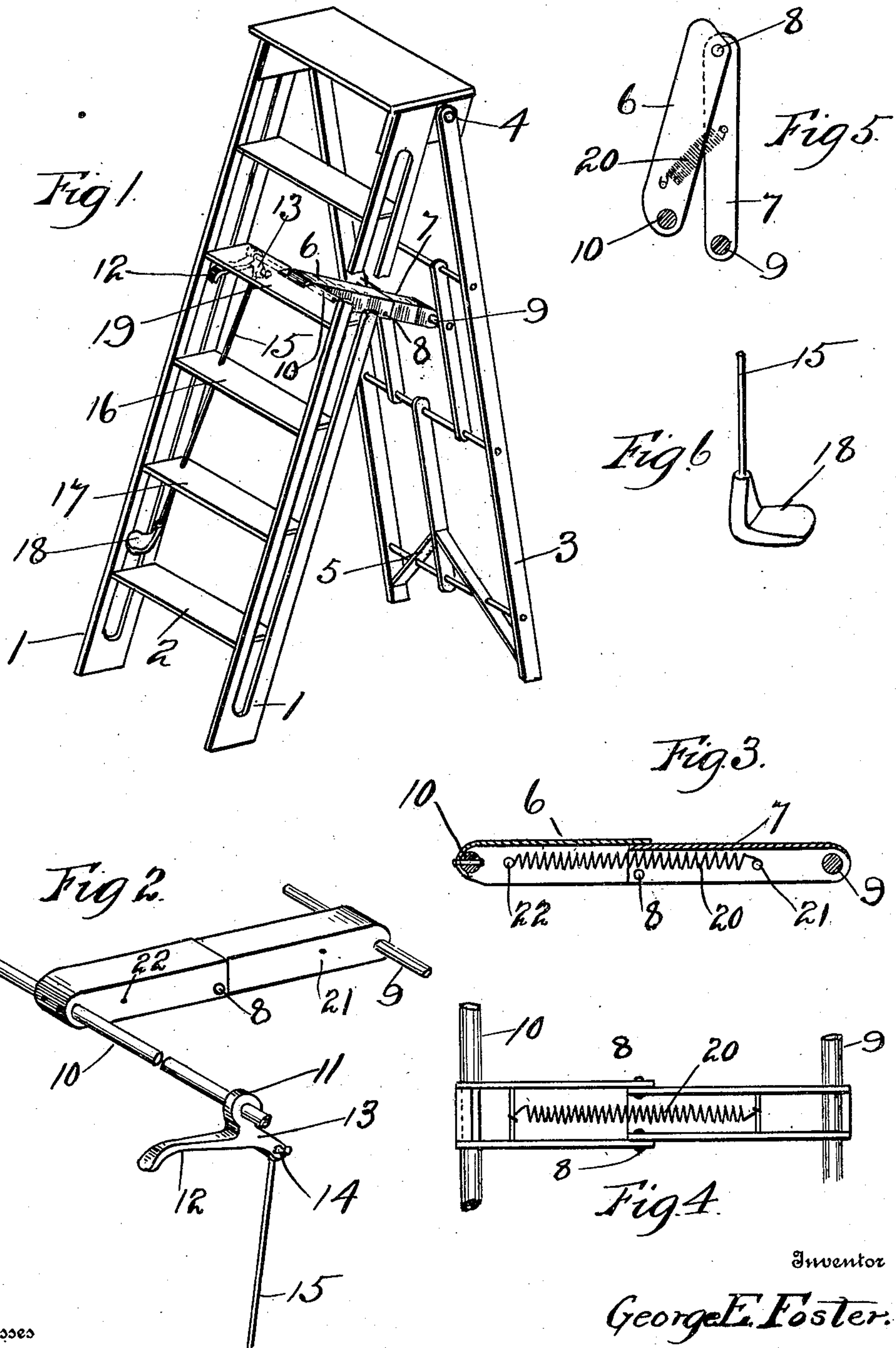


No. 861,583.

PATENTED JULY 30, 1907.

G. E. FOSTER.
STEP LADDER.

APPLICATION FILED APR. 18, 1906.



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STEP-LADDER.

No. 861,583.

Specification of Letters Patent.

Patented July 30, 1907.

Application filed April 18, 1906. Serial No. 312,369.

To all whom it may concern:

Be it known that I, GEORGE E. FOSTER, a citizen of the United States, residing at the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Step-Ladders, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to mechanically operated step ladders, and has for its object to provide a step ladder that may be opened and locked in its open position without the use of the hands in the accomplishment of the same.

The ordinary step ladder requires the use of both hands to swing back the standard and lock the same in its open position. It is very often found in practice that the person using a step ladder has both hands engaged and that he has to deposit the articles to free his hands before the ladder can be used, or else an attendant must accompany the operator in order to facilitate his work.

By the use of my improved ladder the operator can handle the same with the use of but one hand. The ladder may be set in position and by a slight pressure of the foot on the treadle the supporting standard automatically swings back and the hinged stay member naturally falls into position and is automatically locked to firmly retain the standard in the open position.

Another advantage of my device is that when it is desired to close the ladder by bringing the standard back against the steps, a lever is pressed by the thumb or finger thereby throwing up the jointed stay member and the standard automatically swings in against the ladder and is held in that position by spring pressure.

With these and other objects in view the invention is fully set forth in this specification and more particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1—is a perspective view of the step ladder in its open position, illustrating the mechanism for operating the same. Fig. 2—is an enlarged perspective view illustrating the operating mechanism independent of the ladder. Fig. 3—illustrates the hinged stay member extended and in section showing the location of the tension spring therein acting to hold said members in its open position. Fig. 4—is a view of the underside of the said stay member. Fig. 5—shows said stay member in said folded position. Fig. 6—is the treadle member which the foot engages and presses downward when it is desired to open the ladder.

Referring to the drawings 1—1 are the two sides or framework of the ordinary step ladder between which the steps 2 are held in any desired manner. The usual supporting standard 3 is pivotally hung at 4 to the up-

per end of the steps and is adapted to swing outward into the position shown in Fig. 1 to support the steps in a slightly inclined position. This standard may be braced as at 5 in any desired manner to support and stiffen the same. The jointed brace or stay member 60 is constructed of two sections 6 and 7 which are preferably of an inverted trough-shape and may be struck up of sheet metal or constructed in any other desired manner, the end of one section fitting within the other and the two being pivoted together near their lower edge 65 at 8—8.

The coil spring 20 is located out of sight and out of the way on the inside of the trough-shaped members and is connected at one end to a pin 21 in one member and at its opposite end to a pin 22 in the other member, which brings the spring on a line above the joint pivots when the stay is extended, thereby locking the same in that position. One end of this stay is connected to the cross bar 9 in the supporting standard and the opposite end of this member is rigidly fixed to the shaft 10 which shaft is designed to extend through the step 19 and be supported thereto or extend across the ladder under a step to receive its bearing in the steps or in the two side frames 1—1. On this bar is mounted and fixed the dog 11 which has an outwardly extending hand lever 12 that projects forward beneath the steps 19 and just beyond the edge of the same so it may be readily engaged by the thumb or finger to be operated when it is desired to close the ladder. Extending rearwardly and downwardly from this lever member is the arm 13 which is provided with a hole at 14 to receive the connecting wire 15, this wire extends downward through two of the steps 16 and 17 and is provided with the foot treadle 18 that is connected at its lower end within easy reach by the foot from the floor.

One advantage of a step ladder constructed with my improved device is, that the same normally remains in its closed position, the pivoted stay member closes similar to a jack-knife as illustrated in Fig. 5, and its operating spring acts on the standard and prevents the same from becoming inadvertently opened while being carried about.

When the operator wishes to use the ladder he places the same in an upright position and by bringing a little pressure of the foot on the treadle 18 the shaft 10 is rotated and the stay members are brought to their extended position carrying the standard outward in position to support the steps. As both members of the stay are brought into line with each other the spring 20 takes the position illustrated in Fig. 3 where as they are drawing above the hinged or pivoted portion of the stay members the tension of the spring serves to prevent the members from opening, thereby securely locking the same in its open position against being inadvertently closed. When the operator has finished his

work with the ladder he simply presses his thumb or finger against the lever 12 which is also attached to the shaft 10, thereby raising the pivoted portion of the stay members above the line of the spring, after which the tension of the same automatically closes the standard and holds it securely in that position against the frame of the ladder.

Another feature of the invention is that by connecting the stay member to the center portion of the frame work there is nothing to prevent the ladder from being set up close to the corner of a building in which position it is often desirable to use the same in practice. This cannot be done where the stays are attached to the outside of the framework.

The device is extremely simple in its construction and practical in its operation.

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

1. A step ladder comprising a ladder section, a standard section pivotally connected thereto, a stay member connected to both of said sections and formed of two members pivotally united and adapted to fit one within the other, means for extending and folding said stay member to open and close the ladder sections, and automatically operated means connected to the stay member to normally prevent folding thereof when extended and also to accelerate the folding movement thereof.

2. A step ladder comprising a ladder section, a standard section pivotally connected thereto, a brace having its ends pivotally connected to the ladder and standard sections respectively, said brace being formed of two members, having their contiguous ends pivotally connected and fitting one within the other, means for rocking one of said brace members to fold and unfold the brace, and means carried by the brace and automatically positioned by the unfolding movement of the ladder to normally prevent folding of the brace.

3. A step ladder comprising a ladder section, a standard section pivotally connected thereto, a brace having its ends pivotally connected to the ladder and standard sections respectively, said brace being formed of two members having their contiguous ends pivotally connected and fitting one within the other, means for rocking one of said members to fold and unfold said brace, and means carried by the brace and automatically positioned by the unfolding movement of said brace to normally prevent folding thereof, said means being so arranged as to automatically assist the folding movement of the brace when the sections thereof have been started towards folding position.

4. A step ladder comprising a ladder section, a standard section pivotally connected thereto, a brace formed of two trough like members pivotally connected at their contiguous ends, said members being respectively connected to the ladder and standard sections, means for rocking one of said members, and a spring located within said trough-like members and having its ends secured to the respective members at a point above the plane of the pivotal connection between said members.

5. A step ladder comprising a ladder section, a standard section, a brace having its ends pivotally connected to the ladder and standard sections, respectively, said brace being formed of two members fitting one within the other and pivotally connected to each other, a hand lever pivoted to the ladder section and connected to one of said

members for rocking the same to fold and unfold said brace, and a spring having its ends connected to the members of said brace.

6. A step ladder comprising a ladder section, a standard section, a brace having its ends pivotally connected to the ladder and standard sections respectively, said brace being formed of two members fitting one within the other and pivotally connected to each other, a hand lever pivoted to the ladder section and connected to one of said members for rocking the same to fold and unfold said brace, a foot lever, a pitman connecting the hand and foot levers, and a spring having its ends connected to the members of said brace.

7. In a step ladder, the frame portion including the sides and the steps, a supporting standard pivoted thereto a rotatable shaft journaled in said frame portion, a jointed stay member pivotally connected to the standard at one end and fixed to said shaft at its opposite end, a dog also fixed to said shaft, and a foot treadle connected to said dog whereby a pressure of the foot will rotate said shaft and swing the jointed stay member down into line to throw back said standard and open the ladder.

8. In a step ladder, the frame portion including the sides and the steps, a supporting standard pivoted thereto, a rotatable shaft journaled in said frame portion, a jointed stay member pivotally connected to the standard at one end, and fixed to the shaft at its opposite end, a dog also fixed to said shaft, and a foot treadle connected to said dog whereby a pressure of the foot will rotate said shaft and swing the jointed stay member down into line to throw back said standard and open the ladder, and an extending lever connected to said shaft to be actuated by hand to rotate said shaft, raise the joint of the stay member and allow the standard to swing in and close the ladder.

9. In a step ladder, the frame portion including the sides and the steps, a supporting standard pivoted thereto, a rotatable shaft journaled in said frame portion, a jointed stay member pivotally connected to the standard at one end and fixed to said shaft at its opposite end, a spring connected to said member on each side of the joint thereof, said spring being arranged to act in a line above the joint to hold said members open when in their extended position, a dog fixed to said shaft, and a foot treadle connected to said dog whereby a pressure of the foot will rotate said shaft and swing the jointed stay member down into line to throw back said standard and open the ladder.

10. In a step ladder, a framework including the steps, a supporting standard pivoted thereto, a rotatable shaft journaled in one of the steps, a jointed stay member pivotally connected to the standard at one end and fixed to said shaft at its opposite end, a spring located in said jointed stay member and arranged to hold the same in its open position when opened, a dog fixed to said shaft, a foot treadle connected to said dog whereby a pressure of the foot will rotate said shaft and swing said jointed member down into line to throw back said standard and open the ladder, and an extending lever connected to said shaft to be actuated by hand to rotate said shaft, raise the joint of the stay member whereby said spring will act on said standard to swing it in and hold the same in its closed position.

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

GEORGE E. FOSTER.

Witnesses:

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