

(No Model.)

W. B. TURMAN.

VALVE GEAR FOR STEAM ENGINES.

No. 283,538.

Patented Aug. 21, 1883.

Fig. 1.

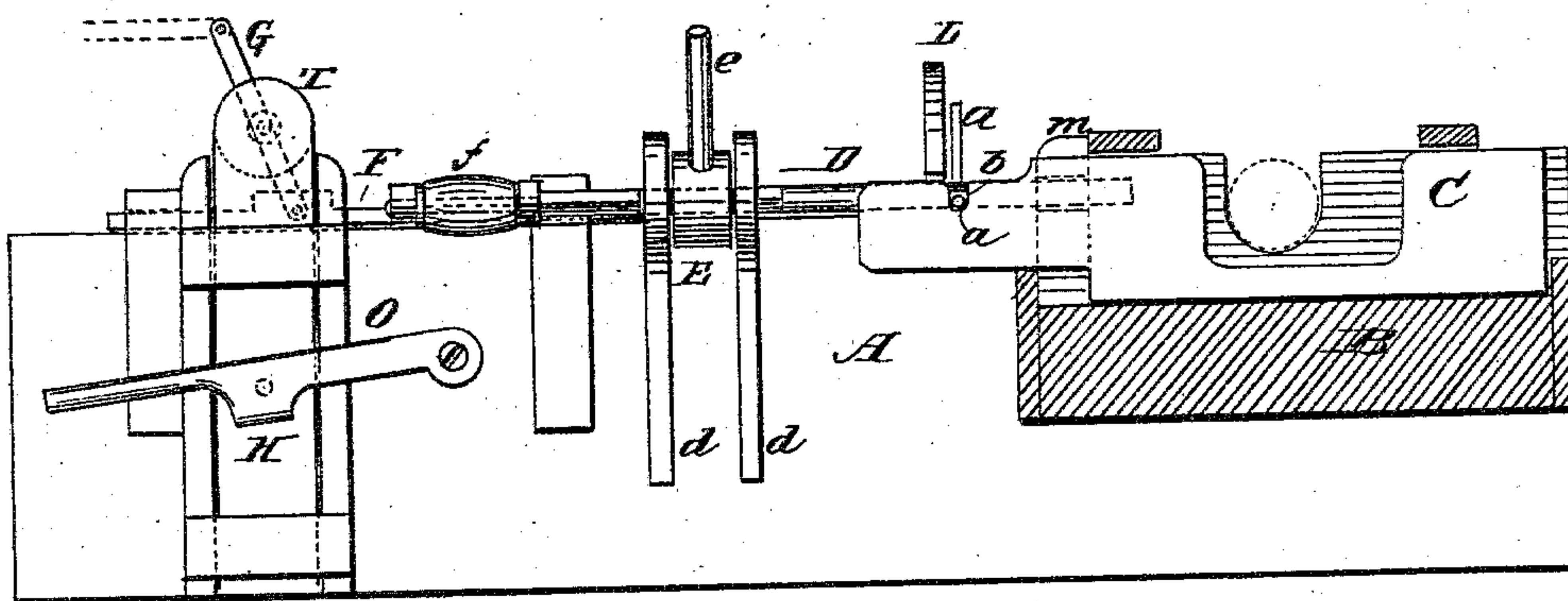


Fig. 2.

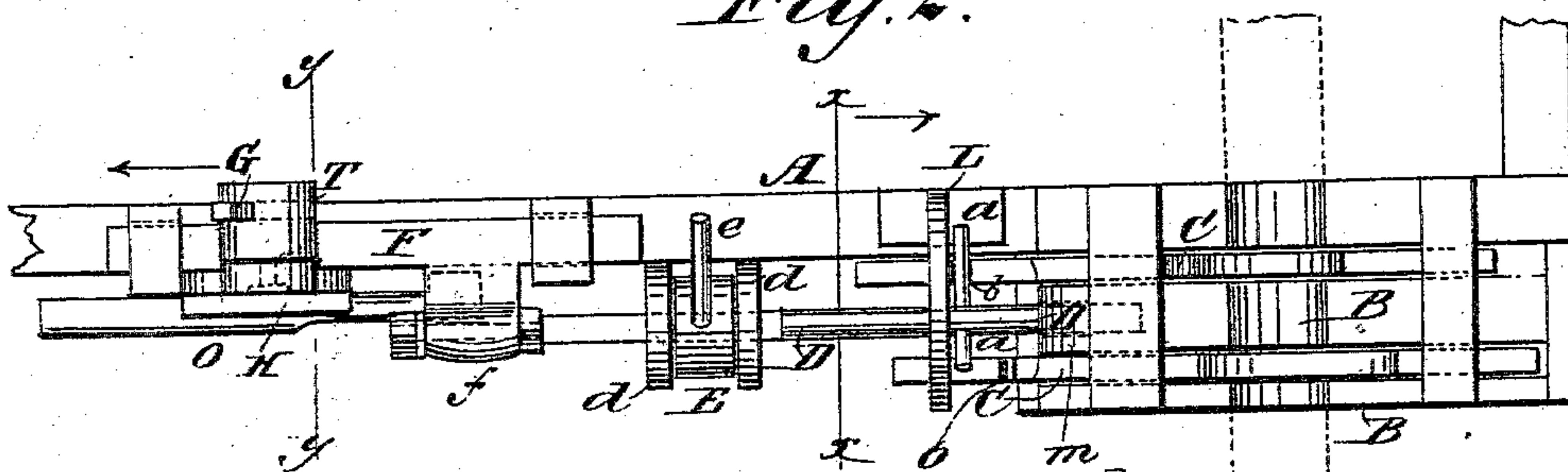


Fig. 3.

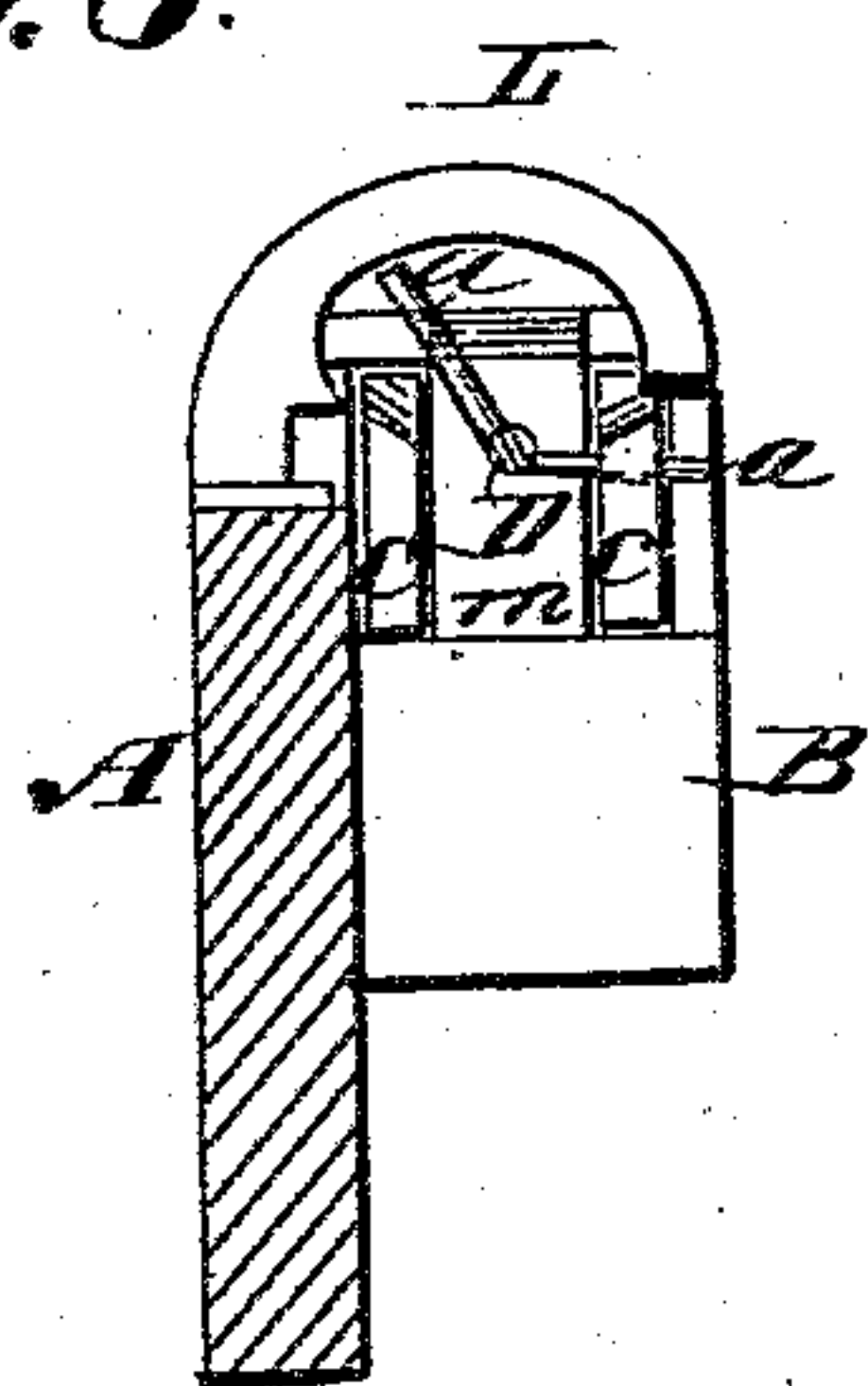
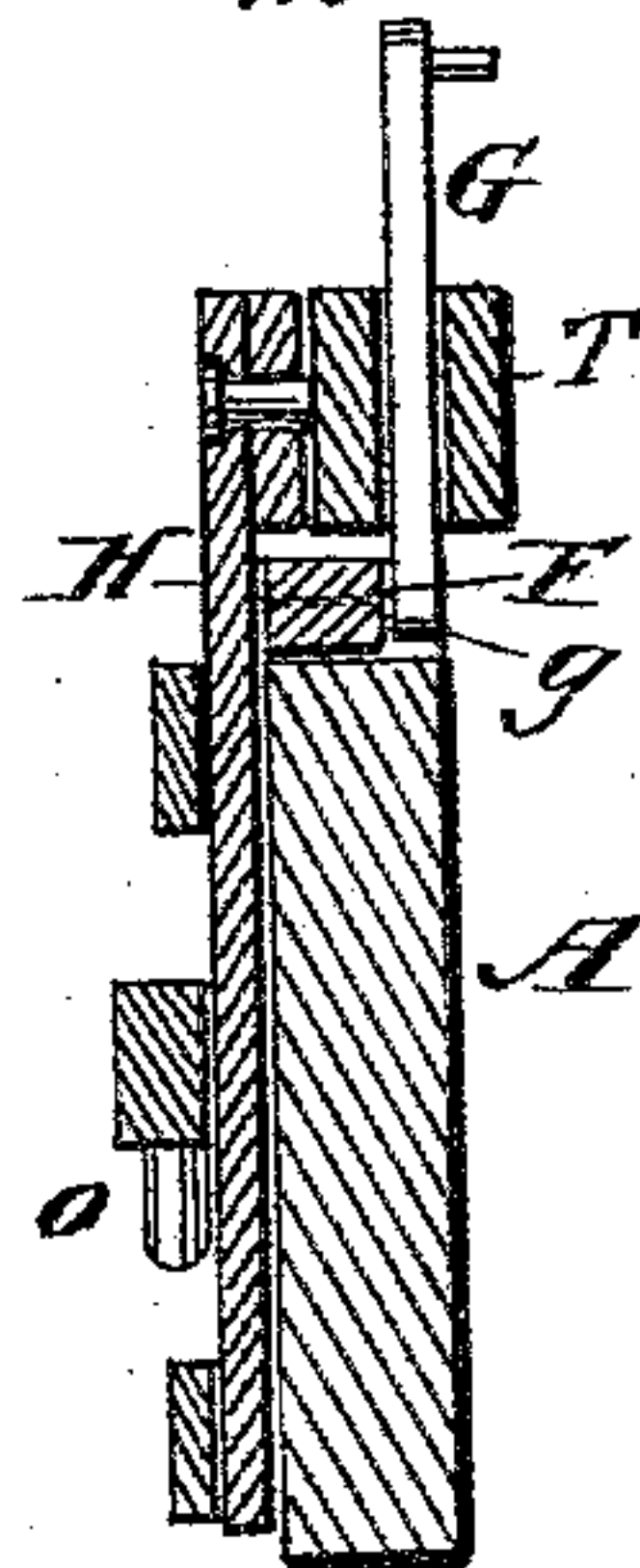


Fig. 4.



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VALVE-GEAR FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 283,538, dated August 21, 1883.

Application filed December 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. TURMAN, of Waldron, in the county of Scott and State of Arkansas, have invented a new and Improved Valve-Gear for Steam-Engines, of which the following is a full, clear, and exact description.

My invention consists in valve-gear for steam-engines constructed to allow of convenient reversal of the engine and regulating the supply of steam, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of my improved valve-gearing. Fig. 2 is a plan view of the same. Fig. 3 is a cross-section on line *x x*, Fig. 2. Fig. 4 is a cross-section on line *y y*, Fig. 2.

A represents one side of the bed-plate of an engine.

B are slideways fixed at one end of the bed-plate, and fitted with two cam or eccentric rods, C.

D is a connecting-rod, sustained at its end between the eccentric-rods C by a bracket, *m*, and also formed with two arms or wrist-pins, *a a*, for engaging notches *b*, formed in the rods C.

E is a sleeve fitted on the rod D between brackets *d d*, and provided with a handle or lever, *e*, for turning the sleeve, and also the rod D, which is formed square, and passes through a square aperture in the sleeve, so that it is free to move endwise, and at the same time can be turned by the sleeve.

F is a slide fitted at the side of the rod D, and parallel thereto, and formed with a bracket or projection, *f*, to which the end of the rod D is connected.

Upon the slide F is a wrist-pin, *g*, to which one end of an arm or lever, G, is fastened.

H is a slide-bar, fitted for vertical movement by means of a hand-lever, O, carrying at its upper end a rocking stud, T, through which the arm or lever G passes, so that the stud serves as a fulcrum for the lever. To the lever G the stem of the engine-valve will be jointed, as illustrated by dotted lines in Fig. 1.

L is a curved plate secured to the bed-plate A, and extending over the rod D and cam-rods C C, so as to prevent the disconnection of the pins *a a* from the notches *b* of the rods when the valve is in the position for cushioning the piston.

The main shaft of the engine is to be provided with two cams or eccentrics placed for operating upon the eccentric-rods C, and so set that one cam will move the valve for driving the engine in one direction and the other for driving the engine in the opposite direction. By turning the rod D, one of its arms *a* is engaged with one of the cam-rods C, so that the rod D will be moved endwise with the movement of the rod C by the eccentric, and that in turn giving movement to the slide F, the lever G will be rocked and the valve operated.

To reverse the engine, the rod D is to be turned by means of the lever *e* and sleeve E, thereby disengaging the arm *a* from the rod C at one side and engaging the other arm with the rod at the other side. To stop the engine, the sleeve E is to be operated to bring the rod D to the middle position with both arms *a* disengaged. By movement of the lever O the slide H is raised and lowered, thereby shifting the fulcrum-stud T of the lever G, and the amount of steam admitted to the engine-cylinder is thus regulated.

The rod D may be connected to the valve-stem directly, instead of using the intermediate slide, F, and lever, as shown, but in place of them using a small cross-head or slide, to which the valve-stem and the rod D are both connected.

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

1. A valve-gear for steam-engines, consisting of the slide-rod D, provided with arms *a a*, and fitted for being rocked sidewise, the slide-rods C C, provided with notches *b*, and fitted for movement by cams or eccentrics upon the engine-shaft and the connections between the rod D and the valve-stem, all substantially as described, combined for operation as set forth.

2. In valve-gearing, the combination of the eccentric or cam rods C C, the slide-rod D, and the slide F, connected to the valve-stem, substantially as shown and described.

3. In valve-gearing, the combination of the eccentric-rods C C, the slide-rod D, provided with arms *a a*, the slide F, and the lever G, substantially as shown and described.

5 4. The combination, with the bed-plate A, the notched eccentric-rods C, and the sliding rods D, provided with the arms *a*, of the curved plate L, substantially as described.

10 5. In valve-gearing, the combination, with the slide-rod D, of the sleeve E, the brackets *d*, and the lever *e*, as and for the purpose specified.

6. In valve-gearing, the combination, with the slide F of the rod D, that is operated by the eccentrics, of the adjustable slide H, fulcrum-stud T, and lever G, substantially as shown and described. 15

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Witnesses:

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