C. F. BARNARD.

Step-Ladders.

No. 149,909. Patented April 21, 1874.

Fig. 3

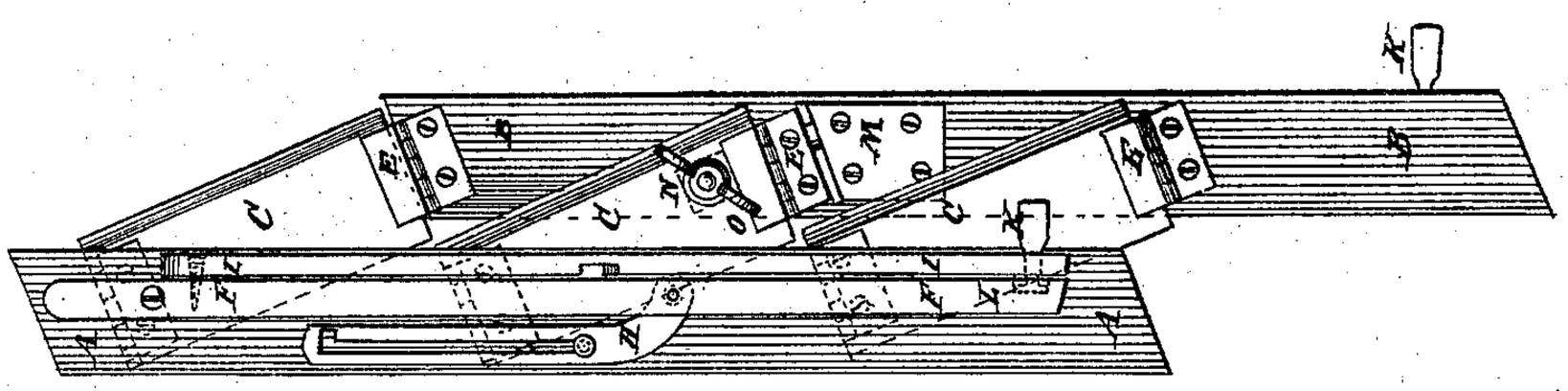

Fig. 2

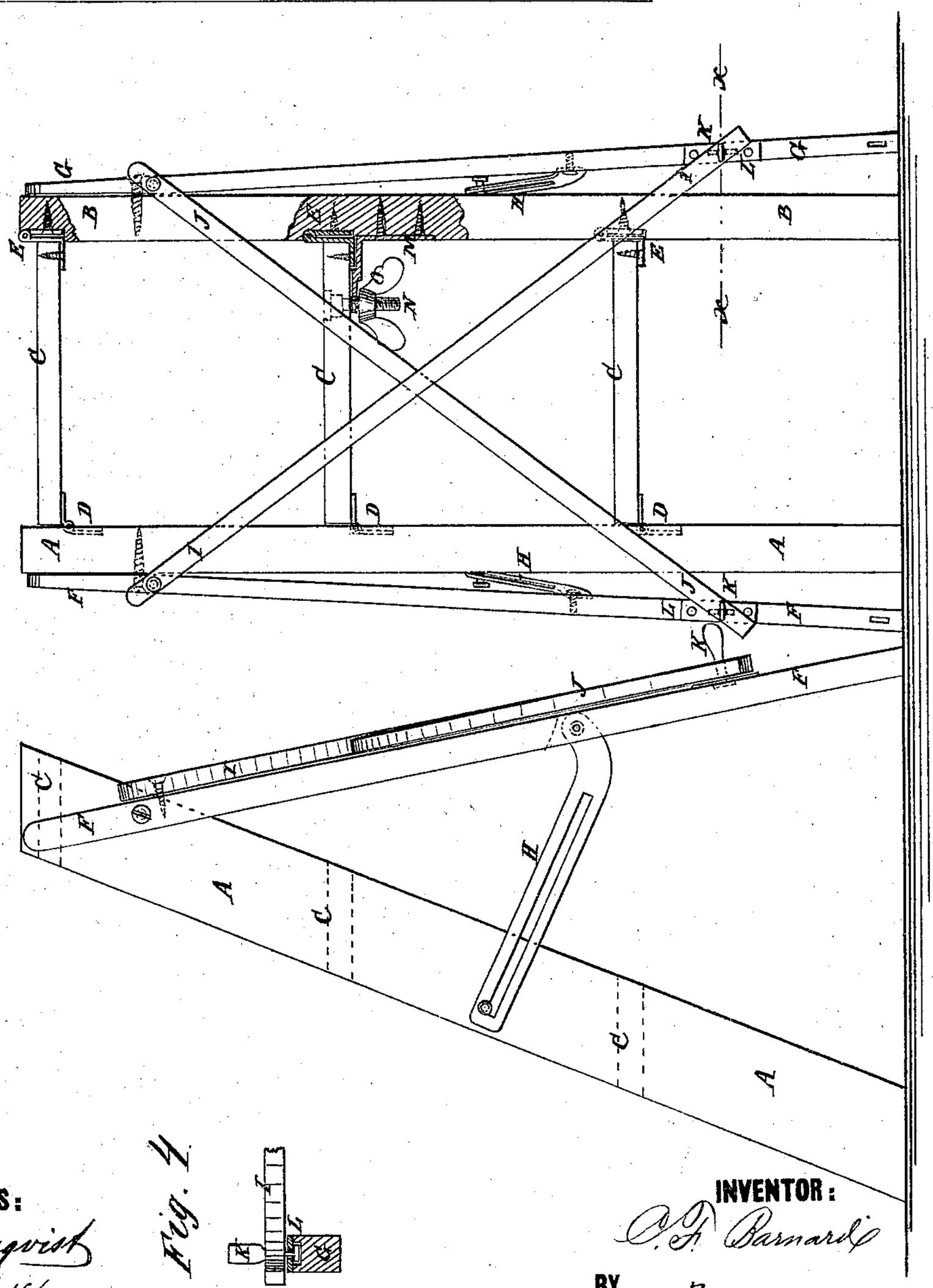

Fig. 1

Fig. 4

WITNESSES:

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CHARLES F. BARNARD, OF NEW YORK, N. Y.

IMPROVEMENT IN STEP-LADDERS.

Specification forming part of Letters Patent No. **149,909**, dated April 21, 1874; application filed February 7, 1874.

To all whom it may concern:

Be it known that I, CHARLES F. BARNARD, of the city, county, and State of New York, have invented a new and useful Improvement in Folding Step-Ladder, of which the following is a specification:

Figure 1 is a side view of my improved step-ladder, shown as extended for use. Fig. 2 is a rear view of the same, parts being broken away to show the construction. Fig. 3 is a side view of the same folded for storage. Fig. 4 is a detail section, taken through the line *x x*, Fig. 3.

Similar letters of reference indicate corresponding parts.

The invention will first be fully described, and then pointed out in the claims.

A B are the side boards of the step-ladder, which are connected with each other by the steps C. The ends of the steps C are hinged to the side A by hinges D attached to the said side, and to the lower side of the ends of the said steps, so that the pivots of the said hinges may be at, or a little below, the under surface of the steps. The other ends of the steps C are hinged to the side B by the hinges E, one plate or part of which is attached to the side B, and its other part or plate crosses the end of the steps, is bent at right angles to underlap the end of the steps, and is secured to the under side of the steps. By this arrangement, all the screws that hold the hinges enter across the grain of the wood, and thus take a firmer hold.

The plates of the hinges E should be so long that their pivots may be a little above the steps C, so that the sides A B and steps C may fold closely together.

The steps C must be attached to the sides A B in an inclined position, so that they may be horizontal when the ladder is extended for use. From this cause one of the sides will be a little in advance of the other when the ladder is folded, as shown in Fig. 3.

F G are the legs, which are pivoted, near their upper ends, to the outer sides of the stiles A B, near their upper ends, and which are made of such a length as to hold the ladder in proper position when extended. The inner sides of the upper ends of the legs F G are inclined, so that their lower ends may be spread apart to brace the ladder when extended. To the legs F G are pivoted the lower ends of the bars H, which are made with a bend near said lower ends, and which are slotted longitudinally to receive a screw attached to the sides A B, the said slots being made so narrow that the heads of the said screws cannot pass through. In the bars H, at the upper edge of the forward ends of their slots, is formed a notch to receive the screws, and thus lock the legs F G in place when extended. To the rear side of the legs F G, a little below their pivots, are pivoted the upper ends of the braces I J. The braces I J, when the ladder is extended, cross each other, and their lower ends are secured to the rear sides of the lower ends of the legs F G by the cross-head pivoted catches K, the heads of which pass through slots in the plates L, and, when turned one-quarter around, securely lock said braces and legs together. The outer ends of the pivoted catches K should be so formed that they may be conveniently turned to fasten and unfasten the braces.

The braces I J, at their point of intersection, are halved to each other. To the inner surface of one of the sides A B, just below one of the steps C is attached a plate, M, which is bent at right angles, so as to lie along the under side of said step, and its end edge is notched to receive a screw, N, attached to said step, so that it may be secured by a hand-nut, O, screwed upon the said screw N. By this construction, the sides and steps of the step-ladder will be held rigidly in place when said ladder is extended.

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

1. The combination, with sides A B and steps C, of the plate M, screw N, and hand-nut O, as and for the purpose described.

2. The combination, in a folding step-ladder, of cross-head catches K, slotted plates L, pivoted braces I J, and pivoted legs F G, as and for the purpose specified.

CHARLES F. BARNARD.

Witnesses:

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