J. A. GROSHON.

FIREMEN'S LADDER.

No. 180,761. Patented Aug. 8, 1876.

Fig. 2

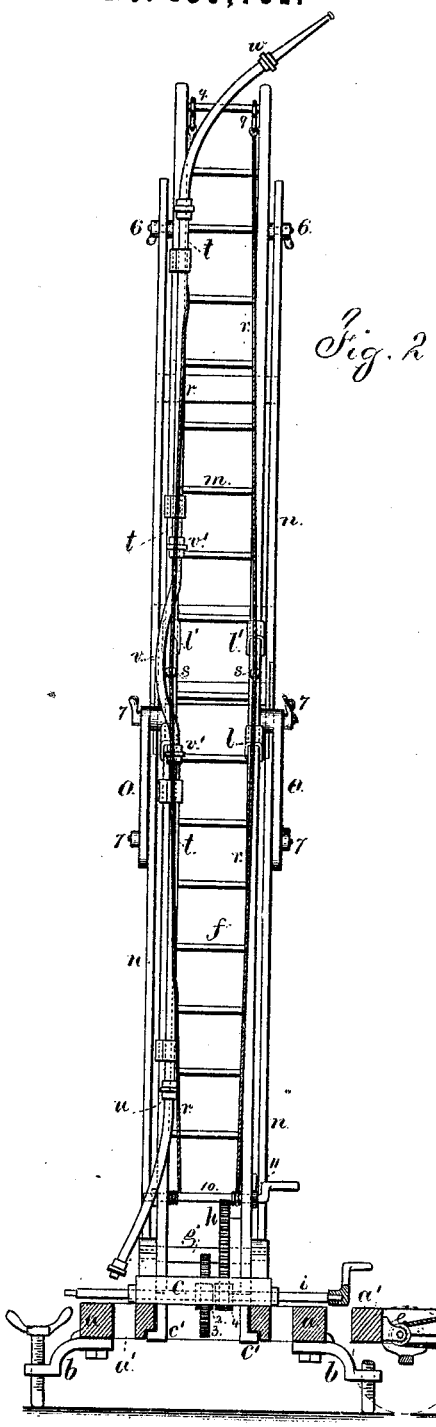

Fig. 1

Witnesses

Chas. H. Smith

Harold Serrell

Inventor

John A. Groshon.

per Lemuel W. Serrell

Atty

UNITED STATES PATENT OFFICE.

JOHN A. GROSHON, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND JOHN D. BUCKHOUT, OF SAME PLACE.

IMPROVEMENT IN FIREMEN'S LADDERS.

Specification forming part of Letters Patent No. **180,761**, dated August 8, 1876; application filed January 31, 1876.

To all whom it may concern:

Be it known that I, JOHN A. GROSHON, of the city and State of New York, have invented an Improvement in Extension-Ladders, of which the following is a specification:

This improvement is intended for facilitating access to buildings in case of fires. I mount the ladder upon a frame that contains gearing, connecting with a segment upon the ladder, by means of which the ladder can be raised from a nearly horizontal position into an inclined position, and then the frame and ladder can be moved bodily along upon a main frame, to bring it nearer to or farther from the burning building; and the ladder is made to stand in a vertical plane by adjusting the main frame into a horizontal position by vertical screws passing through movable arms attached to the main frame. The ladder itself is stiffened and supported by an inclined brace and slotted bars, that connect the brace and ladder; and upon the ladder there are tubes, connected by flexible hose where one length of ladder unites with the next, so that the tube for the water is raised into position by the ladder, and is ready for the supply-hose to be attached, thereby avoiding the delay and effort necessary in drawing up a ladder the hose, as now usual.

In the drawing, Figure 1 is an elevation of the ladder complete, with the bed and frame in section. Fig. 2 is a front elevation of the same.

The main frame is made with longitudinal beams *a* and cross-beams *a'*, and it is mounted upon wheels of any suitable character, so as to be readily moved from place to place. There are extension-sills *b b* connected to this main frame, preferably by vertical bolts, so that they can be turned in beneath the frame when the ladder is being transported, or turned out at right angles to sustain the frame in a horizontal position when at rest, such sills being each provided with a vertical screw, that can be run up or down to bear upon the pavement and render the ladder-base level.

The bed *c* of the ladder rests upon the beams *a a*, and can be moved on them by means of the winch-barrel *d* and ropes or chains, leading around the pulley *e*, and in opposite directions from the barrel. By this means the base of the ladder can be moved nearer to or farther from the building, and it is firmly held in its position by the frame or bed *c*, having projections *c'*, passing down at the sides of the beams *a* and hooking beneath them, as seen in Fig. 2. The winch-barrel is to be provided with ratchets and pawls, to hold it in position after the bed has been adjusted.

The ladder *f* is made of any ordinary character; but its lower end is connected to the bed *c* by a cross-shaft, *g*, that either passes through the side pieces of the ladder, or is provided with sockets receiving the said side pieces of the ladder; and there is a segment or gear-wheel, *h*, that has the shaft *g* for its center, that is attached to the ladder, and the same is in gear with a pinion, 2, that is provided with a wheel, 3, with which the pinion 4 on the shaft *i* is in gear. By a crank-handle upon this shaft *i* the gearing is turned, and the ladder raised or lowered. Of course the train of gearing is to be proportioned so that the hand-power applied to revolve the shaft *i* will be sufficient for raising the ladder.

There may be two wheels or segments, *h*, one at each side of the ladder; and the ratchet-wheel *k* and pawl serve to hold the parts in position when the ladder has been raised.

The ladder is composed of two or more sections, which can be pulled apart or set together when in a horizontal position. The straps *l l'* are attached to the respective parts of the ladder, and allow the second length *m* of the ladder to be connected with, or disconnected from, the lower length *f* of such ladder. There is a brace, *n*, made in lengths, that are united together by slipping one into the socket or strap of the other when in a nearly horizontal position; and the brace is connected by clamping-screws 6 in slots with the upper part of the ladder, and at the bottom the brace rests upon the frame *c*, and is preferably provided with an adjusting-screw. The diagonal slotted braces *o* are provided with clamping-screws 7 7 at the respective ends, and these screws are to be loose when the ladder is raised, and hence the brace accommodates itself to position as it hangs, and then the screws are tightened, to hold the parts in a

firm position and render the ladder rigid. There are metal bars projecting at *s*, with notched outer ends, into which a brace rope or chain, *r*, is placed. The upper end of this rope *r* is connected to the ladder by a hook, 9, and at the lower end the said rope or chain is attached to one of the ladder-rungs, 10, that can be turned and held by a ratchet and pawl, 11, to tighten this rope, and form a brace to stiffen the ladder.

The tubes *t* are permanently connected with the ladder, and provided with couplings at their ends, so that the fire-engine hose can be connected at *u*, and one tube, *t*, can be connected to the next above by the flexible tube *v* and couplings *v' v'*; and the nozzle *w*, or a hose leading into the building, will be coupled at the upper end of the pipe.

I claim as my invention—

1. The bed *c* for the ladder and gearing, mounted upon the beams *a* of the main frame, in combination with the winch *d*, the chains or ropes passing in opposite directions, and the pulley *e*, as and for the purposes set forth.

2. The combination, with the extension-ladders, of the inclined brace *n* and the slotted diagonal braces *o* and the clamping-screws 6 6 7 7, substantially as and for the purposes set forth.

3. The combination, with the extension-ladder, of the metal bars *s*, ropes or chains *r*, hooks 9, and revolving rung 10, substantially as set forth.

4. The combination, with the extension-ladder *f*, actuating-segment *h*, and gearing, of the water-tubes *t*, attached to the lengths *f* and *m* of the ladder, and united by a flexible coupling-tube, substantially as set forth.

Signed by me this 27th day of January, 1876.

JOHN A. GROSHON.

Witnesses:
GEO. T. PINCKNEY,
CHAS. H. SMITH.