3 Sheets--Sheet 1.

J. A. KLEY & V. H. HIGGINS.

Hook and Ladder Truck.

No. 166,112. Patented July 27, 1875.

Fig. 1.

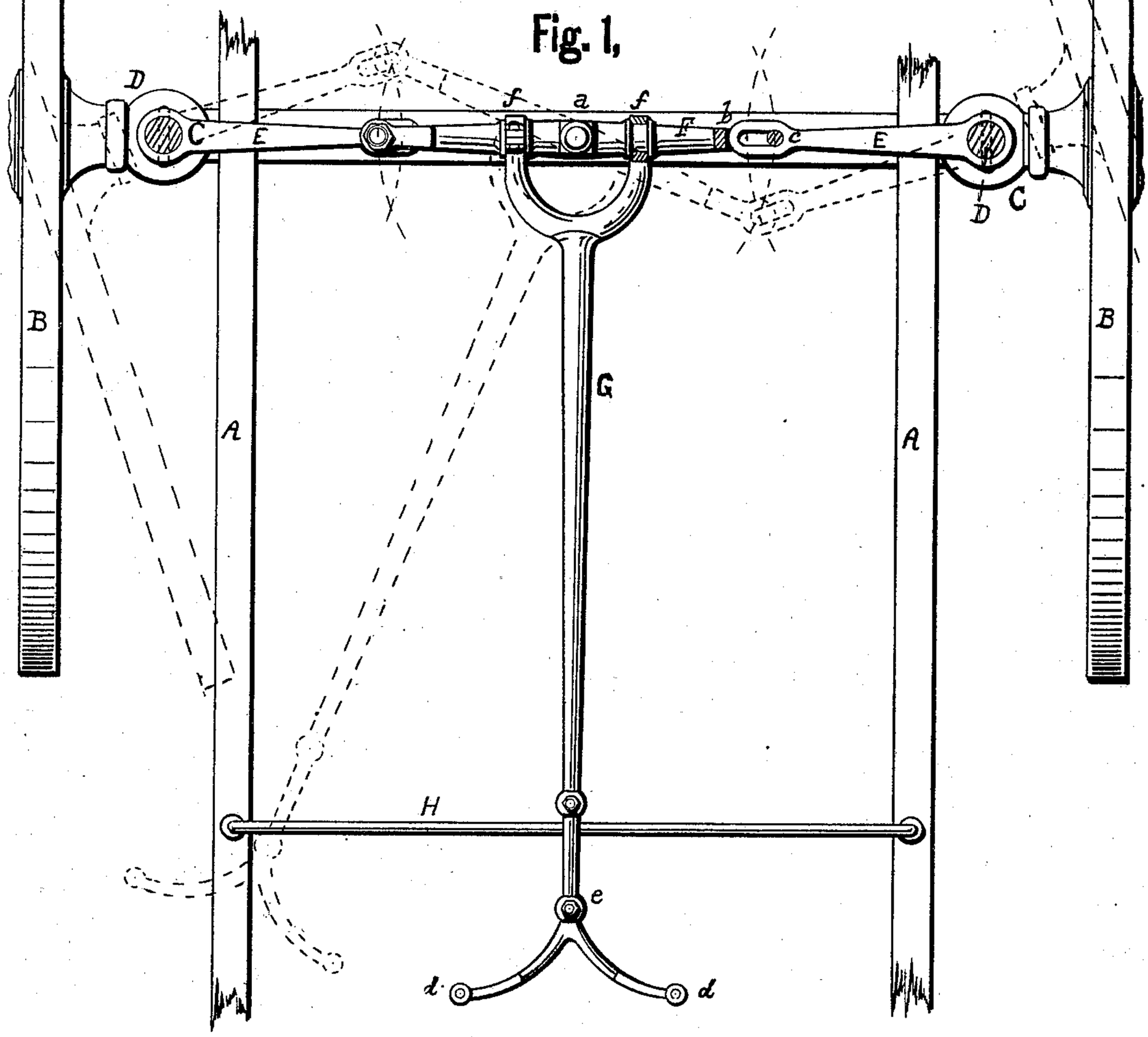
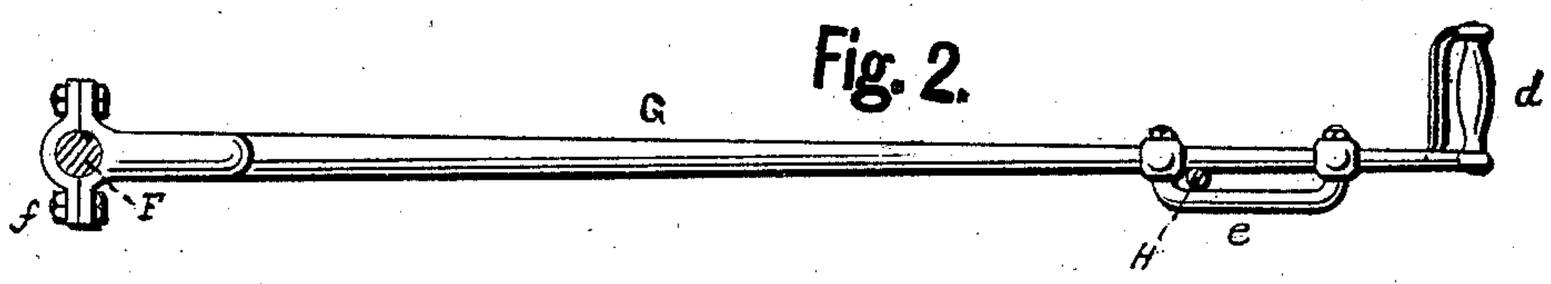


Fig. 2.



Witnesses:

E. A. Fish

O. W. Bond.

John A. Kley

Van H. Higgins

Inventors:

3 Sheets--Sheet 2.

J. A. KLEY & V. H. HIGGINS.

Hook and Ladder Truck.

No. 166,112.

Patented July 27, 1875.

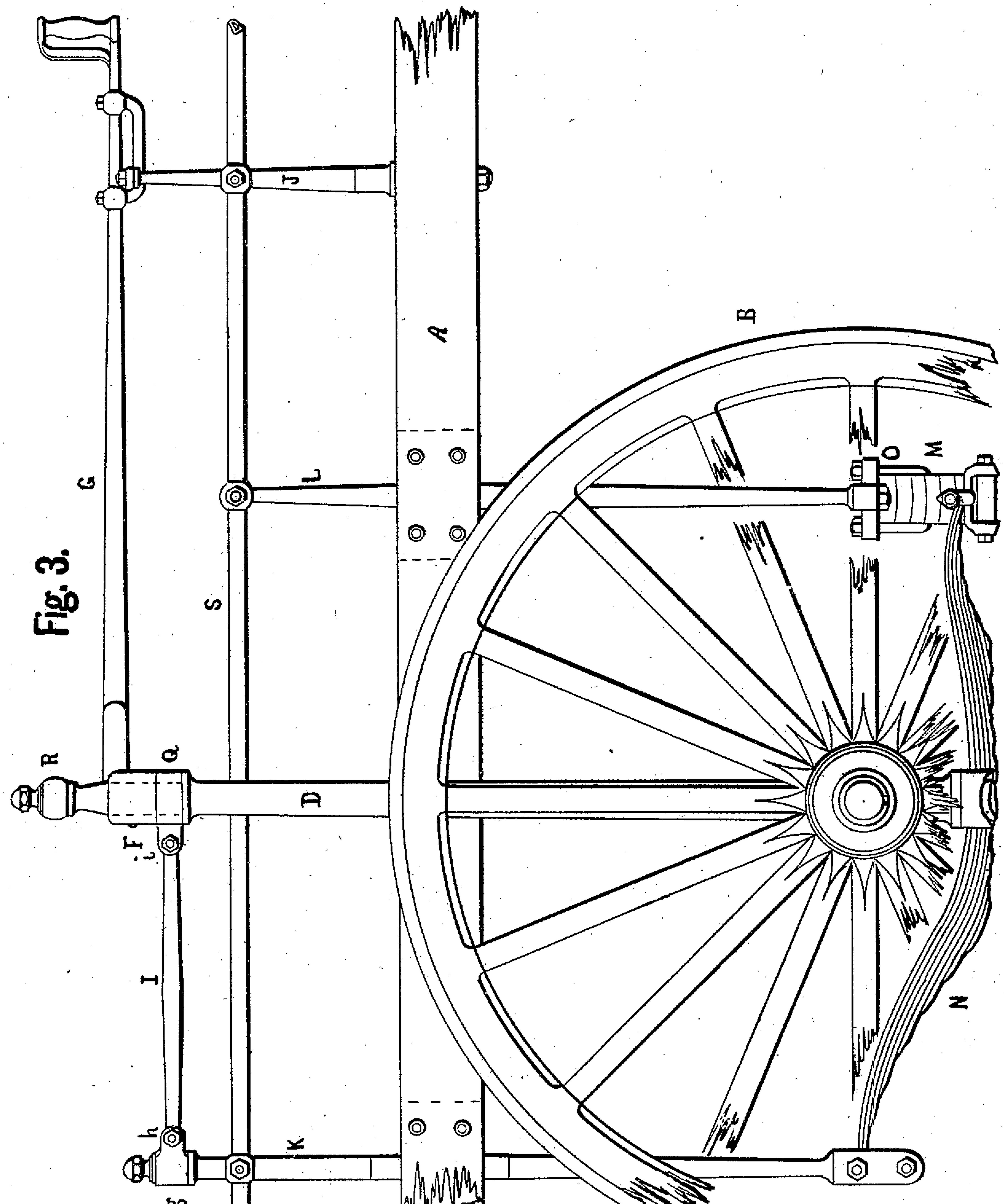


Fig. 3.

Witnesses:

E. A. West.

O. W. Bond.

John A. Kley

Van H. Higgins

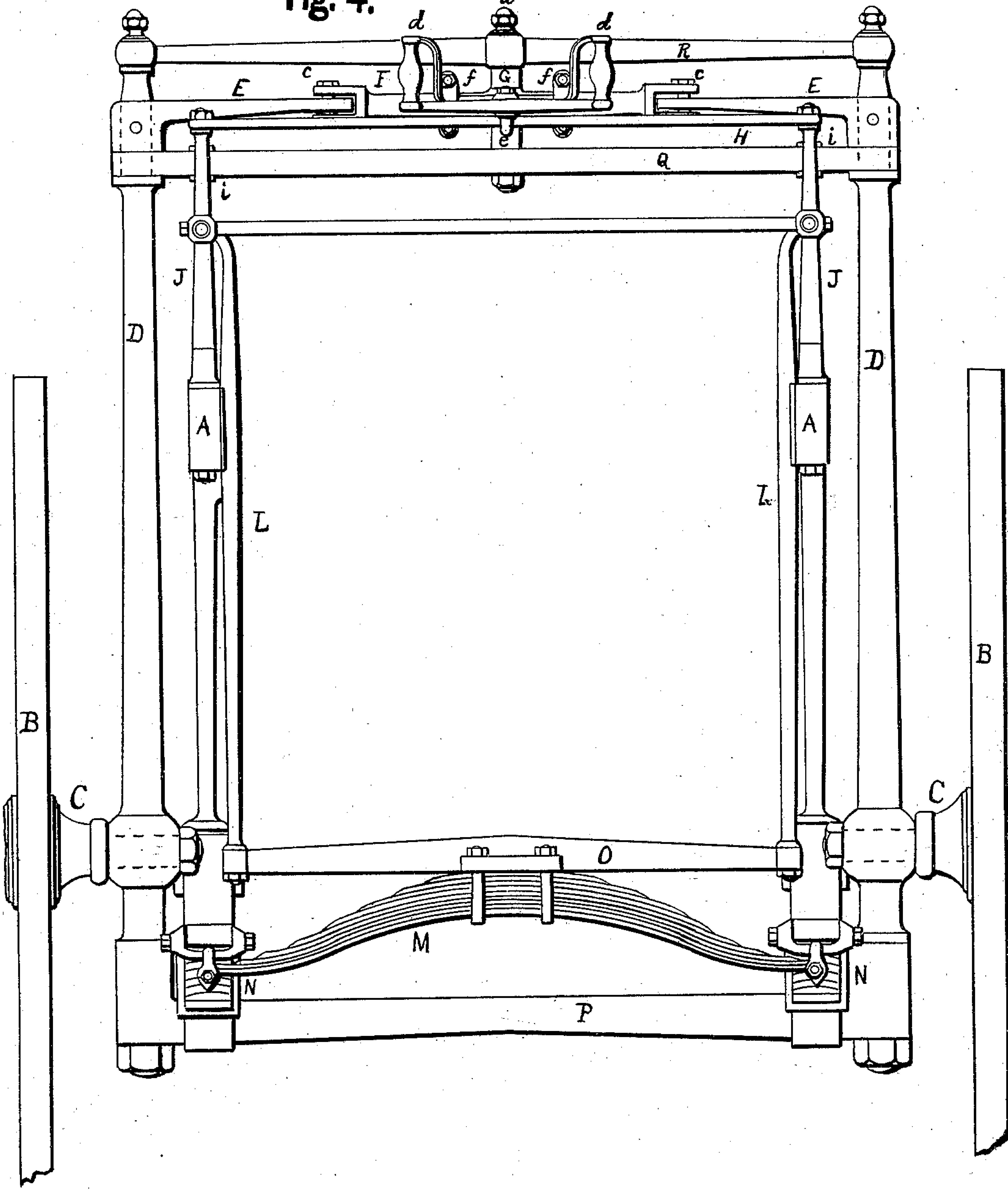
Inventors:

J. A. KLEY & V. H. HIGGINS.

Hook and Ladder Truck.

No. 166,112. Patented July 27, 1875.

Fig. 4.



Witnesses:
E. A. Hirst
O. W. Bond

John A. Kley
Van H. Higgins
Inventors:

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN A. KLEY AND VAN H. HIGGINS, OF CHICAGO, ILLINOIS, ASSIGNORS TO THE BABCOCK MANUFACTURING COMPANY.

IMPROVEMENT IN HOOK-AND-LADDER TRUCKS.

Specification forming part of Letters Patent No. **166,112**, dated July 27, 1875; application filed May 7, 1875.

To all whom it may concern:

Be it known that we, JOHN A. KLEY and VAN H. HIGGINS, of the city of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Hook-and-Ladder Trucks, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view of the hinder portion of a hook-and-ladder truck, with the rear cross-bar broken off, and the upper cross-bar removed to show the levers; Fig. 2, a side view of the guiding-lever; Fig. 3, a side view; Fig. 4, an end view.

The object of this invention is to improve certain parts of the hook-and-ladder truck patented to John A. Kley and Wellington Lee on the 7th day of July, 1874; and its nature consists in an improved combination of the guiding-levers, in an improved arrangement of the springs, and in the several combinations of parts hereinafter described and claimed.

In the drawings, A represents the sides of the main frame; B, the wheels; C, the axles or journals of the wheels; D, the vertical shafts to which the axles are applied; E, the levers attached to the shafts D, and projecting inward; F, the cross-head connecting the levers E; G, the guiding-lever; H, the rod or cross-bar supporting the rear end of the guiding-lever; I, the steady rods or bars; J, the posts on the upper side of the frame A; K L, bars or supports for the springs; M, the rear cross-springs; N, the side springs; O, the spring-bar; P, the cross-bar supporting the spring N; Q R, the cross-bars supporting the upper ends of the shafts D; S, the side rails; *a*, the pivot of the guiding-lever; *b*, the slots in the inner ends of the levers E; *c*, the pins passing through the slots *b*; *d*, the handles of the guiding-lever; *e*, the clip for holding the guiding-lever down on the rod H; *f*, the clamp or attachment of the guiding-lever, for attaching it to the cross-head F; *g*, a collar on the rods or bars K; *h*, the pivot of the steady-bar I; *i*, the pivot of the steady-bar I to the cross-bar Q. The wheels B, frame A, axles C, shafts D, and cross-rods for supporting the ladders in position (not shown) are made similar to the corresponding parts shown and described in the before-mentioned patent. The shafts D are journaled in the bars P Q R. To the lower bar P we attach two ordinary leaf-springs, N, which are firmly attached to the bar P, and are connected together at their rear ends by a similar spring, M, upon which rests a cross-bar, O, which is attached to the frame A by means of rods or bars L. The inner or front ends of the spring N are connected together by a simple stay-rod, and are attached to the rods or bars K, by which they are held in position, and from which, with the cross-bars O and bars L, the frame is supported upon the springs. This manner of connecting the frame with the supporting-springs permits not only a vertical movement to the frame, but also allows of a lateral or side movement. This side movement or spring, which we have found to be important, is still further facilitated by means of the steady-rods I, which connect the upper end of the bars K with the cross-bar Q. These rods I are pivoted to the upper end of the bars K, as shown in Fig. 3, to allow a vertical movement, and also at *i* to the bar Q, so as to give a free lateral movement at that point. These rods I not only steady the frame and hold the bars supporting the upper ends of the shafts D in position, but also allow the frame to ride easily upon its supporting-springs without straining any of the parts.

We have improved the arrangement for guiding the truck by attaching levers E to the axle-shafts, and operating them by a cross-head connected with a guiding-lever of sufficient length to give the steersman perfect control over the truck, and to enable him to handle it easily and quickly. The inner ends of the arms E are provided with slots *b*, through which the pins on the outer ends of the cross-head F play with sufficient freedom to enable the operator to turn the wheels and levers, as shown by the dotted lines in Fig. 1, in either direction. The cross-head is pivoted at *a*, and the guide-lever is held down to the cross-rod H by the clip or loop *e*, so as to relieve the steersman from unnecessary jar or vibration.

In constructing a full-sized machine we pro-

pose to mount the frame on the front wheels by four springs, supported upon the ordinary fifth-wheel.

By the use of the devices shown and described we have materially improved the operation of the truck described in the patent mentioned, and still retain the valuable features of that truck.

What we claim as new is as follows:

1. The combination of the guide-lever G and cross-head F with the levers E and the shafts D, substantially as specified.

2. The combination of the springs M N with the bars K L, cross-bar P, and frame A, substantially as described.

3. The pivoted steady-rods I, in combination with the bars K and cross-bar Q, for holding the upper ends of the shafts D in position and allowing them to sway, substantially as set forth.

JOHN A. KLEY.
VAN H. HIGGINS.

Witnesses:
E. A. WEST,
O. W. BOND.