P. N. WOODS.

Improvement in Valves and Steam-Chests for Engines.

No. 114,078. Patented April 25, 1871.

Fig: 1.

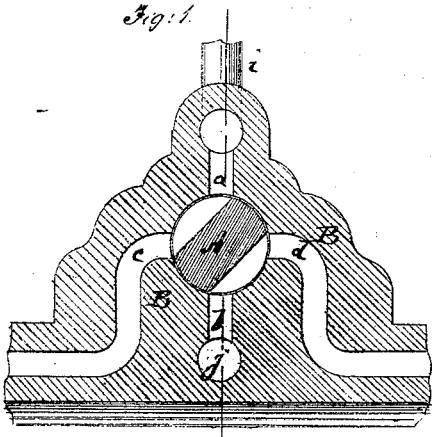


Fig: 2.

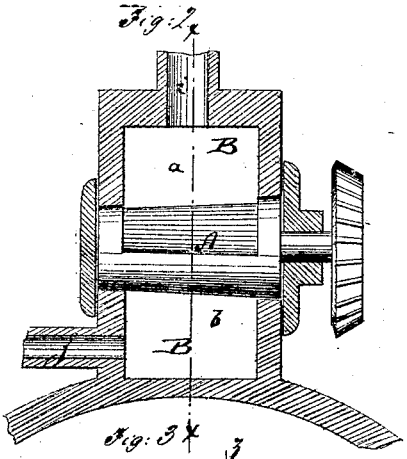


Fig: 3.

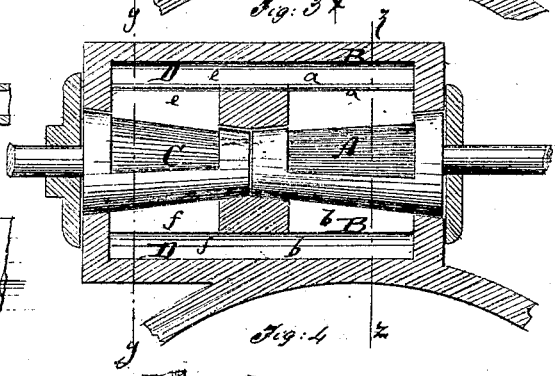


Fig: 5

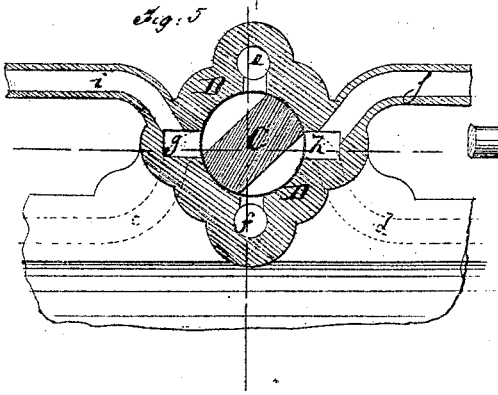


Fig: 4

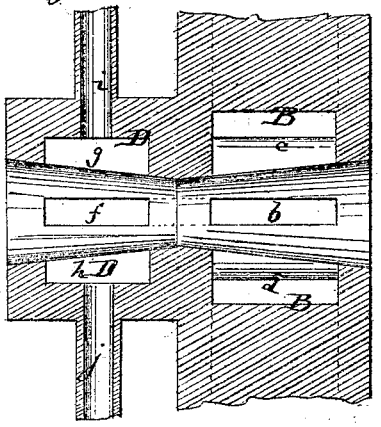
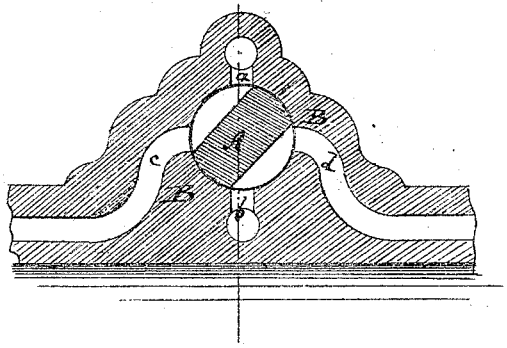


Fig: 6



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UNITED STATES PATENT OFFICE.

PETER N. WOODS, OF FAIRFIELD, IOWA.

IMPROVEMENT IN VALVES AND STEAM-CHESTS FOR ENGINES.

Specification forming part of Letters Patent No. **114,078**, dated April 25, 1871.

To all whom it may concern:

Be it known that I, PETER N. WOODS, of Fairfield, in the county of Jefferson and State of Iowa, have invented a new and Improved Valve for Steam-Chests; 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 drawing, forming part of this specification, in which—

Figure 1 represents a vertical transverse section of my improved valve, taken on the plane of the line *x x*, Fig. 2. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a longitudinal vertical section of my improved double valve-chest and valve. Fig. 4 is a longitudinal horizontal section of the same without the valve. Fig. 5 is a vertical transverse section of the same, taken on the plane of the line *y y*, Fig. 3. Fig. 6 is a vertical transverse section of the same, taken on the plane of the line *z z*, Fig. 3.

Similar letters of reference indicate corresponding parts.

This invention relates to a new construction and arrangement of oscillating and rotating valves in the steam-chests of steam-engines, and has for its object to provide a more perfect control of the steam inlets and outlets and a simpler construction of all the parts.

The invention consists principally in arranging the conical valve A, which is flattened on two sides, within a steam-chest, B, that has four ports, *a*, *b*, *c*, and *d*. The upper port, *a*, is in communication with the inlet-pipe *i*, and the lower port, *b*, with the outlet-pipe *j*. The ports *c* and *d* lead to the ends of the steam-cylinder in the ordinary manner. The several ports are all equal distances apart, as shown in Fig. 1. The valve, when set, as in Fig. 1, connects the port *a* with *c* and the port *d* with *b*. The other position of the valve connects *a* with *d* and *c* with *b*. The steam is thereby guided to opposite ends of the cylinder in the ordinary manner. Instead of being oscillated the valve may be rotated in the chest B, when every fourth part of a revolution will produce a change in the steam-passage.

The valve may be rotated with any desired degree of speed, and will, while it closes two opposite ports, serve as a cut-off to use the steam expansively. The conical shape of the valve serves to keep it snug on the seat, and to make up for wear, as it allows the steam reaching the ends, by leakage, to apply more pressure to the large than to the small end of the valve.

By applying to the chest a second valve, C, as in Figs. 3 and 4, in line with the first valve, A, I am enabled to cause the reversal of the engine by a slight motion of said valve C.

The same works in a chamber, D, which has four ports, *e*, *f*, *g*, and *h*. The top port, *e*, communicates with the upper port, *a*, of the main chest B, and the bottom port, *f*, with the lower port, *b*, of the steam-chest B. The steam enters at the port *g* and exhausts from *h*, the inlet and outlet pipes being removed from the chest B to D, as shown in Fig. 4.

By setting the valve C so as to connect the inlet-port *g* with *e*, as in Fig. 5, it will admit steam to the top of the steam-chest B, and exhaust it from the bottom of the same through *f* and *h*. By shifting the valve C, steam may be conducted to the lower part of the steam-chest B and exhausted from the top of the same, thereby reversing the motion of the engine. The reversing valve and chest can also be used as a perfect stop-valve at half the motion of the reversing-lever, so that in an emergency but one lever is required.

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

The aligned conical valves A C, combined, as described, with the four-ported steam-chests B D, when all are constructed and arranged to operate in the manner described.

PETER N. WOODS.

Witnesses:
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R. GAINES.