2 Sheets—Sheet 1.

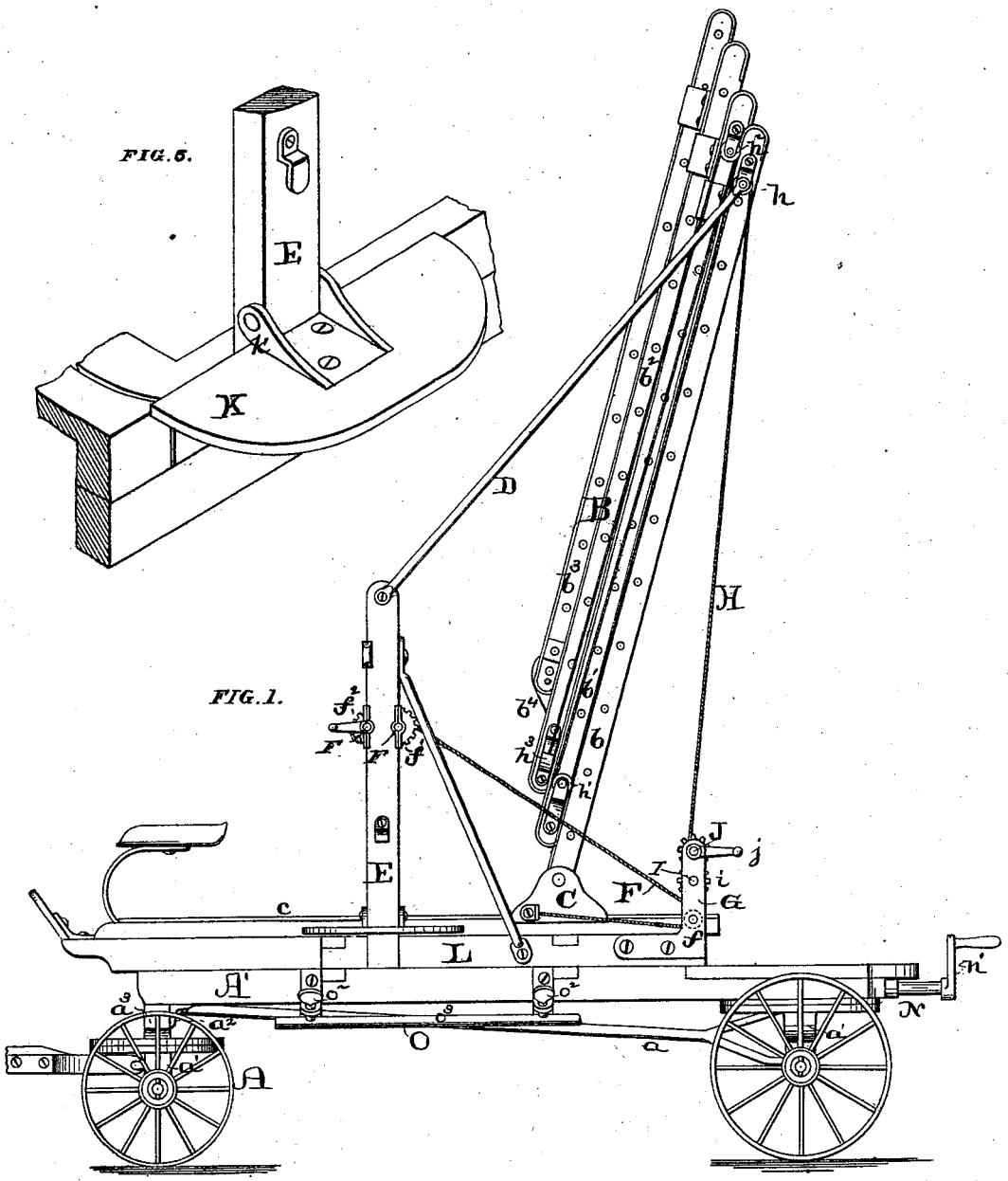
J. J. LUCAS.

Fire-Escape Ladder.

No. 204,059. Patented May 21, 1878.

FIG. 6.

FIG. 1.



ATTEST:

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Paul Bakewell

INVENTOR:

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by Chas. D. Moody, atty.

2 Sheets—Sheet 2.

J. J. LUCAS.

Fire-Escape Ladder.

No. 204,059. Patented May 21, 1878.

FIG. 2.

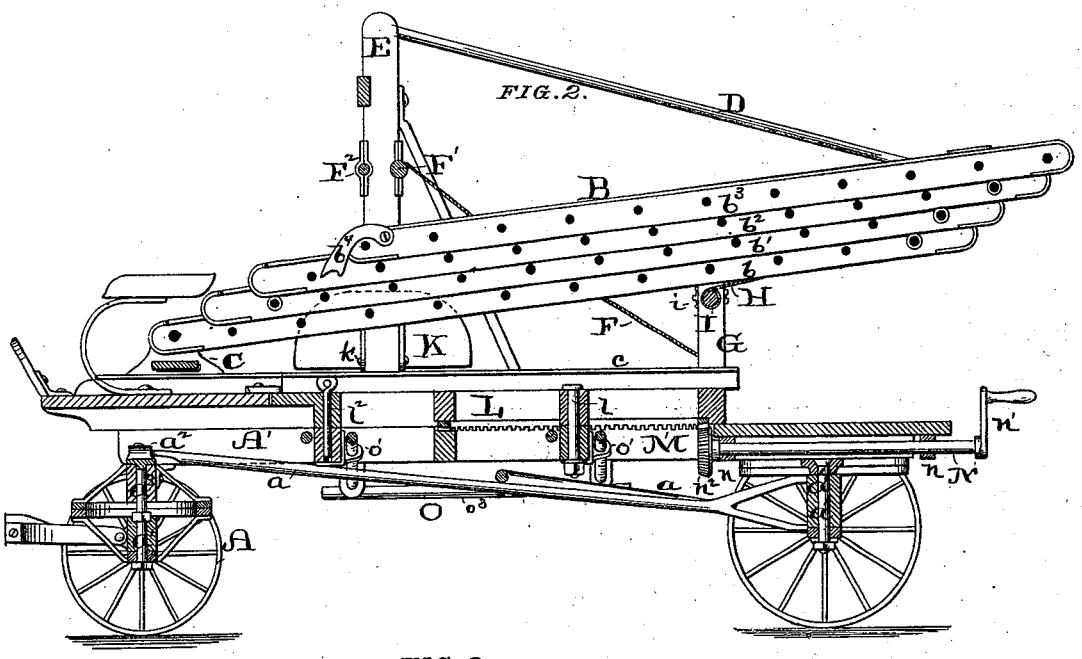


FIG. 3.

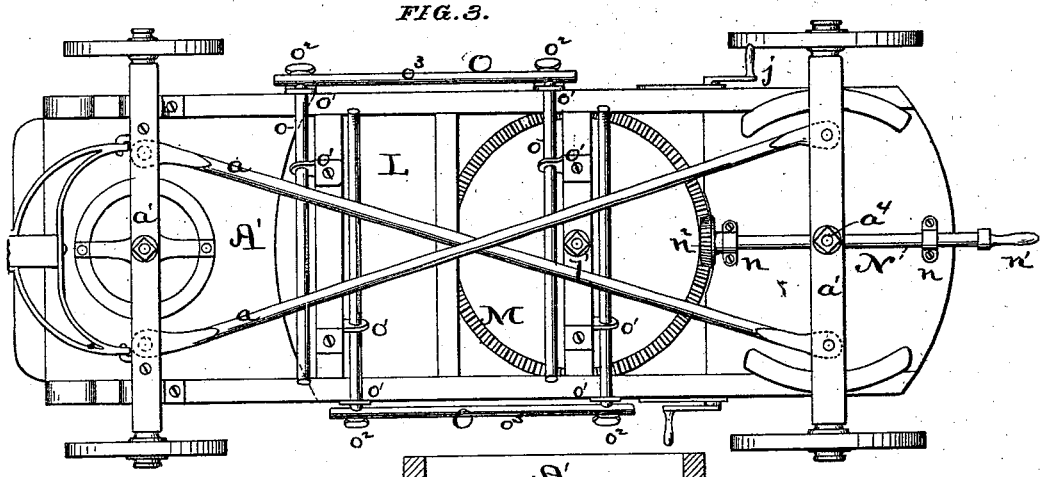
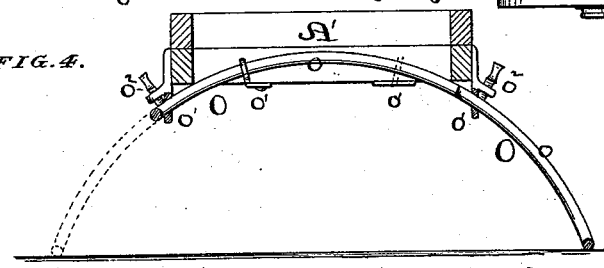


FIG. 4.



ATTEST:

Arthur V. Boyd
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UNITED STATES PATENT OFFICE.

JOHN J. LUCAS, OF BELLEVILLE, ILLINOIS.

IMPROVEMENT IN FIRE-ESCAPE LADDERS.

Specification forming part of Letters Patent No. **204,059**, dated May 21, 1878; application filed March 14, 1878.

To all whom it may concern:

Be it known that I, JOHN J. LUCAS, of Belleville, Illinois, have invented a new and useful Improvement in Fire-Escapes, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a side elevation of the invention, the foot of the ladder being moved back onto the turn-table and the ladder being in position to be extended; Fig. 2, a longitudinal sectional elevation, the foot of the ladder being drawn forward and the ladder being closed down nearly to the wagon-bed; Fig. 3, a bottom view of the invention; Fig. 4, a detail, being a cross-section of the wagon-bed and showing the side braces; and Fig. 5, a detail, being a view in perspective, showing one of the platforms at the side of the wagon-bed.

Similar letters of reference represent similar parts.

The present invention relates to that class of fire-escapes that are attached to a wagon, by means of which they are transported from place to place, and that are elevated from the wagon, as a base, into position for use.

The construction, considered generally, is as follows: An extensible ladder is attached to the wagon-bed, the lower end of the ladder being pivoted to a slide that is arranged to move upon ways that extend longitudinally upon the wagon-bed. When the ladder is not in use its various sections are closed upon each other, and the ladder lies longitudinally upon the wagon, the slide to which the ladder is attached being moved to one end of the ways. When used the closed ladder is first moved upon the ways so as to bring its foot to the center or thereabout of the wagon, and so as to give the ladder the proper inclination when it is opened out to the desired height. The upper portion of the wagon, or the part to which the ladder and the mechanism for elevating it is immediately attached, is in the form of a turn-table that can be rotated upon the wagon so as to point the ladder in any desired direction.

The invention further relates to the provision for bracing the wagon laterally. It also has reference to various details connected with the mechanism for moving the ladder upon the ways and for elevating and lowering the ladder.

Referring to the drawing, A represents the wagon to which the ladder is attached. In place of the ordinary single coupling-pole, the front and hind gears of the wagon are connected by two coupling-poles, *a a*, that extend from the ends of one axle a^1, respectively, to the opposite ends of the other axle a^1, as shown more distinctly in Fig. 3. All of the connections of the poles with the axles are pivotal, and the poles at their forward ends, instead of being attached directly to the forward axle, are preferably pivoted to a plate, a^2, that is arranged above the bolster a^3, and that turns with the forward axle.

A′ represents the wagon-bed. Its forward end is attached to the bolster a^3, which is pivoted to the front axle in the usual manner, and its hind end is pivoted at a^4 to the hind axle. Thus made, both the front and hind gears of the wagon are connected with the wagon-bed by pivoted connections, and when the forward axle is turned to the right or left the hind axle is turned in the opposite direction, causing the hind wheels, as the wagon is turned around, to follow in the track of the forward wheels.

B represents an extensible ladder, having, say, four sections, *b* b^1 b^2 b^3, that slide upon each other in the order named, and that can be closed upon each other, as in Figs. 1 and 2, or be opened out. The lower section *b* at its lower end is pivoted to a slide, C, that is arranged to slide upon ways *c c*, that extend longitudinally upon the wagon-bed. By this means the foot of the ladder can be moved to and fro upon the wagon from the end to the center thereof, and be brought from a position where it lies upon the wagon-bed, as in Fig. 2, into a position, as in Fig. 1, to be extended upward.

D D represent braces, that at one end are pivoted to the ladder-section *b*, at the upper end or thereabout thereof, and at the other end are pivoted to the standards E E, with which the wagon is provided. This connection serves to bring the closed ladder into an upright position as the slide C is moved to the center of the wagon.

The mechanism for sliding the ladder upon the ways is as follows: Cords F F are carried from the slide C, at each side thereof, around pulleys *f f*, that are journaled in standards G G, that are upon the wagon, and thence around a shaft, F^1, that is journaled in the standards E E. The shaft F^1 is provided with a gear-wheel, f^1, with which a pinion, f^2, that is upon a shaft, F^2, (this last-named shaft is also journaled in the standards E E,) engages. By turning the shaft F^2, the cords F F are wound upon the shaft F^1 and the slide carrying the ladder is drawn to the center of the wagon-bed.

The ladder is now in position to be extended upward, which operation is effected by the following means: Cords H H lead from a shaft, I, that is journaled in the standards G G, over pulleys *h h*, that are upon the upper end of the ladder-section *b*, upon each side thereof, respectively, and thence over pulleys h^1 h^1, that are upon each side of the ladder-section b^1 at the lower end thereof. The cords thence pass over pulleys h^2 h^2 at the upper end of the ladder-section b^1, and thence to the foot of the ladder-section b^2 at h^3 h^3, respectively. J J represent pinions journaled in the standards G G, and that engage with gear-wheels *i i* upon the shaft I. By turning the pinions J J, (by means of the cranks *j j*,) the cords H H are wound upon the shaft I, and the various sections of the ladder are thereby successively extended upon each other. The upper ladder-section b^3 is arranged to be extended by band upon the section b^2, and be held at any point by means of the pivoted braces b^4 b^4, which are made so as to be turned down the rounds of the ladder-section b^2, and thereby uphold the upper section b^3.

K K represent platforms attached, respectively, to the standards E E, and that can be turned down upon the hinges *k k*, as in Figs. 1, 5, and when turned down made to serve to support the persons operating the ladder. When not in use these platforms can be upturned against the standards E E, and be out of the way.

As thus far described, the wagon-bed has been regarded as a fixture upon the wagon. I preferably, however, make the principal portion of it, including that portion that supports the ladder when it is elevated and the standards E E G G, in the form of a turn-table, L, that can be rotated horizontally upon the wagon-frame, turning on the pivot *l*. The preferable means for effecting such rotation is as follows: The turn-table, on its under side, is furnished with a crown-gear, M. A shaft, N, journaled in the wagon-frame at *n n*, and having a crank, n^1, is provided with a pinion, n^2, that engages with the gear M. By turning the shaft N the turn-table can be rotated, and thereby cause the ladder to be pointed in any desirable direction from the wagon. This last-named feature is especially valuable in connection with the provision for moving the foot of the ladder upon the ways *c c*, for, by being able to turn the ladder to any quarter and to set it at any inclination, the ladder can be readily used in all situations.

The turn-table can be made to extend the whole length of the wagon, if desired. A bolt, *l'*, serves to fasten the turn-table when not in use.

O O represent braces for bracing the wagon laterally when the ladder is elevated, one of the braces being used at one side of the wagon and the other brace at the other side of the wagon. They are similarly made, each consisting of one or more arms, *o o*, arranged to move in guides o^1 o^1 transversely upon or beneath the wagon-bed, so that they can be drawn up upon or beneath the wagon-bed, as in Fig. 3, or be let down to the ground, as indicated in Fig. 4. They are fastened in either position by the set-screws o^2 o^2. When let down they serve to very materially widen the support for the ladder.

The arms *o o* are preferably curved, as shown, to enable them to be more readily operated. To extend their bearing upon the ground, and to stiffen them, the arms are united at their lower ends by the bars o^3 o^3.

If desired, the foot of the ladder can be made to rest and slide directly on the ways *c c;* but I prefer to employ the slide C, as shown.

I claim—

1. The combination of the turn-table L, ways *c c*, ladder B, slide C, standards E E, and braces D D, substantially as described.

2. The combination of the ladder B, slide C, ways *c c*, braces D D, and standards E E, substantially as described.

3. The combination of the ladder B, slide C, ways *c c*, braces D D, standards E E, cords F F, pulleys *f f*, standards G G, and shaft F^1, substantially as described.

4. The turn-table L, having the ways *c c*, in combination with the ladder B, substantially as described.

5. The combination of the turn-table L, the ways *c c*, the ladder B, slide C, standards E E, and braces D D, substantially as described.

6. The combination of the bed A^1, ladder B, ways *c c*, slide C, turn-table L, standards E E G G, cords F F, shaft F^1, braces D D, cords H H, shaft I, and pulleys *f h* h^1 h^2, substantially as described.

7. In combination with the wagon A, the braces O O, having the arms *o o* and bars o^3 o^3, and arranged to move in the guides o^1 o^1, and be fastened by the screws o^2 o^2, substantially as described.

JOHN J. LUCAS.

Witnesses:

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JAMES F. KRAFFT,
THEO. J. KRAFFT.