opening the legs, the bar G will extend the lower ends of the braces F and J, and thus spread the legs laterally. In folding up these legs the bar G will contract the legs again in a lateral direction.

The braces which I apply to the legs not only support them when open against undue lateral strain, but they also serve, as above stated, to move the lower ends of the legs out-

ward laterally during the act of erecting the ladder.

When the legs E are spread apart their upper beveled ends will abut against the projecting ends of the cross-piece, which, together with the ties *h h*, will prevent the further separation of the legs.

I am aware that the legs of step-ladders have been hinged to them in such manner that when the legs were opened they could be spread apart laterally; but these I do not claim. By my invention I provide for spreading out the legs laterally in the act of opening them, at the same time sustaining these legs by means of extensible braces.

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

1. The combination of the eye-plates *c*, socket-plates *d*, extension-braces F F, and hinged center bar, G, the whole constructed and operating substantially as and for the purpose set forth.

2. Providing the top step, C, of a step-ladder with a hinged leaf, C', substantially as described.

JOHN S. LASH.

Witnesses:

WM. P. HIBBERD,  
DAN J. McCLOSKEY.