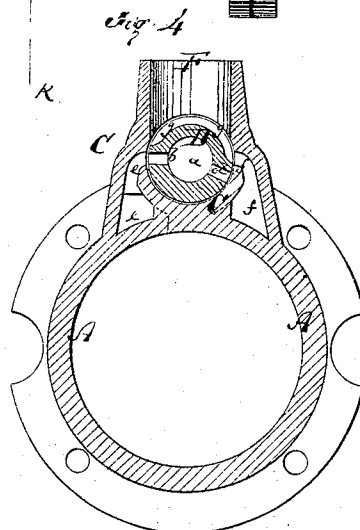
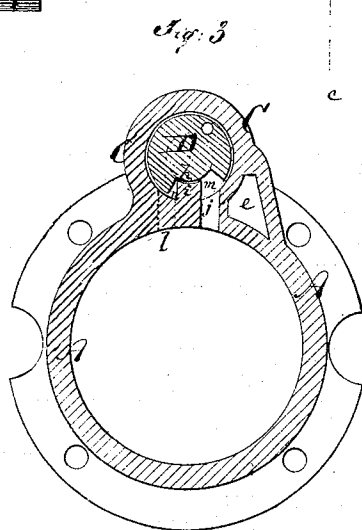
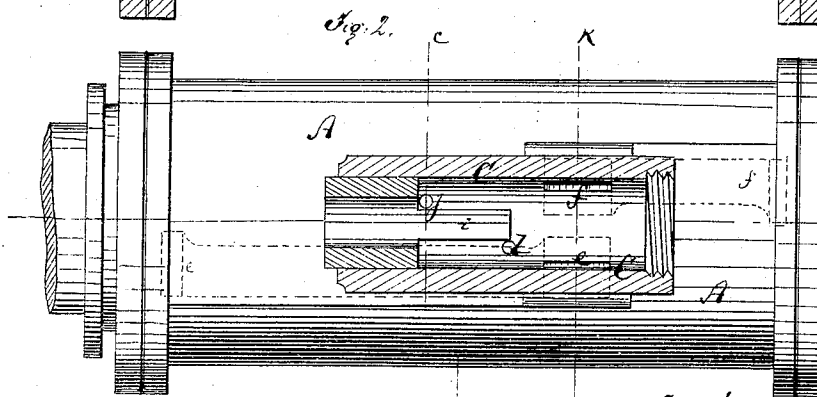
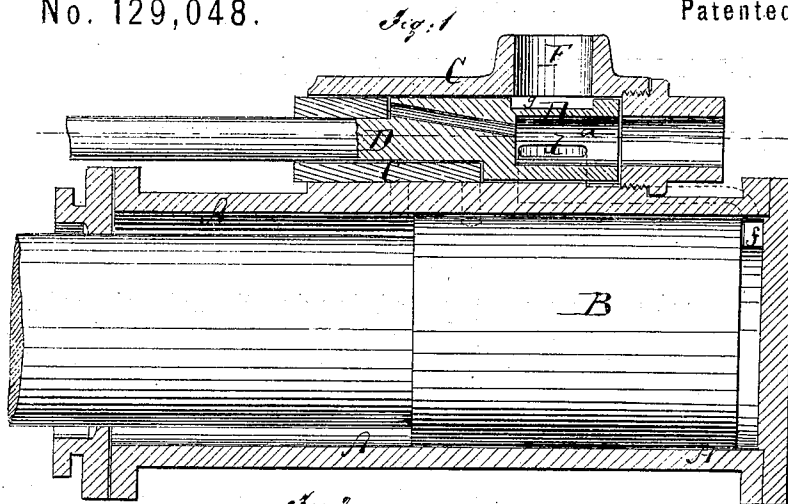


J. NORTH.
Improvement in Valves for Drilling and Pumping Machines, &c.
No. 129,048. Patented July 16, 1872.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN NORTH, OF NEW YORK, N. Y.

IMPROVEMENT IN VALVES FOR DRILLING AND PUMPING MACHINES, &c.

Specification forming part of Letters Patent No. 129,048, dated July 16, 1872.

Specification describing a new and Improved Steam-Valve for Drilling and Pumping Machines, &c., invented by JOHN NORTH, of New York city, in the county and State of New York.

In the accompanying drawing, Figure 1 represents a vertical longitudinal section, Fig. 2 a horizontal section, and Figs. 3 and 4 vertical transverse sections, of my invention, the lines *c c* and *K K*, Fig. 2, indicating, respectively, the planes of section for the last two figures.

Similar letters of reference indicate corresponding parts.

This invention relates to a new steam-valve for use in connection with such engines whose piston motion is to be reversed with great rapidity, such as are required to operate stroke-drills, pumps, or similar machines. The invention consists more particularly in making the valve oscillating and self-reversing by the action upon it of the steam from the cylinder.

A in the drawing represents the steam-cylinder. *B* is its piston, by preference about half the length of the cylinder. *C* is the steam-chest, of cylindrical form, secured on top or at the side of the cylinder; *D*, the valve, of cylindrical form, fitted into the chest *C*. Steam is admitted into a chamber, *a*, at one end of the valve, and is thence, through one of two slots *b d* in the sides of this chamber, *a*, conducted to one end of the cylinder *A* through one of the steam passages and ports *e f* of said cylinder. When the chamber *a* is, with one of its ports or slots—say *b*—in communication with one of the passages *e*, as in Fig. 4, the other port or slot, *d*, is closed against the concave bottom of the chest *C*, as is also shown in the same figure, while the other steam-passage, *f*, which does not communicate with the steam-supply, is converted into an exhaust-passage by causing it to communicate with a recess, *g*, on the outer side of the valve *D*, said

recess being directly under the exhaust-pipe *F*. When the motion of the piston is to be reversed the valve *D* must be so swung as to bring the port *d* in communication with the passage *f*, close the port *b*, and cause the passage *e* to enter the recess *g* for exhausting. This reversion of the valve is made automatic by forming a segmental recess, *h*, in the under side of the valve, and a projecting rib or abutment, *i*, on the bottom of the chest *C*, said rib entering the recess. Two apertures, *j* and *l*, lead from and through the top of the cylinder into the steam-chest on opposite sides of the rib *i*. The piston *B* is of such length that it will always cover at least one of the openings *j l*. The position of the valve is determined by the position of the piston *B* in as far as the same leaves the one or the other of the apertures *j l* open; for if the steam enters the recess *h* through the aperture *j*, as in Fig. 3, and crowds against the shoulder *m* of the recess *h* while the aperture *l* is closed, the steam so swings the valve *D* as to bring the ports into the position of Fig. 4. But, as soon as the aperture *l* is opened and *j* closed, the steam will act against the shoulder *n* of the recess *h*, and so swing the valve *D* as to cause the necessary change of ports for reversing the motion of the piston.

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

The cylindrical valve *D* recessed at *g h* and slotted at *b d*, the chest *C* having pipe *F* and rib *i*, the cylinder *A* having inlet-ports *e f* and apertures *j l*, and the piston *B*, all constructed and applied in combination as and for the purpose set forth.

JOHN NORTH.

Witnesses:

A. V. BRIESEN,
T. B. MOSHER.