(No Model.) 2 Sheets—Sheet 1.

R. BRAYTON.

FIRE LADDER.

No. 487,235. Patented Nov. 29, 1892.

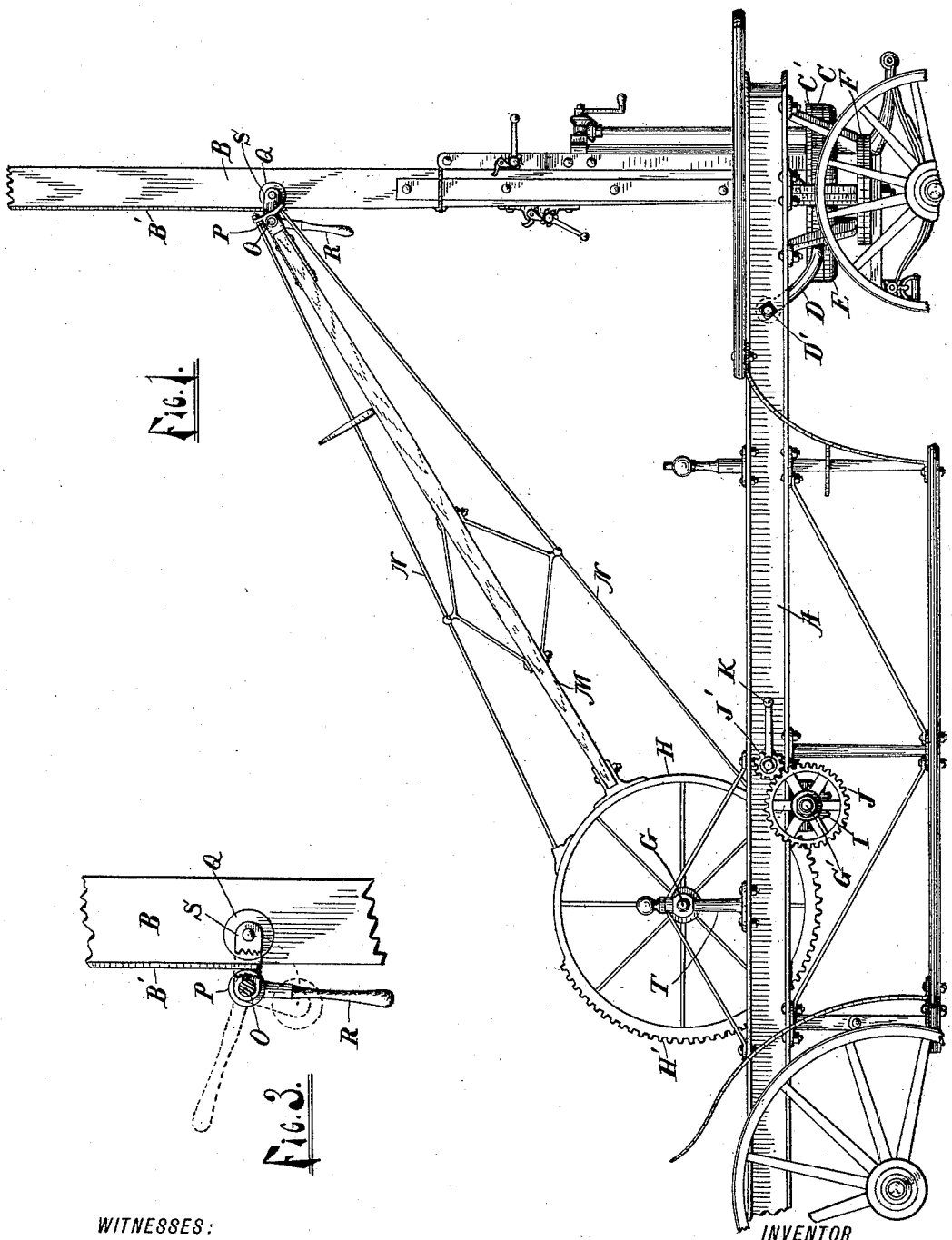

Fig. 1.

Fig. 3.

WITNESSES:

Arthur C. Denison.

Denton O. Sprout

INVENTOR

Richard Brayton

BY

Edward Taggart.

his ATTORNEY.

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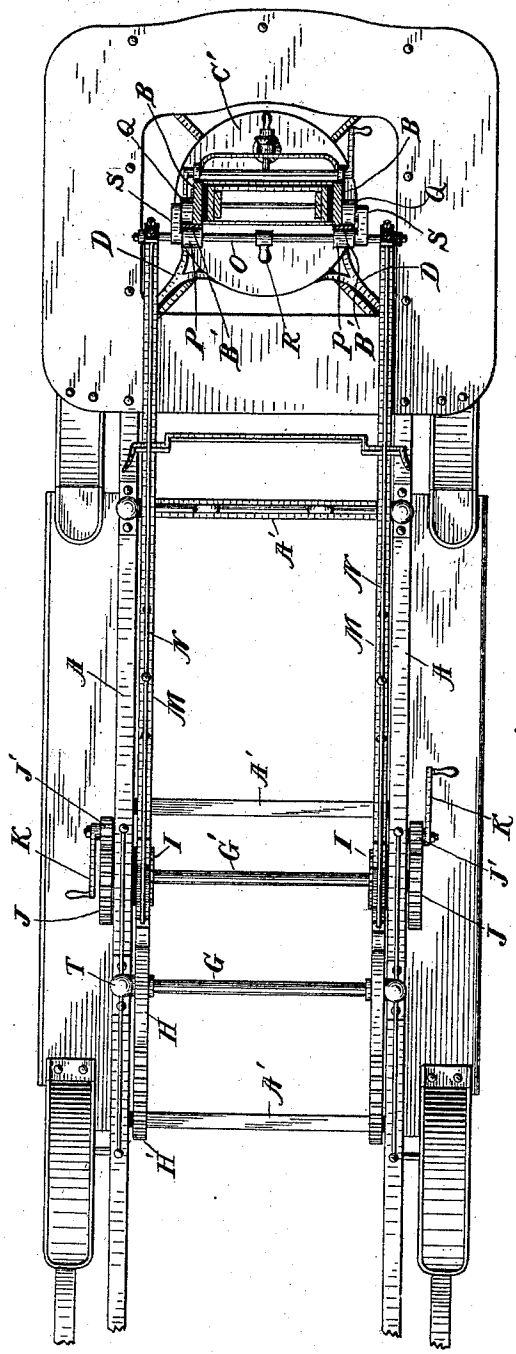

FIG. 2.

WITNESSES:

Arthur C. Denison.

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UNITED STATES PATENT OFFICE.

RICHARD BRAYTON, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO THE MICHIGAN FIRE LADDER AND ENGINE COMPANY, OF SAME PLACE.

FIRE-LADDER.

SPECIFICATION forming part of Letters Patent No. 487,235, dated November 29, 1892.

Application filed April 9, 1892. Serial No. 428,499. (No model.)

To all whom it may concern:

Be it known that I, RICHARD BRAYTON, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Fire-Ladders, of which the following is a specification.

This invention relates to that type of fire-escape ladders wherein a lever or lever-arm is operated by suitable mechanism for raising and lowering the ladder.

The objects of my invention are to improve the prior construction and to provide novel means whereby one end of the lever or lever-arm may be connected to the ladder in raising and lowering the latter and detached from the ladder when it is not in use.

To accomplish these objects, my invention involves the features of construction and the combination or arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of the part of the supporting-vehicle containing my invention, showing the ladder raised to a perpendicular position with the lever-arm connected thereto. Fig. 2 shows a plan view of the same. Fig. 3 shows a portion of the ladder on an enlarged scale, with the detachable connection in position to attach the free end of the lever-arm to the ladder.

The dotted lines in Fig. 3 show the position of the connection when the lever-arm is detached.

Similar letters refer to similar parts throughout the several views.

A represents the body of the vehicle, which supports the ladder and parts connected thereto.

A′ represents the cross-pieces supporting the framework of the body.

B represents the ladder, which ladder is supported in the ordinary manner, so that it may be raised and lowered and turned into any required position.

The mechanism for operating the ladder at its base is shown by C, C′, E, and F, together with the supporting parts D and nuts D′.

Inasmuch as I make no claim to novelty in the parts for turning and operating the ladder at its base, I do not deem it necessary to make any further description thereof. There are also other parts shown for extending the ladder and contracting the same, which parts are similar to those now in use and which need, therefore, no description.

The ladder may be pivoted at its lower end in any ordinary manner—as, for instance, as shown in Letters Patent Nos. 311,981 or 390,626, issued, respectively, February 10, 1885, to L. Harris, and October 2, 1888, to A. J. Sutherland.

The ladder B, or that portion of it which comes in contact with the lifting arm or lever, is provided with tracks or ways, (shown in the drawings as B′,) one of which tracks is applied to either side of the ladder B. The object of the track or way is to form a projection for the connection of the lever-arm to the ladder. The lever-arm is shown in the drawings by M, which lever-arm is preferably strengthened by the braces N N. The lever is rigidly connected to the wheel H, which wheel I shall call the "lever-supporting wheel." The wheel H is supported upon the shaft G and is also provided with cogs, (shown by H′,) which cogs are located on the periphery of the wheel H and extend a suitable distance around the periphery for raising and lowering the lever-arm M.

G′ is a shaft provided at either end with cog-wheels I. The cog-wheel I engages with the cogs H′ on the supporting-wheel H.

J is a spur-wheel attached rigidly to the shaft G′, provided with cogs which engage with the pinion J′, which pinion J′ is provided with the crank K.

It will be understood that the gearing referred to, including the wheel H, is made in duplicate, as shown in Fig. 2.

The lever-arm M is provided at its upper end with the shaft O, which bears on either side a short arm or extension S, and is also provided with the friction-rollers P and Q. The friction-roller Q being supported upon the arms S, each way B′ is clasped between the friction-rollers P and Q, thus making an attachment between the ladder B and the free end of the arm M. The lever or handle R may be attached to the shaft O for the purpose of connecting and disconnecting the ladder from the free end of the lever-arm. When the lever-arm M is connected to the ladder B,

the friction-roller Q is on one side of the way or track B′ and the friction-roller P on the other side, the position being fully shown in Fig. 3.

When the ladder B is lowered from the position shown in Fig. 1, the friction-pulley passes upward along the ladder until the lever-arm M is turned backward to a position horizontal and parallel with the framework A. When the lever has been raised to the position shown in Figs. 1 and 3, the free end of the lever-arm M is detached from the ladder by turning the shaft O, which brings the pulley Q and the handle or arm R into the position shown by the dotted lines in Fig. 3. The track B′ terminates at this point, so as to make said detachment possible. The lever-arm M may then be turned upward and backward out of the way, said lever-arm being at all times under the control of the operator by means of the gearing already described.

I have described what I deem to be the preferable mechanism for attaching and detaching the free end of the lever-arm M from the ladder B and, also, my preferred form of mechanism for raising and lowering the ladder by means of lever-arm and cog-gearing. It will be obvious, however, that the form or structure may be varied without departing from the spirit of the invention.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In combination with the fire-ladder supported on a suitable vehicle, a track or way upon said ladder, a lever-arm adapted to raise and lower said ladder, and suitable detachable connections between the free end of said lever-arm and the way upon said ladder, whereby the arm is attached to the ladder in raising and lowering the same and detached from said ladder when the same has been raised to a perpendicular position, substantially as and for the purpose described.

2. The combination of the lever-arm, the ladder provided with ways, and detachable connections upon the free end of the said lever-arm, whereby the lever-arm may be attached to the ladder in raising and lowering the same and detached therefrom when said ladder is in use, substantially as described.

3. The combination of the ladder provided with ways, as B′, and lever-arm, as M, provided with friction-rollers, which said rollers may be detached by revolving said shaft, lever-supporting wheel, as H, supported upon the shaft-pinion, as I, engaging with spur-wheels, as J, and pinions, as J′, and levers K, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

RICHARD BRAYTON. [L. S.]

Witnesses:
ARTHUR C. DENISON,
EDWARD TAGGART.