G. W. DIXON.

Valve for Steam-Pumps.

No. 218,501. Patented Aug. 12, 1879.

Fig: 1.

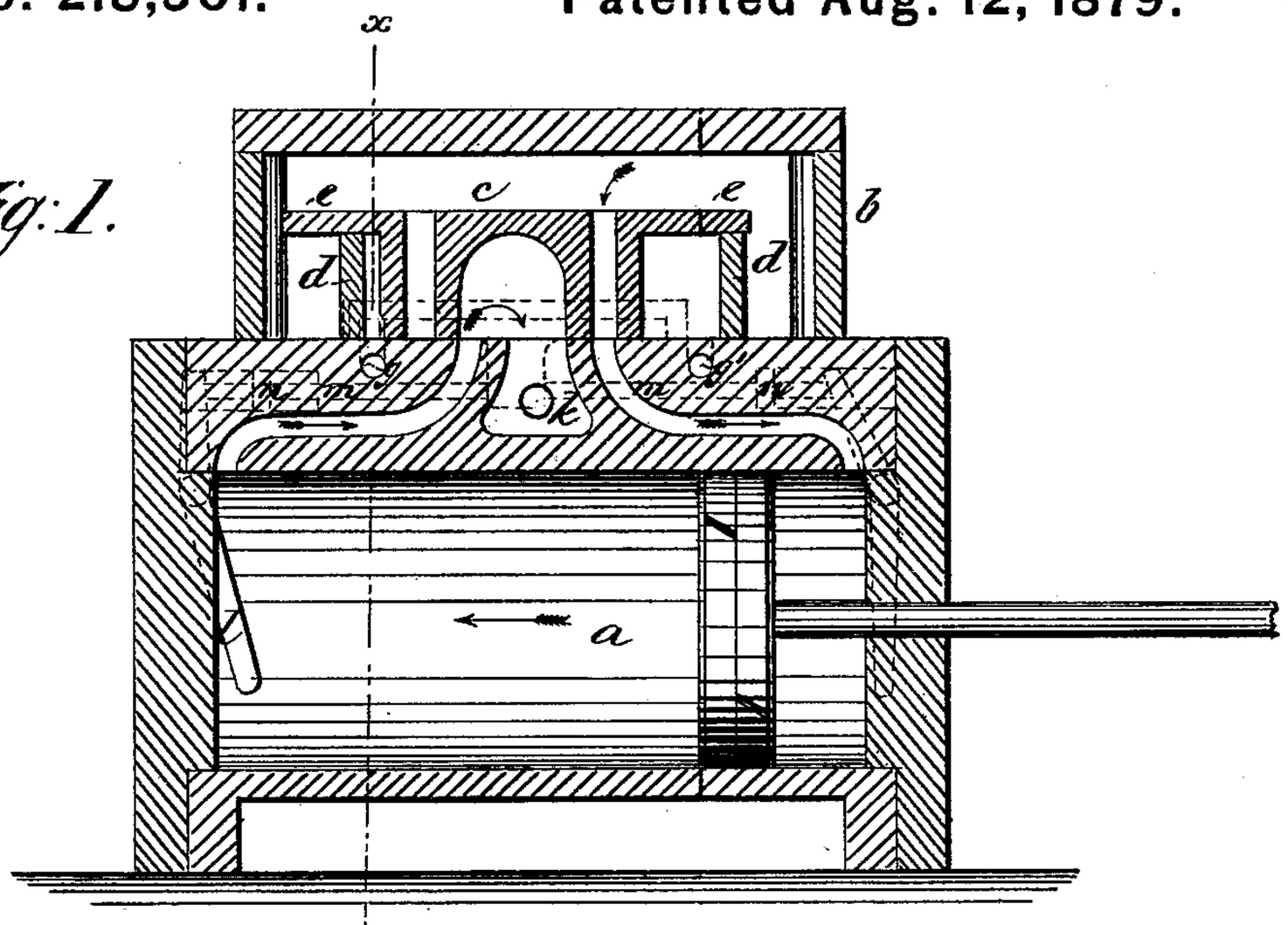


Fig: 2.

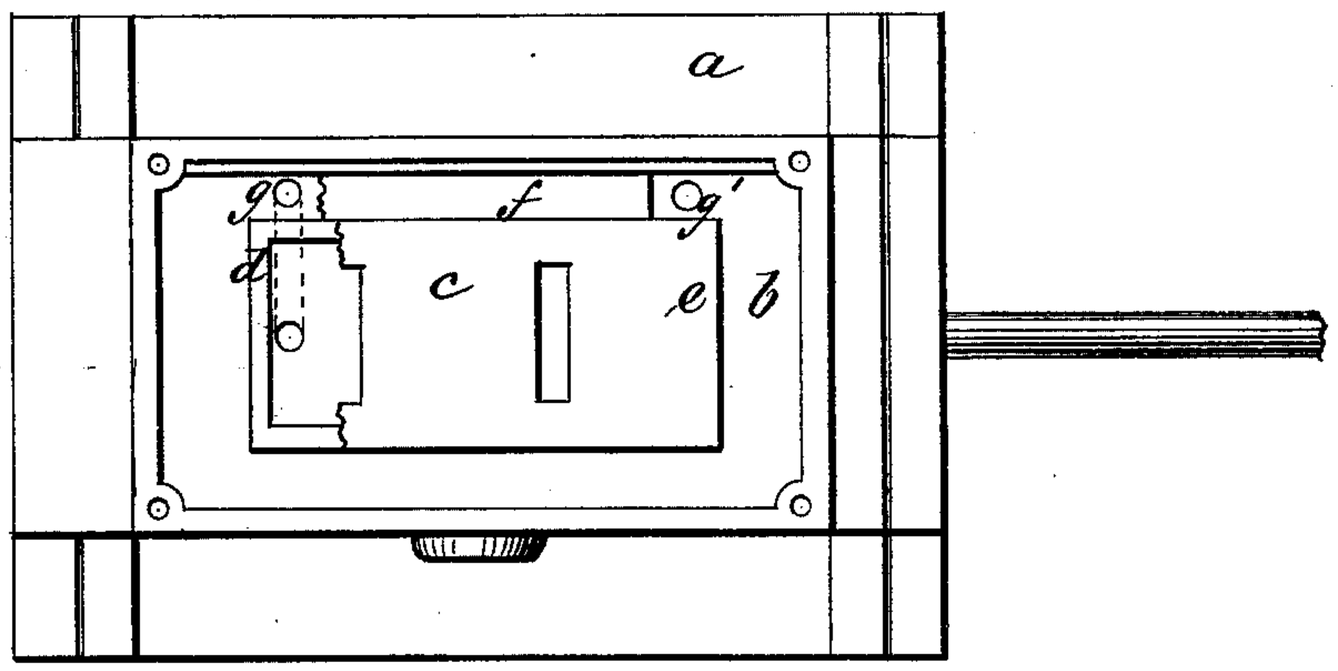


Fig: 3.

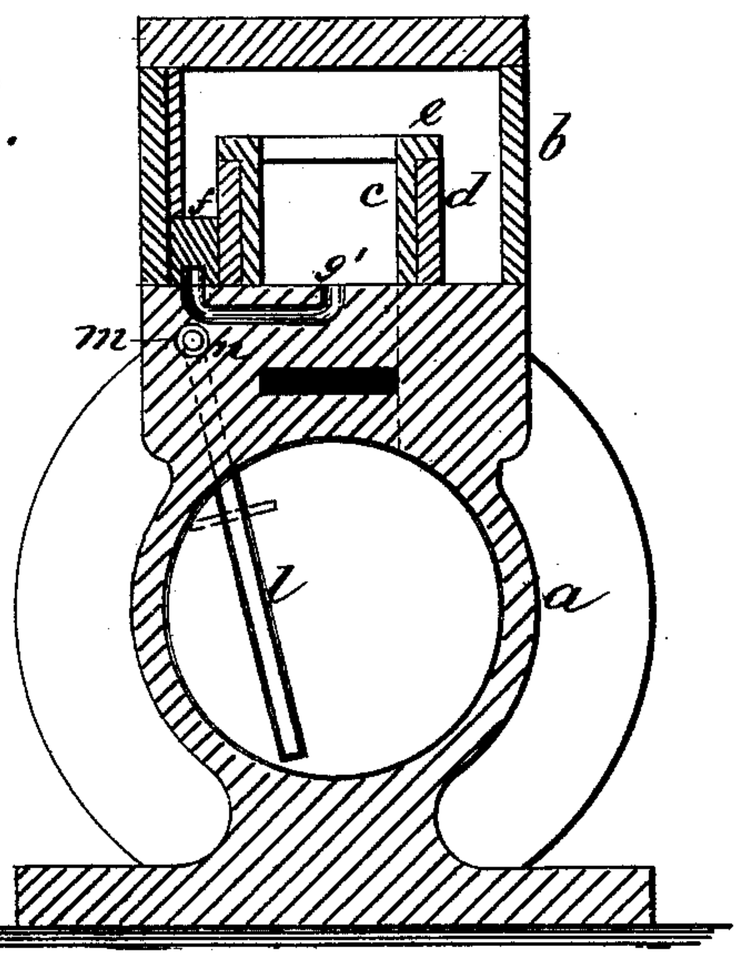
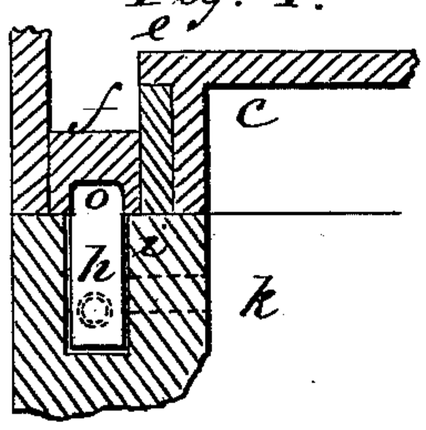


Fig: 4.



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UNITED STATES PATENT OFFICE.

GEORGE W. DIXON, OF SPRING LAKE, MICHIGAN.

IMPROVEMENT IN VALVES FOR STEAM-PUMPS.

Specification forming part of Letters Patent No. **218,501**, dated August 12, 1879; application filed December 7, 1878.

To all whom it may concern:

Be it known that I, GEORGE W. DIXON, of Spring Lake, in the county of Ottawa and State of Michigan, have invented a new and useful Improvement in Valves for Direct-Acting Steam-Pumps, of which the following is a specification.

The object of my invention is to simplify the construction of valves for direct-acting steam-pumps, and thereby reduce the first cost of such pumps and the expense of repairs.

My invention consists in a double-seated slide-valve, the same being substantially the ordinary slide-valve fitted within a case in the steam-chest, within which case the valve slides, the space at the ends forming steam-chambers, into which the steam is admitted alternately to move the slide-valve. The admission of steam to the chambers is effected by means of an auxiliary valve in the steam-chest, which is operated by means of shifting-levers that are acted upon by the piston-head in the engine-cylinder.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of an engine-cylinder fitted with my improved valve mechanism. Fig. 2 is a plan view with the cover of the steam-chest removed. Fig. 3 is a cross-section on line *x x* of Fig. 1. Fig. 4 is a sectional elevation, showing the valve-stem in the cavity of the valve-seat.

Similar letters of reference indicate corresponding parts.

a is the cylinder; *b*, the steam-chest. *c* is the slide-valve, moving upon a valve-seat having parts arranged as usual.

Upon the valve-seat is a case or boxing, *d*, inclosing slide-valve *c* tightly at its sides, but permitting it to have the proper movement lengthwise. The valve *c* has a projecting flange, *e*, at the top, which rests upon the upper edge of case *d*, which thereby renders valve *c* double-seated.

f is the auxiliary valve fitted in the steam-chest outside of box *d*, so as to slide and uncover one of the parts *g g'*, that are formed in the valve-seat and communicate from the outside to the inside of case *d*, and at opposite ends of box *d*.

The valve *f* is provided with a stem, *h*, that projects downward into a cavity, *i*, in the valve-seat, which cavity communicates with the main exhaust-port *k*.

In each cylinder-head, in a suitable recess, is fulcrumed a shifting-lever, *l*, in such position that each lever *l* will be acted upon by the piston-head in its turn at the completion of the stroke.

m m are rods fitted in the upper part of cylinder *a*, at opposite sides of the stem *h* of valve *f*, in a position to be acted upon by the levers *l* and move valve *f* either in one direction or the other, according to the direction in which the piston is moving. Each rod *m* is fitted with a collar, *n*, that acts as a valve to prevent passage of steam through the holes in which the rods are placed.

The under side of valve *f* is recessed, as seen at *o*, Fig. 4, to form exhaust-ports in connection with ports *g* and opening *i*, as hereinafter described.

When the valve *f* is shifted by the action of the piston-head upon lever *l*, as described, port *g'* is covered by *f*, and the steam enters the other port, *g*, and goes between the end of valve *c* and case *d*, and forces valve *c* to the other end of box *d*, which action changes the relative positions of the main ports. Upon the return stroke of the piston, valve *f* is again shifted, the other port, *g*, uncovered, and valve *c* moved in the opposite direction. As soon as valve *f* is shifted, the recess *o* coincides with port *g'* and permits the escape of the steam from that end of box *d*.

The mechanism described has but few parts, and those are of simple construction, such as can be repaired by any mechanic familiar with the ordinary valve mechanism of steam-engines.

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

1. In combination with the cylinder and steam-chest having ports, substantially as described and shown, the valve *c*, having flange *e*, overlapping case *d*, and valve *f*, the valve *f* being shifted by the movement of the piston-head through positive connections, substantially as described and shown.

2. The combination, with the main valve,

the auxiliary valve *f*, having the stem *h*, the valve-seat having the cavity *i*, and the main exhaust-port *k*, of the levers *l*, fulcrumed in cylinder-heads, and the rods *m*, having the collar *n*, substantially as and for the purpose specified.

3. In combination with a cylinder and steam-chest having ports, substantially as described and shown, the case *d*, double-seated valve *c*, valve *f*, rods *m*, and shifting-levers *l*, combined, arranged, and operating substantially as described and shown, and for the purposes set forth.

GEORGE W. DIXON.

Witnesses:
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