

(Model.)

C. MILLER.
Slide Valve for Steam Engines.

No. 237,302.

Patented Feb. 1, 1881.

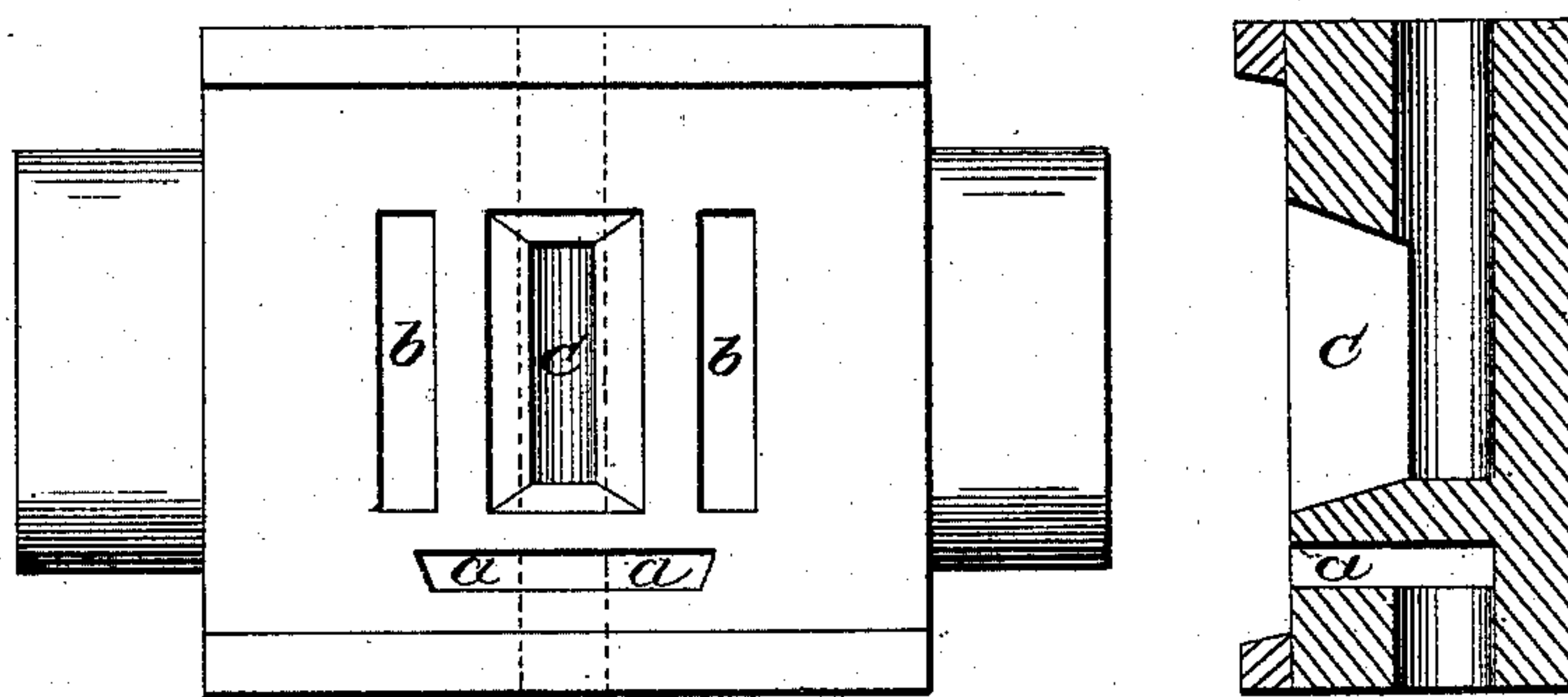
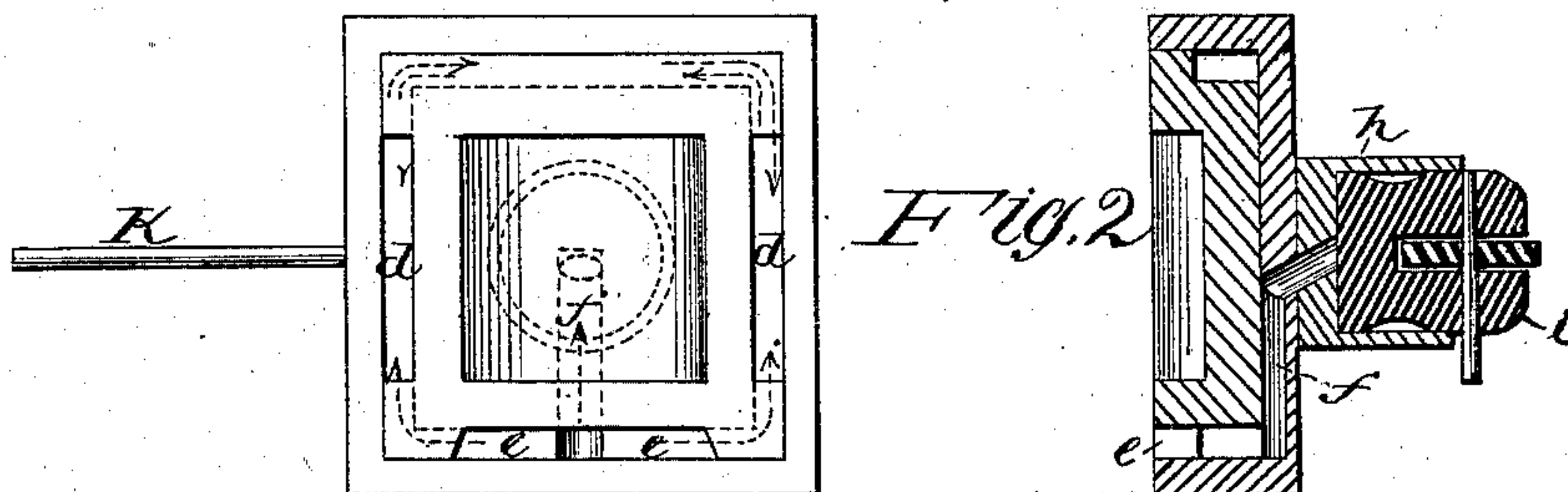
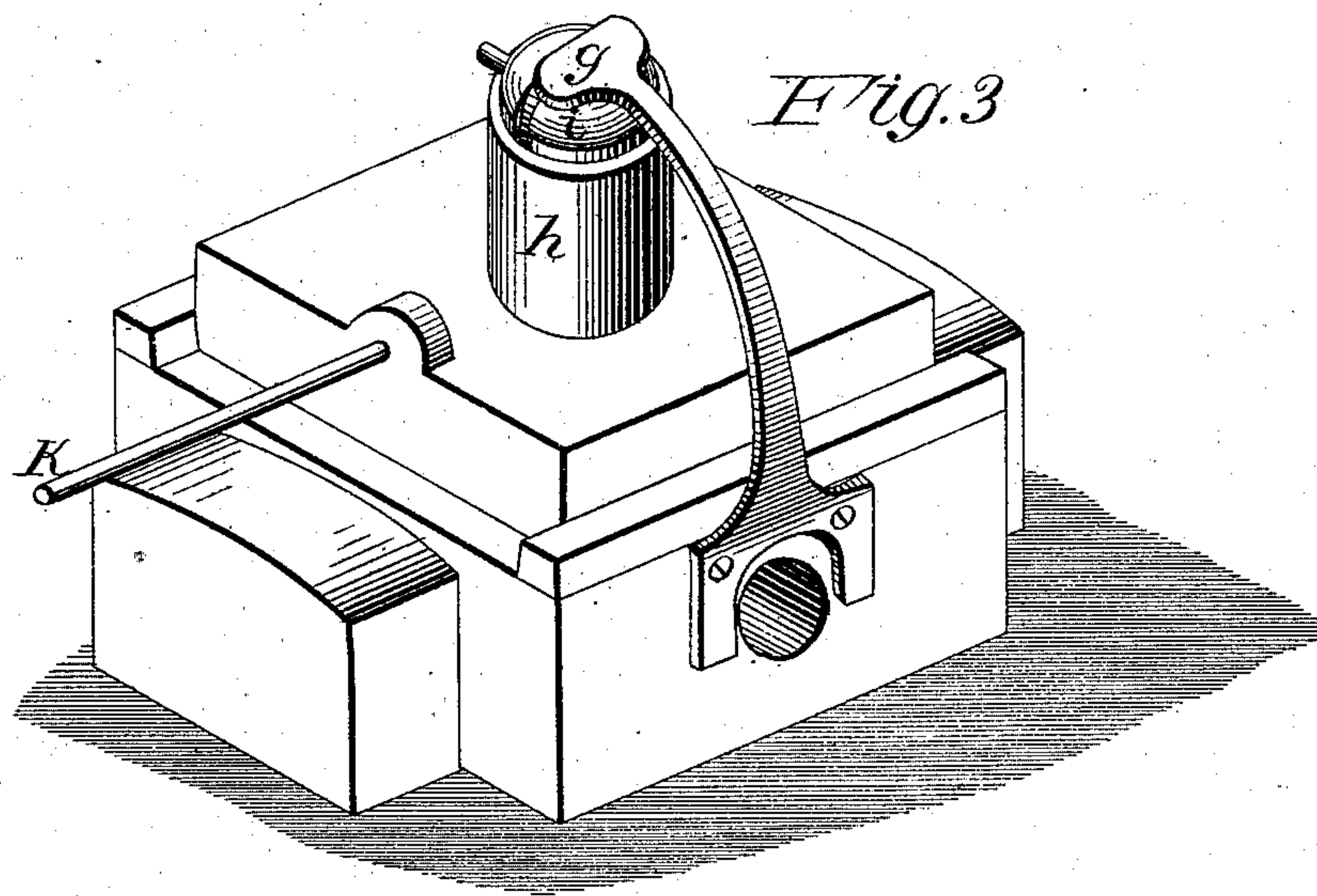


Fig. 1.

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CHARLES MILLER, OF BOONVILLE, MISSOURI.

SLIDE-VALVE FOR STEAM-ENGINES.

SPECIFICATION forming part of Letters Patent No. 237,302, dated February 1, 1881.

Application filed October 15, 1880. (Model.)

To all whom it may concern:

Be it known that I, CHARLES MILLER, of Boonville, in the county of Cooper and State of Missouri, have invented a new and Improved Slide-Valve for Steam-Engines; and I do hereby declare that the following is a full and exact description of the said invention.

My invention relates to an improvement in slide-valves for steam-engines, the object being to provide a valve of such construction as to dispense with the ordinary steam-chest, to reduce the friction of the valve on its seat, so that the valve may be operated by a minimum expenditure of power, and to simplify the construction and cheapen the cost of this type of valves.

With these ends in view my invention consists in a slide-valve embodying certain features of construction and combinations of parts, as will hereinafter be explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 shows a plan and transverse section of the valve-seat. Fig. 2 shows a plan view of the under side of the valve and a transverse section of the same; and Fig. 3 is a view, in perspective, of the valve located in its seat.

As illustrated in Fig. 1, the valve-seat is cast solid upon the cylinder, or made separate therefrom and secured to the cylinder in any desired manner. The valve-seat is furnished with side flanges or ledges, between which the valve-seat reciprocates, and is thereby retained against displacement. The valve-seat may be constructed on the middle of the cylinder of a single-valve engine, or at both ends of a double-valve engine. The valve-seat is furnished with the elongated supply-port *a a*, which communicates with the passage through which steam is received from the steam-boiler.

Ports *b b*, located on opposite sides of the exhaust-port *c*, convey steam to the cylinder-ports.

The slide-valve, as shown in Fig. 2, is furnished with a central exhaust-arch, on opposite ends of which are located the ports *d d*, which communicate with each other by a channel on one side of the valve, and with an

elongated port, *e e*, on the opposite side of the valve. A steam-passage, *f*, leads from the port *e e* upwardly and over the center of the exhaust-arch, and then upwardly, and opens in the center of the bottom of the cylinder *h*. Within the cylinder *h* is located a small piston, *i*, having a friction-roller journaled in its upper end.

g represents a spring-arm, secured at its lower end to the valve-seat, and its upper and free end resting upon the friction-roller.

K represents the valve-stem.

As steam enters the induction-passage to the valve-seat it flows upwardly through the port *a a* in the valve-seat and through port *e e* to either one of the ports *d d*, according to the position of the valve. The pressure of the steam on the under face of the valve tends to lift it from its seat, and to counteract such upward pressure a portion of the steam is allowed to flow upwardly through the steam-passage *f* and against the bottom of piston *i*, the reaction of the steam on the lower face of the piston *i* serving to counterbalance the upward pressure on the valve, as the area of the lower end of the piston is equal to that of the three supply-ports.

The piston is retained in place by the arm *g*, and but slight friction is created on the piston by reason of the friction-roller *i* being interposed between the parts.

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

1. The combination, with a valve-seat having supply and exhaust ports, substantially as shown, of the valve provided with the three supply-ports, central exhaust-arch, and channels connecting the supply-ports, substantially as set forth.

2. The combination, with a valve-seat having supply and exhaust ports, substantially as shown, of the valve provided with the three supply-ports, central exhaust-arch, connecting-channels, and steam-passage *f*, leading from one of the supply-ports to the lower end of a steam-cylinder located over the center of the valve, substantially as set forth.

3. The combination, with the valve provided with supply-ports and connecting-channels, substantially as shown, of cylinder *h*, piston *i*, and steam-passage *f*, substantially as set forth.
- 5 set forth.
4. The combination, with the valve having the supply-ports and connecting-channels, substantially as shown, of the cylinder *h*, piston *i*, friction-roller, arm *g*, and steam-passage *f*, substantially as set forth.

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Witnesses:

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