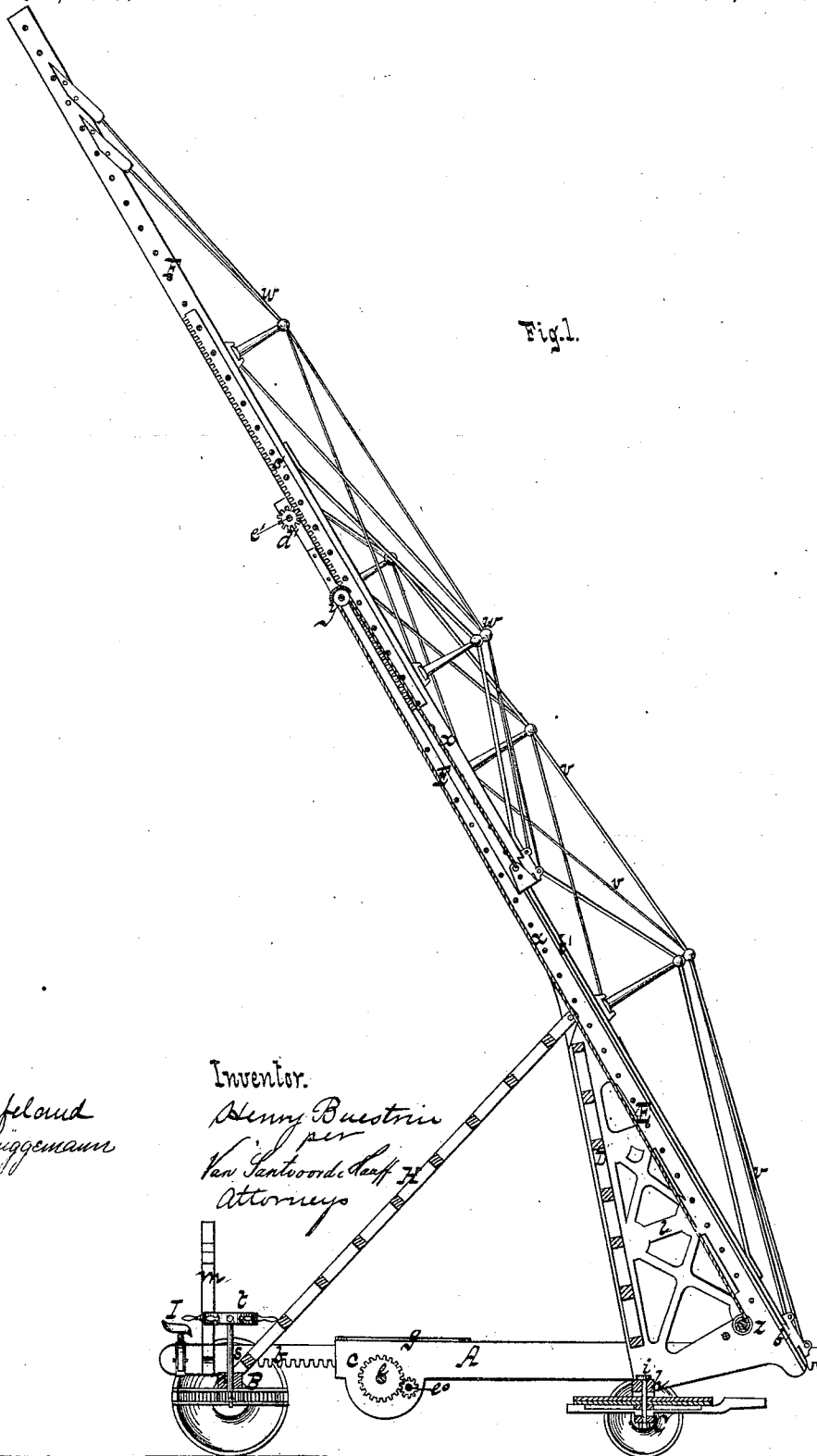


H. BUESTRIN.

FIREMEN'S EXTENSION-LADDER.

No. 179,262.

Patented June 27, 1876.



Witnesses

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Hugo Brüggemann

Inventor.

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Fig. 2.

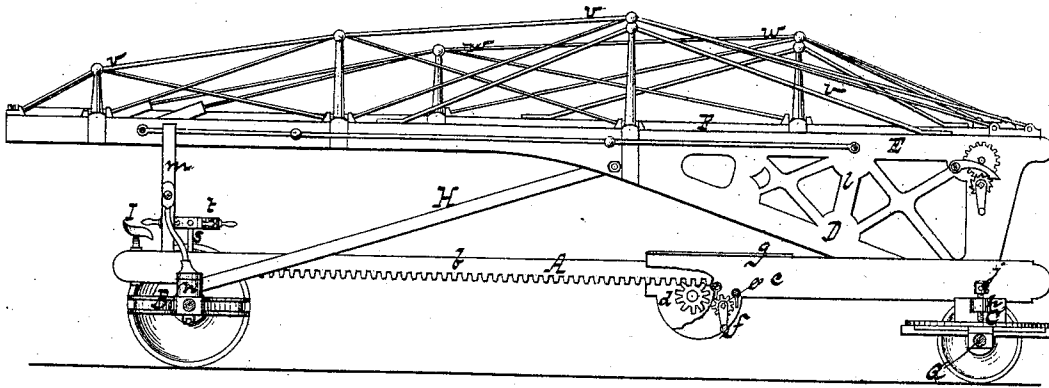


Fig. 3.

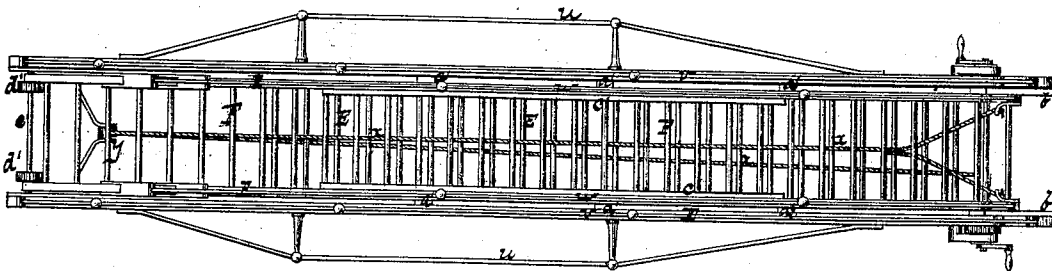
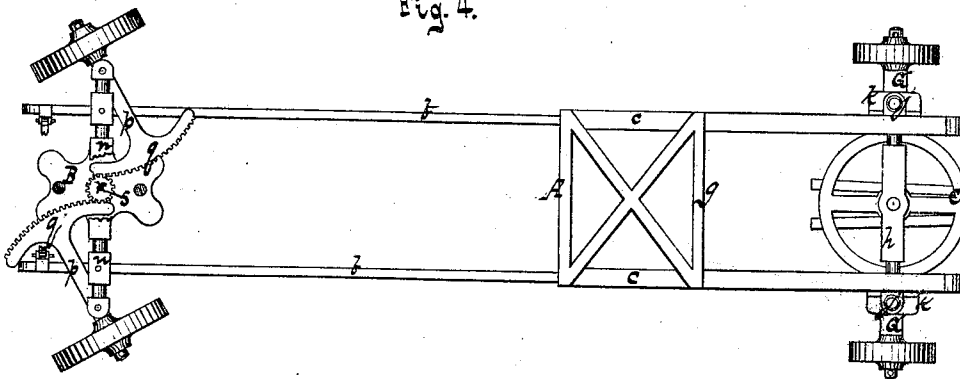


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY BUESTRIN, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN FIREMEN'S EXTENSION-LADDERS.

Specification forming part of Letters Patent No. **179,262**, dated June 27, 1876; application filed February 24, 1876.

To all whom it may concern:

Be it known that I, HENRY BUESTRIN, of the city and county of Milwaukee and State of Wisconsin, have invented a new and Improved Fire-Escape Ladder, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section when the ladder is extended and raised. Fig. 2 is a sectional side view when the ladder is contracted and lowered on the truck. Fig. 3 is a plan of the ladder. Fig. 4 is a sectional plan of the truck.

Similar letters indicate corresponding parts.

This invention relates to a fire-escape ladder, which is combined with an extension-truck, the side rails of one section of said truck being hollow or tubular, and forming guides for the side rails of the other section, so as to allow the same to slide in the tubular guide-rails. The sliding rails are provided with rack-teeth, which mesh into pinions mounted on a shaft which has its bearings in journal-boxes attached to the tubular guide-rails. The outer ends of these tubular guide-rails are secured to a cross-bar which forms the fulcrum for a frame supporting the ladder, and also the bearing for the king-bolt, on which turns the front axle of the truck. Through this cross-bar extend screws for fastening the front axle of the truck. The outer ends of the sliding rails rest upon a cross-bar or bolster, which forms the fulcrum for a brace that is hinged to the ladder-supporting frame, so that when the truck is contracted the ladder rises, and when the truck is extended the ladder sinks down.

In the drawing, the letter A designates the truck of my fire-escape ladder, which is made in two sections, B C. The side rails *b* of the rear section B are solid and fitted into tubular side rails *c* of the front section, said sliding rails being provided on their lower edges with cogs which gear into pinions *d* mounted on a shaft, *e*, which has its bearings in journal-boxes attached to the tubular guide-rails *c*. This shaft is geared together with another shaft, *e'*, on the outer ends of which are secured hand-cranks *f*, so that by turning said shaft the truck is extended or contracted.

The inner ends of the tubular guide-rails *c* are retained in the proper relation toward each other by cross-braces *g*, and their outer ends are firmly secured to a bolster, *h*, which forms the fulcrum for a frame, D, supporting the ladder E F. In the middle of the bolster *h* is secured the king-bolt *i*, which forms the connection between the truck and its front axle G, and the ends of the bolster extend beyond the guide-rails to afford room for set-screws *j*, which, when screwed up, bear upon friction-plates *k* secured to the front axle. By this arrangement the front axle can be rendered rigid in regard to the truck. The frame D is provided with triangular cheek-pieces *l*, which support and strengthen the main ladder E, and which are so formed that when the ladders are turned down to the position shown in Fig. 2 the rounds and side rails of each ladder are situated in horizontal planes, or nearly so. In this position the outer end of the main ladder rests upon a support, *m*, which rises from the rear section B of the truck.

The rear ends of the sliding rails *b* are connected to and supported by a bolster, *n*, which forms the fulcrum for a brace, H, the upper or inner end of which is pivoted to the ladder-supporting frame D. When the truck A is contracted this brace serves to raise the frame D together with the ladders to the position shown in Fig. 1, and if the truck is extended the various parts assume the position shown in Fig. 2.

The outer ends of the bolster *n* form the bearings for vertical pivots *o*, on which swing the hind axles *p p*. These axles are independent of each other, and their inner ends form toothed segments *q*, which gear in a pinion, *r*, mounted on the lower end of a vertical arbor, *s*, that extends up through the bolster *n*, and on the upper end of which is secured the steering-wheel *t*. By this arrangement the hind wheels can be readily so manipulated that that my truck can be made to turn comparatively short curves, or if it is desired to retain the truck stationary the hind and front wheels can be adjusted in such relation to each other that the desired object is accomplished.

Close behind the steering-wheel is a seat, I, which is fastened to the sliding rails *b*. It will be noticed that this seat as well as the

entire steering mechanism are connected to, and move with, the sliding rails, so that the motion of the apparatus can be controlled, whatever be the position of the ladders. The side rails of the main ladder E are provided with trusses *u* on their sides, and with other trusses *v* on their upper edges, so that the strength of the ladder is materially increased. The side rails of the secondary ladder are also strengthened by trusses *w*, and these trusses, as well as the trusses *v* on the main ladder, form railings, which add materially to the safety and convenience of persons going up and down on said ladders. To the secondary ladder F is secured a rope, *x*, which extends from its bottom end over a pulley, *y*, near the top of the main ladder, and thence down to a windlass, *z*, secured in the ladder-supporting frame D. By turning this windlass the rope is wound up and the secondary ladder is raised. This ladder is guided in its motion by slides *a'*, which are secured to its side rails, and catch over ribs or ways *b'* on the inner surfaces of the side rails of the main ladder. On the lower or inner edges of the side rails of the secondary ladder are formed racks *c'*, which gear in pinions *d'* mounted on a shaft, *e'*, which has its bearings in the side rails of the main ladder near their upper or outer ends. If a third ladder is added to the secondary ladder the shaft *e'* acts as a windlass for elevating this third ladder by the act of elevating the secondary ladder, being connected to the secondary ladder and to the shaft *e'* by a rope and by guides in the same manner in which the secondary ladder is connected to the main ladder. The racks *c'* also prevent a lateral motion of the ladder F when the same is drawn far out.

By these means an apparatus is obtained which can be raised to a considerable height, and which, when the ladders are raised, can be moved with convenience to the place of danger, so that the firemen can reach the heart of a fire even in high buildings, and at the same time a convenient escape is produced for removing persons or goods from burning buildings.

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

1. The combination of a sectional truck, B C, having sliding rails *b*, and tubular guide-rails *c*, provided with the rack and pinion for extending and contracting the truck, with the ladder-supporting frame D hinged to the bolster *h* of the truck-section C, and with the brace H hinged at one end to the bolster *n* of the truck-section B, and at the opposite end to the frame D, the whole being constructed and operating substantially as shown and described.

2. The combination with the sectional truck B C, its front axle G, and bolster *h*, of set-screws *j*, and friction-plates *k*, substantially as described, for securing the front axle in position when required.

3. The combination with the ladders E F, of racks *c'*, and pinions *d'*, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 15th day of February, 1876.

HENRY BUESTRIN. [L. S.]

Witnesses:

AUGUST KIECKHEFER,
ROBERT HARPER.