

No. 621,468.

Patented Mar. 21, 1899.

C. S. COMINS.  
STEP LADDER.

(Application filed July 7, 1898.)

(No Model.)

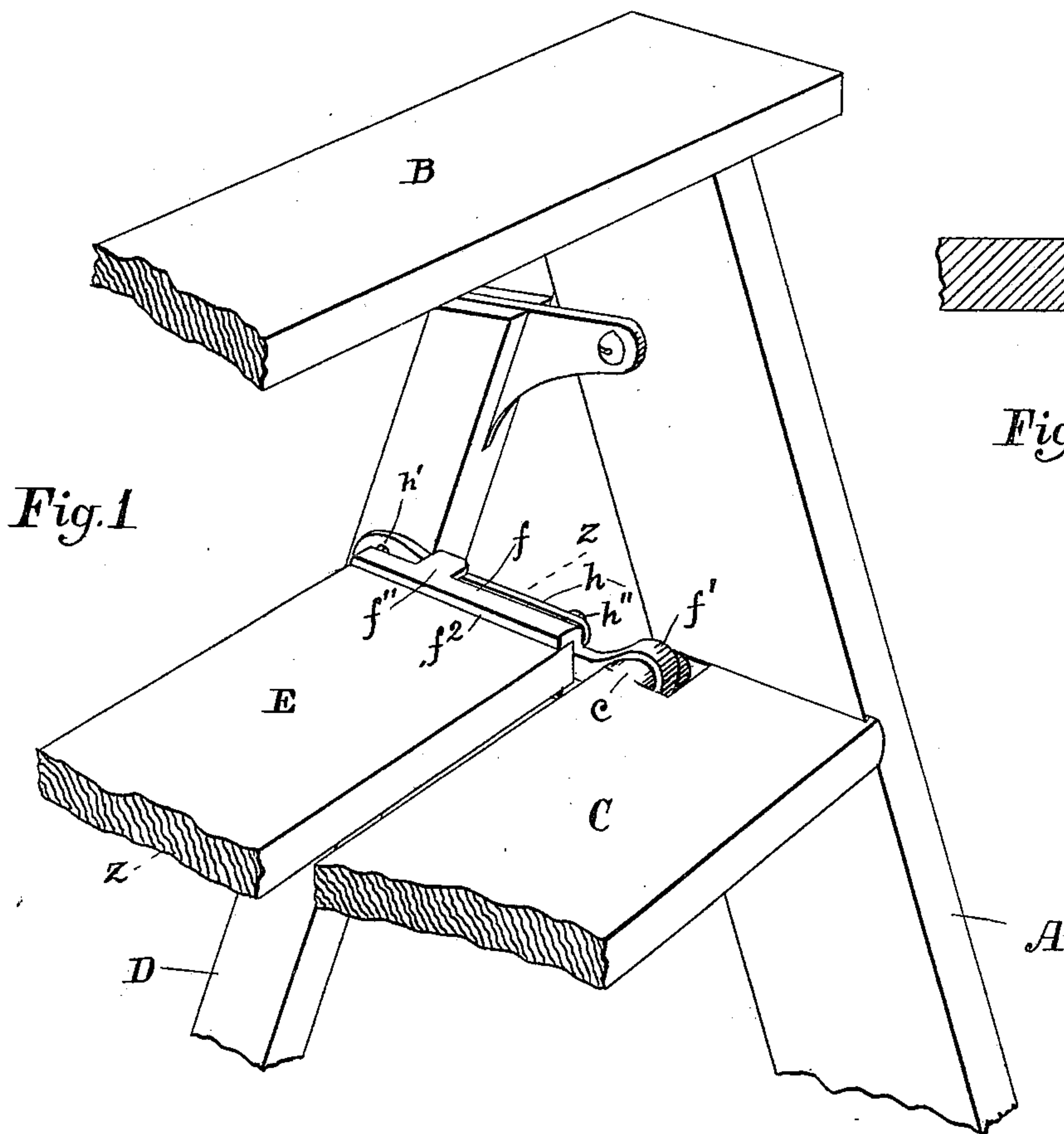


Fig. 1

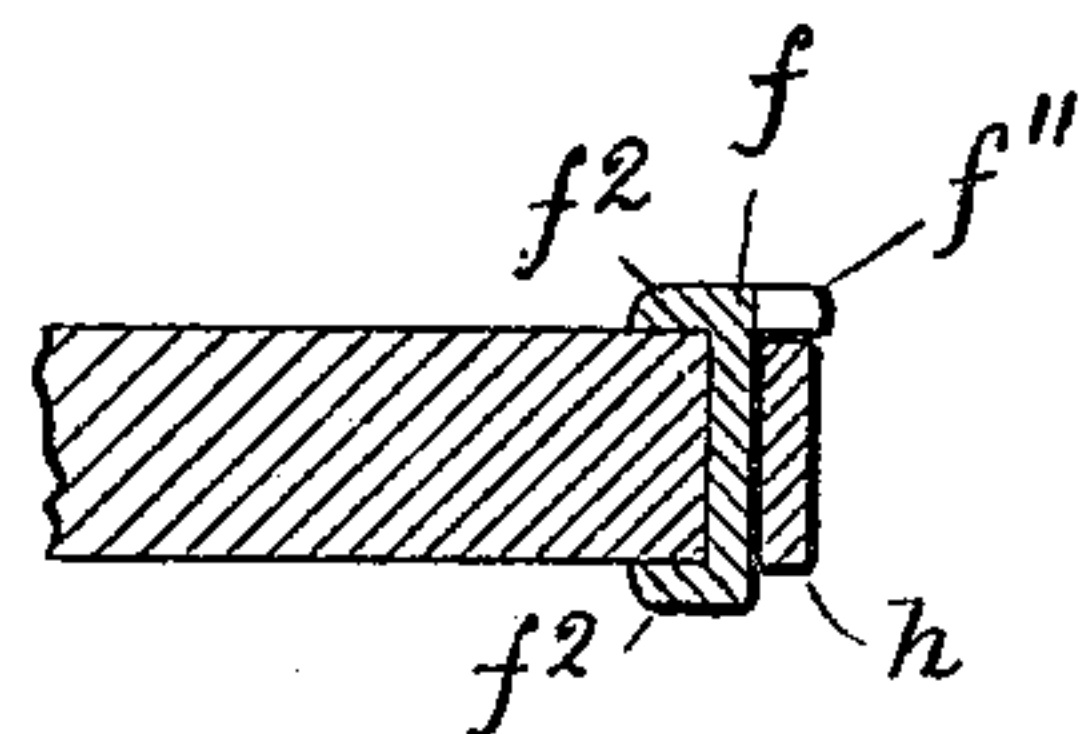


Fig. 3

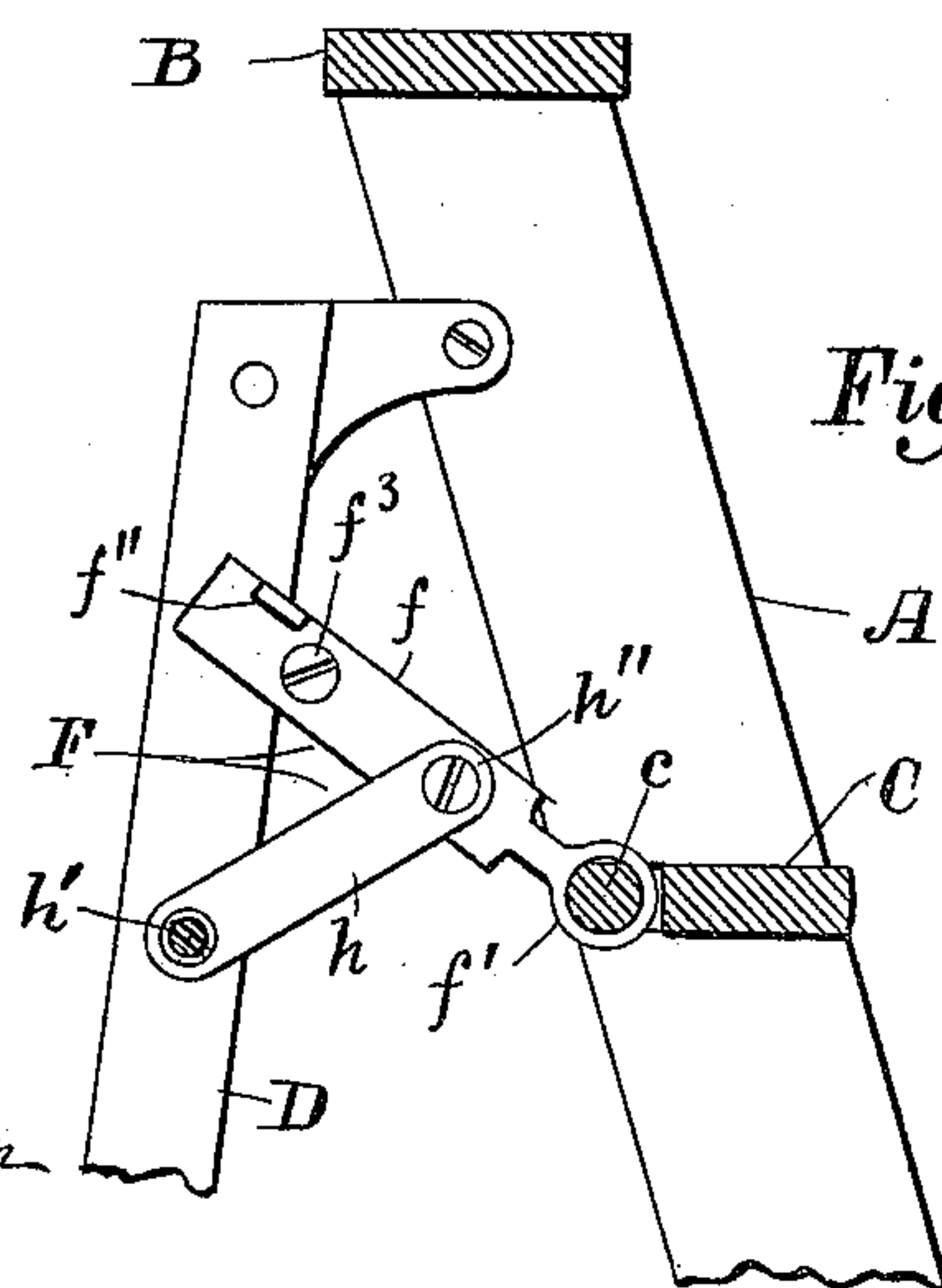


Fig. 2

Attest;

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# UNITED STATES PATENT OFFICE.

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## STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 621,468, dated March 21, 1899.

Application filed July 7, 1898. Serial No. 685,298. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES S. COMINS, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented a new and useful Step-Ladder, of which the following is a full, clear, and exact description.

The object of this invention is the construction of an improved stay-rod for step-ladders which shall contain the following desirable features: one in which the stay-rod when the ladder is in a condition for use shall constitute a double-width extension of next to the upper step of the ladder, and, further, one in which the pivot-joints of the stay-rod can be friction-tight and the ladder still be easily folded or unfolded either by the hand, foot, or knee.

These improvements are accomplished by the construction illustrated in the drawings forming part of this specification, in which—

Figure 1 is a perspective view of a portion of a step-ladder. Fig. 2 is a side sectional elevation of the same upon a smaller scale, and Fig. 3 is a detail sectional view upon the line *z z* in Fig. 1.

Referring to the drawings, A is the side bar of the ladder. B is the top step, C next to the upper step, and D is the brace. Said brace is pivoted to the side bar A, as shown, and is held in the proper condition for use by means of the stay-rod, comprising a toggle-joint F. There are of course two side bars and two stay-rods, but for the sake of conciseness I show and describe only one side of the step-ladder, the remainder being understood. Said toggle-joint stay-rod consists of the links *f* and *h*, pivoted together at *h''*, and the link *h*, pivoted to the brace-rod D at *h'*. The link *f* is pivoted to the ladder by being formed with the enlarged eye *f'*, engaged by the pintle *c*, shaped from the step C itself. Said link *f* is prolonged beyond the pivot-point *h''* and formed with the flanges *f''*. These flanges are designed to be about equal in length to the width of the step C and are for the purpose of receiving the end of the auxiliary step E. The pivot-screw *h''* and the additional screw *f'''* serve to fasten the end of said auxiliary step in place between said flanges. To hold said auxiliary step in its position of alinement with the step C, and thereby support the weight of the individual

standing upon both steps, the prolonged link *f* is formed with a lug *f''*, adapted to rest upon the link *h*, as shown in Fig. 1.

When the step-ladder is folded up, the auxiliary step E will take a position substantially parallel with the edge of the side bars A; but, as will be more clearly seen in Fig. 2, when one's hand is applied to the rear edge of the auxiliary step E he possesses a very pronounced leverage in bringing said step E into this position, and thereby folding the ladder. In the same manner he has an equal leverage in pressing back against said edge, and thereby forcing the stay-rods, and consequently the brace-bars, into proper position for the ladder's use. Consequently the pivot-joints of the stay-rods can be made quite tight without in the least interfering with the ease of the ladder's manipulation. Such tightness serves both to render the ladder more firm and strong when in use and in addition prevents its accidental folding up or unfolding when being moved about. The great advantage, however, of my step-ladder consists in its auxiliary step. I have noticed that when using a step-ladder the individual nine times out of ten will not stand upon the top step, but upon the one next below. The reason for this is that he cannot brace himself when standing upon the top step; but when his feet rest upon the next lower step he can brace his legs against the front edge of the top step and then, leaning well forward, put his body into a position of stable equilibrium. His center of gravity is thus far enough forward to prevent his falling backward, while at the same time the top step preserves him from toppling forward; but with the usual narrow step his feet rest either upon the heel or ball of the foot or upon the instep alone. This not only tires greatly the person so standing, but causes considerable pain and distress to the feet. With my auxiliary step, the support for the feet being broadened to a distance ample for even the largest feet, there is absolutely none of this distress and weariness; but there is a platform upon which the user can stand solidly and firmly, freely move about thereon, or even rise upon his toes.

As will be evident from inspection of Figs. 1 and 2, in case one is carrying some article in one hand and is holding the step-ladder in



the other he does not require to set such article down; but by the pressure of his foot or knee against the rear edge of the auxiliary step the ladder will be forced into either its  
5 folded or unfolded position, as desired. In the case of low step-ladders for household use this ease of manipulation is a great convenience, while its absolute immunity from all danger of folding up and collapsing when in  
10 use renders it still more valuable for hasty and not always agile housekeepers.

What I claim as my invention, and for which I desire Letters Patent, is as follows, to wit:

15 1. In a step-ladder, the combination with the ladder and its brace, of the auxiliary step hinged to the rear edge of one of the steps of the ladder and adapted to be either turned down to form a continuation of said step or  
20 to be folded up vertically against the ladder, and links pivotally held by said auxiliary step and said brace and adapted when said auxiliary step is turned down to form a support therefor and to hold said brace.

25 2. The combination with the side bars, steps and brace of a step-ladder, of the links pivoted to said brace, the links pivoted to one of said steps and to said first-named links

and prolonged beyond the pivotal junction of said pairs of links, the auxiliary step secured  
30 to said prolonged portion of said links, and means for supporting said auxiliary step in a horizontal position when the step-ladder is unfolded for use, substantially as and for the purpose set forth. 35

3. The combination with the side bars, steps and brace of a step-ladder, of the links pivoted to said brace, the links pivoted to one of said steps and to said first-named links and  
40 prolonged beyond said juncture, and the auxiliary step, said prolonged portions of said links being formed with the flanges for better securement to the ends of said auxiliary step, and each of said prolonged portions being  
45 formed with a lug adapted to rest upon the links pivoted to the brace and thereby support the said auxiliary step when the ladder is in a condition for use, substantially as set forth.

In testimony that I claim the foregoing in-  
50 vention I have hereunto set my hand this 23d day of June, 1898.

CHARLES S. COMINS.

Witnesses:

A. B. UPHAM,  
EDWD. P. COMINS.