

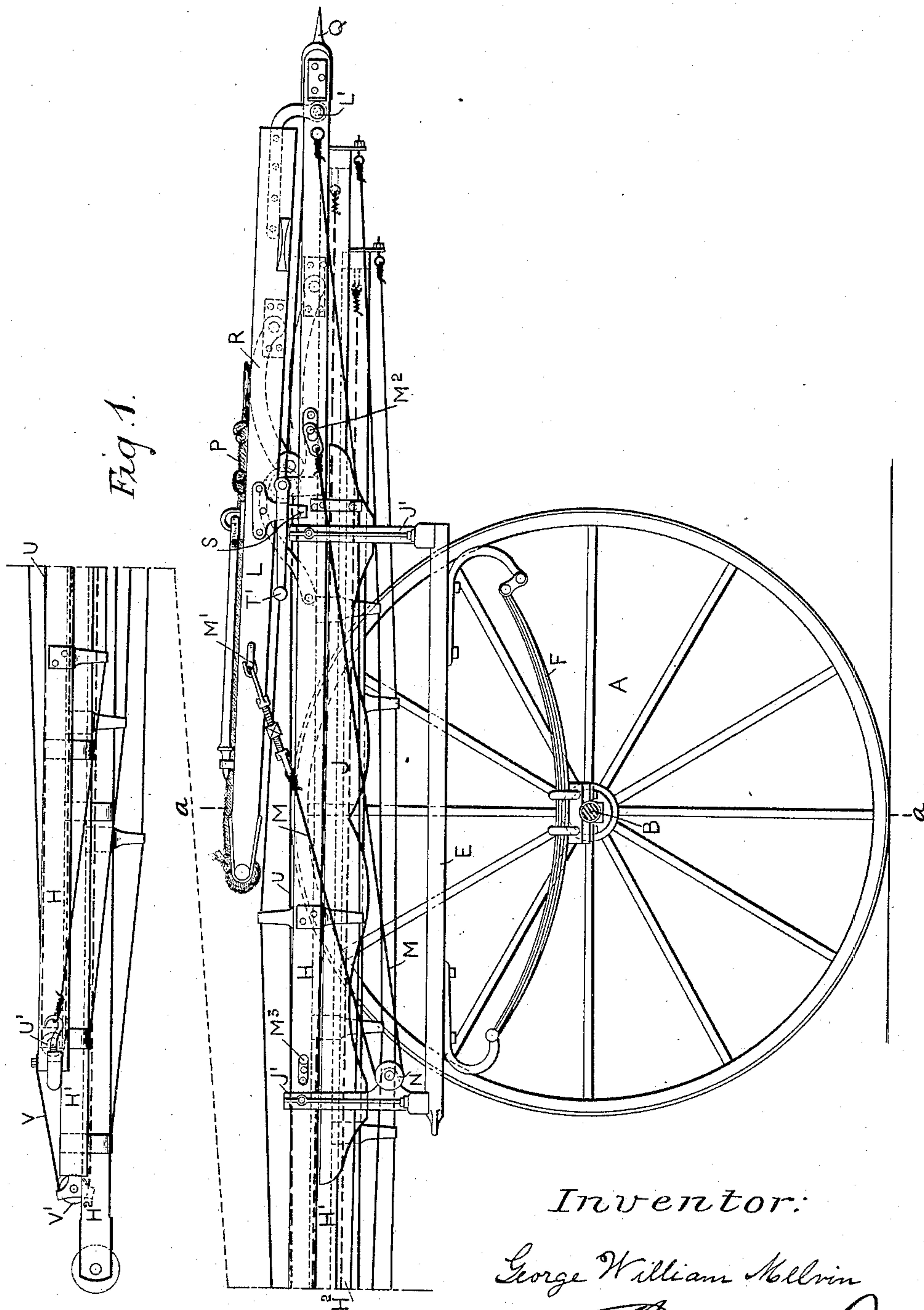
(No Model.)

6 Sheets—Sheet 1.

G. W. MELVIN.  
FIRE ESCAPE AND SCALING LADDER.

No. 482,441.

Patented Sept. 13, 1892.



Inventor:

George William Melvin

By

Richardson & Co.  
his Attorneys.

Witnesses.

E. B. Bolton

W. B. Kenney.

(No Model.)

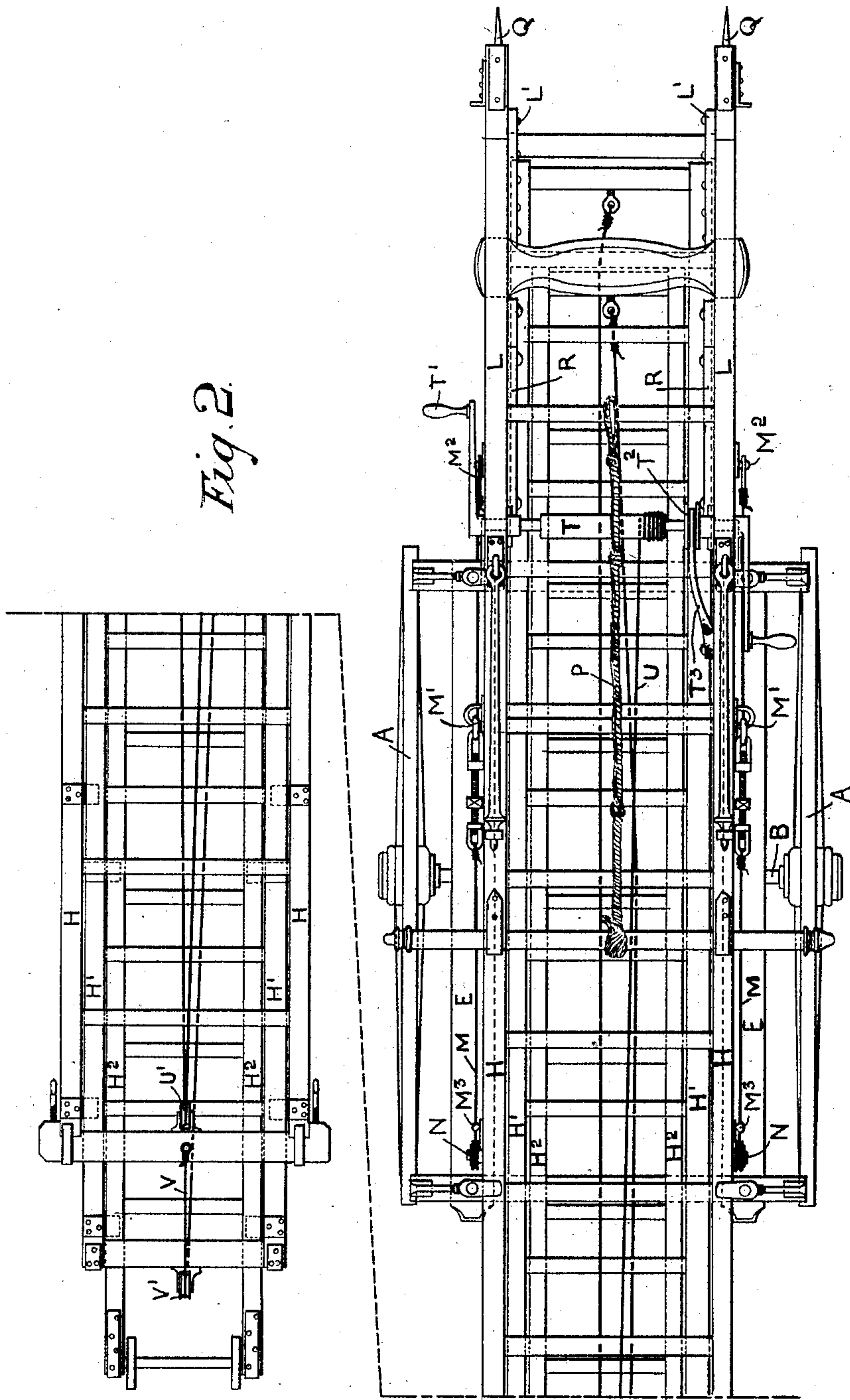
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Fig. 2.



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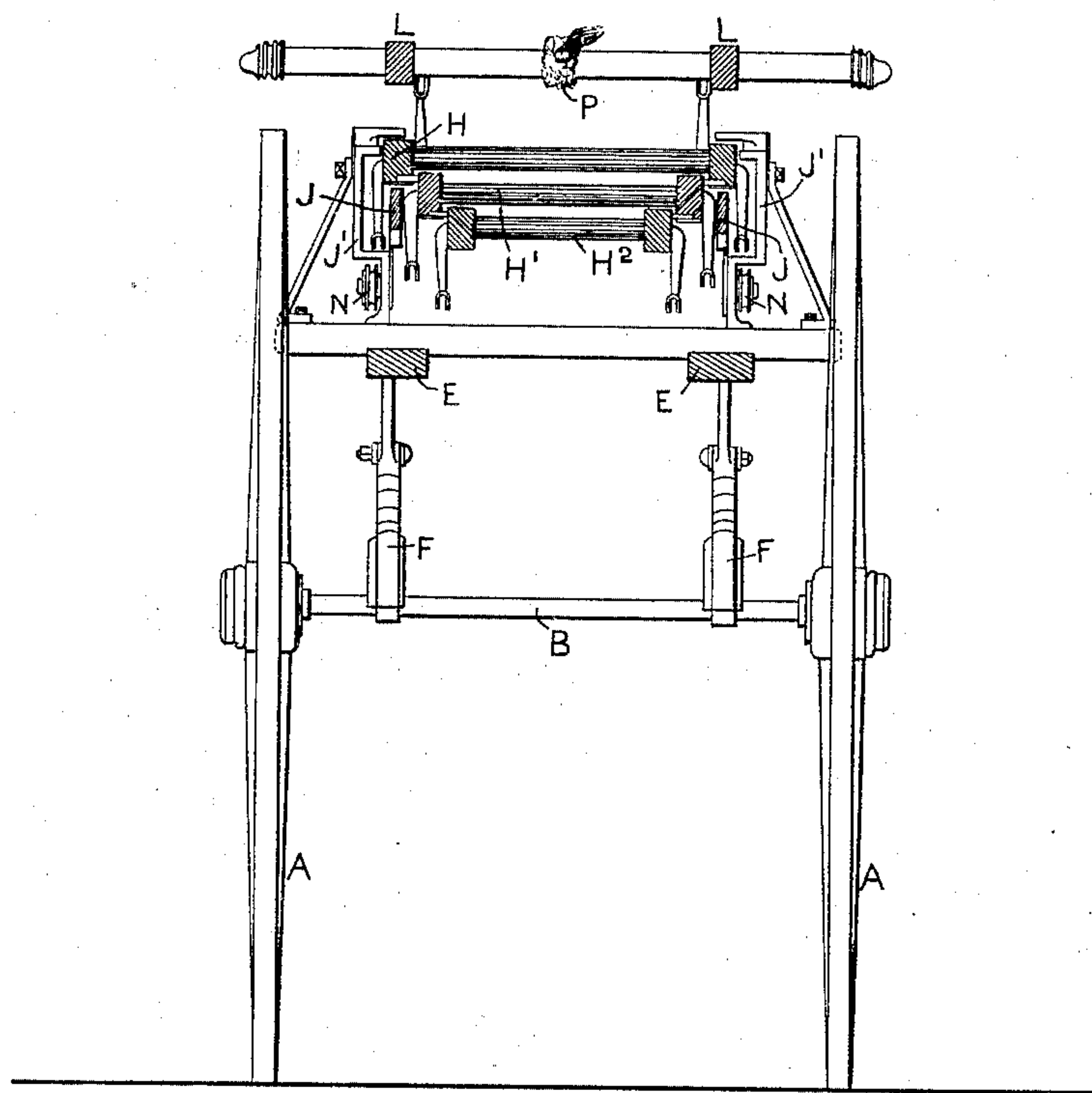
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*Fig. 3.*



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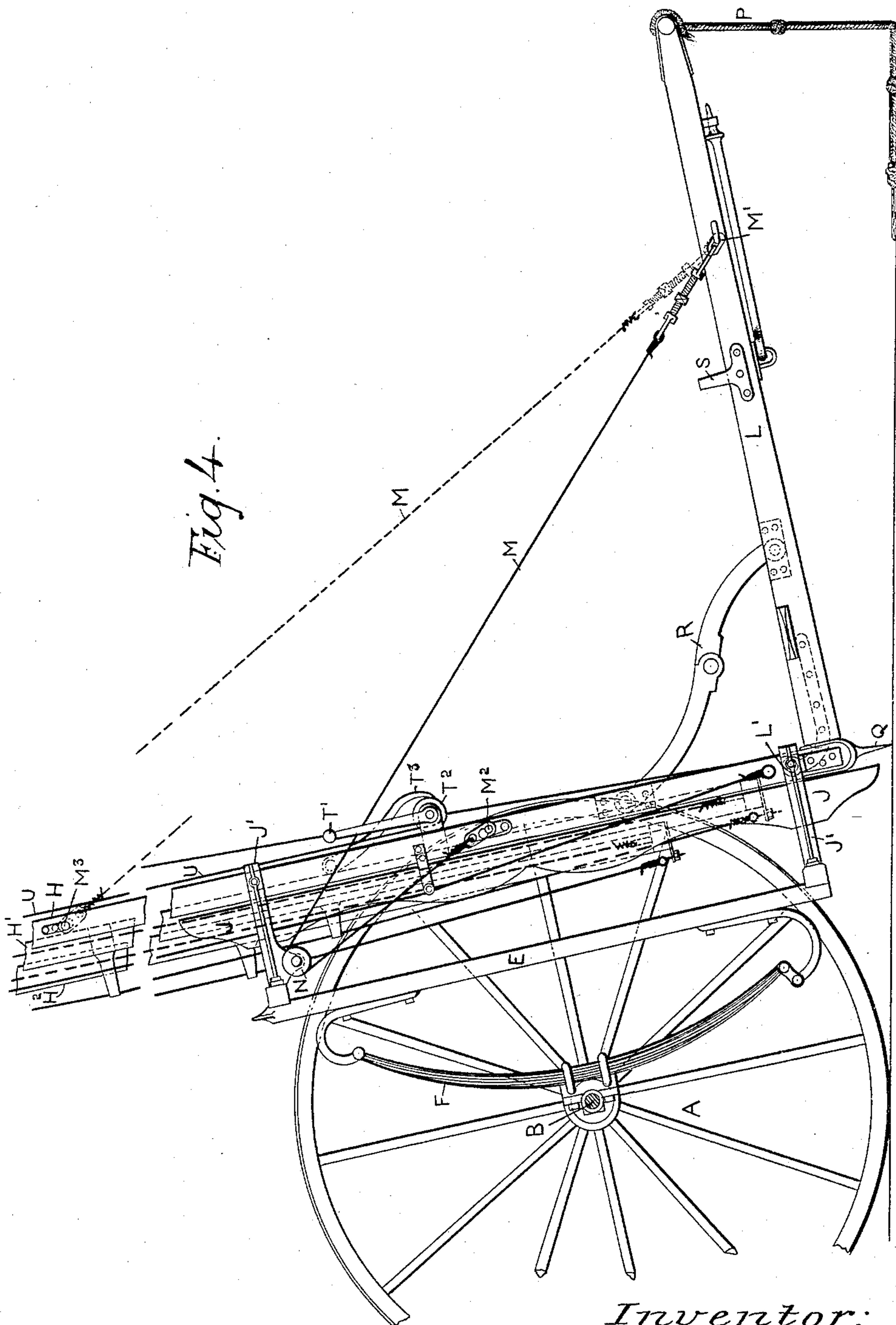
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(No Model.)

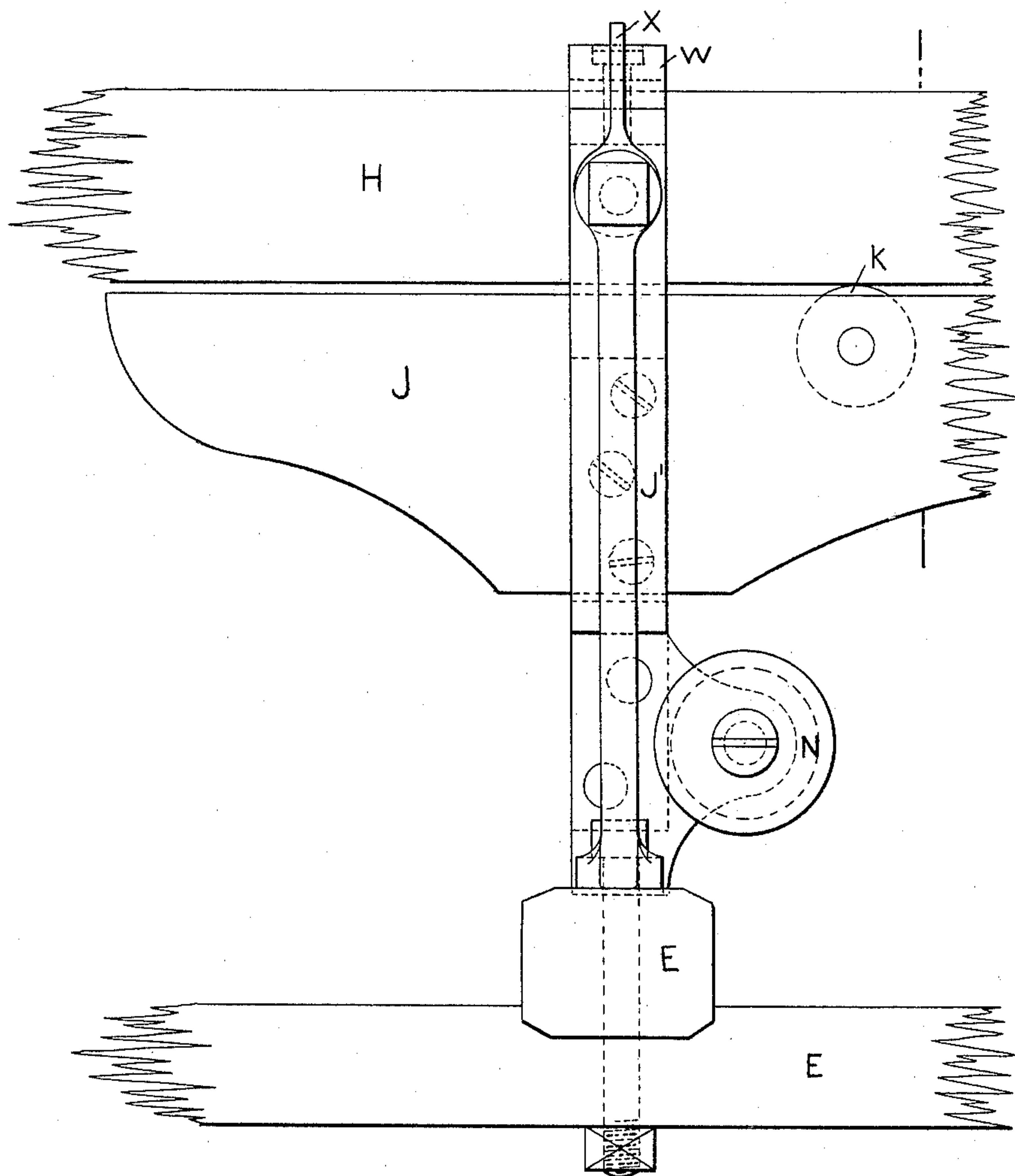
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*Fig. 5.*



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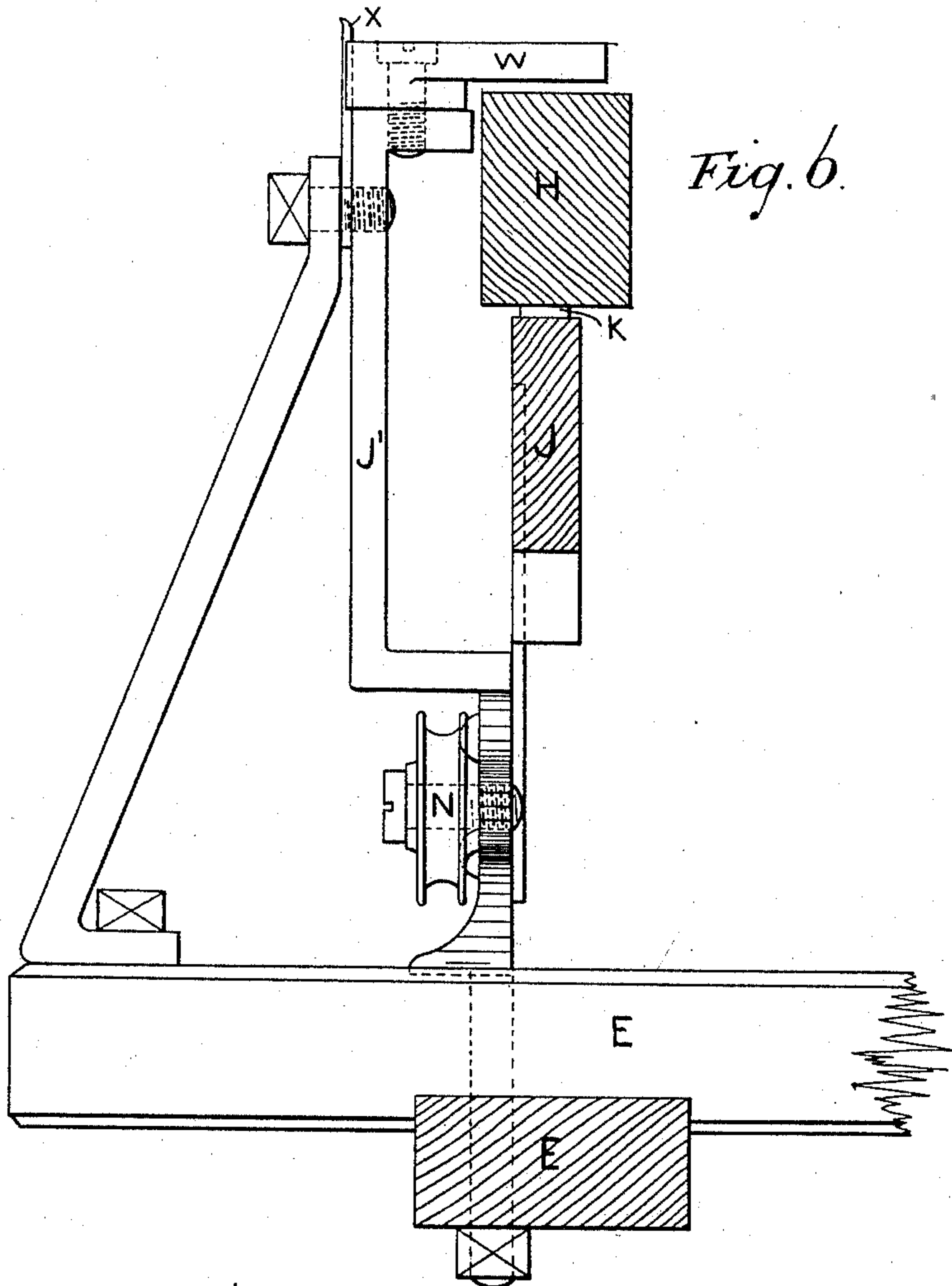
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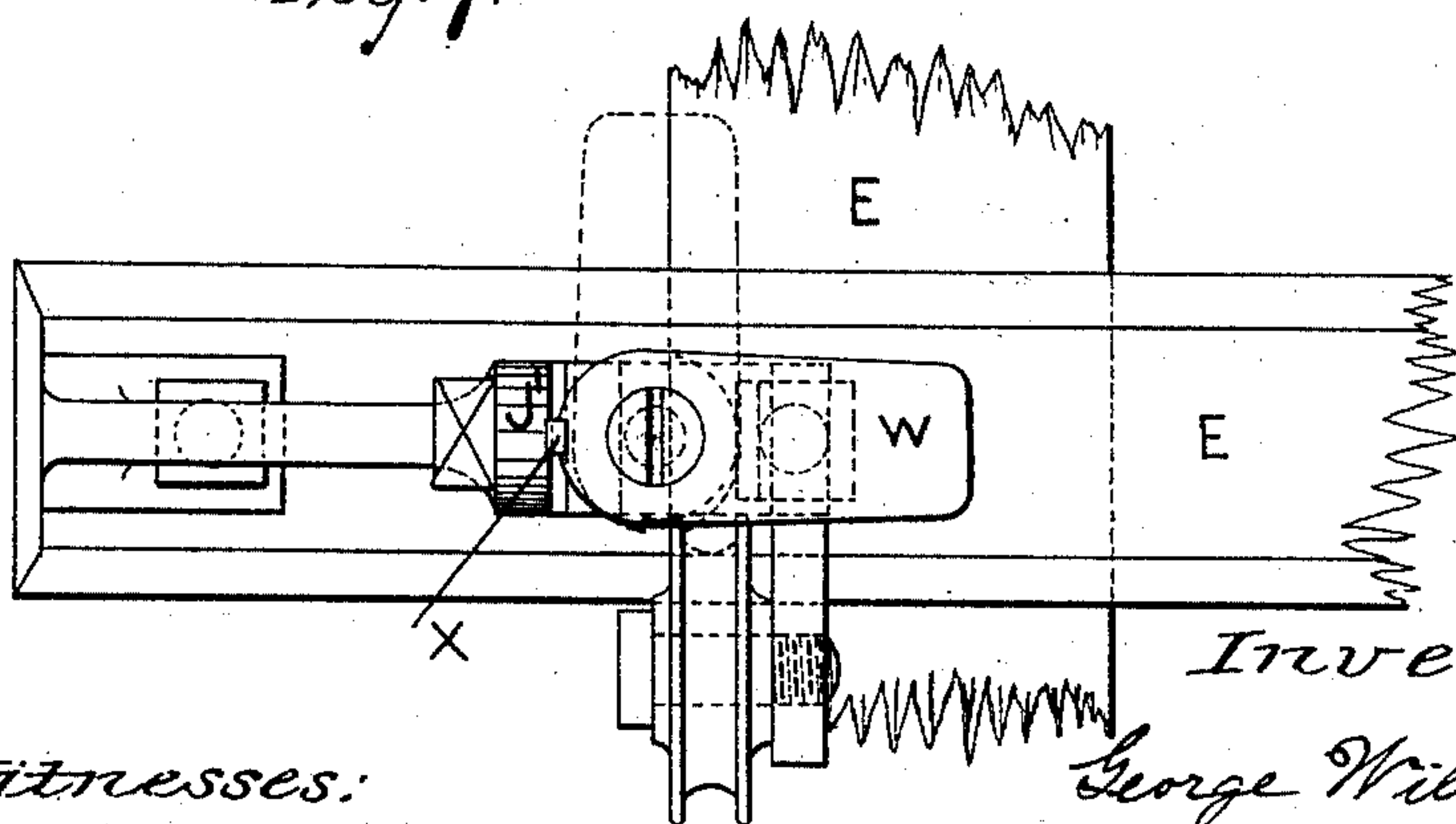
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*Fig. 6.*



*Fig. 7.*

Witnesses:

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Inventor:

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# UNITED STATES PATENT OFFICE.

GEORGE WILLIAM MELVIN, OF DEPTFORD, ENGLAND.

## FIRE-ESCAPE AND SCALING-LADDER.

SPECIFICATION forming part of Letters Patent No. 482,441, dated September 13, 1892.

Application filed June 3, 1892. Serial No. 435,376. (No model.) Patented in England March 3, 1891, No. 3,810.

*To all whom it may concern:*

Be it known that I, GEORGE WILLIAM MELVIN, a subject of the Queen of Great Britain and Ireland, and a resident of Deptford Green, Deptford, in the county of Kent, England, have invented certain new and useful Improvements in Fire-Escapes and Scaling-Ladders, (for which I have obtained a patent in Great Britain, No. 3,810, bearing date March 3, 1891,) of which the following is a specification.

The main object of my invention is to effect improvements in the construction of combined fire-escapes, scaling-ladders, and hose-carts; but parts of such improved apparatus may also be used in the construction of or in combination with other fire-escapes, scaling-ladders, or hose-carts.

In the accompanying six sheets of drawings, which illustrate a small fire-escape or scaling-ladder constructed in accordance with my invention, Figure 1 is a side elevation of the escape with the various parts in the relative positions which they ordinarily occupy when the escape is not in use or is traveling along the road. Fig. 2 is a plan of Fig. 1. Fig. 3 is a cross-section through the line *a a* in Fig. 1. Fig. 4 is a side elevation of the escape with the ladders erected ready for use. Figs. 5 and 6 are elevations at right angles to each other; and Fig. 7 is a plan, to an enlarged scale, of one of the standards on the framing of the carriage.

Similar letters of reference denote similar parts throughout the drawings.

A pair of wheels *A A* are mounted upon an axletree *B* of such length that they will readily pass through any narrow passage or gateway. *E* is the carriage or frame affixed to the axletree *B* by springs *F F*.

*H H' H<sup>2</sup>* are the three parts of a telescopic ladder sliding under one another and provided with stay lines or trusses, or constructed in any other suitable manner. It is unnecessary to describe in detail the construction of these ladders; but they are preferably narrow and are not provided with chutes.

Longitudinal timbers *J J* are fixed on the frame *E* and form a bed or carriage on which the sides of the main ladder rest and slide, as will presently be described. Small rollers

*K* may be provided in the timbers *J J* to enable the ladder to move freely thereon. *J' J'* are metal standards fixed on the carriage to hold the timbers *J J* and keep the ladders in position thereon. These standards are made of the form shown in Figs. 3 and 6 to give room for the understruts and stay-lines on the ladder *H*.

The most important improvement contained in my present invention consists in the arrangement for moving the ladders on the framing of the carriage. For this purpose I employ a double-sided lever *L L*, which is hinged to the lower end of the main ladder *H* at *L'*, and folds down flat thereon when the escape is not in use or is traveling, as shown in Figs. 1, 2 and 3. Two ropes *M M*—one on each side—are affixed to the upper part of the lever at *M'*. From thence they pass round pulleys *N N* on the front standards *J' J'* on the carriage, their other ends being affixed to the lower part of the main ladder *H* at *M<sup>2</sup>* by means of a keyhole link and stud or other suitable device. To move the ladders bodily forward on the framing, the escape is tipped till the lower end of the main ladder rests on the ground. The attendant then places one foot on the bottom rung of the said ladder and pulls the lever up by means of the rope *P*, attached to it. The ropes *M M*, passing over the pulleys *N N*, compel the carriage *E*, with its wheels *A A*, to slide back underneath the ladders, thus forcing the latter into the vertical or working position at the same time that the lever rises. Short spikes or studs *Q Q* are preferably provided on the end of the main ladder *H* to obtain a firm hold upon the ground. Two jointed struts *R R* are employed between the lever *L L* and main ladder *H*, which when the ladder is fully raised on the carriage automatically lock it and the lever in such position as shown in Fig. 4. To return the ladders to their former place, it is only necessary to strike up the joints of the struts *R R* and fold the lever *L L* down, when the ladders will slide back on the framing into the position shown in Figs. 1 and 2. When in such position, the ropes *M M* prevent the ladders moving on the carriage in one direction, and to lock and prevent them moving in the other direction any convenient



device may be employed. In practice, however, I prefer to use for this purpose the simple device shown on the drawings, which merely consists of a projection S, fixed on each side of the lever L L. When the lever is folded down, these projections come against the standards J', and thus effectually lock the ladders on the carriage.

After the escape has been erected into the position shown in Fig. 4 the telescopic ladders may be extended by any convenient means. The arrangement I prefer to employ consists of a drum T, journaled on the front of the main ladder H and provided with a winch-handle T' at each end. A rope U from this drum passes over a pulley U' on the ladder H and is fixed to the bottom of the second ladder H'. A rope V, fixed to the top of the ladder H, passes over a pulley V' on the top of the ladder H' and is fixed to the bottom of the ladder H<sup>2</sup>. Thus by rotating the handles T' the ladders are simultaneously extended.

The ratchet-wheel T<sup>2</sup> on the drum T, is so formed that the pawl T<sup>3</sup> always stops the handle T' parallel with the ladders, as shown, thus preventing the said handles fouling the standards J' when the ladders are moved on the framing.

The telescopic ladder is not necessarily made in three parts, as shown, and a single ladder of fixed length may be substituted therefor, if preferred.

The ladders are so disposed on the carriage that when in the position shown in Fig. 1 their center of gravity is practically over the axletree B, thus making the apparatus very convenient to handle.

In an escape or scaling-ladder of this class it is often convenient to be able to remove the ladders from the carriage and wheels, and in order to effect this rapidly I sometimes employ the arrangement shown in Figs. 5, 6, and 7.

On the top of each standard J' a finger W is pivoted. These fingers project over the sides of the ladder H, as shown, and keep it in place on the timbers J J. Each finger is held in such position by a spring X, entering a notch in the back of the finger.

When the spring is pulled out, the finger can be turned aside into the position shown in dotted lines in Fig. 7, and the ropes M M being detached at M<sup>2</sup> M<sup>2</sup>, the ladders, with their lever L L, can then be removed bodily from the carriage, or if the apparatus is erect-

ed against a building the carriage can be taken away from the ladders.

Additional studs are provided on the ladder H at M<sup>3</sup> M<sup>3</sup>, so that the ropes M M can be attached thereto, as shown by dotted lines in Fig. 4, to act as guy-lines.

The ropes M M are provided at the ends M' M' with a suitable tightening arrangement, as shown.

By my arrangement of hinging a lever to the ladder the construction is rendered so simple and effective that one man can easily operate the machine, while there are no parts likely to get out of order, and the ladders, with the lever, can be instantly removed from the carriage in one piece, as before described.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fire-escape, a carriage or truck, standards J' J', extending upwardly therefrom, a ladder or ladders supported by said standards, a lever L, hinged to one end of the main ladder, and operating-ropes M M, attached to the lever L and extending directly to and over pulleys on the front of the carriage and thence to the main ladder, substantially as described.

2. In combination with the ladders, the supporting-frame and the overhanging pivoted part W under spring tension, substantially as described.

3. In a fire-escape or scaling-ladder, the combination of projections S S on the lever L L with the standards J' J' on the carriage, substantially as and for the purpose set forth.

4. In a fire-escape, the combination of the carriage or truck, the standards J' J' thereon, the ladder H, supported by said standards, the lever L, provided with operating-ropes M M, extending from said lever to the ladder over pulleys on the carriage, and the additional studs M<sup>3</sup> M<sup>3</sup>, substantially as described.

5. In a fire-escape or scaling-ladder, the combination, with the standards J' and the ladder, of pivoted fingers W, provided with springs X for the purpose of enabling the ladders to be readily removed from the carriage, substantially as set forth.

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

GEORGE WILLIAM MELVIN.

Witnesses:

H. OUGHTERSON HAYMEN,  
ARTHUR HALPIN GREENE.