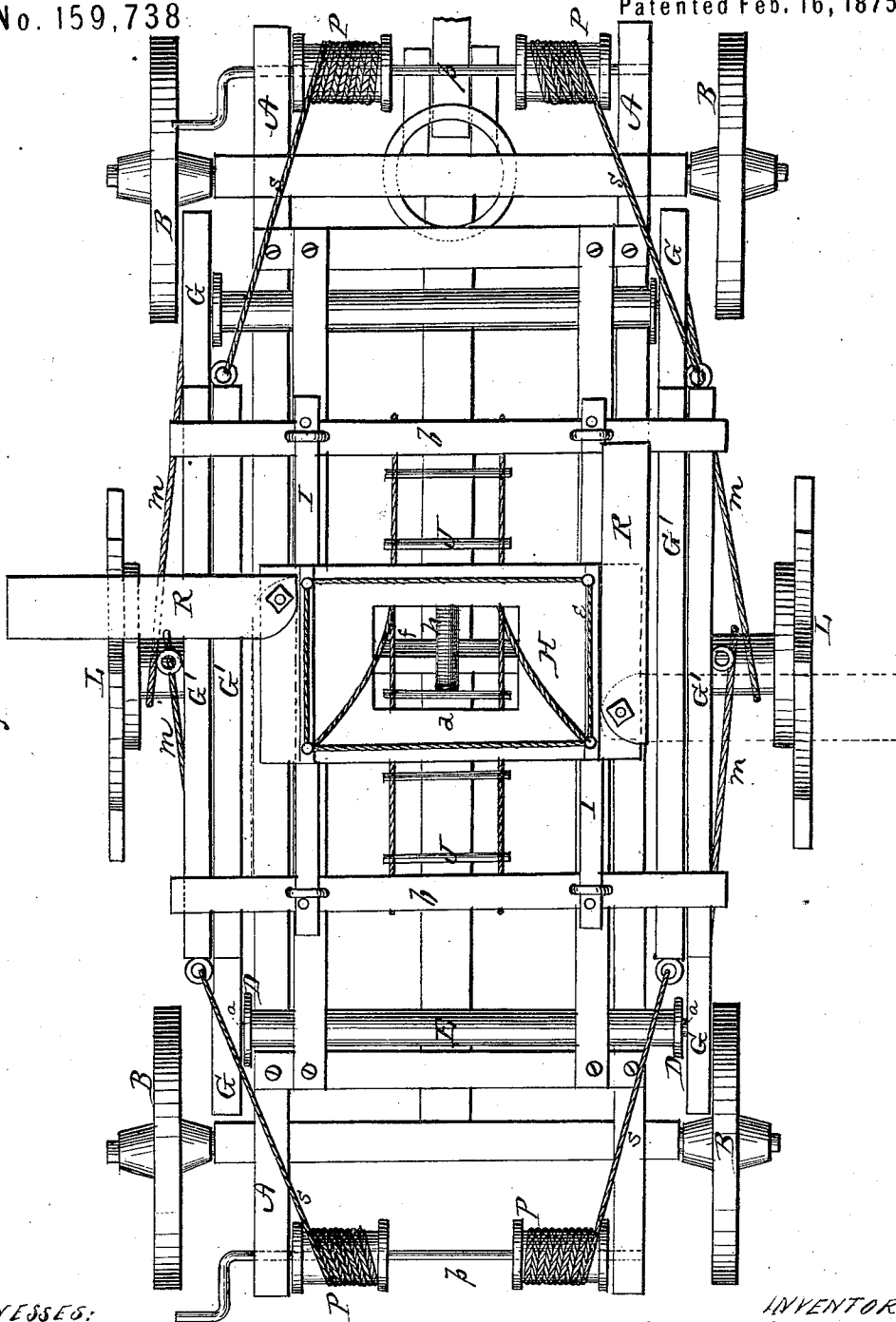


J. ARNAO, J. F. ARNAO & J. ARNAO, Jr.
Fire-Escape.

No. 159,738

Patented Feb. 16, 1875.

Fig. 1.



WITNESSES:

P. C. Dietrich

J. H. Hisecker

INVENTORS:

Juan Arnao,

Jose Francisco Arnao,

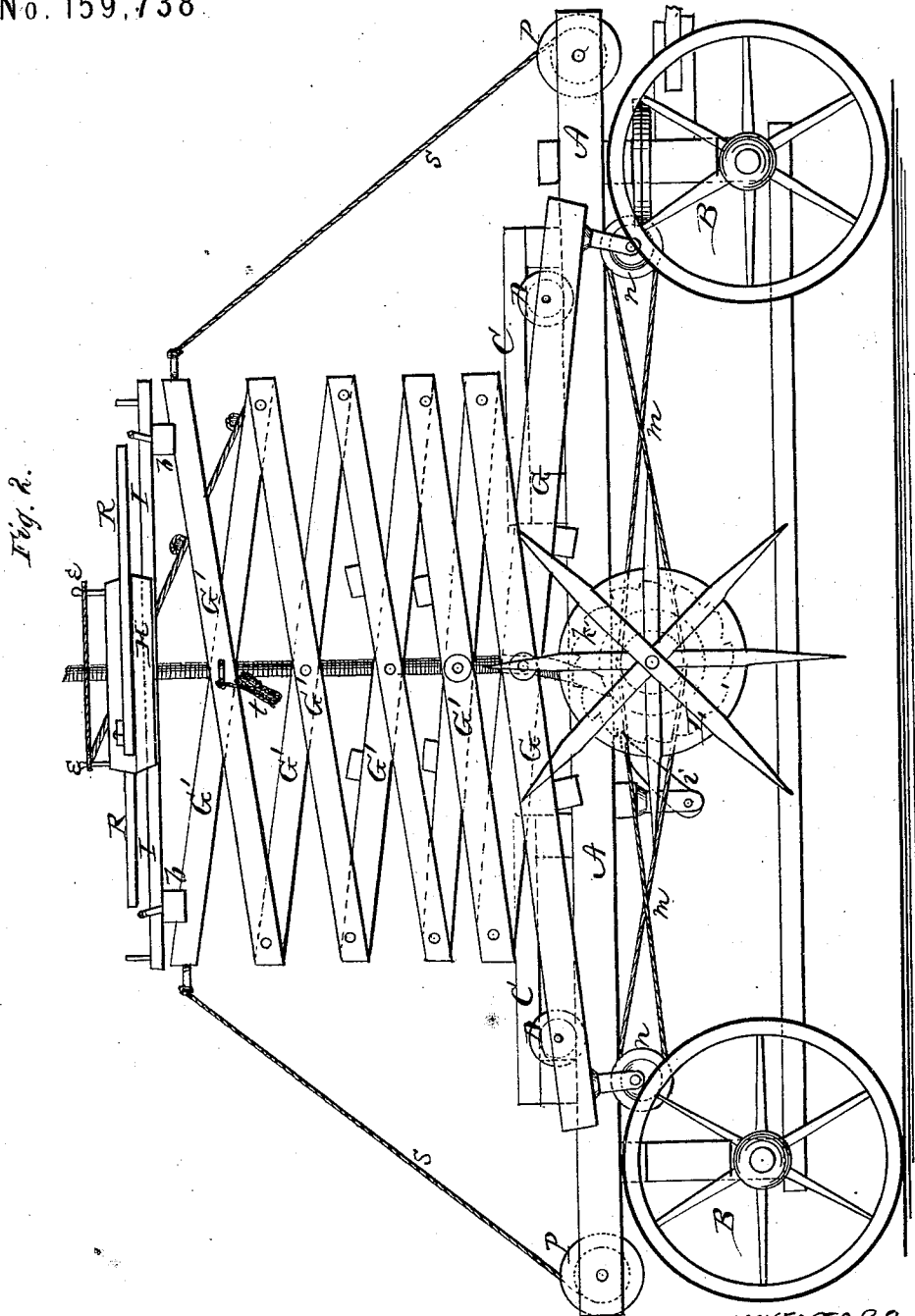
Juan Arnao, Jr.

per *C. H. Watson & Co*
ATTORNEYS.

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WITNESSES:-

P. E. Dietrich.

F. Kieschen.

INVENTORS:

Juan Arnau,
José Francisco Arnau,
Juan Arnau, Jr.

per: C.H. Watson & Co
ATTORNEYS

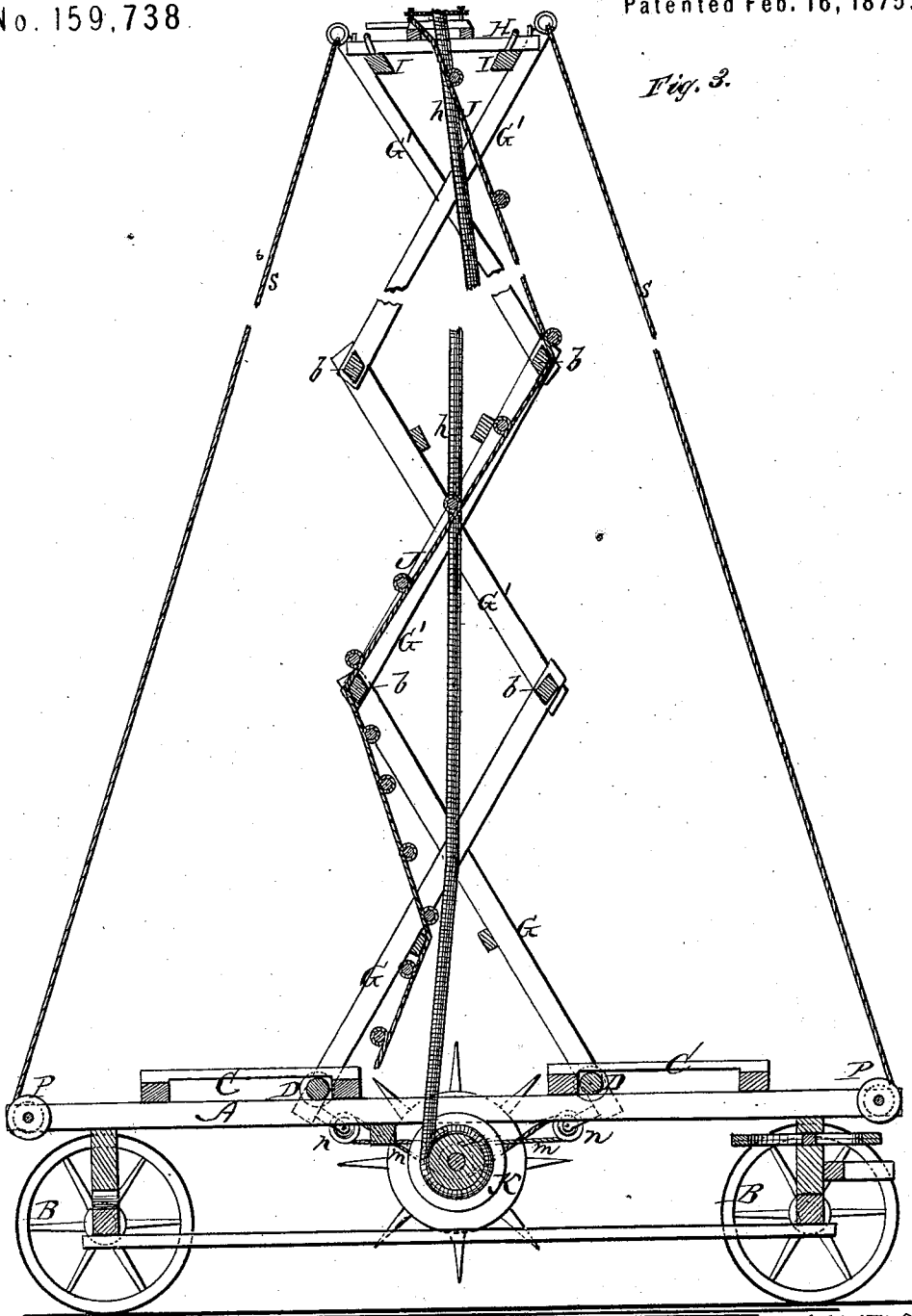
J. ARNAO, J. F. ARNAO & J. ARNAO, Jr.

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Fig. 3.



WITNESSES:

P. C. Dieterich.
J. H. Hise.

INVENTORS:

Juan Arnao.
José Francisco Arnao
Juan Arnao Jr.
per C. H. Wainwright
** ATTORNEYS.*

UNITED STATES PATENT OFFICE.

JUAN ARNAO, JOSÉ FRANCISCO ARNAO, AND JUAN ARNAO, JR., OF
BROOKLYN, NEW YORK.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. 159,738, dated February 16, 1875; application filed November 19, 1874.

To all whom it may concern:

Be it known that we, JUAN ARNAO, JOSÉ FRANCISCO ARNAO, and JUAN ARNAO, JR., of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fire-Escapes and Ladder for Firemen; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of our invention consists in the construction and arrangement of an apparatus designed as a ladder for the firemen to carry the hose to any desired height, and also to aid persons in a burning building to escape, as will be hereinafter more fully set forth.

In the annexed drawings, Figure 1 is a plan view of our apparatus when lowered ready to be moved from place to place. Fig. 2. is a side elevation of the same, in the same position; and Fig. 3 is a longitudinal vertical section of the same, showing it in an elevated position.

A represents a suitable frame-work mounted upon four wheels, B B, and to be provided with ordinary shafts or pole for the attachment of horses, so as to be moved from place to place where needed. In the sides of the frame A are formed ways C C, in which are placed flanged wheels D D, the corresponding wheels on the two sides of the machine being attached to the ends of a cross-shaft, E. From the ends of the shafts E project pins *a*, upon each of which is pivoted a bar, G. The two bars G G on each side of the machine are pivoted together at a point about midway between their upper ends and the pins *a*. Upon these two bars on each side of the machine are erected any desired number of pivoted bars, G', in the form usually known as "lazy-tongs;" and the two lazy-tongs are connected by cross-bars, *b*, the ends of which form the pivots for the lazy-tongs. On the top cross-bars of the structure thus erected over the frame A are secured two beams, I I, which sup-

port a platform, H, and in the center of this platform is an aperture, *d*, of suitable size for a person to pass through.

On top of the platform H is a railing, *e*, which may be made of rope fastened to corner-posts, or of wire-netting, or of any other suitable material. From the platform H depends a rope or wire-ladder, J, which passes down through the aperture *d*, and then zigzag from side to side over the connecting cross-bars *b b*. Under the center of the frame A is a cross-shaft, *f*, upon which is loosely placed a reel, K, with hose *h* wound around the same. Upon each end of the shaft *f* is secured a windlass, L, provided with ratchet-wheel *k* and pawl *i*. To each windlass are fastened the ends of a rope, *m*, which passes around pulleys *n n*, attached to the lower ends of the bars G on that side of the machine. At each end of the frame A is a shaft, *p*, upon which is secured one or two drums, P, and from these drums cords or ropes *s s* extend to the corners of the structure, as shown in the drawings.

The operation of this apparatus is as follows: It having been moved to the place where needed, the windlasses L L are turned, winding up the cords *m m* thereon, and thereby drawing the lower ends of the bars G G inward to the inner terminuses of the ways C C. This rapidly extends the lazy-tong structure to the required height, and the ladder J is then in proper position, as shown in Fig. 3, for use. The pawls *i* hold the structure from descending, while it is held firmly from sagging to either side by means of the ropes *s*, which unwind from the drums P as the structure ascends. As soon as the structure is thus in position the firemen can ascend the ladder J to the platform H carrying the hose *h* with them.

On each end of the platform H is pivoted a gang-plank, R, which may be provided with a suitable railing, and can be thrown out to connect with a window or the roof of a burning building, and thus afford means of escape for persons therein.

Ropes *t* are attached to the ends of the platform as additional means for steadying the lazy-tong structure.

By releasing the pawls *i* from the ratchet-wheels *k* the structure is easily lowered again.

We are aware that a fire-escape, with a structure on the principle of lazy-tongs, is not new, and we do, therefore, not claim such broadly as our invention.

In a full-sized machine there will be an adjusting-screw at each corner of the frame *A* for the purpose of leveling the same on uneven ground.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The central shaft, *f*, provided with hose *h*, windlass *L*, and ratchets *K*, in combination with ropes *m*, pulleys *n n*, and bars *G*, all substantially as and for the purpose set forth.

2. The ways *CC*, pawls *i*, shafts *E E*, flanged wheels *D D*, in combination with ropes *m*, pulleys *n n*, loose reel *K*, hose *h*, and windlass *L*, all constructed and arranged as and for the purpose specified.

In testimony that we claim the foregoing as our own we affix our signature in presence of two witnesses.

JUAN ARNAO.
JOSÉ FRANCISCO ARNAO.
JUAN ARNAO, JR.

Witnesses:

F. FUENTH,
RICHARD A. CASANOVA.