

(No Model.)

S. A. GARDNER.
STEP LADDER.

No. 310,814.

Patented Jan. 13, 1885.

Fig. 1.

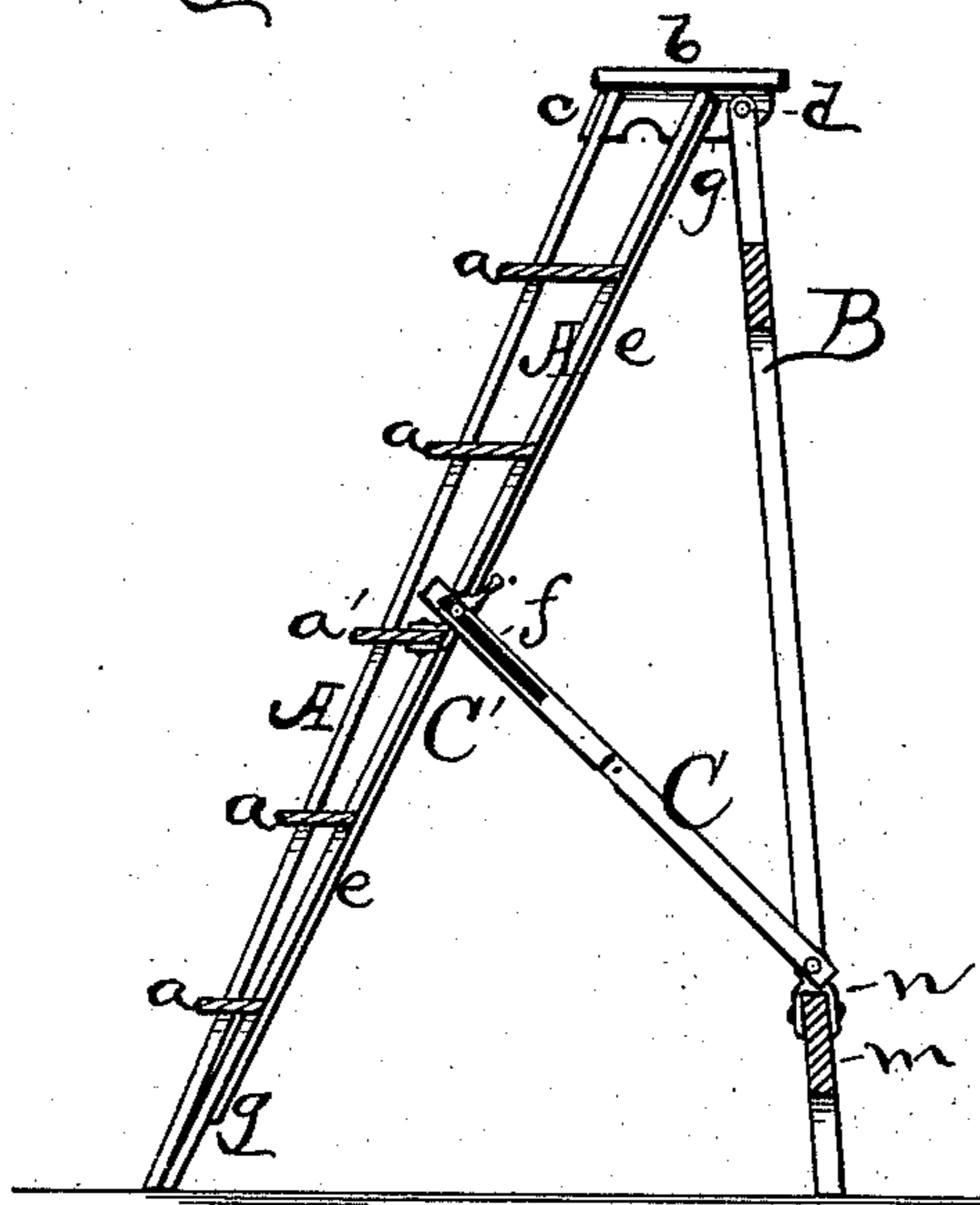


Fig. 2.

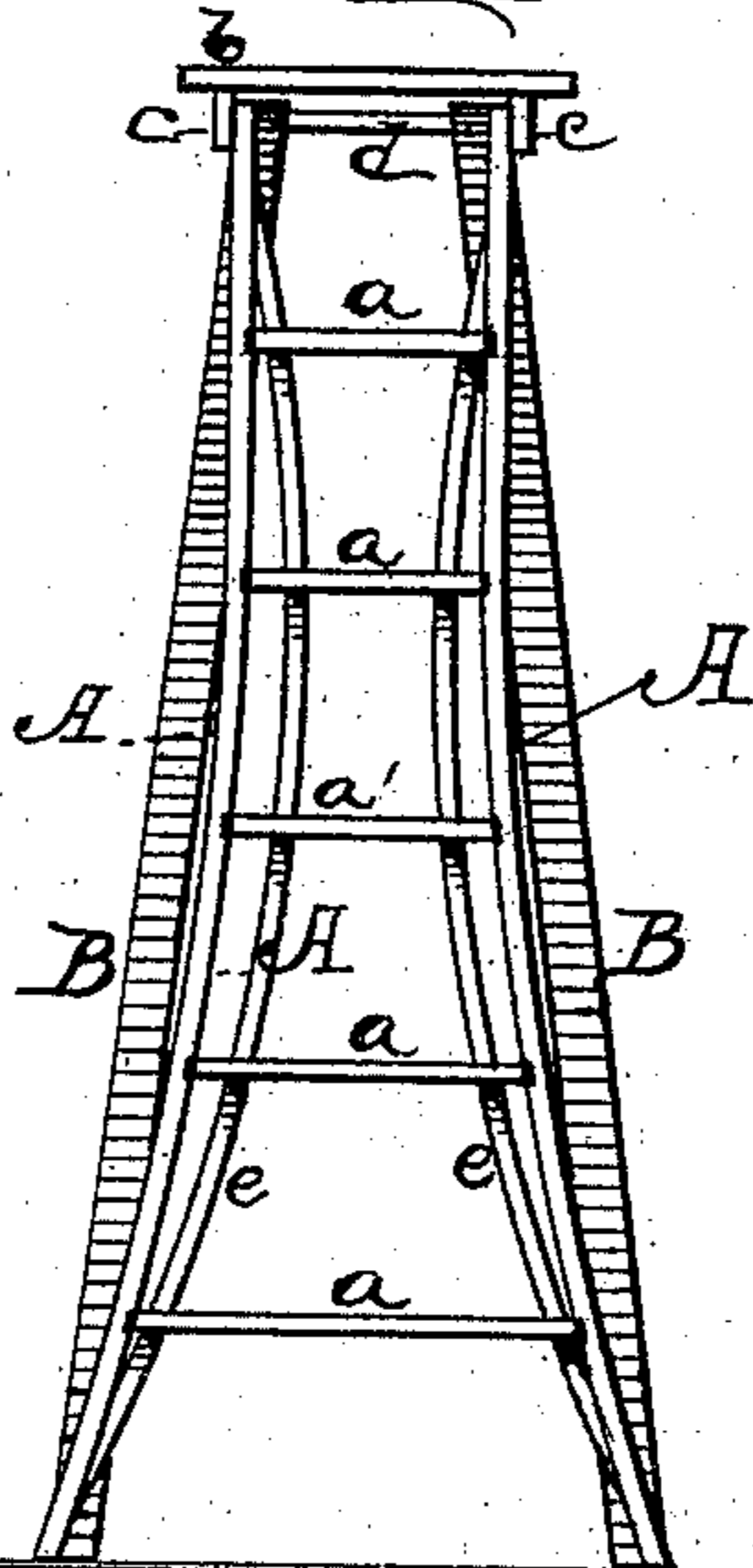


Fig. 3.

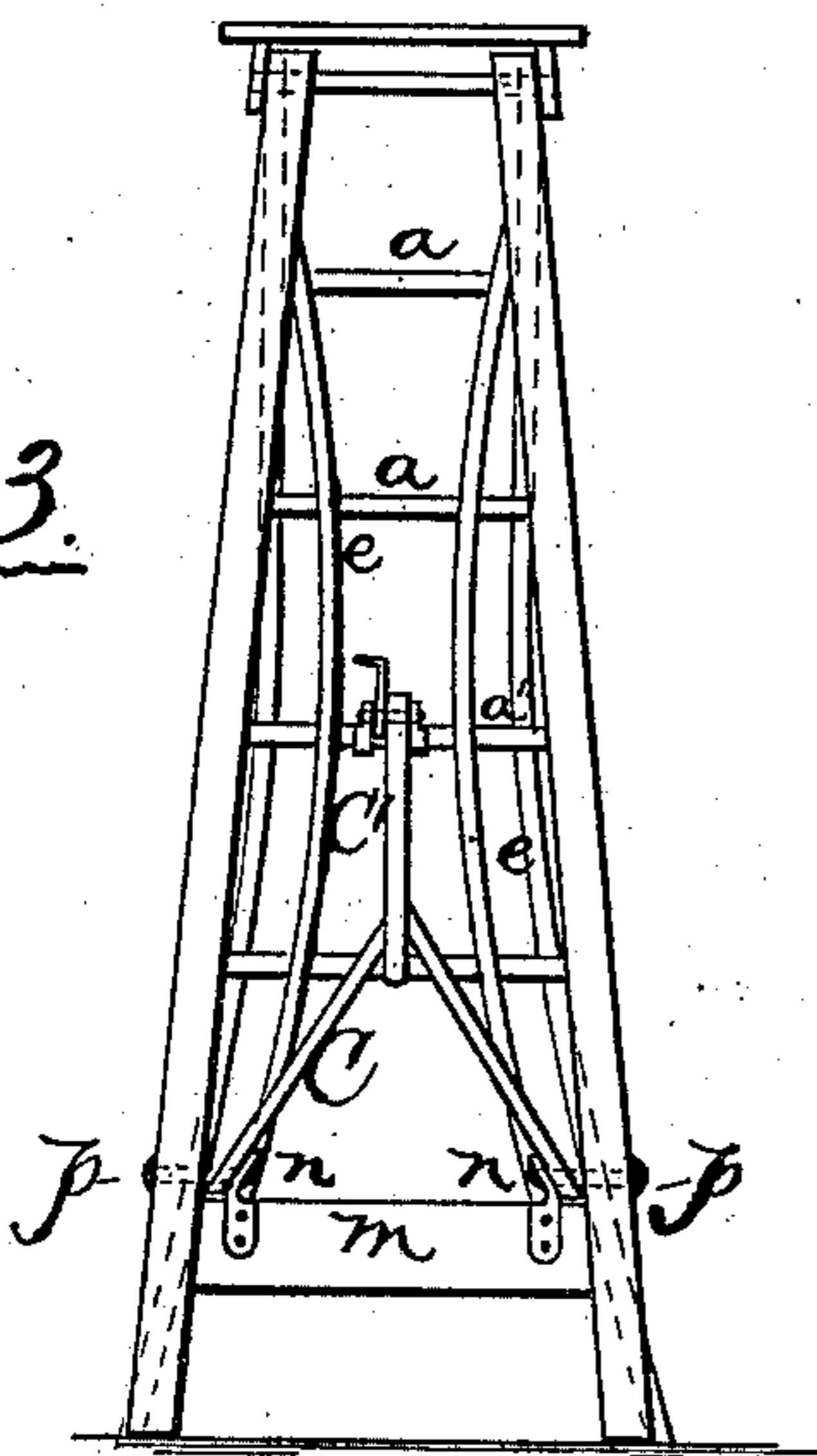
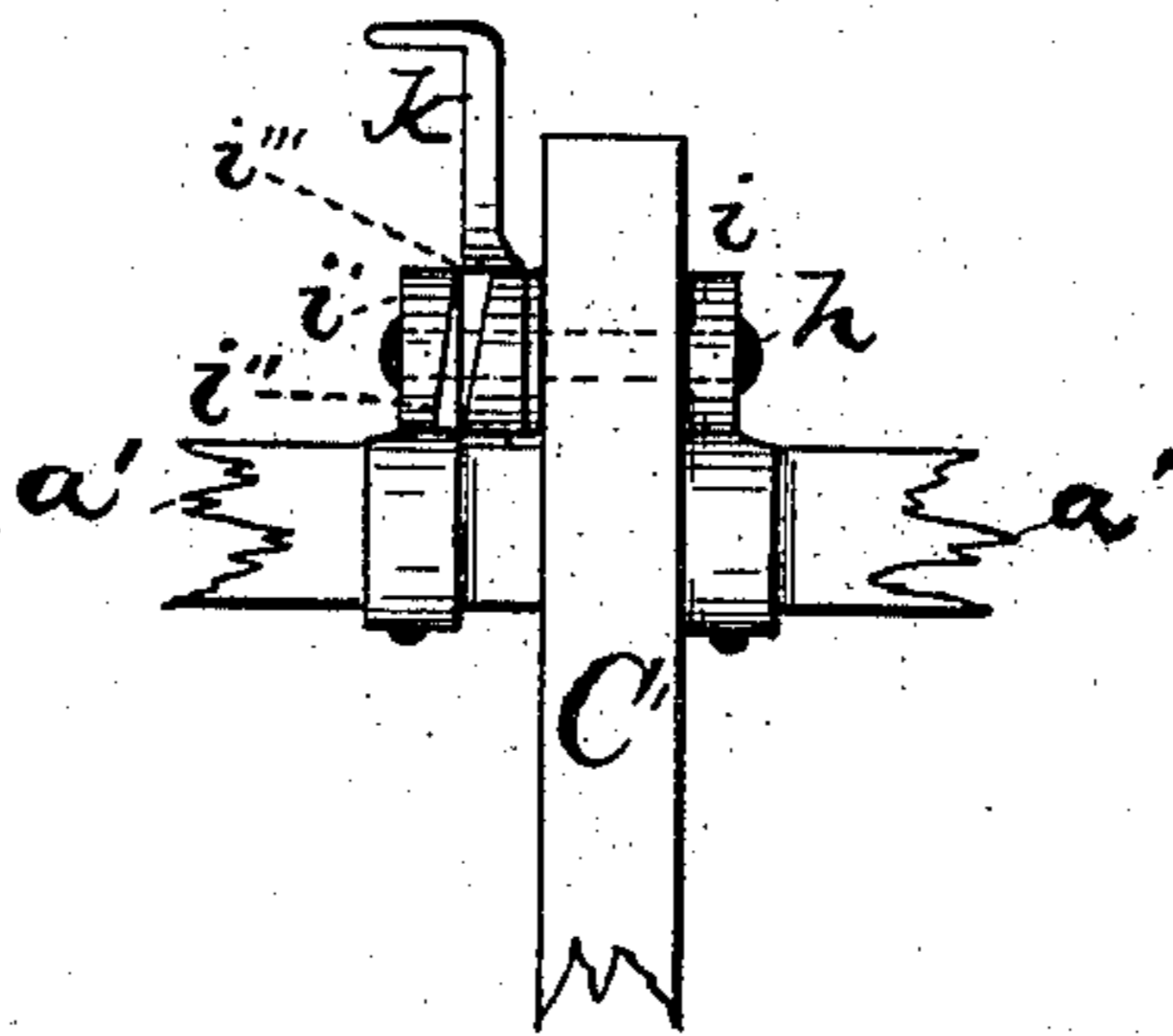


Fig. 4.



Witnesses:

D. H. Parsons.
J. R. Drake.

Sylvanus A. Gardner
Inventor, by
J. R. Drake, Atty.

UNITED STATES PATENT OFFICE.

SYLVENUS A. GARDNER, OF JAMESTOWN, NEW YORK, ASSIGNOR OF ONE-HALF TO CHARLES F. BAKER, OF SAME PLACE.

STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 310,814, dated January 13, 1885.

Application filed May 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, SYLVENUS A. GARDNER, a citizen of the United States, residing at Jamestown, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Step-Ladders, of which the following is a specification, reference being had therein to the accompanying drawings.

These improvements relate to the construction of various parts, as hereinafter fully explained.

In the drawings, Figure 1 is a side elevation, one-half the side and half the strut removed; Fig. 2, a front view showing the inward curve to the sides or "risers," &c.; Fig. 3, a back view showing the brace, &c.; Fig. 4, an enlarged detail of the eccentric and adjacent parts.

A A represent the concave double and separate side pieces or risers, made with an inward curve to get greater strength. To these the steps *a a a* are secured, being set in grooves and screwed therein. A novel feature of these steps is that they are of different widths from front to rear, beginning at the bottom very narrow and growing gradually wider to the top step, *b*, the object being to get wider and stronger steps the higher one ascends, the lowest ones being quite narrow, as they are not stood upon, but only used to mount to the higher ones, where the feet rest in using the device. The risers on each side are in two separate pieces, close together at the bottom, gradually widening apart until the top is reached, where the ends set in slanting slots in a "dado" hinge and supporting-piece, *c*, on the inside thereof, and are screwed in said slots. The risers, being in two separate pieces and widening apart, give greater strength and elasticity to the whole. On top of the dado-pieces *c c* is fastened the top step, *b*, making a firm platform to stand squarely on. These dados also act as part of a hinge for the strut B by means of a rod, *d*, passing through the back of both dados and through the tops of the strut, (the ends being inside the dados,) and the rod being beaded outside.

e e are two inwardly-curved tie-bars, fastened at the bottom at *g* to the risers and at

the top at *g'*. They are also fastened to the back of every step, and being curved, as shown, give additional strength to the whole, and especially to the middle of the device, which is most used, and firmly binding the steps to the risers.

C is a brace that unites the strut B to the front. It is of an inverted-Y form, the stem C' having a long slot, *f*, therein, in which is a longitudinal pin or rod, *h*, and held just above the rear of the middle step, *a'*, by upright metal ears *i i'*, fastened to said step. On this rod *h* is set, between ear *i'* and the stem C', an eccentric fastener, *k*, (see Fig. 4,) having a piece cut out from the side *i'''*, and a corresponding piece, *i''*, is cut out of the ear *i'*. As shown in Fig. 4, the handle of the eccentric is up in position to bind the brace and keep it in the position required. When the handle is pushed down, the two cut-out parts *i'' i'''* come together, leaving the stem loose to slide on the rod *h* and close up the steps and strut. The lower arms of the Y are each pivoted to the lower cross-piece, *m*, of the strut by metal ears *n n*, attached thereto, each having a horizontal pin, which passes through the end of the arm and into the inside of the leg, forming the pivot for the arms to swing on, and connecting both the rail *m* and both legs of the strut to the front, getting thereby the strength of the wood and iron combined.

I claim—

1. The Y-brace when connected to the front by the slotted stem C *f*, each arm pivoted to a leg of the strut by a metal ear, *n*, attached to the cross-piece *m*, and secured by a pin passing through the arm from the ear and into the inside of the leg, all substantially as and for the purpose specified.

2. In a step-ladder, the inwardly-curved separate double risers A A, the portions of each double riser gradually widening apart from bottom to top, in combination with the steps *a a a b*, and the inwardly-curved tie-bars *e e*, the latter attached at bottom and top to the risers and intermediately to each step at the back, all substantially as specified.

3. In a step-ladder, the combination, with a brace having the slotted stem C *f*, of the eccentric fastening *k* (having the cut-out *i'''*)

on rod *h*, and the ears *i i'*, the latter having the cut-out *i''*, all substantially as and for the purpose specified.

4. In a step-ladder, the combination, with
5 the risers or sides *A A*, of the step *a a a*, gradually widening from front to rear, as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

SYLVENUS A. GARDNER.

Witnesses:

CHAS. F. BAKER,
E. W. BUCKLIN, Jr.