J. M. Webb,

Rotary Steam Engine.

No. 6,448. Patented May 15, 1849.

Fig: 2.

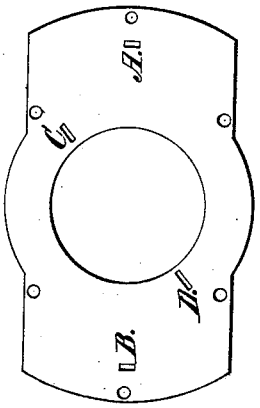


Fig: 4.

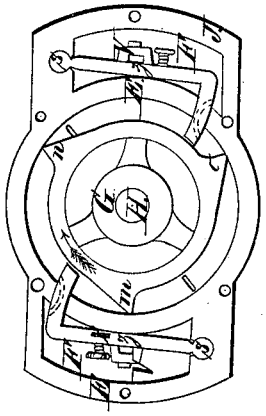


Fig: 1.

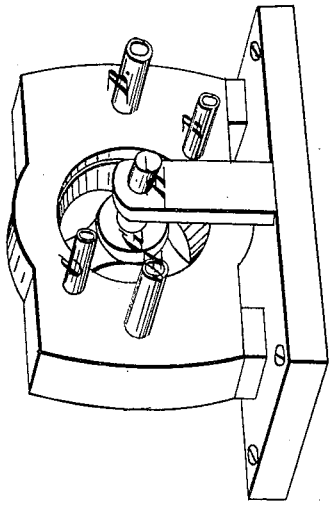
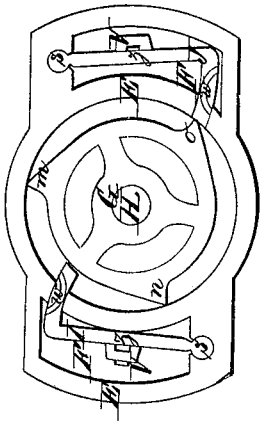


Fig: 3.



UNITED STATES PATENT OFFICE.

JOSEPH W. WEBB, OF LEDYARD, NEW YORK, ASSIGNOR TO BENJN. GOULD.

IMPROVEMENT IN CUT-OFFS AND STEAM-STOPS OF ROTARY ENGINES.

Specification forming part of Letters Patten No. **6,448**, dated May 15, 1849.

To all whom it may concern:

Be it known that I, JOSEPH W. WEBB, of Ledyard, in the county of Cayuga and State of New York, have invented a new and useful Improvement in Rotary Steam-Engines; and I do hereby declare that the following is a full and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a rear perspective view. Fig. 2 is the back plate. Fig. 3 is a longitudinal section, and Fig. 4 is a front view of the machine with the front plate removed.

This machine may be adjusted in either a horizontal or a vertical position; but for the convenience of description the position in these representations is supposed to be vertical.

In the drawings, Fig. 1, the rear of the machine is shown with sections of four steam-pipes, two of which A B conduct the steam to the engine and the other two C D are exhaust-pipes through which the steam is liberated. The apertures by which these pipes communicate with the interior are shown in Fig. 2 and are designated by reference-letters corresponding to those of their respective steam-pipes. In this figure is represented the front side of the back plate of the box or casing in which is inclosed the steam-wheel.

Fig. 3 is a central longitudinal section of the casing E E, the valve-chambers F F, the steam-wheel G upon its shaft H, and the two valve-gates or steam-stops I and J. The wheel is furnished with three piston-cogs *m n o*, which swell outward from the periphery, the forward side of each cog conforming to a tangent and the other to the radius of the wheel, or nearly so, and the apex of each cog comes in contact with the inside of the rim or circular part of the casing. Each steam-stop embraces in its form the radius and arc of a circle, and is made to oscillate upon a hinge-joint or axle S, and the curved part is made to slide through an aperture in the rim, to which it is nicely fitted, the tops, apertures, and cogs being of equal width, and the centerward end of the arc or curved part of the stop, coming in contact with the periphery or cogs of the wheel, serves as an abutment to resist in one direction the steam which is admitted to act between the stop and the receding cog. The curved part of each stop is furnished with a curved aperture *w*, Fig. 3, through which the steam passes from the valve-chamber to the wheel. The steam-stop is ordinarily pressed centerward by the steam within the valve-chamber; but when the wheel is in motion the tangent side of each cog in its progress forces the steam-stop outward till the cog has passed, and the curved aperture *w* is so arranged that it becomes closed by the receding of the stop, as shown at J, Fig. 3. Each steam-stop is also furnished with a cut-off valve V, which projects horizontally from the rear edge of the stop near the apertures A B, and this cut-off valve has a vertical aperture through it near the radius part of the stop. This valve is so formed and adjusted that when one of the cogs begins to force the stop outward the cut-off valve immediately closes its respective induction-aperture prior to the closing of the curved aperture *w*, so that the steam within the chambers acts expansively upon the receding cog until the apex of the cog approaches the stop. At that moment the cut-off valve will have passed so far over the induction-aperture that a small quantity of steam is admitted through the aperture *z*, as shown by the position of the stop J in Fig. 3. This admission of steam is for the purpose of forcing the stop toward the wheel as soon as the apex of the cog has passed the stop, and whereby the curved aperture *w* is instantly opened, admitting the steam to act on the radius side of the cog. An adjusting-screw X passes through the radius part of the stop and is so adjusted as to come in contact with the periphery of the rim for the purpose of preventing a heavy pressure of the stop against the wheel. Each plate has a central aperture the diameter of which is somewhat less than that of the wheel, so that the span between each two cogs is inclosed front and rear by the plates.

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

1. The cut-off valves V V, constructed with apertures through them and fastened to the steam-stops, acting in the manner and for the purpose herein described.

2. The combination of the cut-off valve and of the curved apertures *w* with the arc and radius steam-stops, arranged in the manner and for the purpose set forth.

JOSEPH W. WEBB.

Witnesses:

RUFUS PORTEN,

JOHN C. THOMPSON.