No. 106,659. PATENTED AUG. 23, 1870.

H. D. CHANCE.
EXTENSION STEP LADDER.

Fig 1

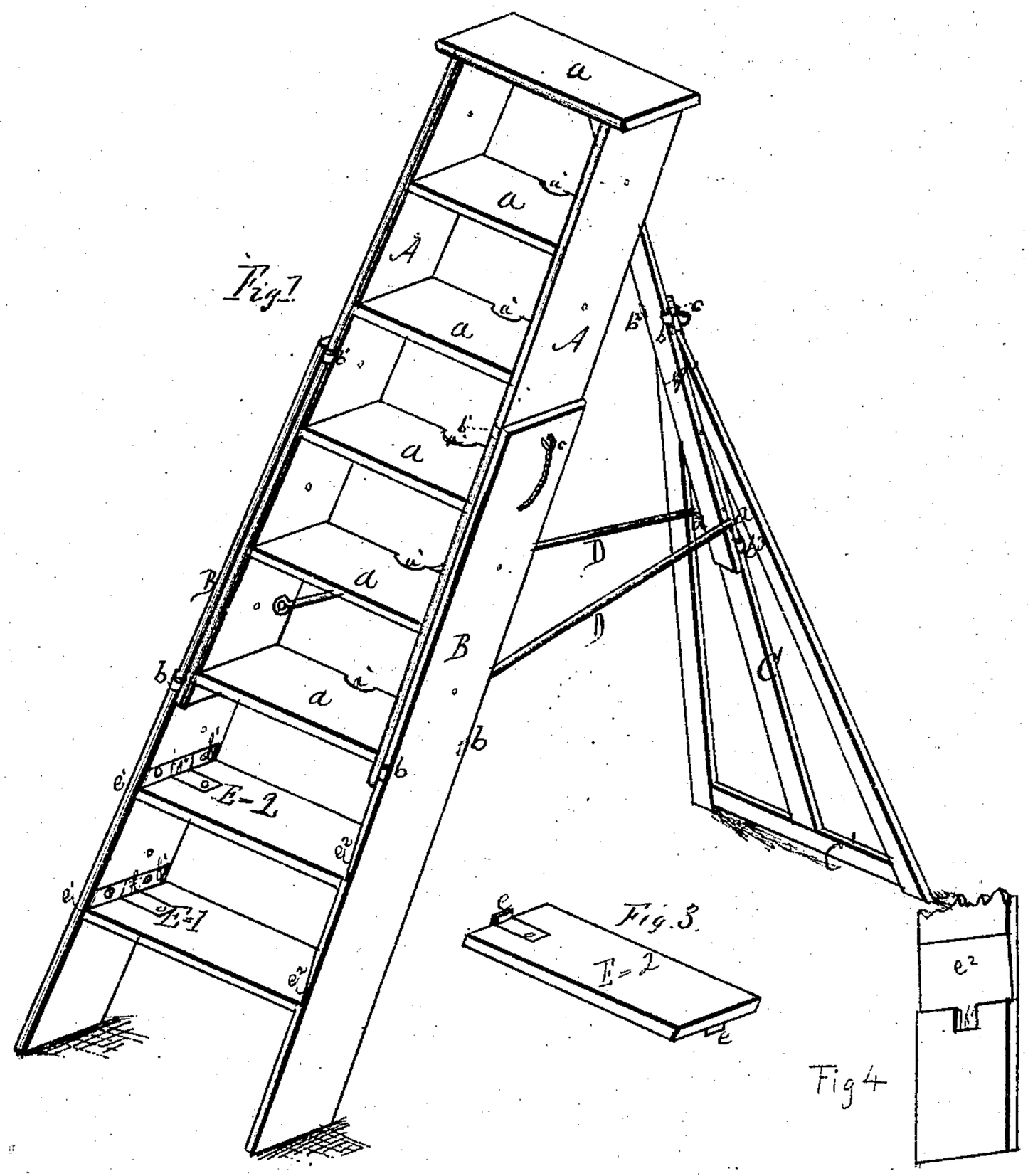
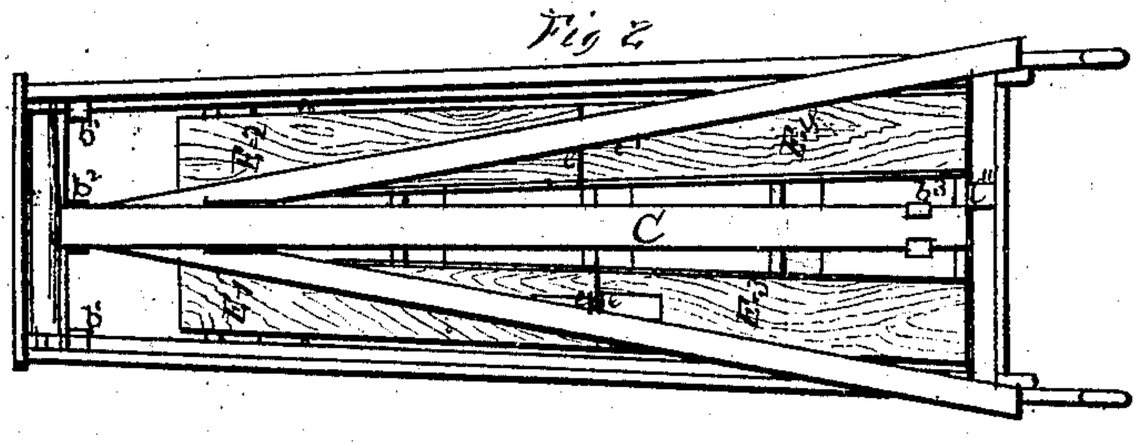


Fig. 3.

Fig 4

Fig 2



Witnesses
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HIRAM D. CHANCE, OF LLEWELLYN, PENNSYLVANIA.

IMPROVEMENT IN EXTENSION STEP-LADDERS.

Specification forming part of Letters Patent No. **106,659**, dated August 23, 1870.

To all whom it may concern:

Be it known that I, HIRAM D. CHANCE, of Llewellyn, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Step-Ladders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of a ladder, partly in extension, having said improvements. Fig. 2 is a plan showing the back of said ladder, the same being folded for carrying; Fig. 3, adjustable step. Fig. 4 is an inner face view of part of extension B, with plate f' removed to show the manner of fixing adjustable steps in place.

The improvements herein referred to relate to a step-ladder which may be extended and adjusted to different heights, and which may also be compactly folded for carrying, rendering it very convenient for those whose occupations are such as to require the use of step-ladders in performing their work.

In the drawings, A are the sides, *a* the steps, and A′ the hinged brace, constituting a step-ladder of ordinary construction.

B are extension sides or sections, attached to the sides A, being arranged to slide up and down outside the latter by guides b' b, the former attached to the upper ends of the extensions B and the latter to the lower ends of the sides A.

C is an extension triangular frame, attached in a similar manner to the brace A′.

c are transverse pins to secure the ladder at the proper height.

D are stay rods, attached to the sides A and hooking in staples *d*, inserted in the brace A′.

E' E^2 E^3 E^4 are adjustable steps for attachment when the ladder is extended, and are of varying length to suit the width of the ladder, which increases according to its length.

e e are lugs at either end and projecting from opposite sides of each adjustable step; e' e^2, notches in the extension B, into which the ends of the steps fit, the lugs *e* fitting into recesses *f*, formed by a vertical notch covered with a plate, f'. The upper part of the notches e^2 are beveled, so that when one end of a step is inserted in its proper notch the other end can be easily placed in position by being pressed down. The lugs and corresponding recesses are formed on opposite sides of the step, so as to bind the sides of the ladder more firmly.

To fold the ladder the adjustable steps are taken out, the pins *c* displaced, the stay-rods unhooked and turned up, the extension B moved up as far as possible, and the steps of the extension arranged, as in Fig. 2, against the back of the ladder, some of the lugs *e* fitting in recesses formed in the back edges of the ladder-steps, against which the adjustable steps rest. The ladder is then folded and the brace-extension moved up until the lower or horizontal bar, c', passes behind the bent end of the catch c'.

In extending or reducing the length of the ladder the stay-rods need not be unhooked. The notches a' in the back part of the steps *a* are to receive the brace A when the latter is folded.

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

1. The combination and arrangement of the sides A, steps *a*, hinged brace A′, extensions B, provided with the recesses *f*, guides b b' b^2 b^3, adjustable steps E^2, provided with the projections *e*, stay-rods D, and extension-frame C, substantially as and for the purpose set forth.

2. The method described and illustrated in Fig. 2 of folding the ladder.

3. The adjustable steps E^2, provided with the lugs *e e*, projecting from opposite sides, in combination with the extensions B B having corresponding recesses, *f*, and beveled notches e^2, as and for the purpose set forth.

HIRAM D. CHANCE.

Witnesses:

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