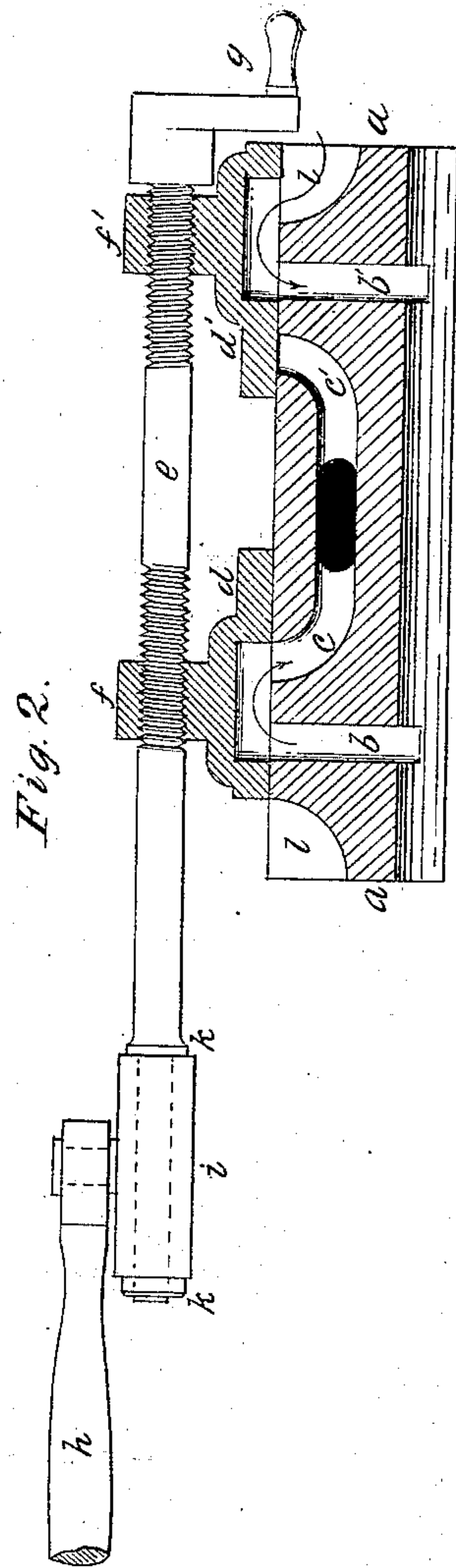
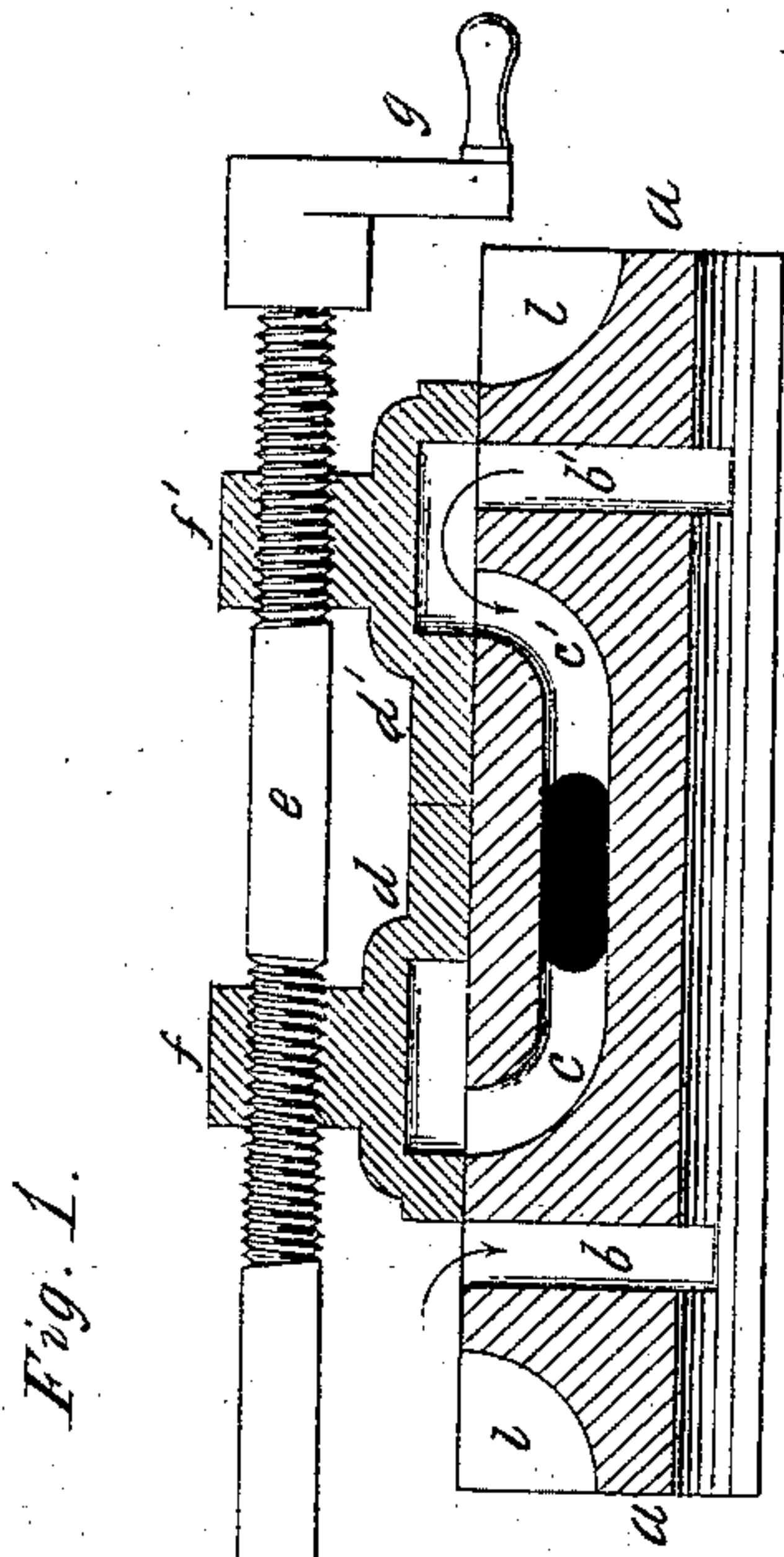


E. S. CHAPPELL.  
Slide-Valve for Steam-Engines.

No. 221,955.

Patented Nov. 25, 1879.



Attest:

Chas. M. Higgins,  
John W. Favin

Inventor:

E. S. Chapell  
by S. D. Wales for  
his Atty



# UNITED STATES PATENT OFFICE.

ELISHA S. CHAPPELL, OF PEMBROKE, MAINE.

## IMPROVEMENT IN SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **221,955**, dated November 25, 1879; application filed March 10, 1879.

*To all whom it may concern:*

Be it known that I, ELISHA S. CHAPPELL, of Pembroke, Washington county, State of Maine, have invented certain new and useful Improvements in Slide-Valves for Steam-Engines, of which the following is a specification.

My invention aims to provide a slide-valve which will enable the engine to be reversed by changing the valve on its seat without altering the eccentric, and yet require but one set of ports and one eccentric or driving device.

In the drawings, Figure 1 presents a fragmentary sectional side elevation of the valve-seat of a steam-cylinder fitted with my improved valve; and Fig. 2 is a similar view, with the sections of the valve separated into the position which reverses the engine relatively to Fig. 1.

As illustrated, *a a* represent the fragment of a steam-cylinder or the valve-seat thereof, which is formed with the steam-ports *b b'* and the exhaust-ports *c c'*.

*d d'* indicate the valve or valves, which slide upon the seat with the usual reciprocating movement; but this valve is formed as shown in the two sections *d d'*, which are connected by a stem or rod, *e*, having right and left screw-threads, which work in correspondingly-threaded bosses *f f'* on the top of the valve-sections, as shown.

The stem *e* is provided with a crank, *g*, at one end, while the opposite or front end is arranged to pass through the stuffing-box of the valve-chest, and connects with the eccentric-rod *h*, being free to turn in the guide-block *i* of the eccentric-rod, but restrained from longitudinal movement therein by the collars or shoulders *k k*. The operating or rear end of the screw-stem *e* is arranged also to pass through a stuffing-box at the back end of the steam-chest, the crank *g* being, of course, on the outside of the steam-chest, so as to be under the control of the hand, so that by turning this crank the engine may be reversed, the valve-sections being thus separated or brought together into either of the positions shown in Figs. 1 and 2, in which, as will be

seen, the direction of the steam and exhaust is relatively reversed.

It will be noted that the valve-seat is formed in about the usual manner, the usual recesses *l l* being formed at each end of the seat. The ports are also formed in about the usual manner, except that the exhaust-port expands into two branches, opening in separate ports on the seat, as shown. Now, when the sections of the valve are drawn together, as shown in Fig. 1, the valve or valves move over the valve-seat, between the recesses, and admit and exhaust the steam in the usual manner; but when the sections are separated by turning the crank *g* the direction of steam and exhaust becomes reversed, as shown in Fig. 2, thus reversing the engine, the ends of the valve then sliding over the recesses, and thus admitting the steam through the said recesses and through the cavity of the valve, as shown.

Instead of the rear end of the valve-stem being extended through the back of the steam-chest the stem may terminate within the chest, as usual, while the reversing-crank or other device may be fitted on the front end of the stem, between the guide-block *i* and the front of the steam-chest.

It will thus be seen that this form of valve, while being simple in its construction, enables the reversal of the engine to be effectually accomplished without changing the position of the eccentric, while but one set of ports and one eccentric are required, the advantage of the link-motion being thus obtained with a much simpler mechanism.

I am aware that the Patent No. 43,142 of 1864 shows a steam-valve having an extensible sectional seat arranged between the slide-valve and the main seat; also, that the Patent No. 39,064 of 1863 shows a cut-off valve made in two sections, screwed onto a right and left threaded stem, and working on the main valve; but these devices are distinct from my invention, and I disclaim them. I also disclaim the English Patent No. 941 of 1876.

What I claim as my invention is—

A reversing slide-valve formed of a valve-

seat constructed with a single set of ports and a recess at each end of the seat, in combination with an oversliding valve formed in two sections, capable of being moved apart or brought together on their stem so as to admit the steam in either of two relatively-reversed directions without changing the eccentric, the steam being admitted in one case

directly through the ports, and in the other over the ends of the seat and through the cavities of the valve, substantially as herein set forth.

ELISHA S. CHAPELL.

Witnesses:

EDWARD H. WALES,  
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