(No Model.)

L. C. LUGMAYR.

VALVE GEAR FOR ENGINES.

No. 307,128. Patented Oct. 28, 1884.

Fig. 2

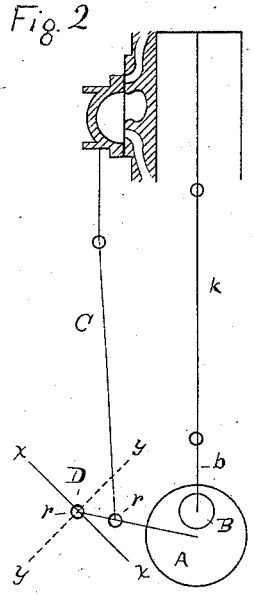


Fig. 3

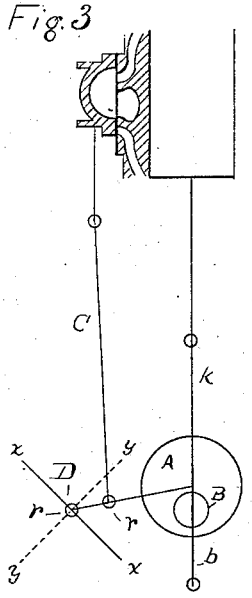


Fig. 1

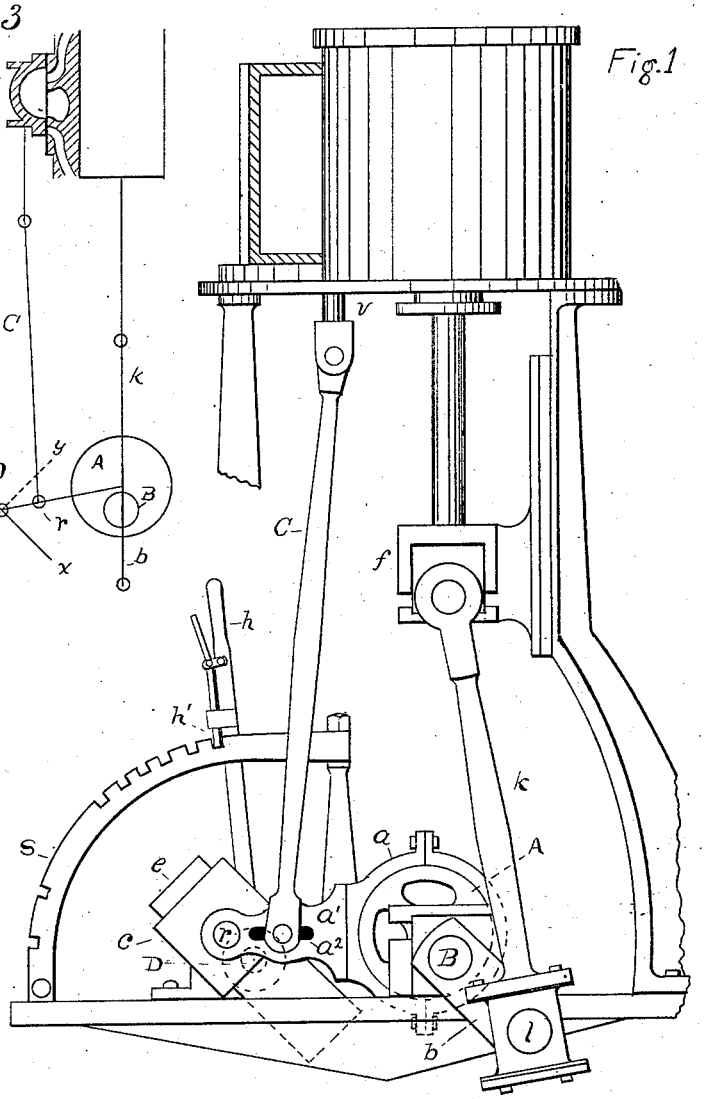


Fig. 4

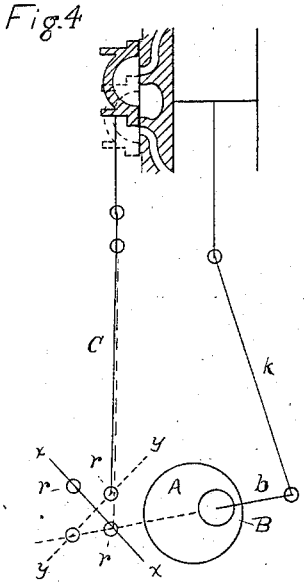


Fig. 8

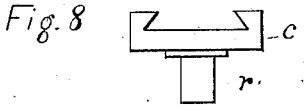


Fig. 7

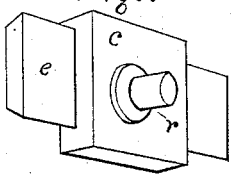


Fig. 5

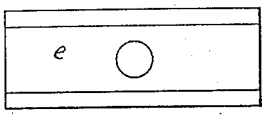
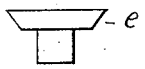


Fig. 6



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UNITED STATES PATENT OFFICE.

LOUIS CHARLY LUGMAYR, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO JOHN GRIME, OF SAME PLACE.

VALVE-GEAR FOR ENGINES.

SPECIFICATION forming part of Letters Patent No. 307,128, dated October 28, 1884.

Application filed May 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, LOUIS C. LUGMAYR, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Valve-Gear for Engines, of which the following is a specification.

My invention relates to that class of steam-engines in which the valves are operated with one eccentric; and the objects of my invention are to work the valves for cutting off by means of one eccentric, and to enable the engine to be reversed with the same mechanism.

The invention consists in the slide-block connected with the eccentric and valve-rod, and carried by a guide or slide suitably pivoted to swing for shifting the valve, and in the adjustment of other parts of the engine to suit such mechanism.

In the drawings, Figure 1 is a side view of a vertical engine containing the improvements. Figs. 2, 3, and 4 are illustrative diagrams of the mechanism and operation. Figs. 5 to 8 are details of the guide and block.

B is the crank-shaft of the engine, provided with the crank-arm *b*, from which the rod *k* passes to the cross-head or piston-slide *f*.

A is an eccentric on the shaft B, provided with a strap, *a*, from which the arm *a'* extends in a plane parallel with the plane of the crank-arm *b*.

C is a rod from the eccentric-arm *a'* to the valve-stem *v*. The end of the rod C is pivoted to the arm *a'*, within the slot a^2, by means of a thumb-screw or other suitable means, whereby it may be adjusted to regulate the valve movement.

D is a rock-shaft fitted in suitable bearings on the bed-plate, and provided with a hand-lever, *h*, by means of which the rock-shaft can be given the desired partial revolution. This hand-lever moves at the side of a segment-plate suitably notched for engaging a spring-catch, *h'*, on the lever, and the lever is thereby held in the position to which it is moved.

On the end of the rock-shaft D is the guide *e*, carrying the slide-block *c*, at the center of which is connected the eccentric-arm *a'* by a pivot, *r*. The guide *e* is a solid piece of metal, preferably made somewhat wide and flat, and has its edges beveled on the side next to the rock-shaft, and fits into a corresponding groove in the block *c*. The shape and size of the guide *e* and block *c* may be somewhat varied from the forms shown and described to serve the same purpose. The lever *h* enables the rock-shaft to be turned, so as to bring either end of the guide *e* above or below the axis of the rock-shaft, as desired. The two extreme positions to which the guide may be turned are shown by the lines *x x* and *y y* in Figs. 2, 3, and 4, in both of which positions the cut-off is made at full-stroke. By adjusting the guide to intermediate points, by means of the lever *h*, the cut-off may be regulated as desired. In any position of the guide the revolution of the shaft B moves the eccentric-arm *a'* in and out and carries the slide-block *c* forth and back on its guide, and the rod and valve are thus moved. The extent of the movement of the valve is dependent upon the inclination of the guide *e*, the shortest valve movement being when the guide is in line with the eccentric-arm and the longest being when the guide is turned to its extreme limits, as illustrated in the diagrams Figs. 2, 3, and 4. The valve movement can also be somewhat controlled by adjustment of the valve-rod C in the slot a^2 in the eccentric-arm, an adjustment toward the outer end of the arm tending to shorten the throw of the rod and toward the eccentric tending to lengthen the rod-throw.

In building the engine the parts should be so constructed that, in setting up, the geometric center of the eccentric will be in line with the axes of the crank-pin *l* and shaft B, and the axes of the shafts B and D should be in the same horizontal plane in a vertical engine and in the same vertical plane in a horizontal engine.

I am aware that in Letters Patent No. 252,683, granted to myself January 24, 1882, is shown a means for operating engine-valves with one eccentric and for reversal of the engine with the same mechanism, and I therefore do not claim, broadly, such construction and combination; but

What I do claim, and desire to secure by Letters Patent, is—

The combination, with the shaft B, having the crank-arm *b*, connected by a rod to the cross-head, and the eccentric A, having the strap *a* and arm *a'*, provided with the slot a^2, within which the rod C, connecting with the valve-stem *v*, is pivoted, of the lever *h*, attached to the rock-shaft D, on which shaft is carried the guide *e* and slide-block *c*, said slide-block being connected to the eccentric-arm *a'* by a pivot, *r*, all constructed and arranged substantially as and for the purpose set forth.

LOUIS CHARLY LUGMAYR.

Witnesses:
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