(No Model.)

J. H. WHITTINGTON.

EXTENSION LADDER.

No. 457,805. Patented Aug. 18, 1891.

Fig.1.

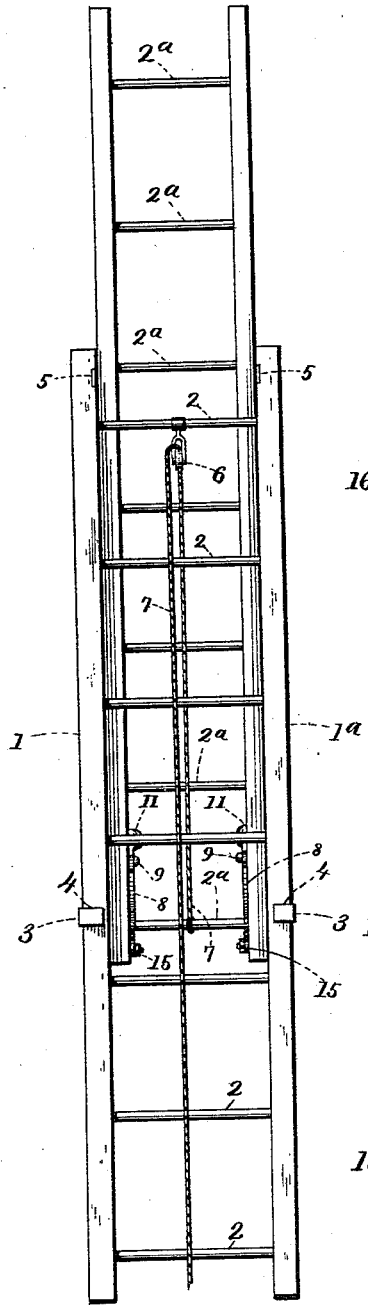


Fig.3.

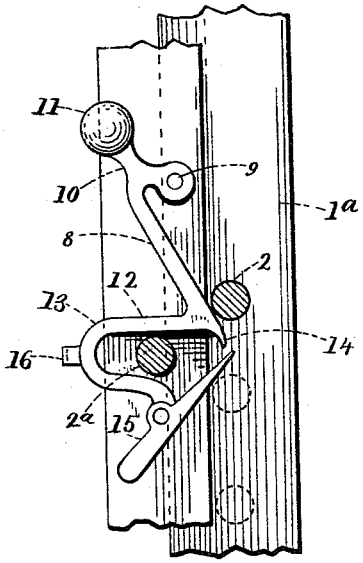


Fig.2.

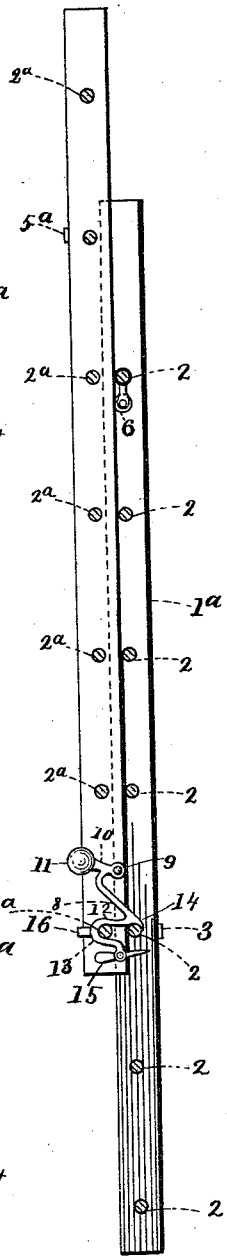


Fig.4.

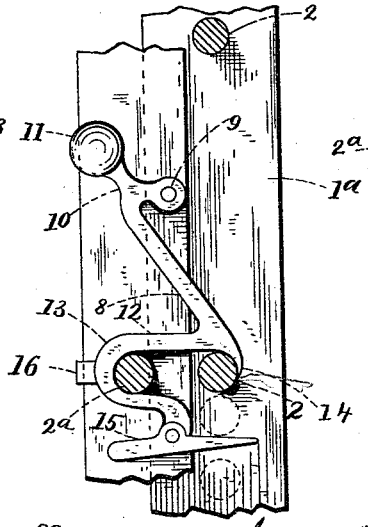
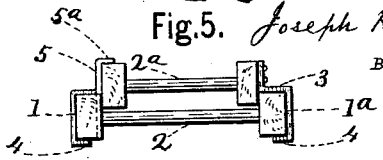


Fig.5.



Witnesses.

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EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 457,805, dated August 18, 1891.

Application filed December 1, 1890. Serial No. 373,149. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. WHITTINGTON, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Extension-Ladders, of which the following is a specification.

My invention consists in certain improvements in that class of extension-ladders which are adapted to be operated or lowered or extended to any height desired by means of a rope secured to the lower round of the movable ladder and passed up over a grooved friction-pulley and then down to the ground or to the operator, the fastening devices being so constructed as to be made to operate automatically by the act of raising and lowering the ladder, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation showing the ladder partly elevated and the fastening device disengaged. Fig. 2 is a side sectional elevation showing the movable ladder slightly elevated and fastened. Fig. 3 is a portion of a ladder enlarged, showing the fastening device in position to permit the moving of the ladder easily up or down. Fig. 4 also represents a portion of a ladder, showing the position of the fastening device when the ladder is raised and secured at the point required; and Fig. 5 is a top end view of the ladder, one of the top holding devices being omitted so as to show the lower end more plainly.

In said drawings, 1 1^a represent the sides of the stationary ladder, and 2 the rounds of the same.

The movable ladder is adapted to slide easily up or down between the sides of the stationary ladder, and is kept in place at the lower end between the rounds 2 and the two holding-pieces 3, fastened to the lower part of the movable ladder and bent so as to pass over the surface at the back of the stationary ladder and over the outer sides, and then they turn inward toward each other over the front face of the same at the points 4. (See Figs. 1 and 5.) This fastening device holds the lower end of the movable ladder and allows it to be moved easily up or down along the stationary ladder.

The upper end of the movable ladder is held in its place to the stationary ladder by two holding portions 5, which are set in and rigidly fastened to the inner sides of the stationary ladder, so as to be of even surface therewith. They then pass over the outer sides of the movable ladder and bend over the edges of the same at the points 5^a. (Shown in Figs. 2 and 5.)

The automatically-acting releasing and holding devices, of which there are two, one on each side of the ladder, are secured to the movable ladder.

At the top round of the stationary ladder is secured a grooved friction-pulley 6, and to the bottom round 2^a of the movable ladder is secured a rope 7, which is then passed up between the rounds of the two ladders, then forward over the grooved pulley, and from thence down to the ground or to a suitable point to be reached by the hands of the operator.

The holding and releasing devices consist of two swinging arms 8, one on each side of the movable ladder, pivoted thereto by a pin 9 about midway between the two lower rounds 2^a of the movable ladder. The upper portion of the arms 8 is provided with a backwardly-inclining arm 10, having a weighted portion 11, which keeps its lower end inclined forward in its normal position. At the lower part of the arm 8 is a U-shaped portion 12, the rear portion of which 13 is formed so as to partly surround the lower round 2^a of the movable ladder, and at the forward portion of this yoke is a downwardly-projecting portion 14. This construction is important, as both fastening devices rest on the two rounds 2 and 2^a, and thereby hold both ladders closely together, and the more the weight upon the movable ladder the stronger the two ladders are secured together. At the lower part of the U-shaped portion 12 is a swinging arm 15, pivoted near the center of its length and above said center, so as to hang horizontal, or substantially so, when left to itself. On the back of the U-shaped portion is a projecting flange portion 16, which rests against the back of the ladder when the device is in the position shown in Fig. 4. This also increases the strength of the parts that hold the ladder securely together when elevated.

The operation is as follows: By pulling continuously in either direction on the rope the ladder may be easily raised or lowered without any obstruction. When it is desired to fasten the device at any desired round, it should be raised just enough to allow the point 14 of the fastening devices to move forward over the round and then let it down until the fastening rests in the position shown in Fig. 4, when everything is held taut and secure. If the ladder is raised too far before dropping it in place, then the round will pass the end of the pivoted bar or arm 15 and a reverse movement of the ladder will cause the round as it moves up to turn the arm 15 into the position shown in Fig. 3 and prevent the device from locking, so that the ladder under such conditions can be moved freely without being caught or secured at any point.

I claim as my invention—

1. An extension-ladder consisting of two ladders held together so as to be movable longitudinally along each other back and forth, in combination with a rope secured to the lower round of the movable ladder and passing up over a grooved pulley on the stationary ladder, and loosely-swinging fastening-arms pivoted to the movable ladder, each having a U-shaped portion 12 and a forward downwardly-inclining portion 14 for holding the rounds of both ladders together at the same time, substantially as described.

2. The combination, with an extension-ladder, of a pivoted arm provided with a U-shaped portion that surrounds the round of the movable ladder, and a forward downwardly-projecting portion adapted to catch and hold the round on the stationary ladder with a pivoted swinging arm 15, substantially as and for the purposes described.

JOSEPH H. WHITTINGTON.

Witnesses:

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