

(No Model.)

P. H. PURSEL & W. W. KELCHNER.

STEP LADDER.

No. 351,713.

Patented Oct. 26, 1886.

Fig. 1.

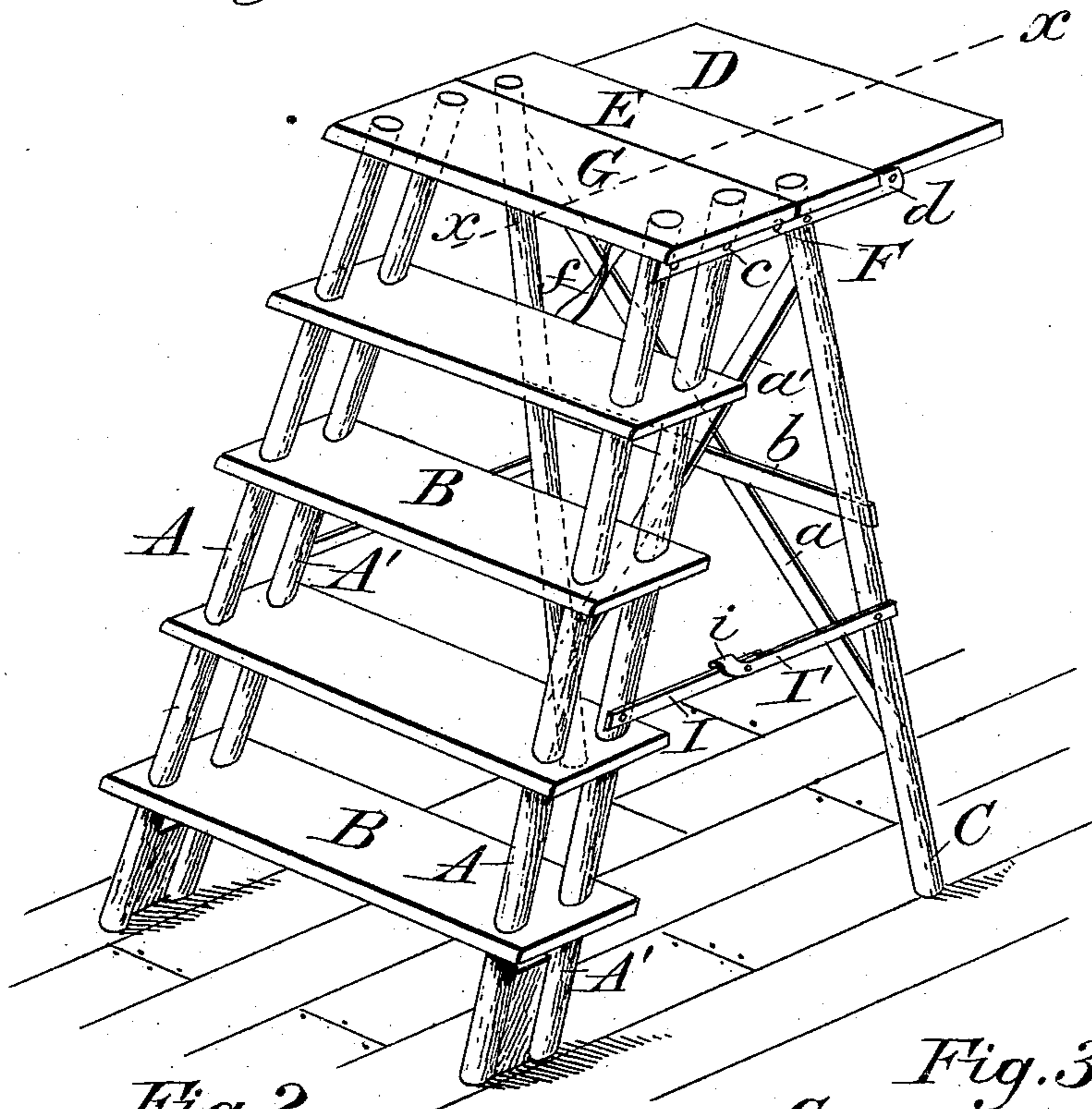


Fig. 2.

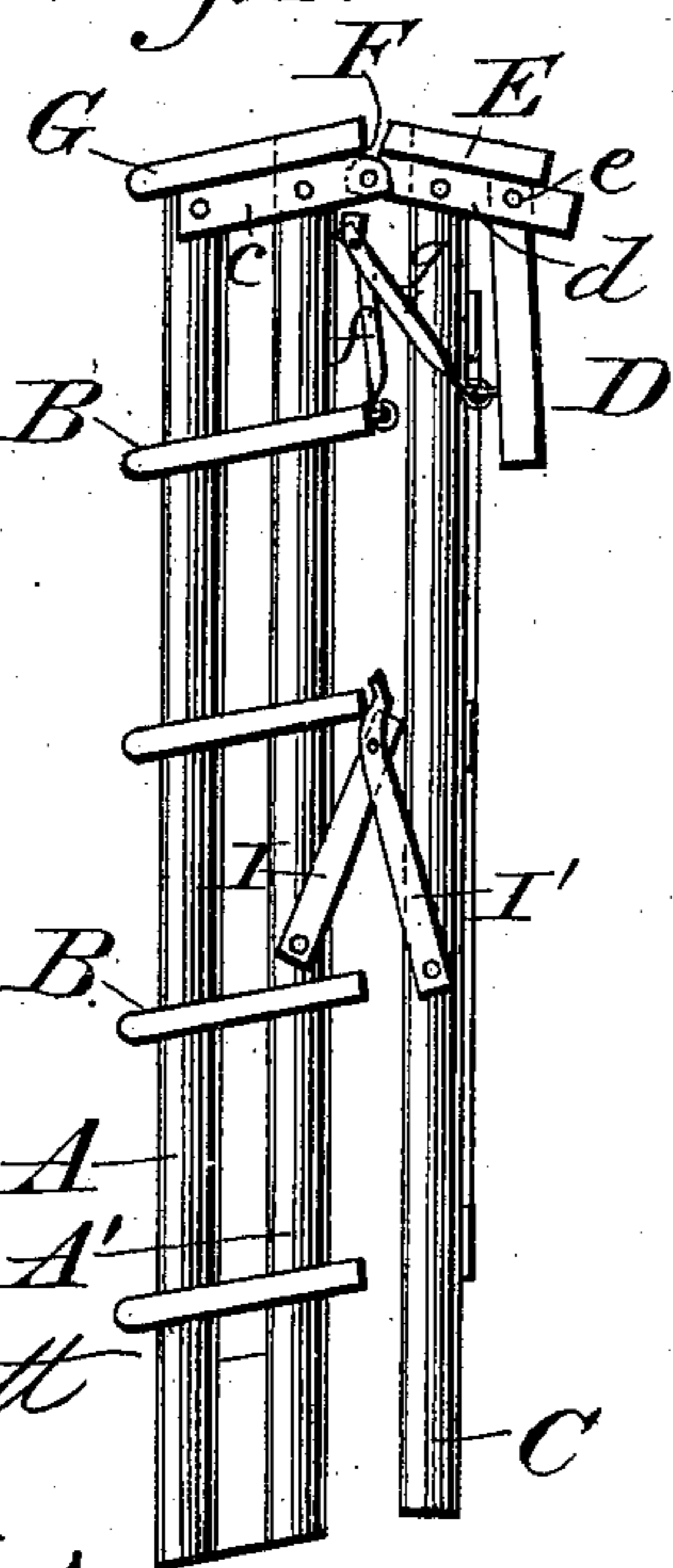


Fig. 3.

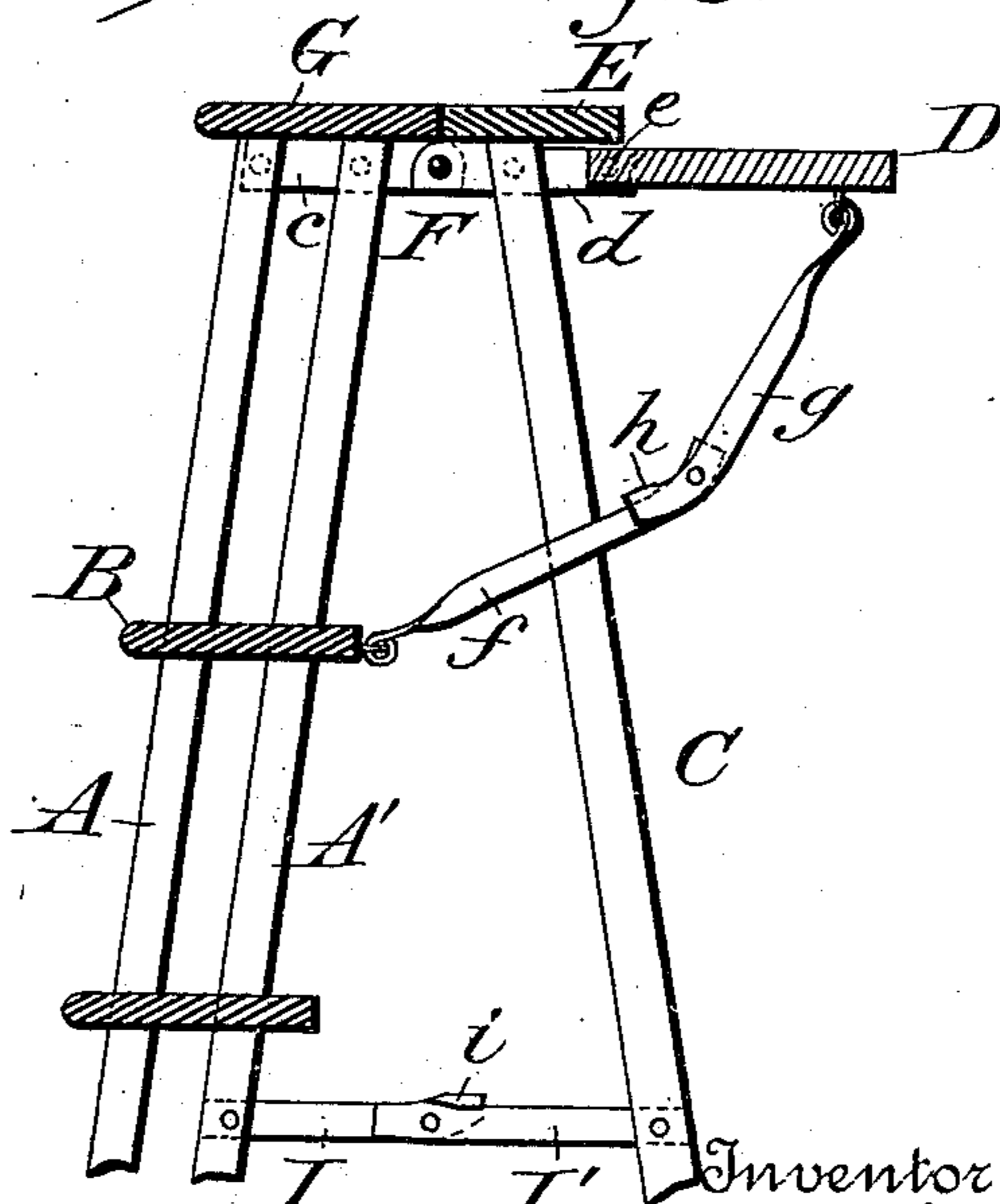
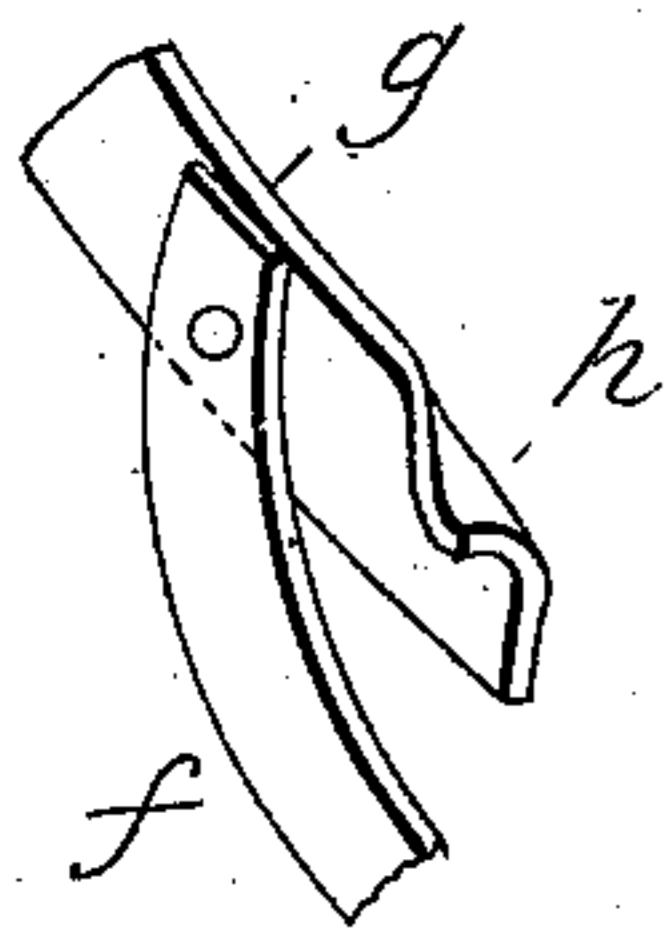


Fig. 4.



Witnesses

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STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 351,713, dated October 26, 1886.

Application filed June 1, 1886. Serial No. 203,792. (No model.)

To all whom it may concern:

Be it known that we, PETER H. PURSEL and WILLIAM W. KELCHNER, citizens of Ithaca, United States, residing at Ithaca, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in a Step-Ladder; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention comprises an improvement in step-ladders; and it consists in the construction, arrangement, and combination of parts, as will be hereinafter fully set forth.

In the annexed drawings, Figure 1 is a perspective view of our improved step-ladder. Fig. 2 is a side view of the ladder with its parts closed and the bucket-shelf in a depending position. Fig. 3 is a vertical section on the line *xx* of Fig. 1, and shows the hinges and braces for connecting the several parts. Fig. 4 is a detail view of the joint between the braces which uphold the bucket-shelf.

Like letters of reference denote like parts in the several figures.

The front portion of the ladder consists of the steps *B B* and top step, *G*, each one of which is provided at its extremities with apertures, through which pass the rods *A A'* for connecting them together. The back portion of the frame consists of the legs *C C*, secured together and held connected by any suitable cross-braces, such as *a a'* and *b*, and also of the top step, *E*, with which the upper ends of the legs *C C* are connected.

The front and rear portions of the frame are connected or hinged together by means of the two hinges *F F*, which consist each of two metallic strips, *c* and *d*, pivoted to each other. One of these strips, as *c*, is secured to the front portion of the ladder by being riveted to the poles or rods *A* and *A'* at a point directly underneath the upper step, *G*, in such a manner that the upper edge of the strip *c* may rest closely against the lower surface of the upper step. The other metallic strip, *d*, is secured to the back portion of the ladder by being riveted to the legs *C*, directly underneath the step

E, and in this case the upper edge of the strip *d* rests closely against the lower surface of the step *E*, this feature being here essential in order to keep the metal strip firm and immovable. The strips *d* of each hinge are made of a length sufficient to extend as far as, or even beyond, the rearmost edge of the step *E*, as shown in the drawings. This is for the purpose of enabling a shelf, *D*, for holding buckets or other purposes to be connected with the upper portion of the ladder by a hinged connection, the same parts which go to form the hinge between the front and rear portions of the ladder serving also to constitute the connection between the rear portion and the shelf, for the strips *d* of each hinge *F* are pivoted by pins *e* to the shelf *D*, so that it may be raised or lowered. Obviously, therefore, the hinges *F* will hold the steps *E* and *G* in the same plane, so that their top surfaces will be as one, and they will also connect the front and rear parts of the ladder and the bucket-shelf.

The shelf *D* is held in a horizontal position by means of a peculiarly-constructed bracing-connection with one of the steps *B*—as, for example, the one next the top, this being the most convenient. This brace comprises two parts, *f* and *g*. These parts are pivoted together, and they consist of metallic straps, preferably twisted at a certain point in their length, so that when the brace is looked at in the position shown in Fig. 3 one portion will be viewed flatwise and the other edgewise. Thus it will be seen that the inter-pivoted parts of the brace will be presented to each other with their flat faces in contact, while at the extremities of the parts the flat faces thereof will be in a different plane, so that they may be conveniently attached to the shelf and step, respectively, by looping the end of said parts and passing a staple on the shelf through said loop. This form of brace, obviously, presents many advantages in point of cheapness and ease of construction. It will be further noted that the arms *f* and *g* are each slightly curved, which causes the pivot at their junction to lie below a straight line extending from the shelf to the step. The result of this location of the pivot is that the shelf must be lifted, more or less, in order to buckle the brace and lower the shelf. Therefore, if the bucket and its contents were on the shelf, any slight accidental

upward hit on the brace at the joint would fail to buckle the brace and let fall the shelf, as might be the case if the extended brace were straight, and the pivotal connection between its parts consequently situated in a straight line joining the shelf and step. The arm *g* is provided with a flange or lug, *h*, which, when the arms are extended, rests on the lower arm and prevents said arms from dropping too far down.

In order to hold the front and rear portions of the frame at the proper distance apart when extended, we use braces, consisting of the sections *I* and *I'*, one of which is pivoted to the rear portion and the other to the front portion. These sections are pivoted to each other, and one, as *I'*, is provided with a lug or flange, *i*, which rests upon the section *I* and keeps them in their proper place when extended.

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

1. In a step-ladder, the combination of the front portion, the rear portion, the bucket-shelf, and the hinges connecting these three elements, said hinges consisting of two metallic strips pivoted to each other and to the bucket-shelf, and secured rigidly, the one to the front portion of the frame and the other to the rear portion, substantially as described.

2. The combination, with a step-ladder, of a bucket-shelf and a bracing device for the same, which consists of two curved and inter-pivoted arms, one of which is hinged to the said shelf and the other to one of the steps, substantially in the manner shown and set forth.

3. The combination, with a step-ladder consisting of hinged front and rear portions, of a bucket-shelf, *D*, pivotally connected with the strips *d* of the hinges *F* by pins *e*, and upheld by a bracing-connection with the front portion of the ladder, consisting of the twisted and pivoted arms *f* and *g*, one of which is provided with a lug, *h*, substantially as and for the purpose set forth.

4. The combination of the front portion of a step-ladder frame, the rear portion of the same, the hinges *F*, for connecting said parts, consisting of the pivoted strips *c* and *d*, secured the one to the front portion and the other to the rear portion, the shelf *D*, pivoted to the strips *d* by pins *e*, and mechanism for upholding said arms, consisting of the pivoted arms *f* and *g*, secured the one to the front part and the other to the shelf, substantially as shown and set forth.

5. The combination, with a step-ladder, of a bucket-shelf pivoted to the rear part thereof and upheld by a bracing-connection with the front portion, consisting of two curved inter-pivoted arms hinged to a step and to the shelf, respectively, and one of them being provided with a lug to keep the arms in proper place when extended, substantially as specified and shown.

In testimony whereof we affix our signatures in presence of two witnesses.

PETER H. PURSEL.

WILLIAM W. KELCHNER.

Witnesses:

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