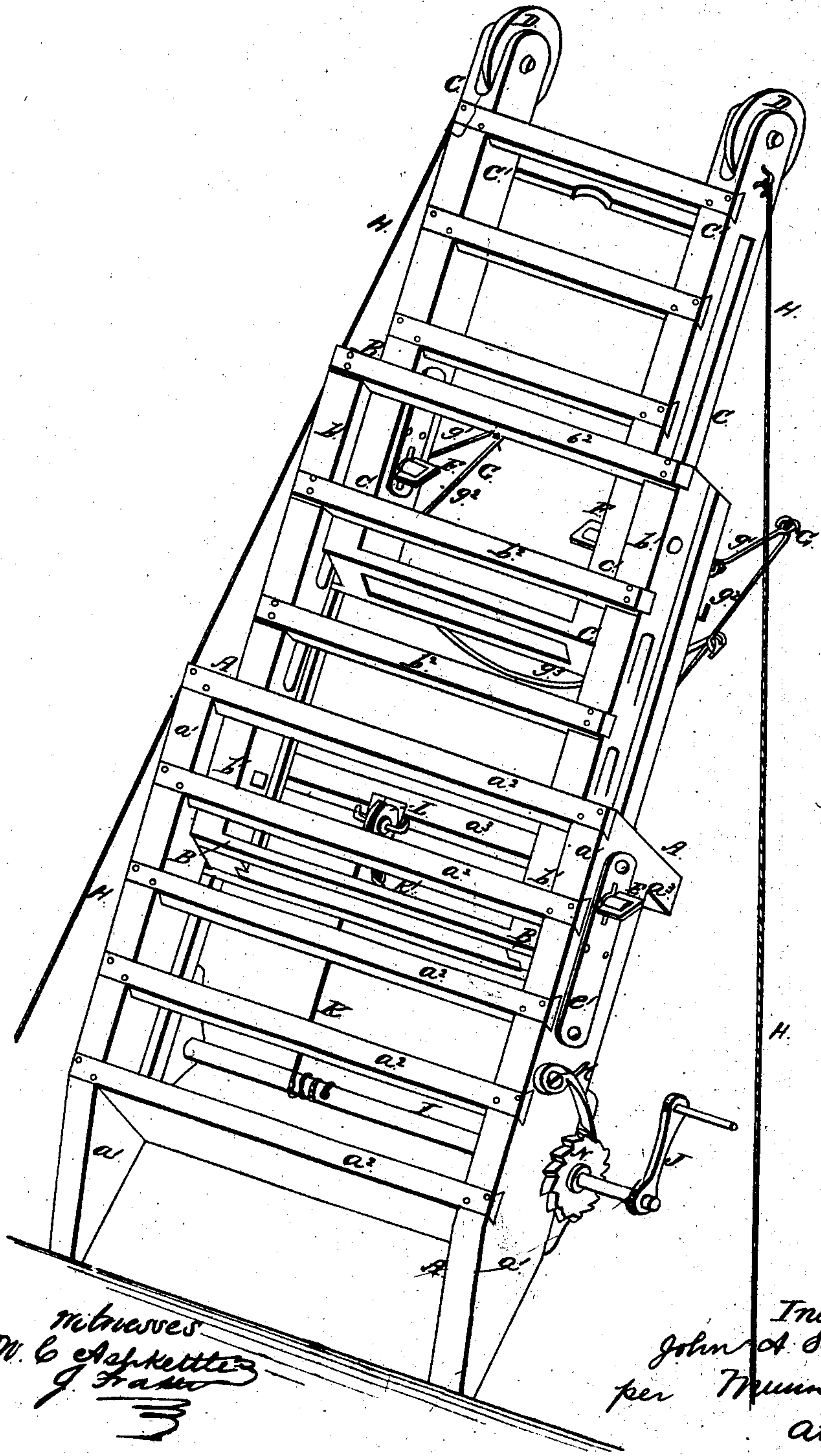


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mitbewerben.
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United States Patent Office.

JOHN A. SMITH, OF LACON, ILLINOIS.

Letters Patent No. 80,367, dated July 28, 1868.

IMPROVED EXTENSION-LADDER.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOHN A. SMITH, of Lacon, in the county of Marshall, and State of Illinois, have invented a new and useful Improvement in Extension-Ladder; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The figure is perspective view of my improved ladder extended.

My invention has for its object to furnish an improved extension-ladder, designed especially for firemen, painters' and tinner's use, but which shall be equally applicable for other uses, which shall be simple in construction, easily adjusted, extended, and moved from place to place; and it consists in the construction, combination, and arrangement of the various parts, as hereinafter more fully described.

My improved extension-ladder is made in two or more sections, each upper section fitting to and between the side-bars of the next lower section.

A is the lower section, the side-bars a of which may be made pointed to prevent them from slipping when the ladder is being used. The cross-bars a^2 , which form the rounds or steps of the ladder, are securely attached to that side of the side-bars a^1 which will be outward when the ladder is raised.

The cross-bars b^2 , of the section B, are attached to the side-bars b^1 of said section, said side-bars b^1 being made enough narrower than the side-bars a^1 to allow the cross-bars b^2 to slide down within the cross-bars a^2 when the ladder is closed.

The third section C is made in the same manner to work in the section B. To the upper ends of the side-bars C^1 , of the upper section C, are pivoted wheels D, to diminish the friction when raising the ladder along the walls of buildings, and also to enable the ladder when closed to be moved from place to place, in the manner of a barrow.

Upon the inner side of the side-bars of each outer section, and upon the outer side of the side-bars of each inner section, are formed longitudinal grooves, the grooves of each pair being placed directly opposite each other, and having stop-pins or blocks in their ends to guide the sections in their upward and downward movements, and to prevent each inner section from being entirely withdrawn from its adjacent outer section.

E are stop-bolts, which pass in through the side-bars a^1 of the outer section A, and are forced inward, and held in place by spiral or other springs attached to them, and placed in recesses formed in the said side-bars a^1 , said recesses being covered by plates e' attached to the outer sides of the bars a^1 , as shown. The heads of the bolts E are made in the form shown in the figure, so that when the bolts are turned in one direction, the bolts may be drawn or forced inward by the action of the springs attached to them, and so that when drawn outward, and turned one-quarter around, the shoulders of the bolt-heads may rest against the plates e' and hold the bolts away from the side-bars b^1 of the inner section B.

In the outer side of the side-bars b^1 of the inner section B are formed holes, to receive the end of the bolts E to support the said section at any desired point. The lower sides of each of these holes, except the upper one, is bevelled out so that the section B, when fully lowered, may be securely locked by the bolts E, and in all other positions be held securely from descent, while at the same time it may be raised freely.

F are bolts, constructed and operating exactly like the bolts E, which pass in through the side-bars c' of the section C, and enter holes in the inner sides of the side-bars b^1 of the section B, exactly similar to the holes in the outer sides of said bars, except that the upper sides of all the holes, except the lower one, are bevelled, as shown in the drawing.

G are jointed braces, the upper ends of the upper parts g^1 of which are pivoted to the upper parts of the side-bars b^1 of the central section B. The upper ends of the lower parts g^2 are pivoted to the lower ends of the parts g^1 , and are held in their proper relative positions, with respect to each other, by the connecting-rod g^3 . When required for use, the lower ends of the parts g^2 are inserted in one or the other of a series of holes formed in the edge of the side-bars b^1 , so that the brace G may project more or less according to the position

of the ladder. When not in use, the brace G is extended along the section B, and secured in place by hooks or keepers attached to the edges of the side-bars b^1 . The braces G, when the ladder is fully extended, rest against the wall of the building, and support and strengthen the middle part of the ladder.

H are guide and stay-ropes, which are attached to the upper part of the side-bars of the upper section C of the ladder, to guide it while being raised and lowered, to stay or brace it when raised, and to withdraw the upper end of the ladder from the wall for the purpose of using the said ladder to break or dash in a window when necessary.

I is a shaft, working in bearings attached to the lower part of the side-bars a^1 , and which is operated by a crank, J, attached to one of its projecting ends.

K is a rope, one end of which is attached to the crank-shaft I. The rope K passes over a pulley, L, pivoted to the cross-bar a^3 , attached to the upper ends of the side-bars a^1 , and has a hook, k' , attached to its other or free end, so that the sections B and C may be raised by hooking the hook k' into an eye attached to the centre of the lower cross-bar of said sections.

The shaft I is held in any position to which it may be revolved by the pawl M, pivoted to the side of one of the side-bars a^1 , which takes hold of the teeth of the ratchet-wheel N attached to said shaft I.

In using ladder, it is raised, when closed, against the wall of the building, and the hook k' is then connected with the section to be raised. The spring-bolts that lock the section to be raised are then drawn out and turned one-quarter around. A half turn is then given to the crank J, and the spring-bolts turned back and allowed to spring into their places. The section is then extended to any desired extent by operating the crank, J. The other section or sections may then be extended in the same manner.

I claim as new, and desire to secure by Letters Patent—

The extension-ladder, constructed, as described, of the three sections A B C, sliding in grooves, one within the other, and provided with the adjusting-screws E F, and the adjustable braces G, composed of the rods $g^1 g^2 g^3$, all arranged as described for the purpose specified.

JOHN A. SMITH.

Witnesses:

A. McKEON,

JAMES H. THOMAS.