2 Sheets—Sheet 1.

E. O'NEILL.

ENGINE-VALVE.

No. 191,812. Patented June 12, 1877.

Fig. 1.

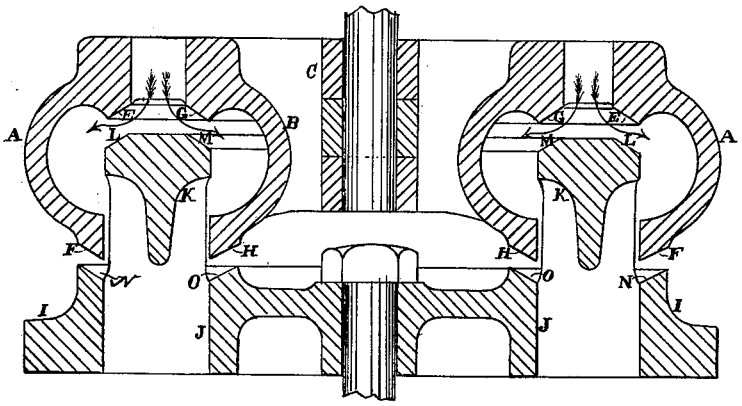
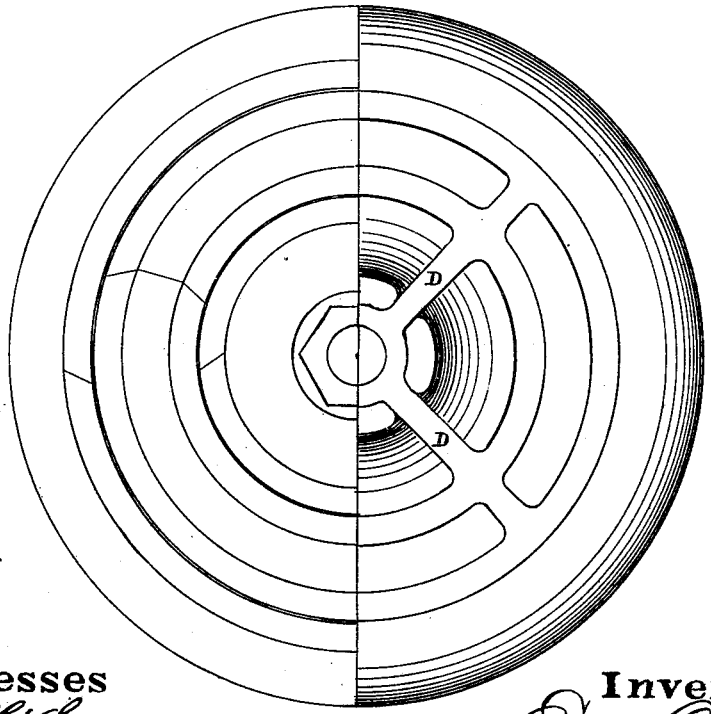


Fig. 2.



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2 Sheets—Sheet 2

E. O'NEILL.

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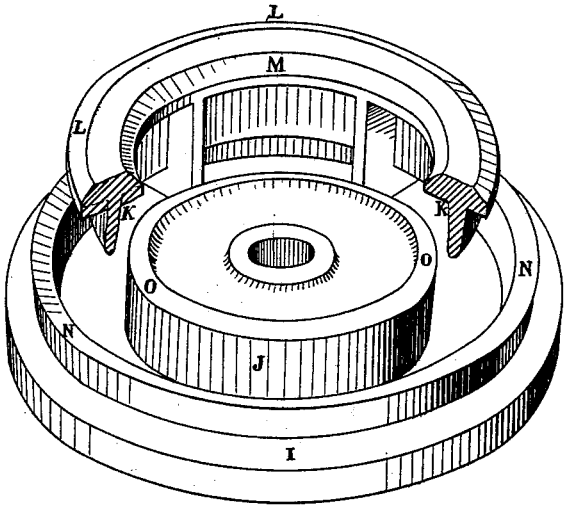
Fig 3.



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UNITED STATES PATENT OFFICE.

EUGENE O'NEILL, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN ENGINE-VALVES.

Specification forming part of Letters Patent No. **191,812**, dated June 12, 1877; application filed April 13, 1877.

To all whom it may concern:

Be it known that I, EUGENE O'NEILL, of the city and county of San Francisco, and State of California, have invented an Improvement in Engine-Valves; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to certain improvements in valves for engines and pumps; and it consists in a novel construction of a valve having upper and lower seats in pairs, and provided with inner and outer steam or water passages for each pair of seats, so that by a small lift of the valve a large area for the admission of steam or water is exposed.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a vertical section of my valve. Fig. 2 is a plan view with a horizontal section of one half to show the seats. Fig. 3 is a perspective view of the seats, showing their relative position.

My valve is an improvement upon a valve which is so constructed as to have two seats, one above the other, and when opened two exterior passages are exposed for the admission of steam below the valve.

My improvement consists in constructing my valve with two outer and two inner passages for the steam, and four faces of contact between the valve and the seat, so that I am enabled to make the lift of the valve only half as much, and I can decrease similarly the height necessary for the steam-chest.

My valve is formed with an outer shell, A, and inner shell or body, B, and a central hub or boss, C, all of which are united by a spider, D, which is, in the present case, four-armed, and an uninterrupted passage is left around and between these parts.

A guiding-stem is secured in a central opening which is bored vertically through the hub C, as shown. The outer shell A is provided with two faces of contact, E and F, which fit upon similar faces upon the seat, as will be hereafter described. The inner shell or body B has also two similar faces of contact, G and H, the faces E and G being situated, respectively, above the faces F and H. The seat is, in like manner to the valve, composed of three parts, I, J, and K, united by a frame or spider. The part K has an outer and an inner face, L and M, upon which the faces E and G of the valve will be seated when the valve is closed. A face, N, upon the part I of the seat, corresponds with and receives the face F of the valve, and another face, O, upon the part J receives the face F.

It will now be seen that when the valve is seated the eight faces are in contact, and, as the expansion of all parts will be equal, no difficulty will be experienced in keeping a tight joint at all points. When the valve is opened steam will be allowed to pass below it, through the openings exposed between the four pairs of faces, as indicated by the arrows. If used in a pump the current of water would, of course, move in an opposite direction. By thus increasing the number of ports or openings, it will be manifest that the size of each can be correspondingly diminished for a given quantity of steam to be admitted, and I am thus enabled to reduce the lift of the valve without in any manner choking the steam-passage.

My valve is also perfectly balanced, as it presents no surface for the pressure of the steam, and it may be made much less in depth.

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

1. A valve, having an outer shell, A, with faces E F, in combination with the inner shell B having faces G H, with their corresponding seats, substantially as and for the purpose specified.

2. In a valve constructed to open and close by its rise and fall, the independent interior and exterior passages, and the corresponding seats, for increasing the area of the steam or water ports, and decreasing the rise and fall of the water, substantially as herein described.

In witness whereof I have hereunto set my hand and seal.

EUGENE O'NEILL. [L. S.]

Witnesses:

GEO. H. STRONG,

OLWYN T. STACY.