No. 655,246. Patented Aug. 7, 1900.

A. T. KINGSLEY.

EXTENSION LADDER.

(Application filed Dec. 22, 1899.)

(No Model.)

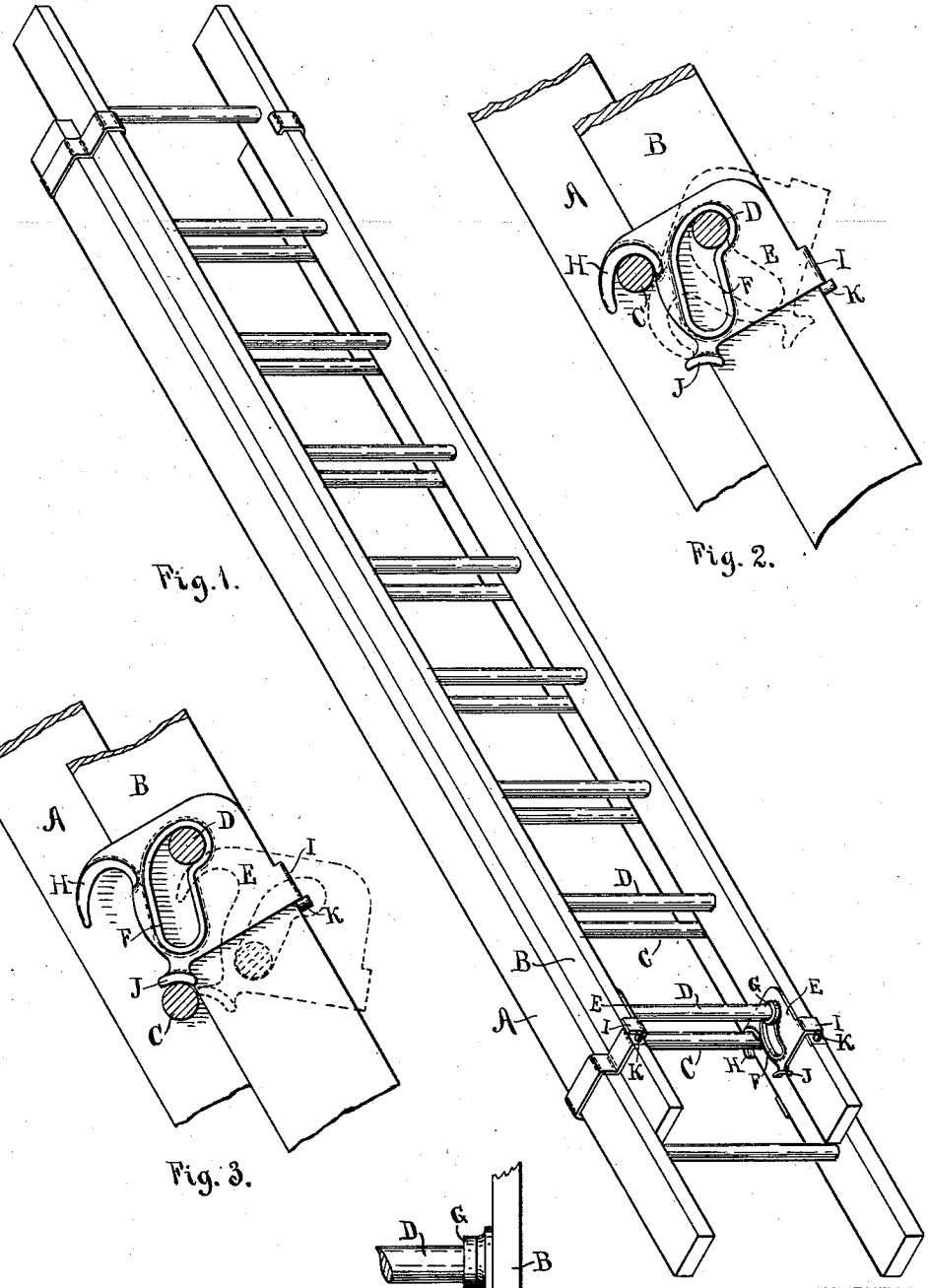


Fig. 1.

Fig. 2.

Fig. 3.

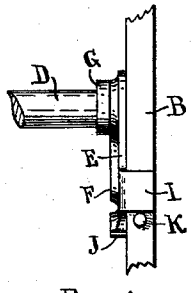


Fig. 4.

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EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 655,246, dated August 7, 1900.

Application filed December 22, 1899. Serial No. 741,220. (No model.)

To all whom it may concern:

Be it known that I, ALBA T. KINGSLEY, a citizen of the United States, residing at Millport, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Extension-Ladders, of which the following is a specification.

My invention relates to improvements in the locking devices by which extension-ladder sections are made fast to the main ladder at different elevations; and the object of my improvements is to provide a simple and cheap lock which will act automatically without the employment of springs. I attain this object by means of the construction and arrangement of parts, as illustrated in the accompanying drawings, in which—

Figure 1 represents an isometric view of an extension-ladder with my improved locks applied thereto; Fig. 2, a side view showing one of the locks in locking position; Fig. 3, a similar view showing the position of the parts when the extension is to be lowered, and Fig. 4 a plan view of one of the locks.

Similar letters refer to like parts in the several views.

A represents the main or butt ladder, and B the extension-ladder section, the rounds on the main ladder being represented by C and those on the extension by D.

E E represent the locks, which are positioned adjacent the inside of the extension sides. These locks are preferably formed of a single square-shaped piece of thin metal, and they are provided with angular slots F, which engage one of the rounds D, the locks being held from lateral movement on the round by means of collars G. A hook H projects from the upper inside corner of the lock in position to engage the round C of the main ladder. At the lower outer corner of the lock a lateral projection or lug I overlaps the top of the ladder-rail. At the inner lowermost corner, below the hook H, is a footpiece or tripper J, which projects below the extension-ladder in position to engage the rounds C of the main ladder. Preferably the body of the lock E is made of little thickness in order to attain lightness and a minimum amount of metal, the rims of the slot F, hook H, and tripper J being provided with projecting flanges in order to provide wider bearing-surfaces upon the ladder-rounds and to minimize the wear upon them.

The operation of this lock will be fully apparent upon an inspection of Figs. 2 and 3 of the drawings. In Fig. 2 I have shown by broken lines the position assumed by the lock when the extension is raised. As soon as the hook H has passed the round C the lock will drop into normal position, and a slight lowering of the extension will cause said hook to engage the round C, as shown in Fig. 2. When it is desired to lower the extension, said extension must first be run out for a distance sufficient for the tripper J to pass and engage the top of round C, as shown in Fig. 3. Then as the extension is lowered this tripper will throw the lock out into the position indicated by the broken lines, thereby throwing the hook H out of line with the round C. If the extension be lowered very slowly, then as soon as the tripper J has passed the round the lock will drop back into its normal position in time for the hook H to again engage the round; but if the extension be lowered with a modicum of speed the hook H will have passed the round C before the lock has regained its normal position, the tripper J then coming in contact with the next round C, thereby causing the lock to be again thrown out and allowing the extension to continue its descent. This action of the lock is attained by reason of the configuration of the slot F, this slot causing the hook H to travel in a diagonally-downward path relatively to the extension side after the tripper has passed the rounds C, so that since the extension is also traveling downward the point of the hook will have passed by the rounds C before it has been thrown out enough to engage them, unless, as has been said, the extension is lowered very slowly. The lug I acts conjointly with the slot to produce this result, as will be apparent from an inspection of the drawings. The lug forms a pivot upon which the lock turns when the tripper is brought into action, as shown in Fig. 3, and as a counterweight to throw the lock into locking position when the extension is being raised, as shown in Fig. 2. It prevents undue oscillation of the lock in either direction, and, furthermore, when the hook H is in position on a round C said lug rests firmly against the top side of the exten-

sion-ladder rail, thereby preventing any displacement of the lock, the downward pressure of the round D acting upon the lock at the bend of the slot and causing a corresponding pressure of the lug against the rail and of the hook upon the round C. In order to prevent downward slippage of the lug upon the ladder-rail when the lock is being tripped, as in Fig. 3, and a consequent tendency of the slot to bind on the round D at its bend, I preferably provide a pin or stop K on the top of the rail to engage and hold said lug in its pivotal position, although the lock can be made to operate without making use of such pin or stop.

This lock, it will be seen, acts entirely through gravity and without the interposition of springs or other parts likely to get out of order. The lock will act at any forward inclination of the ladder, and, furthermore, it will act when the ladder is tilted some degrees backward from a vertical position. The lock is also composed of a minimum number of parts, the essentials for each lock comprising only the one-part body-piece E and the collar G to hold it in place upon the round D, said collar being preferably formed as an integral part of the round. Instead, however, of pivoting the lock upon a ladder-round it may, if desired, be positioned elsewhere on the side of the ladder-rail by pivoting it upon a suitable stud.

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

1. An extension-ladder lock comprising a slotted body-piece carrying a downwardly-projecting hook at its forward end, a tripper projecting from its lower end, and a lug overlapping the top of the ladder-rail opposite said tripper, the lock being hung by its slot upon a pivot projecting from the side of the ladder-rail substantially as described.

2. An extension-ladder lock comprising a body-piece provided with an angular slot, a round of the ladder passing through said slot and having a collar thereon to prevent lateral motion in the lock, a downwardly-projecting hook at the forward end of said body-piece, a tripper projecting from the lower end thereof, and a lug overlapping the top of the ladder-rail opposite said tripper.

3. An extension-ladder lock comprising a body-piece provided with an angular slot, a round of the ladder passing through said slot and having a collar thereon to prevent lateral motion in the lock, a downwardly-projecting hook at the forward end of said body-piece, a tripper projecting from the lower end thereof, a lug overlapping the top of the ladder-rail opposite said tripper, and a stop on the top of said rail to engage the lower side of said lug.

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

ALBA T. KINGSLEY.

Witnesses:
M. E. VERBECK,
EDITH L. MILLER.