(No Model.)

R. H. RICE.

CYLINDRICAL ROTARY VALVE.

No. 571,687. Patented Nov. 17, 1896.

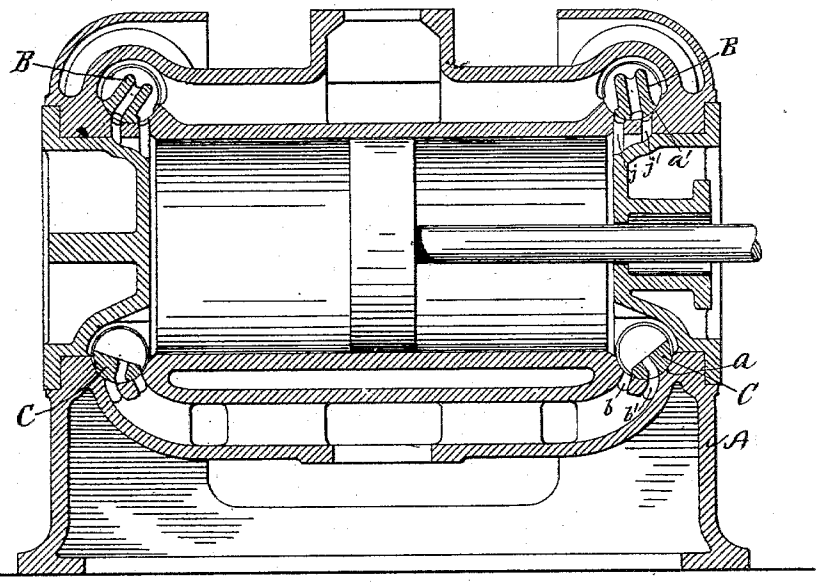


Fig. 1.

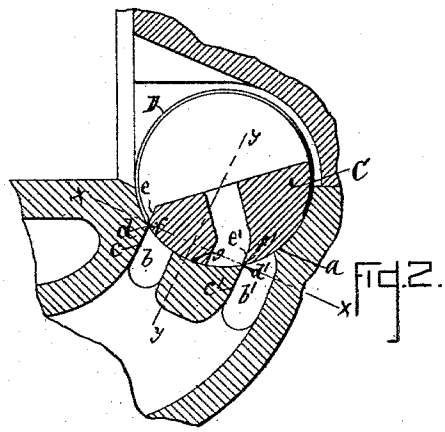
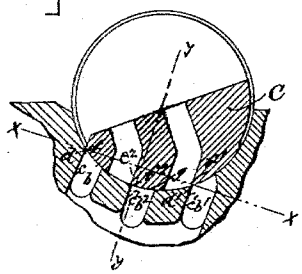


Fig. 2.

Fig. 4.



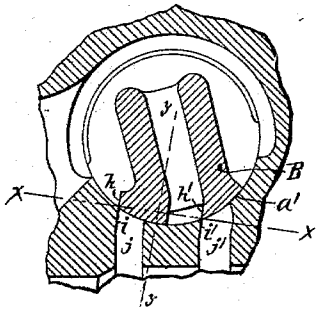


Fig. 3.

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RICHARD H. RICE, OF PROVIDENCE, RHODE ISLAND.

CYLINDRICAL ROTARY VALVE.

SPECIFICATION forming part of Letters Patent No. 571,687, dated November 17, 1896.

Application filed October 25, 1895. Serial No. 566,909. (No model.)

To all whom it may concern:

Be it known that I, RICHARD H. RICE, a citizen of the United States, residing at Providence, in the State of Rhode Island, have invented a new and useful Improvement in Cylindrical Rotary Valves and Valve-Seats for Steam-Engines, of which the following is a specification.

My invention relates to the improved construction of a rotary valve and its valve-seat, whereby, after the valve and valve-seat have become worn, their bearing-surfaces may be trued up without changing the distance between the opening edges of the valve or of the ports of the valve-seat, thus obviating the necessity of constructing a new valve, as heretofore; and my invention consists in a rotary steam or exhaust valve having its opening faces arranged perpendicularly to a plane which coincides with the opening edges of the two opposite opening faces of the valve, and also in a cylindrical valve-seat provided with a plurality of ports, the walls of which at their opening edges are arranged perpendicularly to a plane which coincides with the opening edges of the two opposite ports of the valve-seat, as hereinafter fully set forth.

In the accompanying drawings, Figure 1 represents a longitudinal section of a steam-engine cylinder provided with steam and exhaust valves embodying my improvement. Fig. 2 represents an enlarged transverse section of the exhaust-valve. Fig. 3 represents an enlarged transverse section of the steam-valve. Fig. 4 shows a modification in the number of ports in the exhaust-valve seat.

In the drawings, A represents the longitudinal section of a steam-engine cylinder, B B the steam-valves, and C C the exhaust-valves. The cylindrically-curved valve-seat a, (shown enlarged in Fig. 2,) is provided with the ports $b\ b'$; and in carrying out my invention the walls $c\ c'$, which form the opening faces of the ports $b\ b'$, are made to extend perpendicularly of the plane $x\ x$, which is coincident with the opening edges $d\ d'$ of the ports $b\ b'$, so that when the valve-chamber D is bored out to repair the worn valve-seat a the cutting away of the material to form a new seat will not cause a change in the distance between the opening edges $d\ d'$. Therefore, the same exhaust-valve C may be employed.

In Fig. 4 the exhaust-valve seat a is shown as having three ports $b\ b'\ b^2$ instead of the two ports $b\ b'$ shown in Fig. 2; and in this case the wall c^2, which forms the opening face of the middle port b^2, is also made to extend perpendicularly to the plane $x\ x$, which is coincident with the opening edges $d\ d'$ of the opposite ports $b\ b'$ which lie at each side of the inner port b^2.

The opening faces $e\ e'$ of the exhaust-valve C, as shown in Fig. 2, are made perpendicular to the plane $x\ x$, which coincides with the opening edges $f\ f'$ of the valve, and the opening face e^2 of the exhaust-valve C, (shown in Fig. 4,) is also made perpendicular to the plane $x\ x$, which coincides with the outer opening edges $f\ f'$ of the valve, the intermediate opening edge f^2 being located below the said plane, and when the cylindrical bearing-face g of the valve C is turned off with the turning axis of the valve moved back in the plane $y\ y$, which is perpendicular to the plane $x\ x$, the same distance between the opening edges $f\ f'$ of the valve will be preserved, so as to properly fit the openings of the ports in the valve-seat.

The application of my improvement to the steam-valve B and its seat a' is shown in the enlarged cross-section, Fig. 3. The opening faces $h\ h'$ of the said valve and the opening walls $i\ i'$ of the ports $j\ j'$ are made perpendicular to the same plane $x\ x$ when the opening edges of the valve and the ports are touching each other, as shown in the drawings. The valve and its seat may therefore be trued up when required without changing the distance between the opening edges of the valve or of the ports, whereby the same valve may be continued in use with its valve-seat, thus obviating the necessity of making a new valve.

I claim as my invention—

1. A rotary steam or exhaust valve, having a cylindrical bearing-surface, with its opening faces arranged perpendicularly to a plane, which coincides with the opening edges of the two opposite opening faces of the valve, substantially as described.

2. A cylindrical valve-seat, provided with

a plurality of ports, the walls of which, at their opening edges, are arranged perpendicularly to a plane which coincides with the opening edges of the two opposite ports of the valve-seat, substantially as described.

3. The combination of a cylindrical valve-seat, having a plurality of ports, with a rotary steam or exhaust valve, the opening faces of the valve and of the ports of the valve-seat, being arranged perpendicularly to a plane, which coincides with the two opposite opening edges, substantially as described.

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Witnesses:
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