J. W. Maloy,

Steam-Engine Valve-Gear.

No. 48,418. Patented June 27, 1865.

Fig. 1.

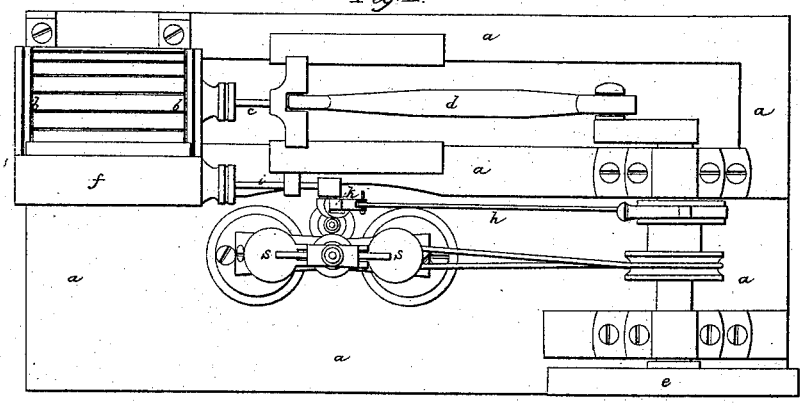


Fig. 2.

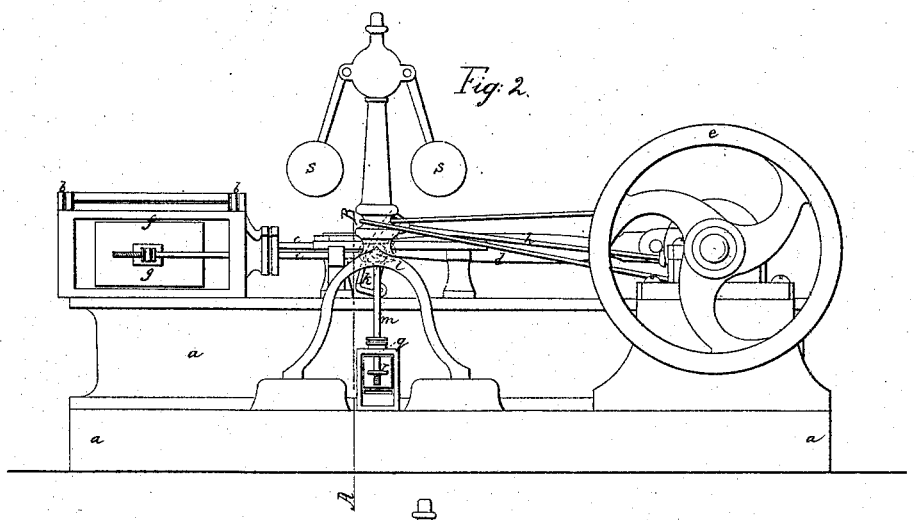
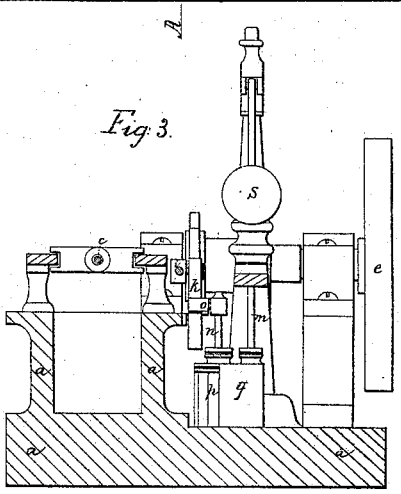


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES W. MALOY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN THE VALVE-GEAR OF STEAM-ENGINES.

Specification forming part of Letters Patent No. **48,418**, dated June 27, 1865; antedated June 9, 1865.

To all whom it may concern:

Be it known that I, JAMES W. MALOY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Steam-Engines; and I do hereby declare that the following description, taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The present invention relates to certain new and useful improvements in steam-engines, having for their object the regulating of the amount of steam supplied to the cylinder, with a view to adapting the power furnished to the actual work to be performed or the load upon the engine.

My improvements are applicable to the well-known "link-motion," or motion in which the medium of communication between the valve-rod and eccentric-rod is by means of a link, the leverage of which can be changed at pleasure, and consequently the play of the sliding valve varied accordingly. This link has heretofore been operated by several different methods, but principally by means of the regulator itself; but in these cases it has been found very difficult to actuate it successfully, because sufficient power could not be furnished by such means, the force furnished by the regulator or governor, for instance, being insufficient to give the link its necessary motion.

My improvement consists in giving the required play or motions to the link by means of a small auxiliary steam chest and cylinder fitted with a proper valve and piston, respectively, the valve being actuated by means of the vertical play of the regulator-rod.

The accompanying plate of drawings represents my improvements.

Figure 1 represents a top view of a stationary engine. Fig. 2 is a side view of the same. Fig. 3 is a detailed section of the same, taken in the plane of the line A B, Fig. 2.

a a a in the drawings represent the bed-piece of a stationary engine. *b b* is the cylinder; *c*, the piston-rod; *d*, the connecting-rod, and *e* the fly-wheel.

f is the main steam-chest, in which slides the valve *g*, so as to open and shut at proper times the induction and eduction ports, through which steam passes in and out of the cylinder *b c*. The valve *g* has a reciprocating-rectilinear motion imparted to it by means of the eccentric-rod *h*, which is connected to the valve-rod *i* by the link *k*. The link travels up and down upon a pivot, *l*, thereby increasing or diminishing the leverage that the eccentric-rod *h* has upon the valve-rod *i* in the same manner as heretofore used in other engines; but this link *k*, instead of receiving its motion from the regulator-rod *m*, or from any other moving part of the engine, is driven by a piston-rod, *n*, attached to the link *k* at the point *o*. The piston-rod *n* travels up and down in a small steam-cylinder, *p*, which is supplied with steam from a steam-chest, *q*.

In the steam-chest *q* works a valve, *r*, which opens and closes the ports that communicate with the cylinder *p* at the proper times. The valve *p* is fastened to the lower end of the regulator-rod *m*. Thus it will be seen that according as the balls of the regulator *s s* are more or less extended, in accordance with the load upon the engine, the valve *p* will admit more or less steam to the cylinder *p*, and through the piston-rod *n* the link *k* will be more or less raised upon its pivot *l*, thereby increasing or diminishing the play of the sliding valve *g*, and consequently supplying the main steam-cylinder *b b* with a quantity of steam proportionate to the load upon the engine. It will be observed, therefore, that the play of the link *k* to effect this desideratum is entirely performed by means of the auxiliary steam-cylinder and its piston, and that its certainty of operation is insured at all times, instead of being dependent upon the movement of the regulator-rod or other uncertain and inadequate means.

Having thus described my improvements, what I claim as my invention, and desire to have secured to me by Letters Patent, is—

Actuating the link that forms the communication between the eccentric-rod and sliding-valve rod by means of an auxiliary steam cylinder and piston when supplied with steam by the movement of the regulator-rod, as set forth.

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Witnesses:

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