

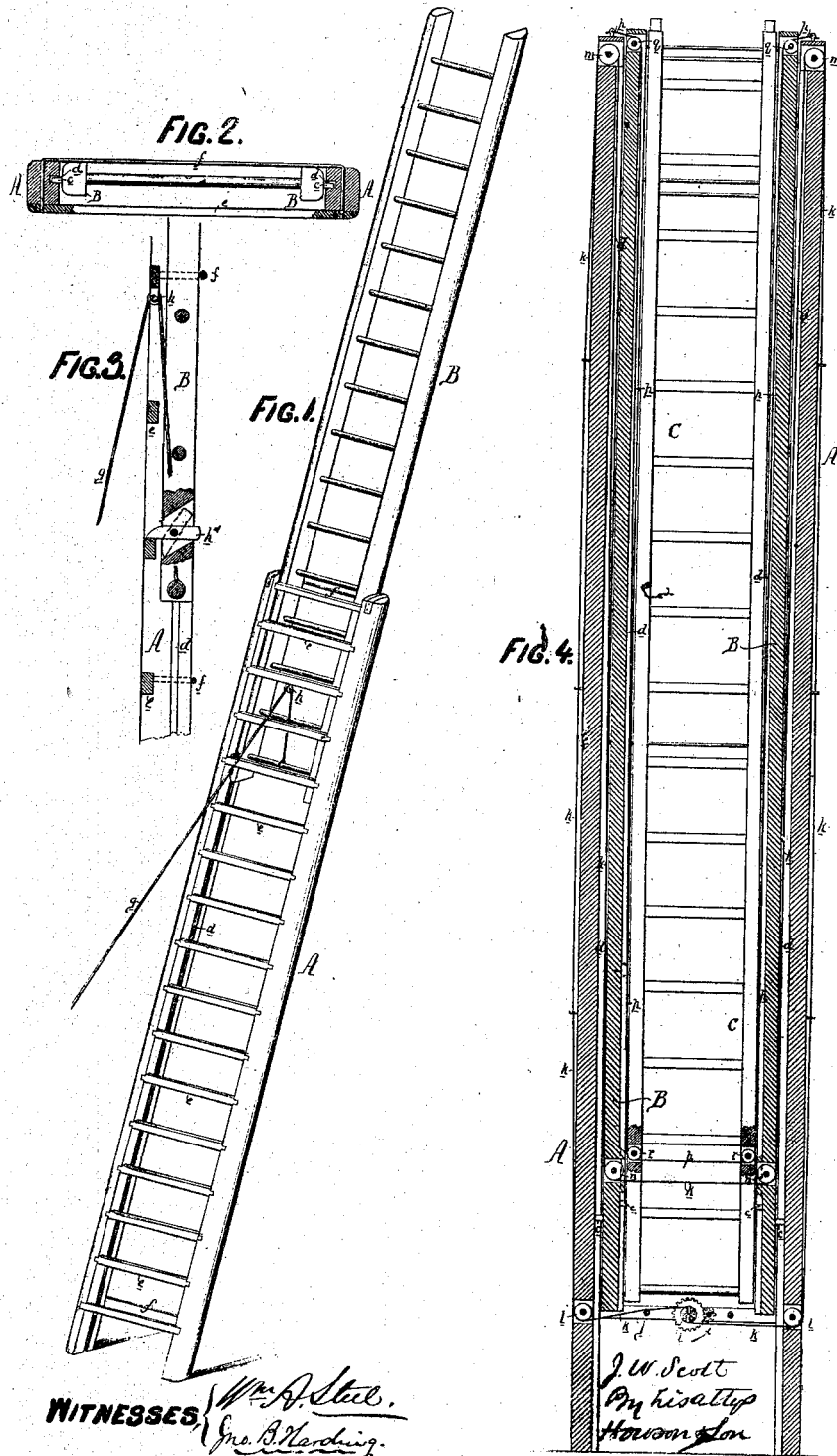
J. W. Scott,

2. Sheets, Sheet. 1.

Ladder.

No. 107,822.

Patented Sep. 27. 1870.



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Ladder.

No. 107,822.

Patented Sept. 27, 1890.

FIG. 6.



FIG. 7.



FIG. 5.

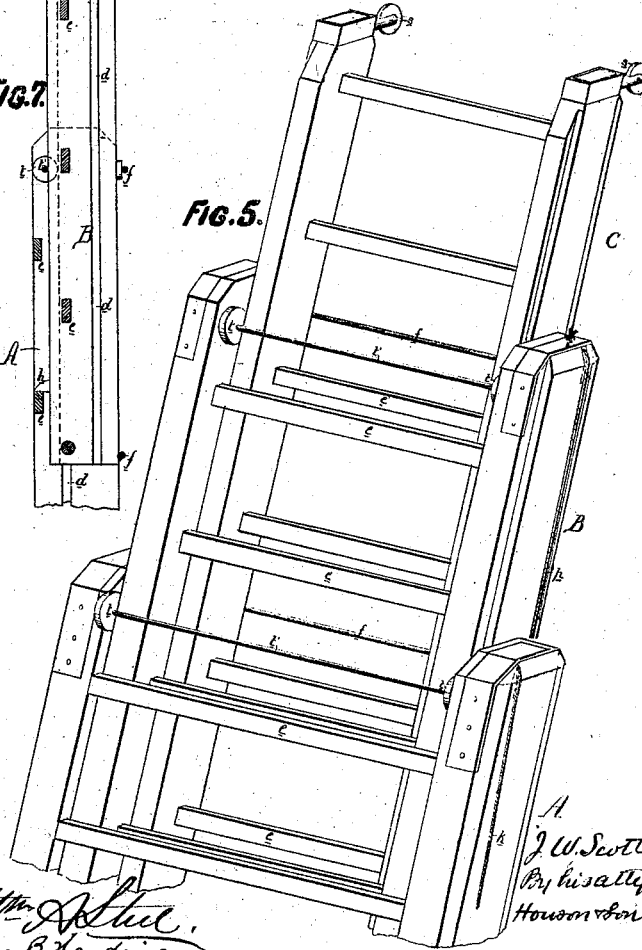
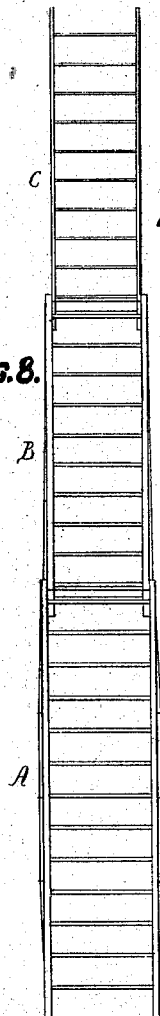


FIG. 8.



WITNESSES

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United States Patent Office.

JOHN WILLIAM SCOTT, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 107,822, dated September 27, 1870.

IMPROVEMENT IN EXTENSION LADDERS.

The Schedule referred to in these Letters Patent and making part of the same

I, JOHN WILLIAM SCOTT, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improved Extension Ladder, of which the following is a specification.

Nature and Objects of the Invention.

My invention relates to improvements in ladders composed of two or more sections arranged to slide one within the other, so that, when not extended, the ladder shall occupy no more room than is required for its lowermost section; and

My invention consists of a peculiar arrangement of parts and devices, fully described hereafter, whereby the ladder is rendered more compact and efficient in its operation.

Description of the Accompanying Drawing.

Figure 1, sheet 1, is a perspective view of the simplest form of my improved extension ladder;

Figures 2 and 3, sectional views of the same drawn to an enlarged scale;

Figure 4, a sectional elevation of a ladder of larger size, made in three sections;

Figure 5, sheet 2, an enlarged perspective view of the upper portion of fig. 4, with the sections slightly extended;

Figures 6 and 7, sectional views of the same, also enlarged; and

Figure 8, a front view of the ladder, fully extended, and drawn to a reduced scale.

General Description.

The ladder illustrated in the first three figures of the drawing, consists of two sections, A and B, each of which forms in itself a complete ladder, composed of side pieces and connecting-rungs, as usual.

The section B, however, although of about the same length, is narrower, and of less thickness, than the section A, so that it may be contained entirely within the latter, as best observed in fig. 2, and on the opposite edges of said section B, close to the lower end of the same, are projections or pins, *c c*, adapted to, and arranged to slide in longitudinal grooves, *d d*, formed on the inner edges of the side-pieces of the section A.

The pins *c* may, if desired, be furnished with friction-rollers arranged to slide in the grooves, but this is not essential.

The steps or rungs *e* of the section A, instead of being arranged in the center, as usual, are secured to the front edge of the same, so as to afford sufficient space for the reception of the section B, the latter being retained in position by means of these rungs in front, and behind by metal rods or braces, *f*, which extend across, and are secured to the rear edges of the side pieces of the section A.

It will be seen that, owing to the arrangement of

the bars *f*, against which the rear edges of all the sections bear, excessive strain is removed from the pins *c*, the sections slide more freely, and the ladder is stronger and more durable.

For a light ladder, such as that above described, no special tackle will be required for the purpose of extending the inner section B. A simple cord *g*, secured to the lower rung of the latter section, and passed around a pulley, *n*, hung to one of the upper rungs of the section A, as plainly illustrated in figs. 1 and 2, will in most cases answer the purpose.

When this simple hoisting-tackle is used, however, it will be necessary to employ a suitable stop or catch to prevent the section B from sliding back when elevated, and for this purpose I prefer to use the device shown in fig. 3.

This consists of a lever or latch, *k*, hung to a pin within a recess of the section B, close to the bottom of the latter, and weighted at one end, so that it will have a tendency to assume the horizontal position shown.

The projecting beveled end of this latch will strike the under side of each rung *e*, as the section B is elevated, but will yield and offer no impediment to the upward movement of the latter. If it be attempted, however, to lower the section B, the latch will strike the upper side of one of the rungs *e*, and will prevent said movement until it is turned to the position indicated by dotted lines, and so retained by a pin, or otherwise.

In fig. 4, and in the remaining figures of the drawing, a larger and heavier ladder than that described is represented, it being made in three sections of about twenty feet each, so that the ladder, when fully extended, as shown in fig. 8, will have an extreme length of from fifty to fifty-five feet.

This ladder is intended principally for the use of builders or firemen, for scaling the walls of houses, and the uppermost and narrowest section C is contained within, and has guiding-pins arranged to slide in longitudinal grooves of the section B, in the same manner that the latter is adapted to the outer section A.

The system of tackle and operating mechanism which I prefer to employ for this ladder is as follows:

A drum, *i*, fig. 4, is hung to cross-pieces *j j*, close to the bottom of the section A, and at one end of this drum is a cog-wheel gearing into a pinion, to the spindle of which is attached an operating-crank. The drum can be freely turned in the direction of the arrow, but is prevented from turning in the contrary direction by a pawl and ratchet attachment.

Cords, *k k*, which are attached to and arranged to be wound upon this drum, are passed around pulleys *ll* of the section A, and along the opposite sides of the latter to the top of the same, whence they pass around pulleys *m m*, and are conducted downward through the grooves *d d* of the section A, and are

then either secured to the section B close to its lower end, or are passed around pulleys *n n* of the same, and secured to each other.

With this arrangement of tackle, the mere winding of the cords upon the drum *i* will have the effect of extending or elevating the section B to any required extent, and, in order to extend the section C simultaneously with the said section B, two additional cords, *p p*, are required. These are secured to the top of the section A, are passed over pulleys *q q* at the top of the section B, and are conducted downward through the grooves *d* of the latter to a point close to the bottom of the section C, to which they are secured, or are passed around pulleys *r*, and secured together in the same manner as the cords *k k*.

The cords *p p* will be raised by the pulleys *q q* when the section B is elevated, so that a corresponding elevation of the section C must necessarily follow.

The catches *h* may, if desired, be employed in connection with the ladder last described, but they are not absolutely necessary, as the pawl and ratchet of the drum *i* will prevent the accidental descent of the sections.

The section C is furnished at its upper extremities with wheels or rollers, *s s*, which are intended to rest

against the wall of a building when the ladder is being extended, and thus ease off and reduce the friction caused by the rubbing of the said section against the wall.

The friction between the several sections may also be reduced, and the extending of the ladder facilitated, by the employment of small wheels, *t t*, hung to cross-rods *t' t'* of the sections A and B, and adapted to ways on the latter section, and on the upper section C.

Claim.

The sections A B, &c, sliding one within the other, and guided by pins *c* projecting into longitudinal slots or grooves, as described, in combination with bars *f*, against which the rear edges of all the sections bear, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN WILLIAM SCOTT.

Witnesses:

WILLIAM FALLS,
HARRY SMITH.