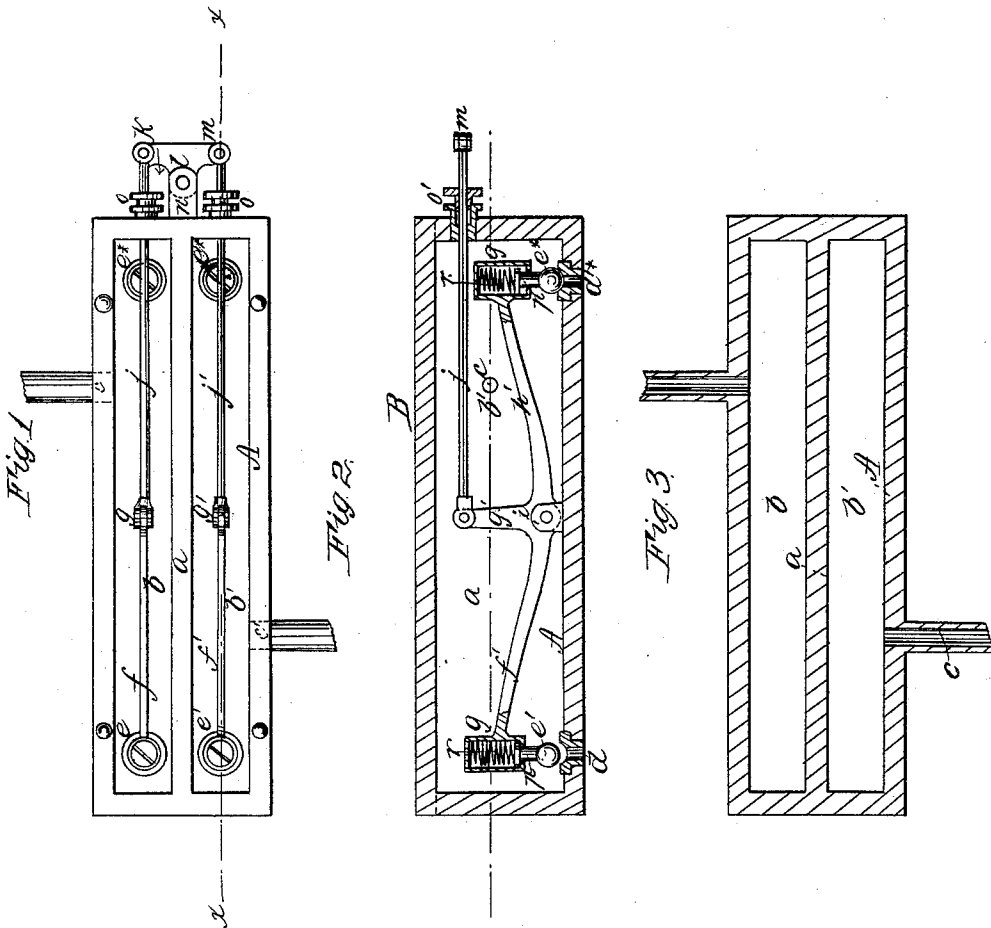


T. Clark,

Steam Poppet Valve.

N<sup>o</sup> 49,858.

Patented Sep. 12, 1865.



Witnesses

Theo. Lusk  
Wm. Brown

Inventor

T. Clark  
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# UNITED STATES PATENT OFFICE.

THOMAS CLARK, OF COHOES, NEW YORK.

## IMPROVEMENT IN VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 49,858, dated September 12, 1865.

*To all whom it may concern:*

Be it known that I, T. CLARK, of Cohoes, in the county of Albany and State of New York, have invented a new and Improved Steam-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a plan or top view of this invention, the cover of the valve-chest having been removed to expose the interior thereof. Fig. 2 is a longitudinal vertical section of the same, the line *x x*, Fig. 1, indicating the plane of section. Fig. 3 is a horizontal section of the valve-chest when the valves are removed.

Similar letters of reference indicate like parts.

This invention consists in a valve-chest which is divided by a longitudinal partition into two compartments, each of which contains two ports and two valves, the ports in the first compartment forming the steam-ports and those in the other compartment forming the exhaust-ports, in combination with three-armed levers, one in each compartment, and connected to the valves by springs or other suitable connections, and to each other by a rocking-lever, in such a manner that by imparting to said lever a rocking motion the steam is alternately admitted from one and exhausted from the opposite end of the cylinder, and a valve is obtained which operates with comparatively little loss of power and which is easily fitted and kept tight.

A represents the valve-chest of an ordinary steam-cylinder. This valve-chest is divided by a longitudinal partition, *a*, into two compartments, *b b'*, one of which connects by an aperture, *c*, with the steam-pipe and the other by an aperture, *c'*, with the exhaust-pipe *e*. When the cover B is secured on the top of the valve no direct communication can take place between the two compartments *b b'*. Each of the compartments *b b'* is provided with two ports, *d d\** *d' d'\**, which communicate with the opposite ends of the cylinder, the openings or ports in the compartment *b* forming the steam-ports and the ports in the compartment *b'* the exhaust-ports. These ports are closed by valves *e e\** *e' e'\**, which can be made spherical, as shown in the drawings, or in any other desirable form or shape, and which are suspended from the extreme ends of the arms *f h f' h'* of elbow-levers *f g h f' g' h'*. These arms have their fulcrum in forked standards *i i'*, rising from the bottom of

the valve-chest, and the arms *g g'* of the same connect by rods *j j'* with the arms *k m* of a three-armed rocking lever, *k l m*. This lever has its fulcrum in forked brackets *n*, projecting from the end of the valve-chest, and the rods *j j'* pass through stuffing-boxes *o o'*, as clearly shown in the drawings.

A rocking motion is imparted to the lever *k l m* by the ordinary eccentric or any other suitable means commonly used for operating the main valves of steam-engines, and by this motion the valves *e e\** *e' e'\** are alternately raised from and depressed in their seats, so as to admit the steam to the cylinder and allow it to exhaust therefrom at regular intervals. For instance, if the lever *k l m* swing in the direction marked on it in Fig. 1, the valves *e* and *e'\** are closed and the valves *e\** and *e'* are opened, steam being admitted through the valve *e\** and exhausted through the valve *e'*; and if the motion of the lever *k l m* be reversed the valves *e e'\** are opened and the valves *e\** *e'* are closed.

In order to allow the elbow-levers *f g h f' g' h'* to oscillate back and forth without throwing the valves out of their seats, said valves are provided with shanks *p*, which play in heads *q*, secured to the ends of the arms *f h f' h'* of the elbow-levers, and springs *r* are so applied that they bear upon the ends of the stems or shanks *p*, and hold the valves firmly down in their seats until the arm to which each valve is attached rises high enough to raise said valve bodily out of its seat, as shown in Fig. 2 of the drawings. By this arrangement the valves are allowed to accommodate themselves to their seats, and they are not liable to leak steam if they have once been properly fitted. But if one of the valves should become leaky it can easily be refitted.

If desired, the valve-seats may be made separate from the valve-chest and of composition or other suitable metal and secured to the bottom of the valve-chest by screw-threads or other suitable means.

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

The valves *e e\** *e' e'\**, fitted into suitable seats in the bottom or ends of the valve-chest, in combination with the partition *a* and with a rocking lever, *k l m*, constructed and arranged substantially as and for the purpose set forth.

THOMAS CLARK.

Witnesses:

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