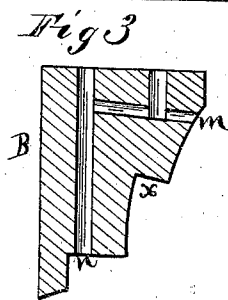
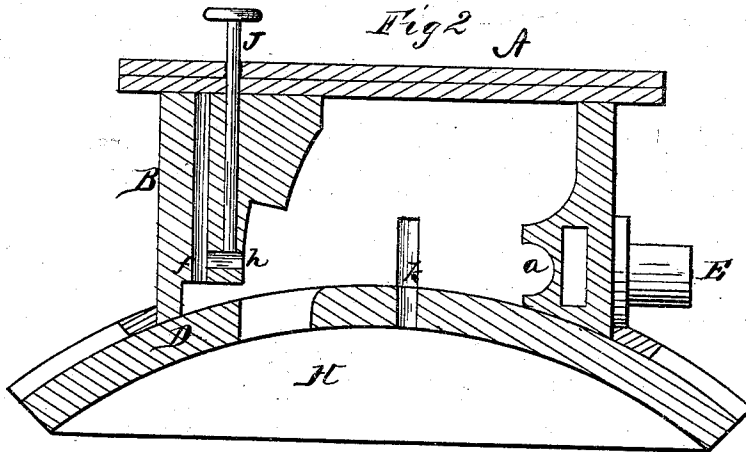
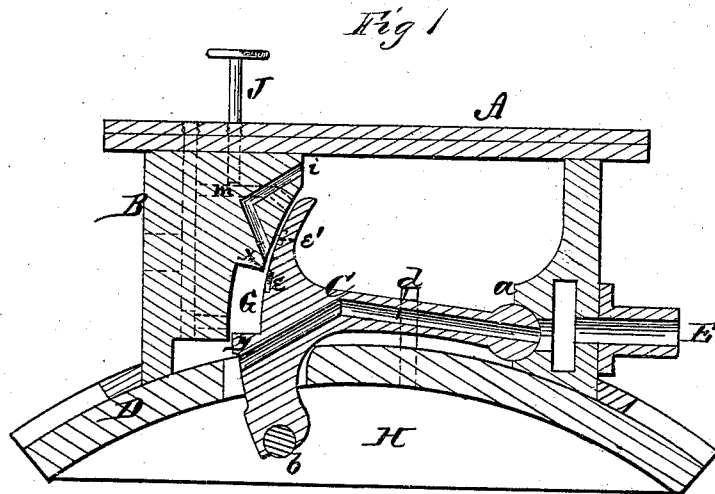


W. P. EAYRS.

Valves and Abutments for Rotary-Engines.

No. 147,621.

Patented Feb. 17, 1874.



WITNESSES.
Al. Conrad
C. C. Evers

By

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 Attorneys.

UNITED STATES PATENT OFFICE.

WINSLOW P. EAYRS, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO TIMOTHY E. STUART, OF SAME PLACE.

IMPROVEMENT IN VALVES AND ABUTMENTS FOR ROTARY ENGINES.

Specification forming part of Letters Patent No. **147,621**, dated February 17, 1874; application filed January 12, 1874.

To all whom it may concern:

Be it known that I, WINSLOW P. EAYRS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Valve and Abutment for Rotary Engines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon forming part of this specification.

The nature of my invention consists in the construction and arrangement of valves and valve-ports for rotary engines, as will be hereinafter more fully set forth.

In the accompanying drawing, Figure 1 is a longitudinal section through the center of the valve or steam-chest. Fig. 2 is a similar section through one side of the same; and Fig. 3 is another section through the port-block.

A represents the valve or steam chest, provided at one end with the block B, in which are the various ports, as hereinafter described. C represents the valve constructed substantially in the form shown in Fig. 1, to project into the steam-channel in the engine. The inner end of the valve C is rounded and rests in a semicircular socket, *a*, in which it is allowed to oscillate and work. In the head of the valve at the lower end, or the end which enters the steam-channel in the cylinder, is placed a friction-roller, *b*, to prevent the wearing of the bottom of the valve. E is the steam-inlet communicating with a port, *d*, running longitudinally through the valve C. D represents the outside casing of the steam-channel through which the valve projects.

In the drawing the valve is represented as giving steam to the steam-channel, the steam passing in at E through the port *d* in the valve into the steam-channel H. The port-block B and valve C are formed, respectively, with shoulders *x y*, which, when the valve is raised, come together; but when down a steam-space, G, is formed between them, as shown. In the head of the valve, a suitable distance above the shoulder *y*, are two recesses, *e e'*, cut out of the valve. At the same time as the steam enters the channel H it passes through ports *f* and *h* in the block B into the

steam-space G, keeping the valve down onto the wheel until it rises. Then when the valve rises it closes the port *h*, and brings the recess *e* in connection with a port, *i*, in the port-block, allowing the steam in the space G to escape through the port *i* into the steam-chest, and from thence through a port, *k*, in the casing D to the exhaust. When the valve rises clear up, so as to pass over the abutment in the steam-channel, it brings the recess *e'* in connection with the end of a steam-port, *m*, in the block B, the other end of which receives steam through the port *n*, letting the steam pass on to the top of the valve, which forces the valve down as soon as the abutment has passed the lower end of the valve, and immediately closes the port *m*, and opens and exhausts the steam through the port *k*, which port communicates with a groove in the side of chest, as shown in Fig. 2, and refills the space G so as just to keep it down until it goes off of expansion. J J are two valve-cocks, to screw down and gage the ports *h* and *m*, so as to let any desired amount of steam-pressure upon the valve at either place. By this construction of the valve and ports there is no pressure on the valve when it rises over the abutment in the steam-channel; only to throw down, and hold when down.

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

1. The combination of the ports *f h i m n* in the port-block B, with the valve constructed as described, for the purposes herein set forth.

2. The valve C, provided with the rounded end resting in the semicircular socket *a*, the hollow passage *d*, and the connecting-ports *e e'*, in combination with the port-block B, with its ports as described, all substantially as set forth.

3. The combination of the port-block B, with ports *h m* and the stop-cocks J J, as and for the purposes herein set forth.

In witness that I claim the foregoing I have hereunto set my hand this 23d day of December, 1873.

WINSLOW P. EAYRS.

Witnesses:

C. M. ALEXANDER,
L. W. HOWES.