

(No Model.)

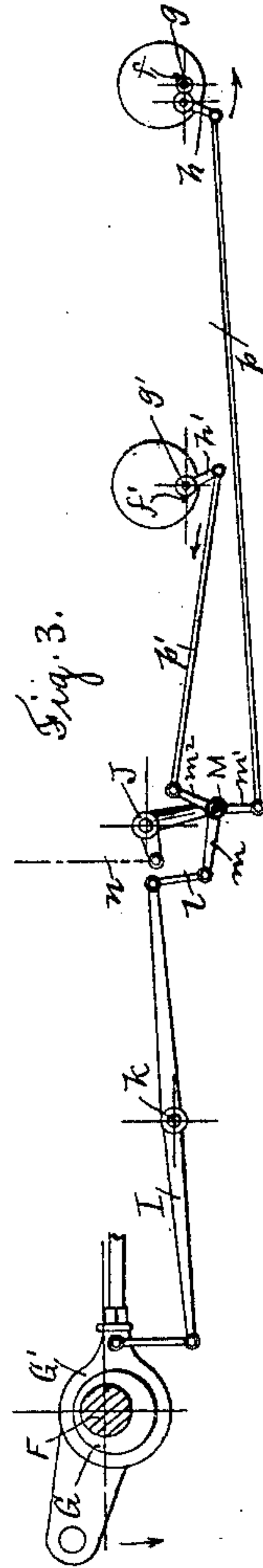
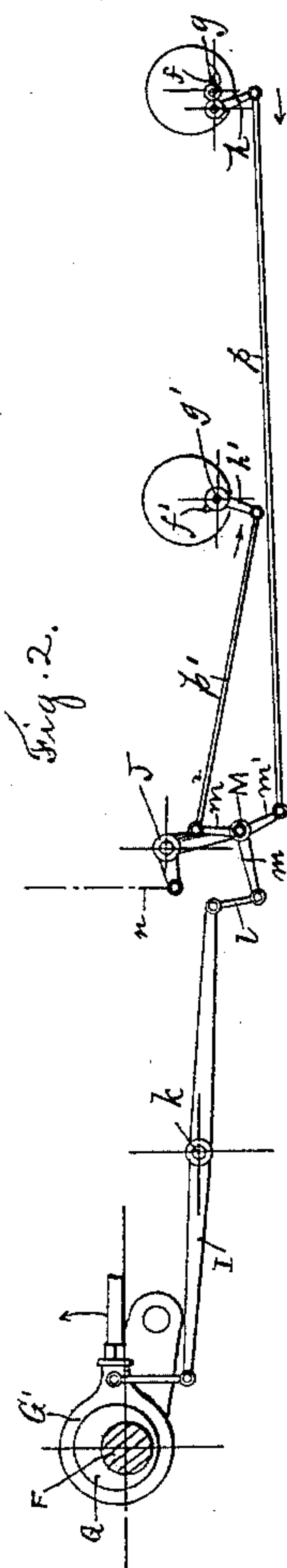
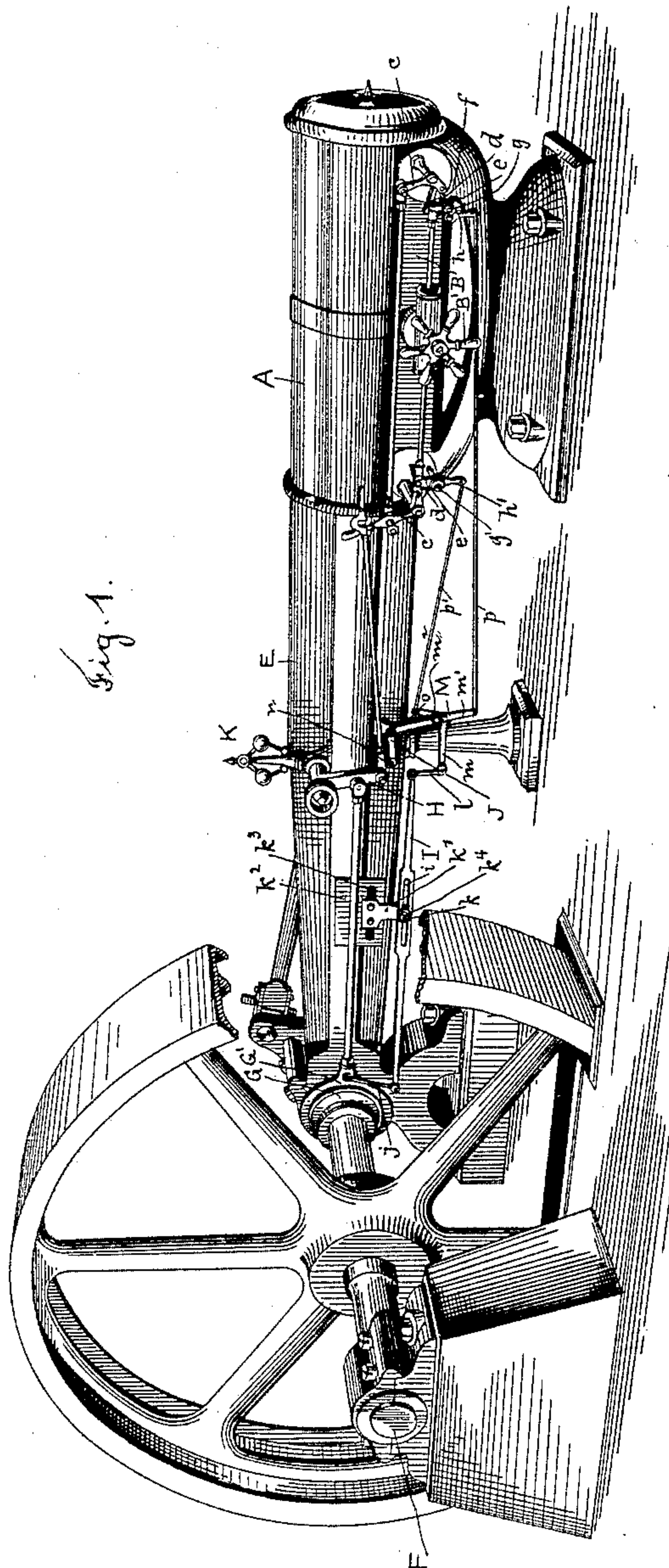
2 Sheets—Sheet 1.

J. WHEELLOCK.

MECHANISM FOR CONTROLLING CUT-OFF VALVES FOR ENGINES.

No. 467,867.

Patented Jan. 26, 1892.



Witnesses
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Inventor
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

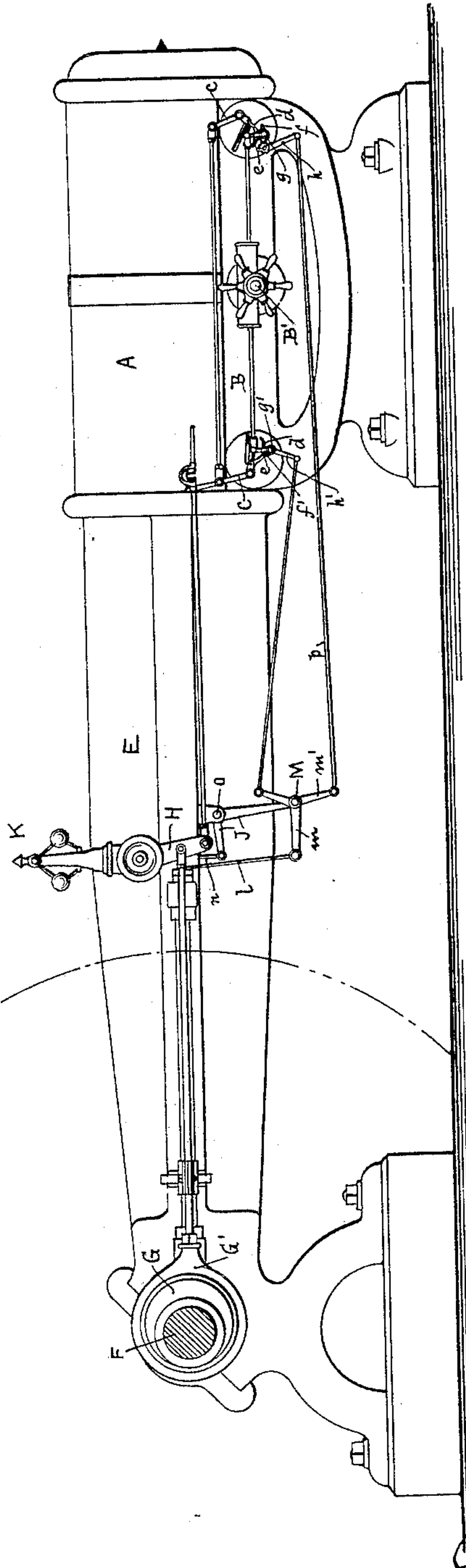
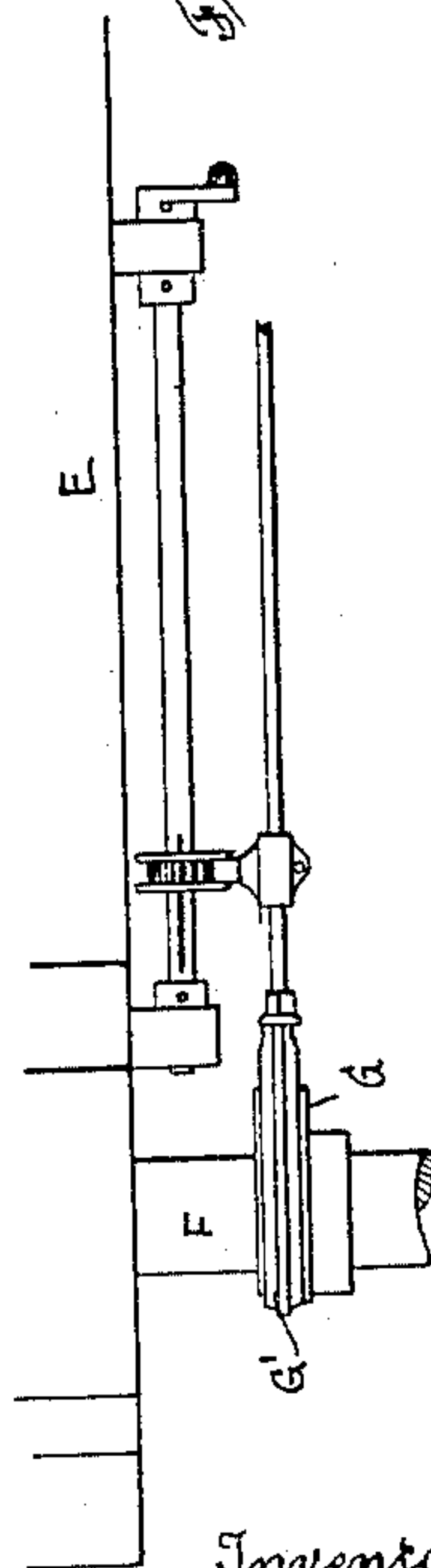


Fig. 5.



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UNITED STATES PATENT OFFICE.

JEROME WHEELOCK, OF WORCESTER, MASSACHUSETTS.

MECHANISM FOR CONTROLLING CUT-OFF VALVES FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 467,867, dated January 26, 1892.

Application filed October 6, 1891. Serial No. 407,909. (No model.)

To all whom it may concern:

Be it known that I, JEROME WHEELOCK, a citizen of the United States, and a resident of Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Mechanism for Controlling the Cut-Off Valves in Engines, of which the following, in connection with the accompanying drawings, is a specification sufficiently clear and descriptive to enable those skilled in the art to which my invention belongs to make and use the same.

My invention relates to automatic cut-off engines in which the cut-off valve is operated by means of a latch block and link connected to the arm of the exhaust-valve and adapted to be disengaged from said latch-block by a trip-cam operated by the governor, all of which are well known and have been fully described in Letters Patent No. 114,174, granted to me on October 28, 1873; and my invention consists in an improvement upon the mechanism for controlling cut-off valves for which I obtained Letters Patent No. 413,696, dated October 29, 1889, and as will be fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of an automatic cut-off engine generally known as the "Wheelock Engine" and embodying my improvements. Fig. 2 is a diagram of the operating parts, the eccentric being in its highest position; and Fig. 3 is a similar figure, the eccentric being in its lowest position. Fig. 4 is a side view of an engine embodying my improvements, showing a modification of the actuating mechanism. Fig. 5 represents a partial top view of the same. Similar letters in the specification and drawings refer to similar parts.

In the drawings, A is the cylinder into the steam-chest B, to which steam is admitted by the throttle B' and then passes through the cut-off valve into the cylinder and out again through the exhaust-valves, both valves being in this instance contained within one shell, as shown and described in Letters Patent No. 440,523, dated November 11, 1890.

E is the engine-bed, supporting at its forward end the crank-shaft F, carrying the ec-

centric G, which, through the rocker H, imparts an oscillating motion to the arms c of the main valves. To the arm c is pivoted the link d, having a bolt, on which slides a latch-block secured to the arm e of the cut-off valve. The links d are raised out of engagement with the latch-blocks on the arms e by the trip-cams f f', the former of which is pivoted on the valve-stem g and is provided with gear-teeth to be engaged by similar teeth provided on the hub of the lever h, which is pivoted on the shell, while the latter cam f' is formed directly on the hub of the lever h', which is pivoted on the valve-stem g'. The levers h h' are operated as follows: To the eccentric-strap G' is attached a link j, the other end of which is secured to the lever I, which is pivoted on a stud k, journaled in the bracket or arm k', which is adjustably secured to the plate k², having a slot k³, and bolted to or made integral with the engine-bed E. The lever I is provided with a slot i, through which the stud k passes, and by means of a nut k⁴ the stud k is firmly clamped to the lever I, the rear end of which is connected through the link l with the arm m of the three-armed lever M.

K is the engine-governor, the balls of which cause the rise and fall of the rod n, which is attached to one arm of the bell-crank lever J, pivoted at o to the engine-bed, and the other arm of which pivotally supports the above-mentioned three-armed lever M. The arm m' is connected by means of the rod p to the trip-lever h'. It will therefore be seen that each revolution of the main shaft F entails a vibratory movement of the three-armed lever M, which results in one complete forward and backward oscillation of the trip-levers h h', and it will also be understood that the amount of such oscillation will always be the same, provided the bolt k, upon which the lever is pivoted, is not shifted, which action would result in an increase or decrease of movement on part of the lever M, so that by these means I am enabled to very closely adjust the engine to the proper degree.

On the other hand, it will readily be understood that the location of such forward and backward movement on part of the trip-levers is entirely under the control of the engine-

governor, so that the cut-off valve can be liberated at any point within three-fourths of the piston-stroke.

It is immaterial to the perfect action of my improvement what means are employed to impart a vibratory movement to the three-armed lever M, since any mechanical device can be substituted for the one described and shown—as, for instance, gearing may be employed to impart movement to a shaft, which imparts the required movement to the said lever, such construction being illustrated in Figs. 4 and 5 of the drawings. I therefore do not confine myself to the use of any particular mode of obtaining said movement; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the latch-links and trips for controlling the cut-off valves of a steam-engine, of means, substantially as described, whereby said trips are caused to complete a forward and backward movement during each revolution of the crank-shaft, and a vibratory arm and rods connected in such a

manner that one trip approaches its respective latch-link, while at the same time the other trip recedes from its respective latch-links.

2. The combination, with the latch-links and trips for controlling the cut-off valves of a steam-engine, of means, substantially as described, for imparting to the trips a complete forward and backward movement during each revolution of the crank-shaft, and a vibratory arm and rods connected in such a manner that one trip approaches its respective latch-link, while at the same time the other trip recedes from its respective link, and a governor whereby the location of such forward and backward movement on part of trips is controlled, so that both trips are caused to simultaneously recede from or simultaneously approach their respective latch-links, for the purpose herein set forth.

JEROME WHEELLOCK.

Witnesses:

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