

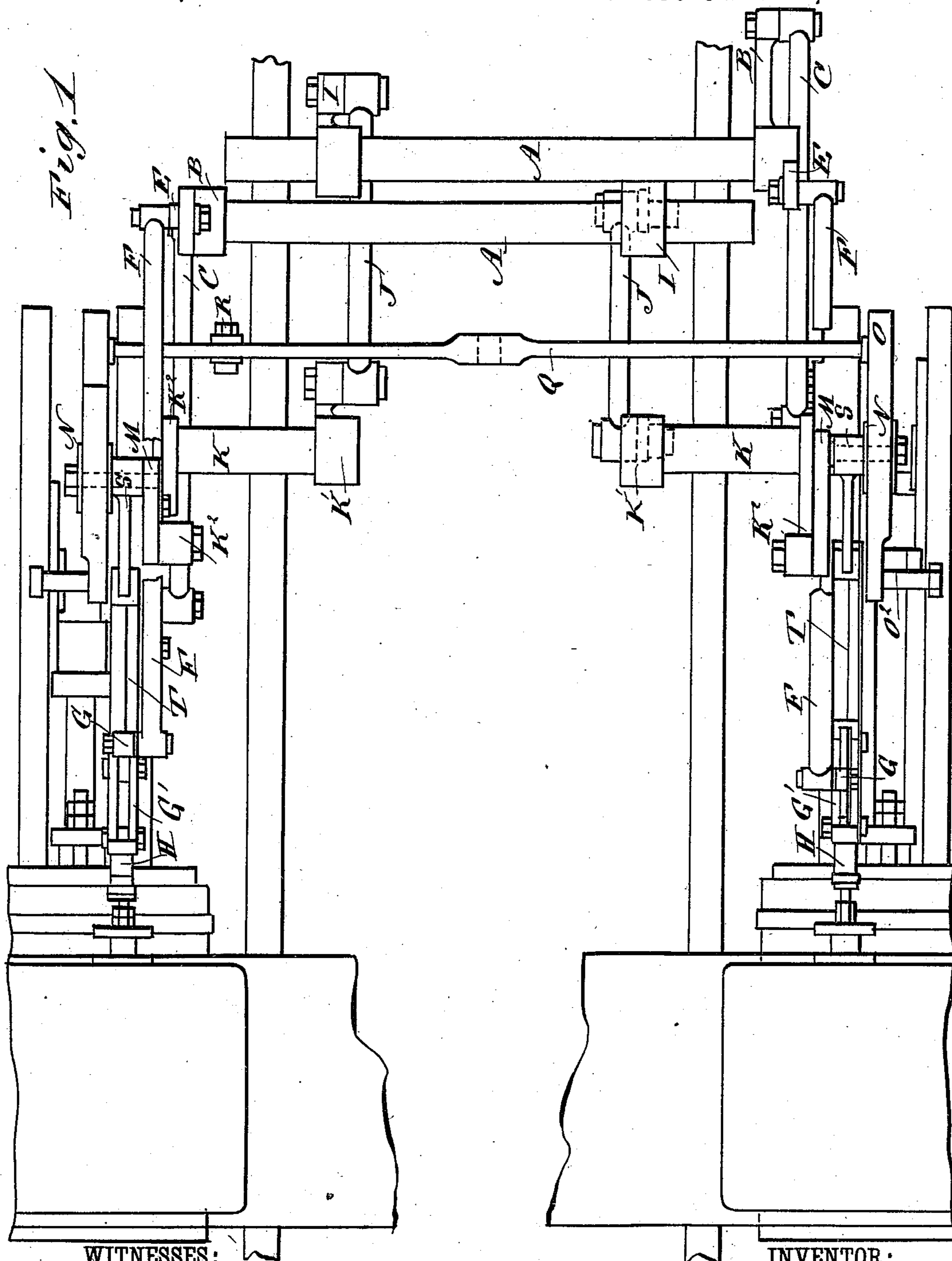
(No Model.)

2 Sheets—Sheet 1.

W. J. LEWIS.
LOCOMOTIVE VALVE GEAR.

No. 355,770.

Patented Jan. 11, 1887.



WITNESSES:

C. Newell
G. Sedgwick

INVENTOR:

W. J. Lewis
BY *Munn & Co.*
ATTORNEYS.

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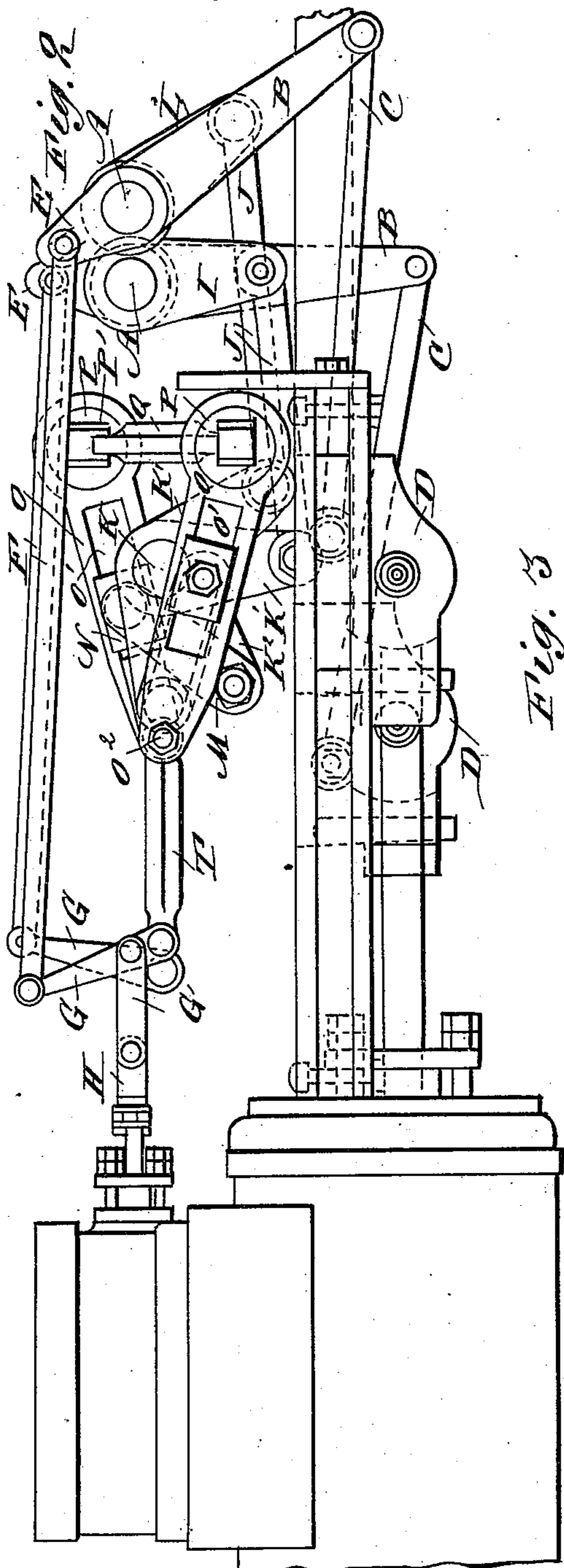
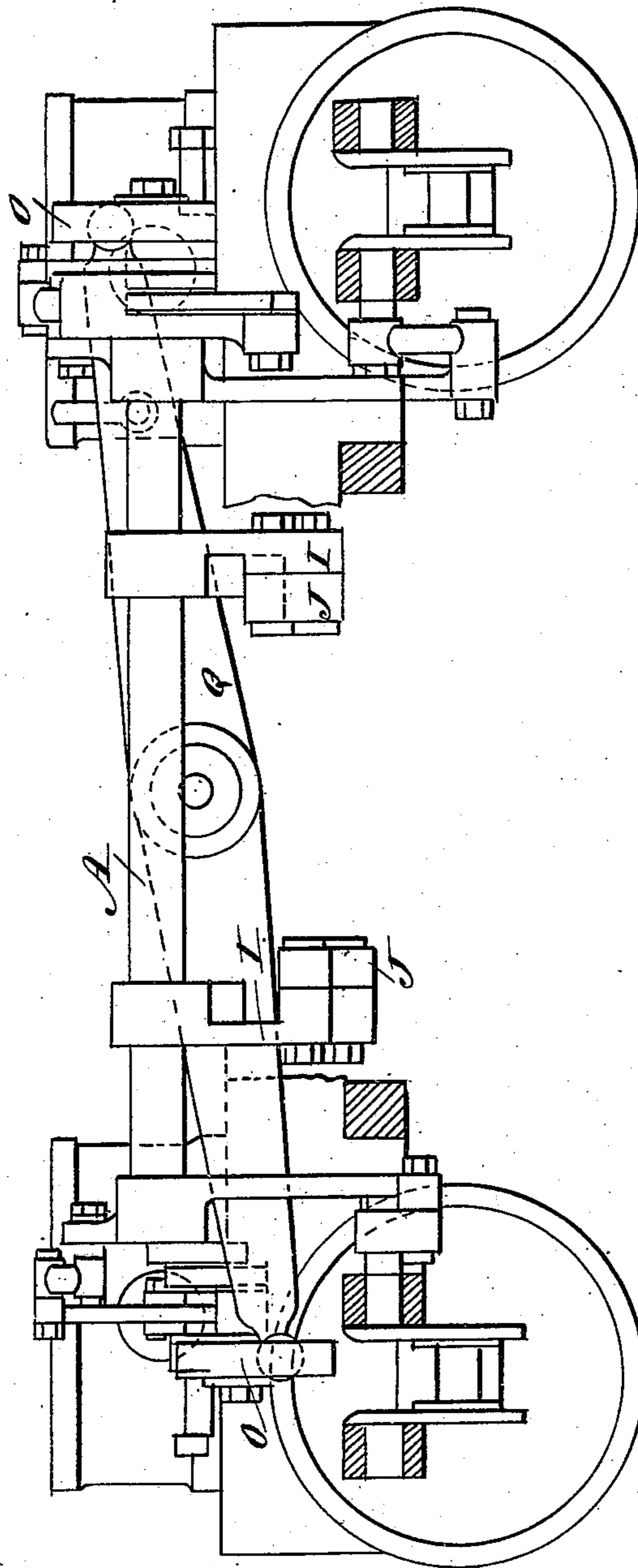


Fig. 1



WITNESSES:

C. Neveu

C. Sedgwick

INVENTOR:

W. J. Lewis

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WALLACE JAMES LEWIS, OF TYLER, TEXAS.

LOCOMOTIVE VALVE-GEAR.

SPECIFICATION forming part of Letters Patent No. 355,770, dated January 11, 1887.

Application filed April 28, 1886. Serial No. 200,442. (No model.)

To all whom it may concern:

Be it known that I, WALLACE JAMES LEWIS, of Tyler, in the county of Smith and State of Texas, have invented a new and Improved Locomotive Valve-Gear, of which the following is a full, clear, and exact description.

The object of my invention is to provide new and useful improvements in the locomotive valve-gear for which Letters Patent No. 331,799 were granted to me December 8, 1885.

The invention consists of a centrally-pivoted lever, which is operated from the cab of the locomotive, and of slotted reversing-arms which are actuated by the same, and are connected to the valve-rod.

The invention also consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improvement. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of the same, parts being in section.

The main rocker-shafts A A extend across the frame of the locomotive, and one end of each of the shafts A is provided with a downwardly-projecting arm, B, which is connected by the rod C with the cross-head D of the locomotive. In line with the arm B is the upwardly-extending arm E, which connects by the rod F with the valve-rod lever G, pivoted to the link G' on the valve-rod H. Each of the rocker-shafts A is also provided with the downwardly-projecting arm I, which connects by the link J with the arm K', attached to the rocking shaft K. Each of the rocking shafts K is operated from the cross-head D on the opposite side of the locomotive-frame. The arm K² of the rocking shaft K is connected by the link M with the block N, sliding in a recess, O', of the reversing-arm O, which is pivotally connected at its end O² to the frame of the locomotive, the other end being provided with a rotating block, P, having a square aperture, P', into which fits one end of the lever or rocking beam Q, pivotally connected at its center to the locomotive-frame and extending

across the same. The rocking beam Q is connected by a link, R, (see Fig. 1,) with a bell-crank attachment which is operated from the cab of the locomotive by the ordinary reversing-lever and reach-rod.

On the pin which connects the link M with the block N is fulcrumed a link, S, which connects with the horizontally-sliding arm T, fastened to the lower end of the valve-rod lever G.

The arms K' and K² on the rocking shaft K are placed at right angles to each other, or nearly so.

The operation is as follows: The valve-gear, as illustrated in the drawings, is at full-stroke or extreme travel of the valve in the forward motion. Now, by reversing the position of the reversing-arms O by means of the rocking beam Q, which is operated from the cab of the locomotive by the ordinary reversing-lever and reach-rod, the motion is changed. When the arms O are parallel with each other, it brings the longitudinal central line through the arms to the center of the rocker-shafts K, and the slides T then have no motion; but when the arms O are moved either way from the center of the rocking shaft K they impart motion to the slides T, which, in combination with the movement derived from the valve-levers G, through the medium of the main rocker-shafts A, gives a perfect motion to the valves.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a valve-gear, the combination, with the crank-shafts A A, having the arms B E I, and the rods C, connecting the arms B and the cross-heads, of the rocking shafts K, operated from the cross-heads, the arms K' on the rocking shafts K, the links J, connecting the arms I and K', the arms K² of the rocking shafts K, the reversing-arms O, pivoted at O² and having sliding blocks N, the links M, connecting the said blocks and the arms K², means for operating the reversing-arms, the valve-rod lever G, the sliding arm T, the link S, connecting the link M and lever G, and the rods F, connecting the arms E E and levers G G, substantially as and for the purpose set forth.

2. In a valve-gear for locomotives, a pivoted reversing-arm having a recess and being fulcrumed on one end, in combination with a

rotating block fitted in one end of the reversing-arm, and engaging one end of the pivoted lever operated from the cab of the locomotive, substantially as shown and described.

- 5 3. In a valve-gear for locomotives, a pivoted lever, Q, operated from the cab of the locomotive, and the pivoted reversing-arms O, in combination with the links M and S, and the rocking shafts K, having the arms K' and
10 K², substantially as shown and described.

4. The pivoted lever Q, the reversing-arms O, the links M and S, and the rocking shafts K, having the arms K' and K², in combination with the main rocking shafts A, having the arms B and E, and the connecting-rods C and
15 F, substantially as shown and described.

WALLACE JAMES LEWIS.

Witnesses:

E. J. TILLMAN,

THOS. R. REYNOLDS.