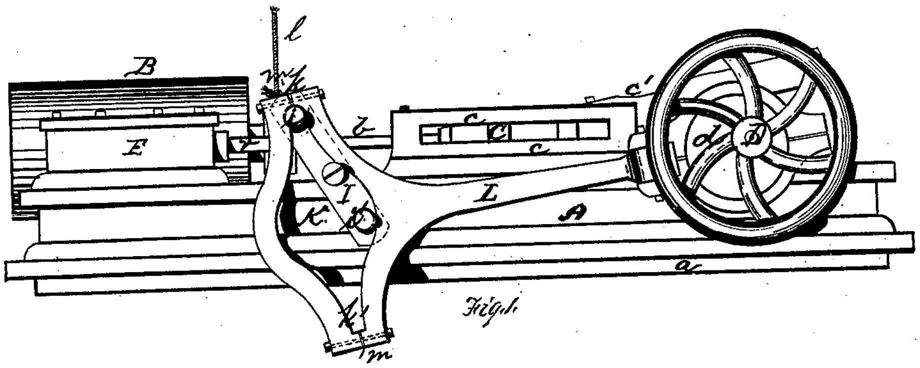
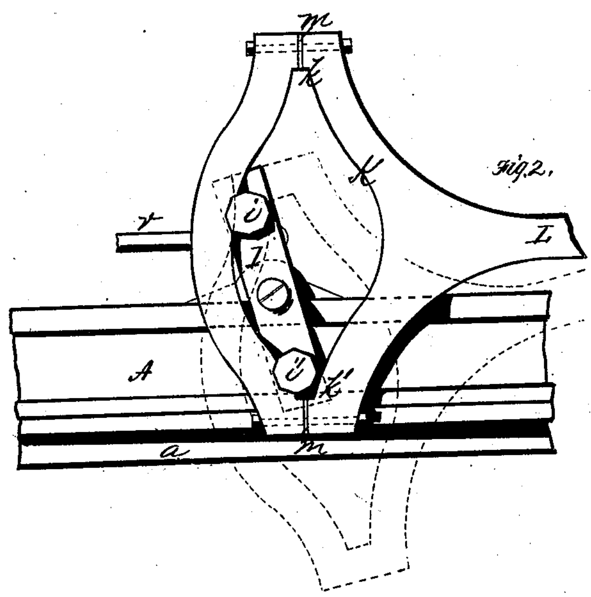
G. W. ZIEGLER.

Valve-Gear for Steam-Engines.

No. 200,639. Patented Feb. 26, 1878.





Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE W. ZIEGLER, OF BUTLER, PENNSYLVANIA.

IMPROVEMENT IN VALVE-GEAR FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **200,639**, dated February 26, 1878; application filed November 3, 1877.

To all whom it may concern:

Be it known that I, GEORGE W. ZIEGLER, of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Steam-Engines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of an engine having my improvements applied, and Fig. 2 is an enlarged view of the reversing-gear.

Like letters refer to like parts wherever they occur.

My invention relates to the construction of the reversing-gear for steam-engines.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may make and use the same.

In the drawings, A represents the bed-frame for supporting the engine, said frame being provided with a downwardly-projecting flange, *a*, which holds the frame firmly in position on the masonry, and renders the whole more steady.

Mounted upon bed-frame A is the cylinder B, whose piston-rod *b* is connected to cross-head C, having ways *c* on the frame, and the cross-head is in turn connected by arm *c'* with the crank-shaft D, the latter being mounted in suitable bearings on frame A, and provided with the usual pulley and fly-wheel, but only a single cam, *d*, for actuating the valve-rod.

I represents a lever, pivoted by its center to the bed-frame A or other suitable support, and provided at or near its ends with pins *i i'*, which engage with recesses *k k'* of a yoke or oval slot, K, on the end of a rod or lever, L, whose opposite end is controlled by the cam or eccentric *d* of the crank-shaft D. The yoke or oval slot K is formed of the two sections, bolted together, and having interposed liners *m*, so that the wear or lost motion can be taken up, should any occur, by changing the liners and tightening the bolts.

To one end of pivoted lever I the valve-rod *r* is secured, so as to cause the valve to be operated from crank-shaft D through lever L. The lever L is provided with a rope or rod, *l*, so that it can be raised at will. When the lever is lowered to cause recess *k* to engage with pin *i*, as shown in Fig. 1, the valve receives its motion directly from lever L on the same side of the pivot, and will consequently move with lever L; but when the lever L is raised to cause *i'* to engage in recess *k'*, as shown in Fig. 2, the valve-rod *r* receives its motion through the pivot of lever I, and consequently moves the valve in reverse direction from the travel of lever L, so that by the mechanism indicated the valve can be reversed at will.

When the engine is to be reversed, the lever L is raised or lowered, as the case may be, to change the action of said lever to the opposite end of pivoted lever I, and the motion of the valve is changed accordingly.

The advantages of my invention are, that the valve is balanced, so as to require little power to move it, and the mechanism for reversing is rendered very simple and effective, and the whole adapted to be operated and adjusted by unskilled labor.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, with the valve-rod and its pivoted lever, of the yoke-lever having the sectional yoke and liners, and thereby adapted to be operated by the single cam, substantially as and for the purpose specified.

In testimony whereof I, the said GEORGE W. ZIEGLER, have hereunto set my hand.

GEO. W. ZIEGLER.

Witnesses:

JAMES I. KAY,

L. C. FITLER.