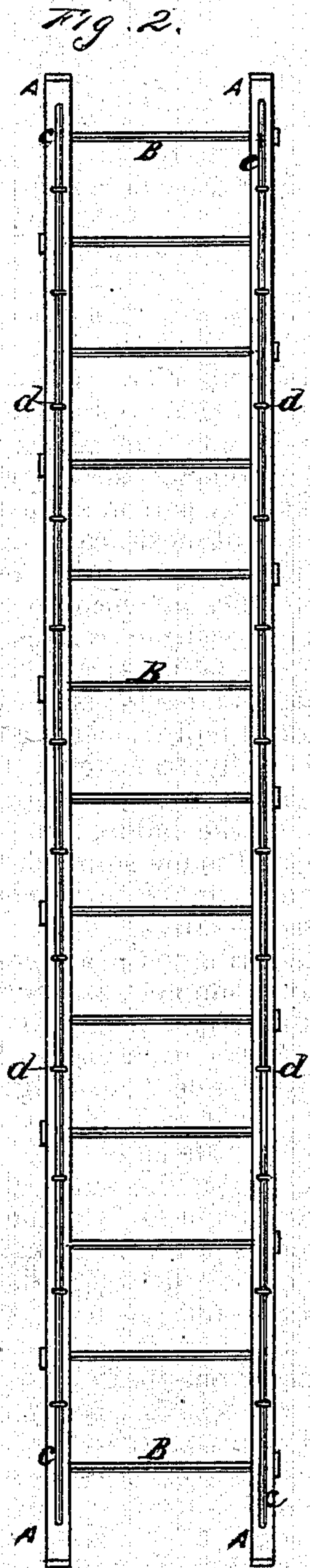
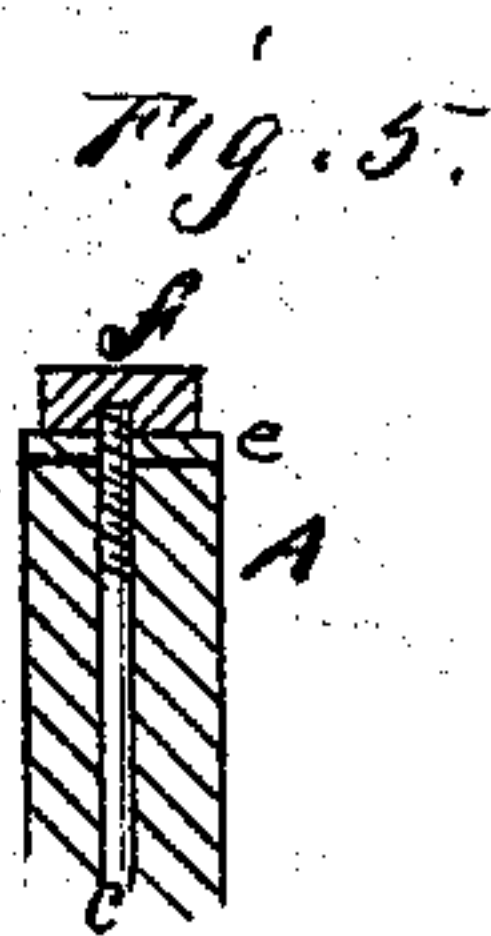
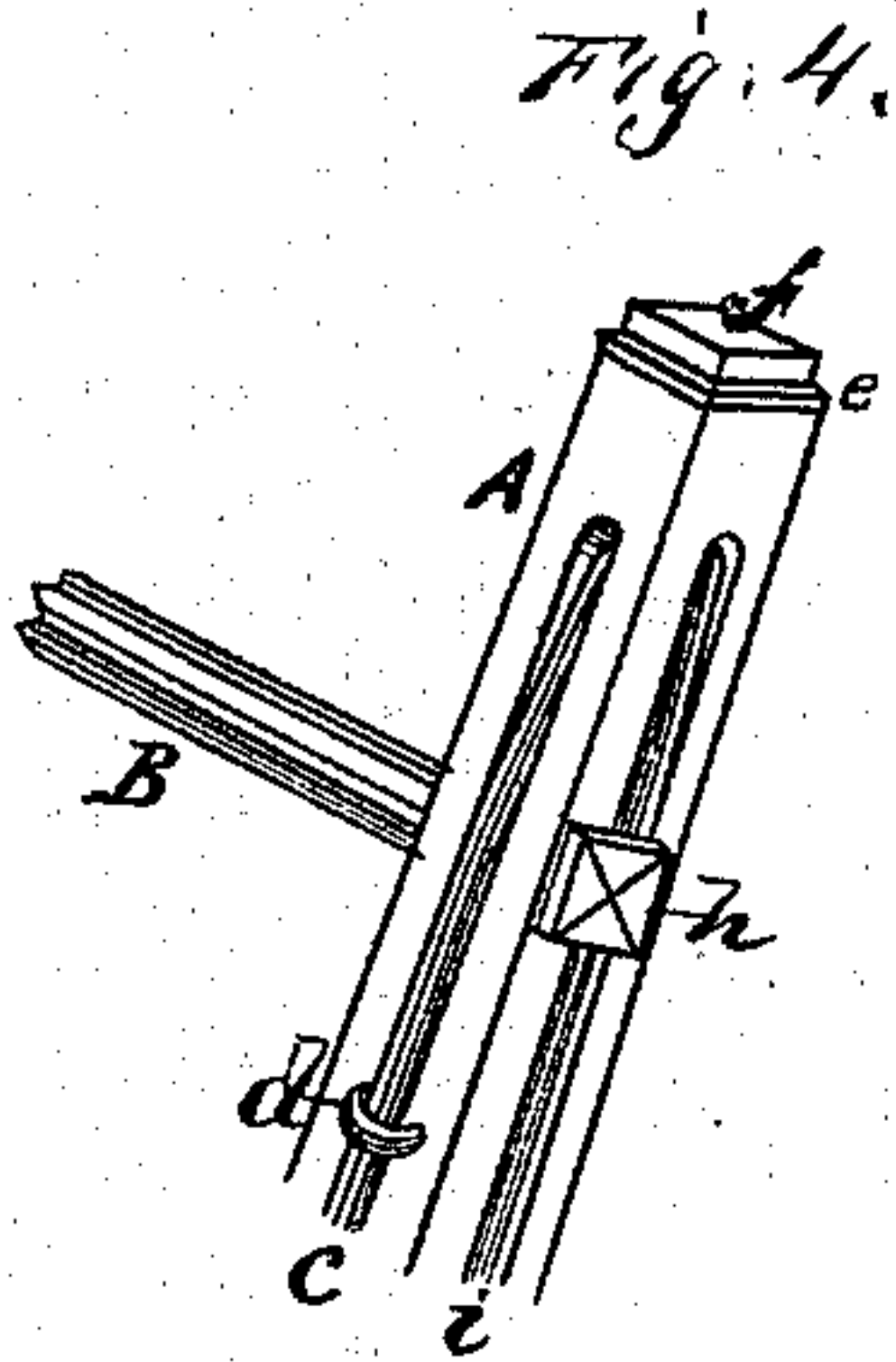
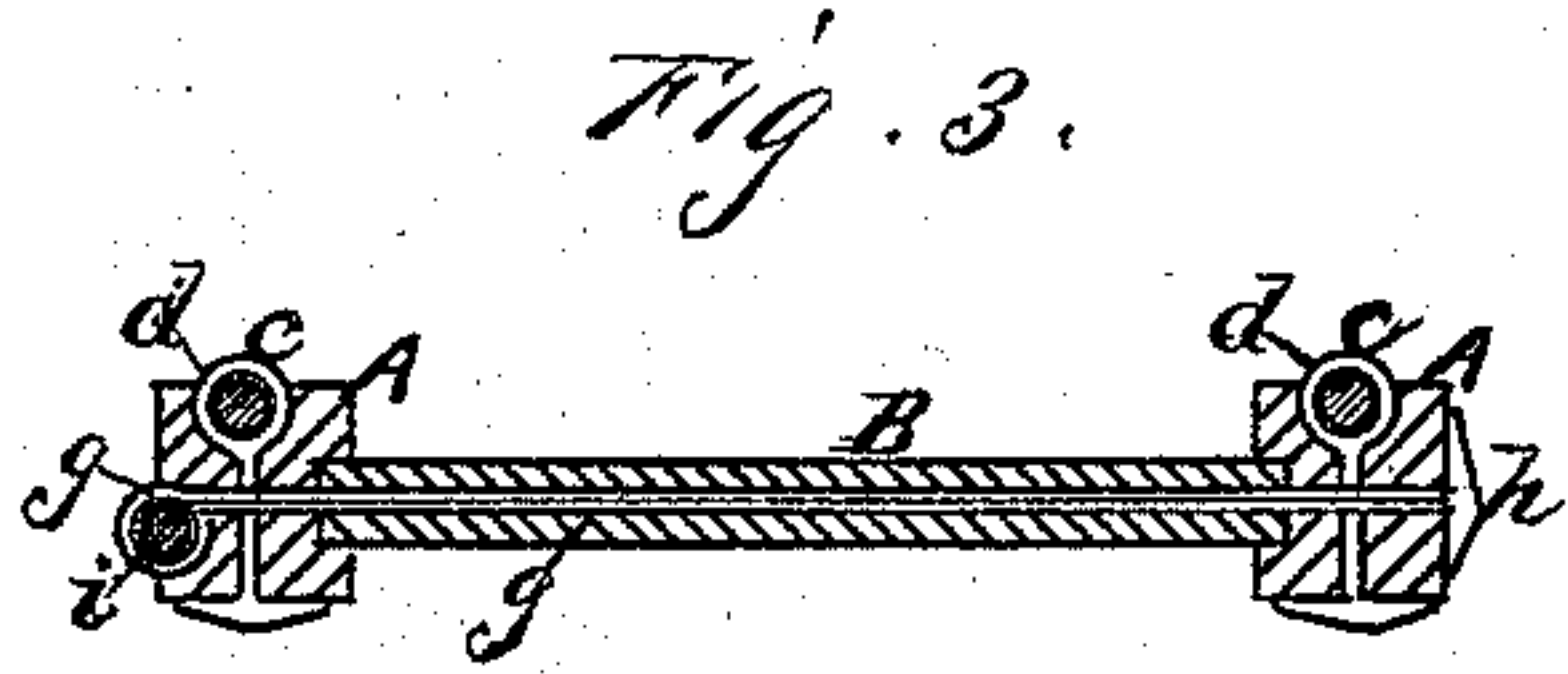
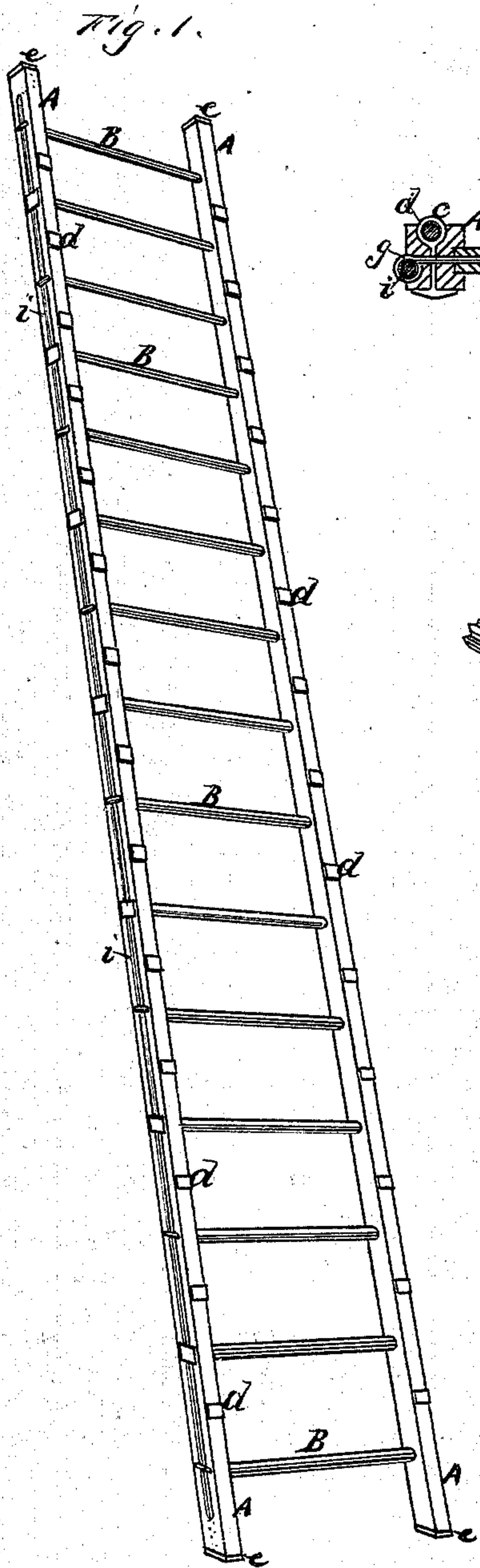


A. P. SMITH.

Ladders.

No. 146,029.

Patented Dec. 30, 1873.



Witnesses

John L. Boone  
C. M. Richardson

Anthony Preston Smith  
By Newey & Co.  
attys



# UNITED STATES PATENT OFFICE.

ANTHONY PRESTON SMITH, OF SACRAMENTO, CALIFORNIA.

## IMPROVEMENT IN LADDERS.

Specification forming part of Letters Patent No. **146,029**, dated December 30, 1873; application filed October 28, 1873.

*To all whom it may concern:*

Be it known that I, ANTHONY P. SMITH, of Sacramento city and county, State of California, have invented an Improved Ladder; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to certain improvements in ladders; and it consists mainly in so strengthening the side rails by means of wires longitudinally placed and strained tight, as well as by transverse uniting-rods, that the material ordinarily employed in the construction of the ladder may be much reduced in size, and made so much lighter that very long ladders can be very easily handled, and are perfectly safe.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a perspective view of my ladder. Fig. 2 is a back view. Fig. 3 is an enlarged transverse section. Fig. 4 is an enlarged view of one end of a side rail. Fig. 5 is a section of one of the ends.

A A are the side rails of my ladder, the steps or rounds B being secured from one to the other, as in the ordinary method of making ladders. The side rails A are much reduced in size; and, in order to strengthen them, I employ stout wires, preferably of steel, which extend from one end to the other of the rails. The wires *c c*, which extend along the back or lower part of the rails, are let into the wood, and edge bolts *d* serve to secure the wires at suitable intervals. These edge bolts pass through the rail from back to front. At each end of the rail A are stout plates *e*; and the wires *c* pass into the rail, as shown, a few inches from the end, so that they will pass through the plates *e*. At one end, the wires

are headed down after passing through the plate, but at the other end a screw-thread is cut, and a nut, *f*, serves to draw the rod or wire as tight as may be desired. Other rods or wires, *i*, are also let into the sides of the rails A; and these wires also enter the rails, so as to pass through the plate *e*. The riveted heads of these wires are made upon the same ends with the nuts of the other set, *c*, while the nuts for the wires *i* will be placed at the end where the wires *c* are riveted. Tie-rods *g* clasp the wires *i*, and pass across the ladder through the rounds B, an eye being made at one end, while a nut, *h*, at the other end, serves to tighten them up, and, at the same time, holds the other wire.

The nuts and eyes are placed alternately upon each side of the ladder, as shown, and, in the case of a step-ladder, the rods will pass beneath the steps. These rods or wires *c c* will ordinarily be drawn so tight as to bow the ladder, so that its upper side will be more or less convex, the weight placed upon it tending to straighten it somewhat.

By this construction, I am enabled to make a ladder strong and light, and one which will be especially valuable in trimming trees or gathering fruit, or when any long and light ladder would be useful.

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

The rods *c c*, with or without the rods *i i*, screw-bolts *d*, plates *e*, and screw-nuts *f*, in combination with the rails A and rounds B of a ladder, when constructed and operating substantially as and for the purpose set forth.

In witness whereof I hereunto set my hand and seal.

ANTHONY PRESTON SMITH. [L. S.]

Witnesses:

JOHN L. BOONE,

C. M. RICHARDSON.