

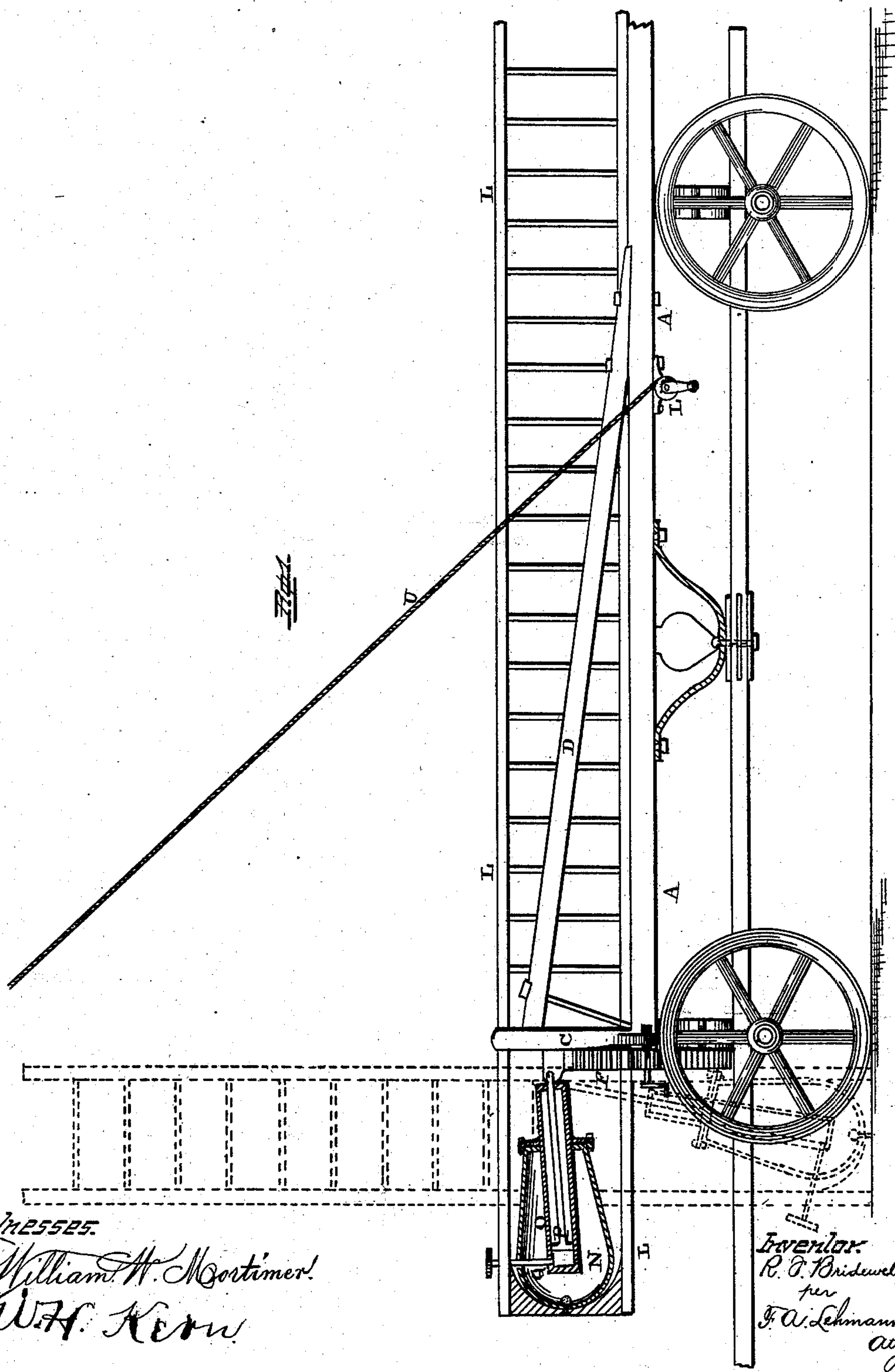
(No Model.)

3 Sheets—Sheet 1.

R. F. BRIDEWELL.
FIRE ESCAPE LADDER.

No. 255,584.

Patented Mar. 28, 1882.



Witnesses.

William H. Mortimer.
W. H. Kern

Inventor.
R. F. Bridewell
per
J. A. Lehmann,
att'y

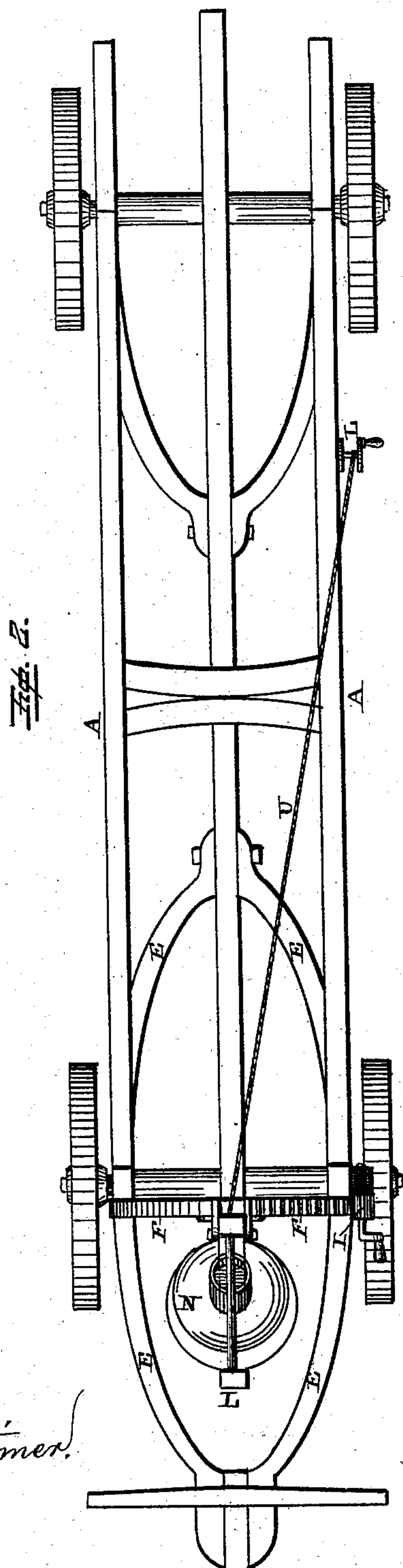
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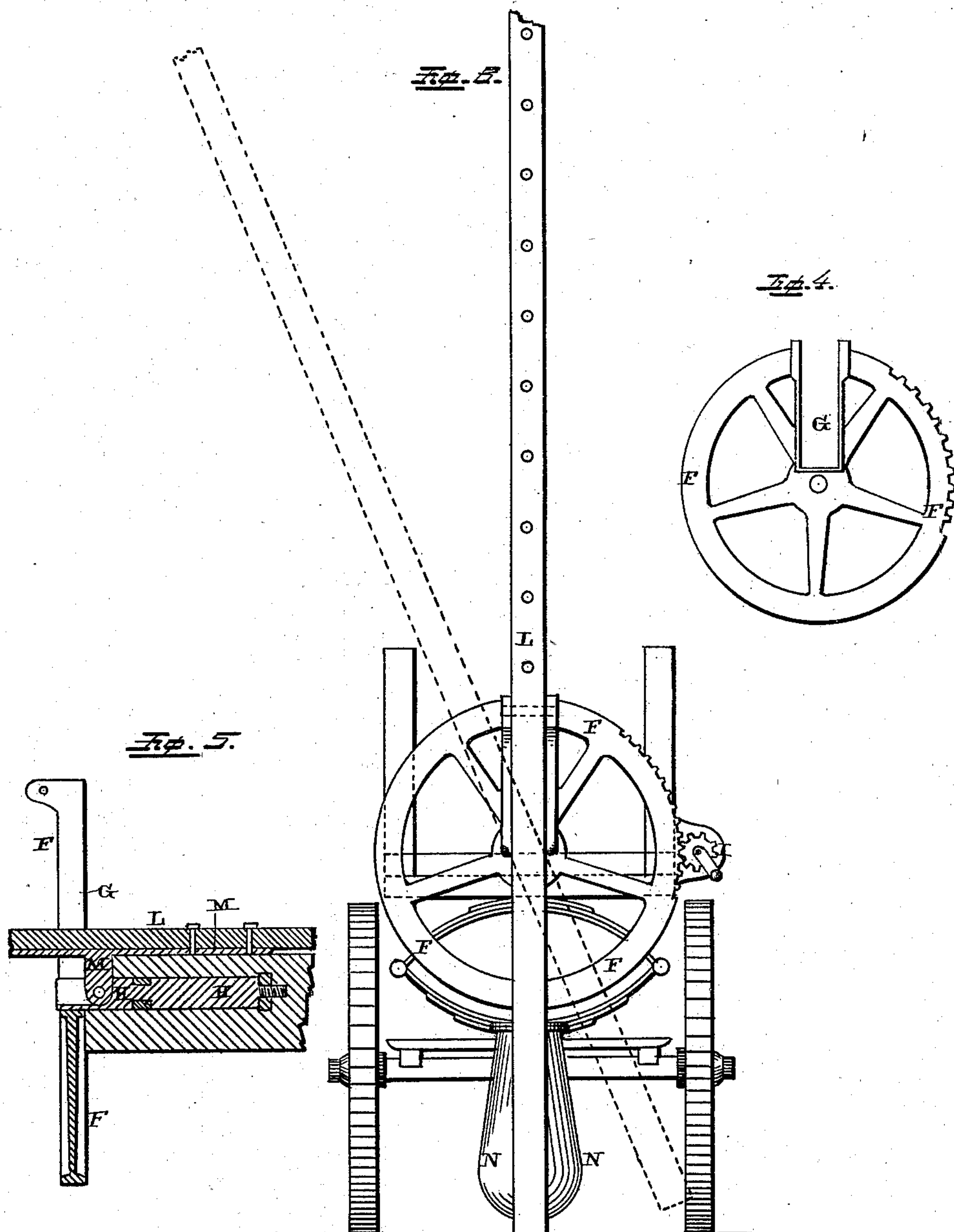
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UNITED STATES PATENT OFFICE.

RICHARD F. BRIDEWELL, OF SAN FRANCISCO, CALIFORNIA.

FIRE-ESCAPE LADDER.

SPECIFICATION forming part of Letters Patent No. 255,584, dated March 28, 1882.

Application filed December 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, RICHARD F. BRIDEWELL, of San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Fire-Escape Ladders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in fire-escape ladders; and it consists, first, in pivoting the ladder to the truck and attaching to the end of the ladder a mechanism, substantially as hereinafter described, for assisting to raise the ladder into position; second, in pivoting the ladder to the truck within a wheel, by means of which the ladder can be partially revolved, so that after the ladder has been raised into position it can be inclined toward either side of the truck; third, in pivoting the ladder to the truck within the wheel, by means of which the ladder partially rotates, and securing in the end of the ladder a chamber for holding compressed air, inside of which chamber is placed a cylinder and piston, which assist in raising the ladder into position, all of which will be more fully described hereinafter.

The object of my invention is to enable the ladders to be raised quickly and easily from the truck against a house, and to enable them to be inclined toward either side of the street.

Figure 1 is a side elevation of my invention, showing the ladder and its attachments in one position in solid lines and in a raised position in dotted lines. Fig. 2 is a plan view of the truck and the operating mechanism. Fig. 3 is a front end view of the ladder, showing it in a raised position; and Figs. 4 and 5 are detail views.

A represents the truck, which is provided with four driving-wheels, the rear ones of which track the front ones as the truck is drawn along by means of horses or by any other suitable means. This truck is made in two parts, which are pivoted together at their inner ends, as shown in Figs. 1 and 2, so as to enable cor-

ners to be easily turned. Upon the front end of the front portion of the truck are secured suitable standards, C, and extending backward from these standards are suitable braces, D. These brace the frame-work, upon which the ladders are placed rigidly in line with each other, but do not in any way interfere with the work of the running-gear of the truck. In the front end of the truck the hounds E are made curved, as shown in Fig. 2, so as to form an oval frame, in the center of which is pivoted the wheel F, which has an opening, G, made through one side, so that the front end of the ladder can pass directly through it. This wheel is placed upon a pivot, H, which is swiveled in position in any suitable manner, so as to turn with the wheel when the wheel is moved by means of the pinion I, which meshes with the wheel at one side. This pinion I is operated by means of a small crank, and is provided with a spring dog or catch of any kind, which will hold it into any position into which it may be adjusted. Upon each side of the opening which is made through the wheel at the outer corners are formed suitable flanges, ears, or projections, so as to allow the upper end of the piston to be pivoted between them.

The ladder L is placed upon the truck so as to rest upon its edge only, and its lower end passed through the opening which is made in the top portion of the wheel, as shown in Fig. 1. To the under side of the ladder is secured a suitable casting, M, which projects down and is pivoted to the swiveled pivot upon which the wheel is secured. This casting serves as a hinge, by means of which the ladder can be raised into a vertical position, and as the pivot revolves with the wheel it will readily be seen that after the ladder has been raised it can be inclined toward either side of the truck by simply operating the pinion I in such a manner as to cause the wheel to turn in the required direction. Although only a single ladder is here shown, it is intended to use two or more sections of ladders connected together, so that in case the lower section should not be long enough to reach the upper portions of the burning building the second section can be extended beyond the lower one in the usual manner.

In order to assist in raising the ladder into an upright position, there is secured inside of its lower end a powerful chamber, N, of any suitable shape and size, and inside of this chamber N is placed the cylinder O, in which the
 5 pivoted piston P has its lower end inserted. In this chamber air is compressed to any suitable degree, and through the inner end of the cylinder is made an air-hole, which is controlled
 10 by the valve Q. This air-chamber is secured between the front ends of the ladder and has no movement of its own; but when the valve Q is operated, so as to allow the compressed
 15 air to enter the cylinder, the air bears against the inner end of the piston and exerts its whole power against it. The pivot or hinge upon which the ladder turns being placed below the point at which the outer end of the piston is
 20 pivoted, when a slight downward pressure is exerted upon the front end of the ladder the whole force of the compressed air operates to force the piston out of the cylinder, and in forcing against the end of this piston the whole
 25 force of the air is exerted in raising the ladder upward. Of course the greater the pressure of the compressed air the less pressure there will have to be exerted by the operator upon the ladder to raise it into position. Where the
 30 cylinder is large enough to hold about six thousand cubic inches and the ladder is not more than about forty-five or fifty feet long, so little pressure is required to start the ladder and raise it into position that a single man or boy can run up the ladder in a few seconds. Then by
 35 operating the pinion the ladder can be inclined so as to bear against the side of the house. It is not necessary to back the truck into position, for when the truck is run up alongside of the curbstone it is ready to have the ladder
 40 raised at once. Should the ladder not be directly in front of the window to which it is desired to run it, the truck has only to be moved either backward or forward, as will be necessary to bring the ladder exactly into position.
 45 To any suitable portion of the rear part of the truck is secured a small windlass, L, so that by winding up the rope U, which is fastened to the windlass at one end and to the raised ladder at the other, the ladder can be
 50 drawn down into a horizontal position upon the truck, as in the first instance. As the ladder is gradually drawn downward the air-chamber is raised upward, and the gradual approach to the point at which the piston is pivoted
 55 forces the piston back into the cylinder and forces the air out of the cylinder into the chamber again. The valve is then closed and the ladder remains securely in position until the valve is again opened and a downward pressure
 60 exerted upon the front end of the ladder.

The great object gained by this invention is not only in the saving of time in running the ladder up against the house, but in the amount of power and men necessary to accomplish this. The great pressure of the air completes the
 65 movement which has been started by the operator, and there is nothing more for him to do than to give the ladder the necessary inclination. It will thus be seen that the man who drives the truck is all that is necessary to
 70 each set of ladders.

Having thus described my invention, I claim—

1. The combination of a truck, a ladder which is pivoted or hinged to a swiveled pivot, and
 75 a mechanism, substantially as shown, for inclining the ladder after it has been raised to a vertical position, substantially as described.

2. The combination of a truck, a ladder which is pivoted or hinged to a swiveled pivot, a wheel
 80 on said pivot having an opening through its top for the ladder to pass through, and a pinion for turning the wheel, whereby the ladder can be inclined toward either side of the truck by turning the pinion, substantially as set forth.
 85

3. The combination of a truck, a ladder which is pivoted to a swiveled pivot, a mechanism for inclining the ladder, and mechanism, substantially as herein described, which is secured to
 90 the end of the ladder for assisting to raise the ladder into position, substantially as specified.

4. The combination of a truck, a mechanism, substantially as here shown, for inclining the ladder after it is raised, a ladder which is pivoted
 95 so as to be raised from a horizontal to a vertical position, a chamber containing compressed air and having a cylinder placed inside of it, a piston which is placed inside of the cylinder, and a valve for controlling the flow of the air to the piston, substantially as
 100 shown.

5. The combination of the truck, a ladder which is pivoted to a swiveled pivot, a mechanism, substantially as described, for inclining
 105 the ladder after it has been raised to a vertical position, the air-chamber secured between the ends of the ladder, the cylinder placed in the air-chamber, and the piston which has its outer end pivoted to the wheel, by means of which the ladder is inclined, and a suitable
 110 mechanism for lowering the ladder after it has been raised, substantially as described.

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

RICHARD F. BRIDEWELL.

Witnesses:

JOHN WHITE,
 JOHN E. HAMILL.