A. M. SCOTT & J. J. ROTH.

VALVE GEAR.

No. 192,459. Patented June 26, 1877.

Fig. 1.

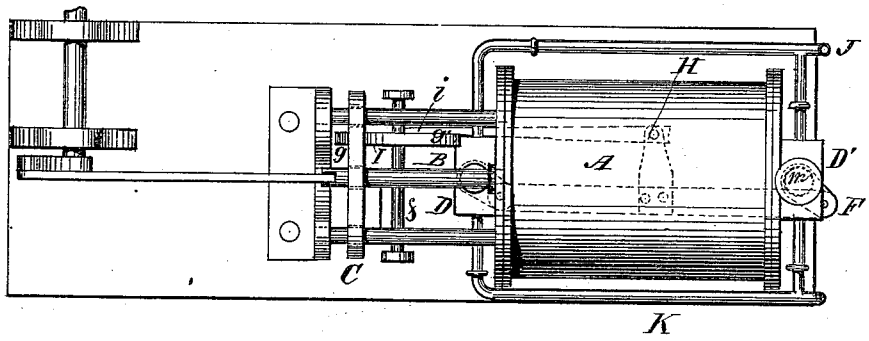


Fig. 2.

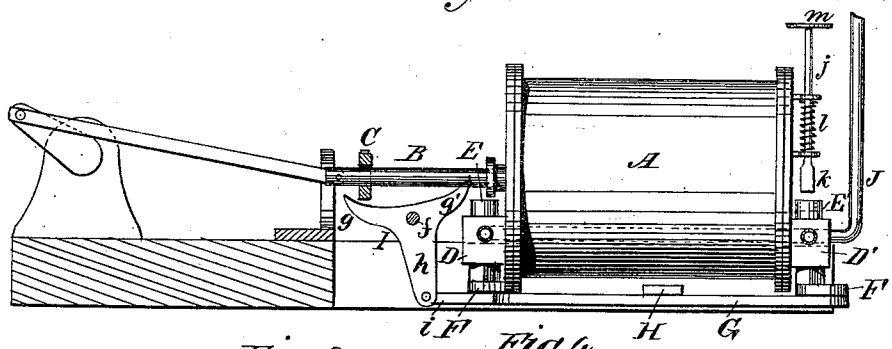


Fig. 3

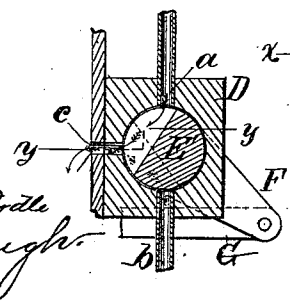
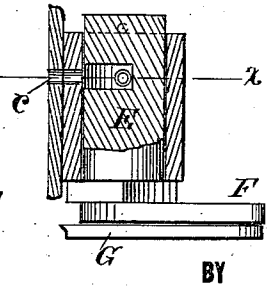


Fig. 4



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALBERT M. SCOTT AND JOSEPH J. ROTH, OF EDWARDSVILLE, ILLINOIS.

IMPROVEMENT IN VALVE-GEARS.

Specification forming part of Letters Patent No. **192,459**, dated June 26, 1877; application filed March 12, 1877.

To all whom it may concern:

Be it known that we, ALBERT M. SCOTT and JOSEPH J. ROTH, of Edwardsville, in the county of Madison and State of Illinois, have invented a new and Improved Valve-Gear for Steam-Engines, of which the following is a specification:

Figure 1 is a plan view. Fig. 2 is a side elevation. Fig. 3 is a transverse section of one of the valves on line *x x*, Fig. 4. Fig. 4 is a longitudinal section on line *y y*, Fig. 3.

Similar letters of reference indicate corresponding parts.

The invention will first be described in connection with the drawing, and then pointed out in the claim.

In the drawing, A is the cylinder of an engine, mounted in the usual way on a bed, and provided with a piston and piston-rod B, connected with the crank on the main shaft by means of a rod, in the usual way. The end of the piston-rod is attached to the ordinary cross-head C.

D D′ are valve-casings attached to the head of the cylinder A, and provided with ports *a b c*, and in which the plug or cylinder-valves E E′ are placed. These valves are cut away at *e* to afford a passage for steam through the casings. The space in the valve is of sufficient width to include two of the ports in the casing.

Levers F are attached to the lower end of the valves E, and are connected by a rod, G, from the center of which an arm, H, projects horizontally at right angles.

I is a cam-lever, whose shaft *f* is placed under the piston-rod at the center of the stroke of the cross-head C. The arms *g g′* of the lever are curved upward, so as to engage with the cross-head at each end of its stroke. The arm *h* of the lever I extends downward, and is connected by a rod, *i*, with the arm H of the rod G.

J is a steam-supply pipe connected with the induction-port *a* of the valve-casings, and K is the exhaust-pipe connected with the ports *b*. The ports *c* communicate directly with the interior of the cylinder.

In the upper end of the valve E′ a square socket is formed, and a shaft, *j*, having a squared end, *k*, that fits the said socket, is journaled above the said valve at the end of the cylinder, and is provided with a spring, *l*, that holds it up out of the socket, and with a hand-wheel, *m*.

The valves at the ends of the cylinder are oppositely arranged, so that when they are moved by the lever I one of them admits steam to the cylinder, while the other permits it to escape through the exhaust-port.

The engine may at any time be reversed, when neither of the arms *g g′* of the lever I are in contact with the cross-head, by pushing the squared end of the shaft *j* downward into the socket in the end of the valve E′, and turning the valve by means of the wheel *m*.

The advantages claimed for our improvement are, that the engine may be readily reversed, it is simple, therefore easily constructed, and is not liable to get out of repair.

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

In the valve-gear of steam-engines, the combination of valve E′, having square socket in upper end, with the shaft *j*, having squared end, journaled at end of cylinder above valve, and provided with spring *l*, as and for the purpose specified.

ALBERT M. SCOTT.
JOSEPH J. ROTH.

Witnesses:
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