W. A. Foster,

Steam Cut-Off.

No. 34,679. Patented Mar. 18, 1862.

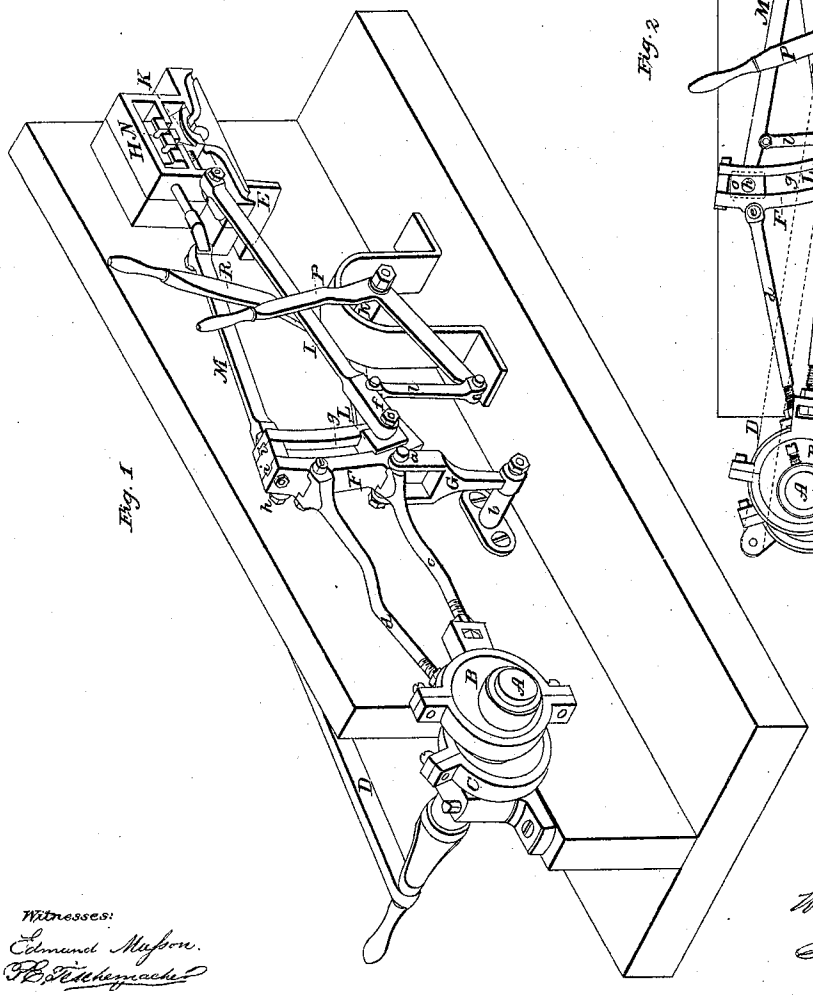

Fig. 1

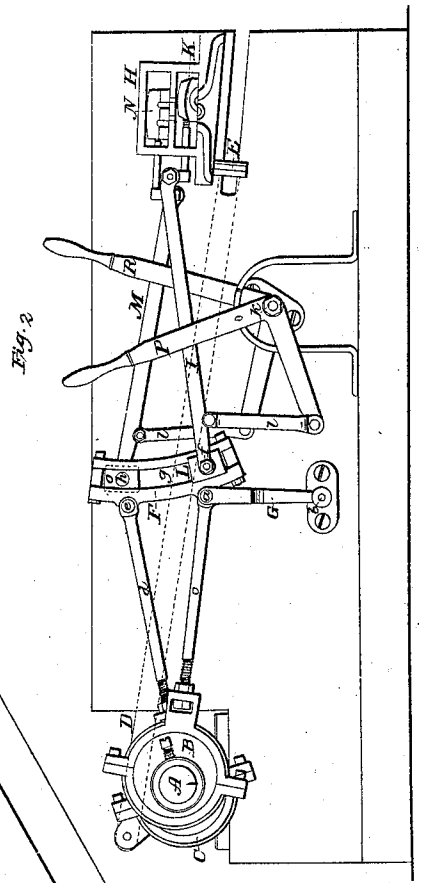

Fig. 2

Witnesses:
Edmund Mayson.
F. B. Teichmacher

Inventor:
Wm. A. Foster
by his attorney
Samuel Cooper
per Roach

UNITED STATES PATENT OFFICE.

WILLIAM A. FOSTER, OF FITCHBURG, MASSACHUSETTS.

IMPROVEMENT IN THE MEANS OF OPERATING CUT-OFF VALVES.

Specification forming part of Letters Patent No. **34,679**, dated March 18, 1862.

To all whom it may concern:

Be it known that I, WILLIAM A. FOSTER, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain Improvements in Operating the Cut-Off of Steam-Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view, and Fig. 2 an elevation, of so much of an engine as is necessary to show the application of my invention.

My invention can be most readily applied to locomotive-engines which use a "link" for operating the main valve, and consists in operating the cut-off with this same link.

Heretofore the cut-off has been operated from a sword-arm, which was vibrated by a single eccentric on one of the shafts, and a block on the end of the rod of the cut-off was moved up or down on the sword-arm to vary the cut-off. This did not permit of such an adjustment of the single eccentric as to give the required lead to the cut-off at all parts of the stroke of the piston, but the link being operated by two eccentrics and having, as it were, a double movement or vibration may be so adjusted by setting the two eccentrics that the required motion may be imparted from it to the cut-off.

That others skilled in the art may understand and use my invention I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the main or driving shaft, to which are secured two eccentrics B and C. The connecting-rod D from the piston E revolves this shaft.

The link F is pivoted at *a* to an arm G, which is free to vibrate on the shaft *b*, which is secured to the frame-work of the engine. A rod *c*, also pivoted to the arm G at *a*, and attached to the eccentric B, vibrates the arm G. Another rod *d*, connected with the eccentric C, is pivoted at *e* to the link F, and a double rocking motion is given to the link by the two eccentrics.

H is the valve-chest. The rod I which operates the main valve K is pivoted at *f* to a block L, which is free to slide in the curved slot *g* in the link F, and is held from falling out of the slot by a tongue which slides in grooves *i* in the link.

Another rod M, which operates the cut-off valve N, is pivoted at *h* to another block O, which slides in a similar manner in the slot *g* of the link on the side opposite to the block L. The blocks L and O are moved in the slot *g* from one end of the link to the other by means of hand-levers P and R, pivoted on a shaft *k*, the ends of each lever being connected by a rod *l* to the rods I or M.

As the motion of the opposite ends of the link F are different and may be varied by adjusting the two eccentrics C and B, changing the position of either of the blocks L or O in the slot *g* in the link F will vary the movement of the valve with which the block so changed is connected. The required movement is thus ordinarily given to the main valve. I have found that by operating the cut-off valve in the same way I am enabled to obtain the movements which I require to give to the cut-off the proper amount of lead when cutting off at any portion of the stroke, which I could not obtain when the cut-off was operated by a sword-arm vibrated by a single eccentric.

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

Operating the cut-off valve by the link F, which operates the main valve, substantially in the manner specified.

WM. A. FOSTER.

Witnesses:

WM. F. KENNEY,

JAMES BRIERLEY.