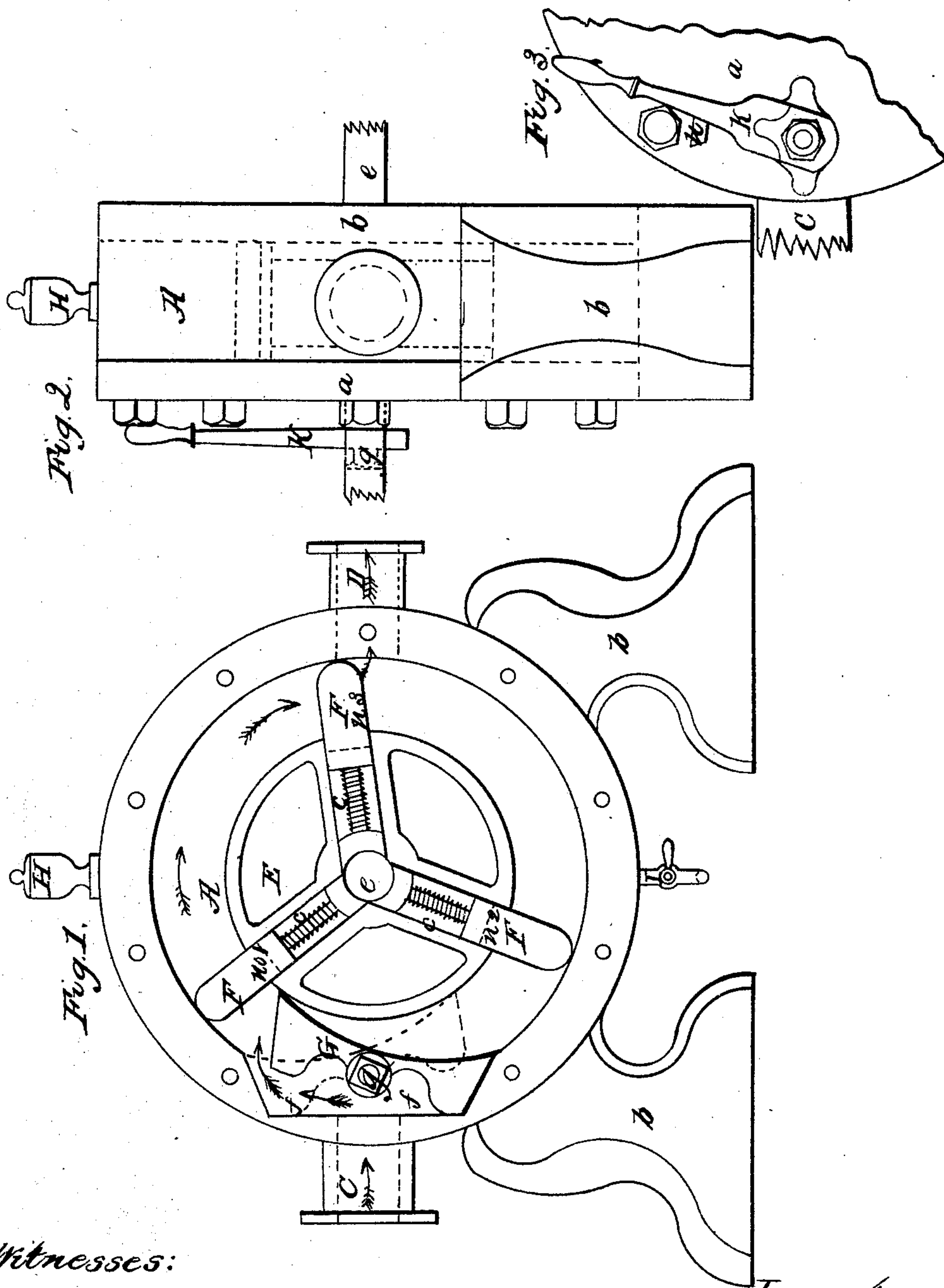


R. W. Riess,
Rotary Steam Engine.
N^o 69,705. Patented Oct. 8, 1867.



Witnesses:
John Clayton
D. Curand

Inventor:
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attys

United States Patent Office.

RUDOLPH W. RIESS, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 69,705, dated October 8, 1867.

IMPROVEMENT IN ROTARY STEAM ENGINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, RUDOLPH W. RIESS, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Rotary Engines; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which it appertains to fully understand and use the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of the inside of the cylinder, showing its working parts.

Figure 2 is an end view thereof.

Figure 3 is a detached view of the lever which operates the valve.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in a valve within the cylinder for reversing the motion of the engine, and which forms part of the interior of the cylinder, whereby the pistons will operate; also in the construction of the pistons, and in a lever which operates the valves, all as will be hereinafter more fully described.

In the drawings, A represents the cylinder, having the usual heads *a* and *b*, and mounted on legs or feet *b'* or other suitable means. C is the steam-port, and D the exhaust. The cylinder A is concentric with the piston-wheel E, in which are passages or ways *c* for the reception of the pistons F. These pistons are of the width of the wheel, and are recessed at their inner ends, having legs, which straddle or cover springs *d*, which are fitted on small rods or pins at the base of the passages *c*. One end of these springs bears against this base, and the other end against the pistons, whereby the pistons are always pressed against the inner periphery or face of the cylinder A. The wheel is mounted on an ordinary driving-shaft, *e*, whose bearings are in the heads of the cylinder. G is a valve, fitted within the inner periphery of the cylinder, which is cut away, as shown at *f*, and where the steam enters the cylinder. This valve is mounted on a pintle or shaft, *g*, secured to its back, and whose bearings are in the cylinder-heads. The inner face of the valve is of concave form, and corresponds with the inner periphery of the cylinder. The upper and lower ends of the valve are bevelled, so that they will fit snugly in the cut away portion *f* of the inner face of the cylinder. The valve will form a continuation of the said inner face, according as either end of the valve is open or shut.

The operation is as follows: The valve being in position, as shown in fig. 1, steam is admitted into the cylinder through the port C, and will pass behind the valve and exert itself against the piston No. 1. The upper inner end of the valve being in contact with the piston-wheel, the steam cannot pass downwards, and thus will bear against the left sides of the pistons, and move them as indicated by the arrows. When piston No. 1 nearly reaches the exhaust-port, piston No. 2 will be operated by another supply of steam, and so soon as the exhaust-port is partly uncovered, the steam between these two pistons will pass out through the exhaust-port. The operation of pistons 2 and 3 is the same as the above. So soon as the pistons reach the lower end of the valve they are forced inward towards the centre of the piston-wheel until they clear the valve, when they will immediately spring out and come in contact with the inner periphery of the cylinder, ready for impact of the steam. Should it be desired to reverse the motion of the engine, the valve is turned from right to left, when communication between the cylinder and steam-port is at the bottom of the valve, the top being closed. The operation in this case is the same as in the former, except that the steam exerts itself against the right-hand sides of the pistons, and of course causes the piston-wheel to revolve in a contrary direction from that indicated by the arrows. The valve performs two functions, viz, admits the steam according to the direction desired, and also forms the irregular or eccentric shape of the inner face of the cylinder, which is necessary to operate the pistons. H is an oil or tallow-cup, to admit oil for the necessary lubrication of the working parts. I is a faucet or cock to allow the water of condensation to pass off. The bearings of the pintle *g* of the valve G are continued on one side, beyond the cylinder-heads, so as to receive an operating-lever, K. This lever lies against the cylinder-head, and is retained in place by a lug, *h*, against which the lever bears. I form the lever in two parts, which are hinged together near its lower end. Now, in order to move the lever over the lug and some of the bolts, the top part is drawn outwards, and then turned to the right or left, as desired. I thus dispense with any other means of fastening the lever, and present a simple and ingenious mode, as described, as well as a practical and useful rotary engine.

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

1. The reversible valve C of a rotary engine, constructed and arranged substantially as described.
2. In combination with the above, the lever K, constructed of hinged parts, substantially as described.

To the above I have signed my name this seventeenth day of July, 1867.

RUDOLPH W. RIESS.

Witnesses:

WM. M. CLARK,

F. SCHLEITZ.