J. Gallatin, Jr,

Rotary Steam Valve,

No. 52,556. Patented Feb. 13, 1866.

Fig. 1

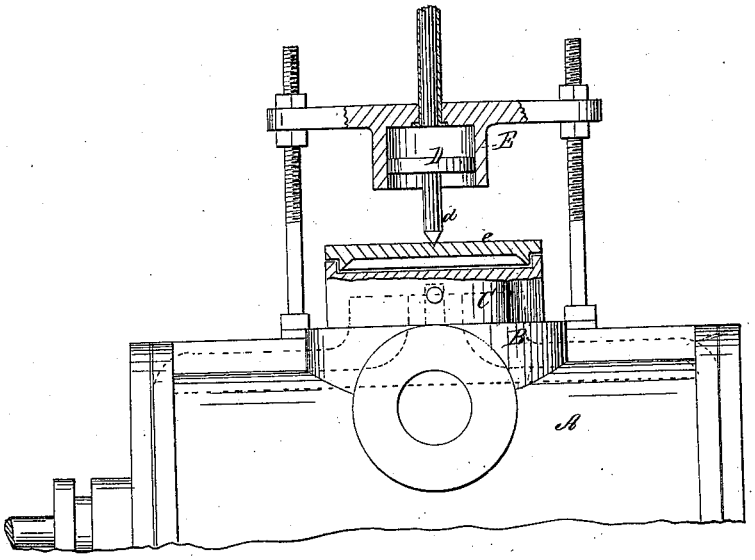


Fig. 2

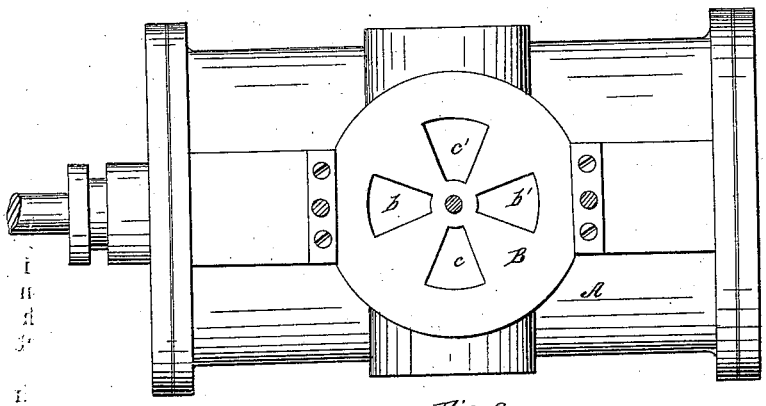
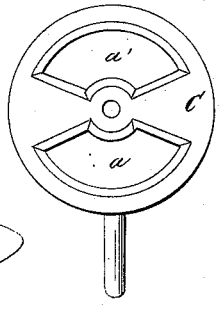


Fig. 3



Witnesses;

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UNITED STATES PATENT OFFICE.

JAMES GALLATIN, JR., OF NEW YORK, N. Y.

IMPROVEMENT IN VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **52,556**, dated February 13, 1866.

To all whom it may concern:

Be it known that I, J. GALLATIN, Jr., of the city, county, and State of New York, have invented a new and useful Improvement in Valves for Steam-Engines, Pumps, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those 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 sectional side elevation of this invention. Fig. 2 is a plan or top view of the valve-seat. Fig. 3 is an inverted plan or face view of the valve.

Similar letters of reference indicate like parts.

This invention relates to an oscillating or rotary valve with a flat face, which is ground down upon a corresponding flat seat, and which is provided with two segmental cavities which alternately form the communication between the supply and exhaust ports of the seat. In order to counteract the upward pressure of the steam or other fluid on the valve, a secondary piston is applied, the area of which is equal, or nearly so, to the combined areas of the cavities in the valve, and which is depressed by the action of the steam or other fluid acting on the face of the valve.

A represents a cylinder, which is bored out to receive a piston, and which may be intended for a steam-engine or for a pump, although it must be remarked that my valve is applicable particularly for steam-engines, and I will therefore describe its operation when applied to a steam-cylinder. This cylinder is provided with a flat, round face, B, which forms the seat for the valve C. This valve is provided with two segmental cavities, *a a'*, in its face, and the seat B is furnished with four ports, *b b' c c'*, two of which form the supply and two the exhaust-ports. For instance, if the aperture *c* communicates with the supply-pipe and the aperture *c'* with the exhaust-pipe, and if the valve is brought in such a position that one of the cavities *a* covers the apertures *b c*, and the other the apertures *b' c'*, the steam passes in through the ports *b c* and it exhausts through the ports *b' c'*. If the valve is turned so that the cavity *a'* covers the ports *c b'*, and the cavity *a* the ports *b c'*, the steam passes in through the former and it exhausts through the latter. If desired, the valve may be operated by imparting to it an oscillating or a revolving motion, though in practice an oscillating motion is preferable. The steam which acts on the cavities in the face of the valve has a tendency to raise the same from its seat, and I have therefore applied a secondary piston, D, which works in an additional cylinder, E, and the area of which is equal, or nearly so, to the combined areas of the cavities in the face of the valve. From said piston extends a rod, *d*, which bears on the top of the valve or on a disk, *e*, placed on said top. If steam is admitted to the upper part of the small cylinder E the piston is depressed, and the valve is held down on its seat with a pressure which is always in proportion to the upward pressure of the steam on said valve. In place of the additional piston a spring-weight may be applied. By this arrangement the valve is prevented from jumping off from its seat, and a valve is obtained which is easily kept tight, which can be made cheap, and which absorbs but little power in its operation.

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

The valve C, with cavities *a a'*, in combination with the flat seat B, provided with ports *b b' c c'*, and with a secondary piston, D, all constructed and operating substantially as and for the purpose described.

JAMES GALLATIN, JR.

Witnesses:

M. M. LIVINGSTON,

W. HAUFF.