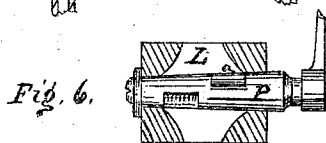
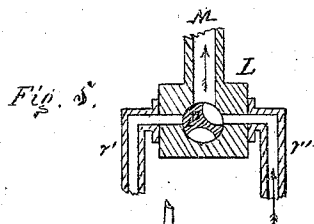
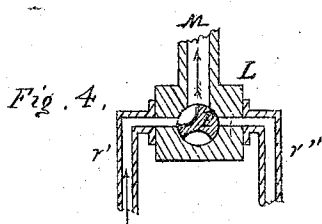
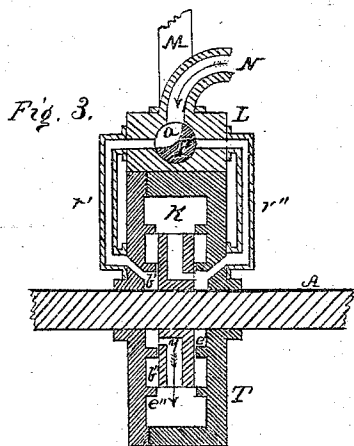
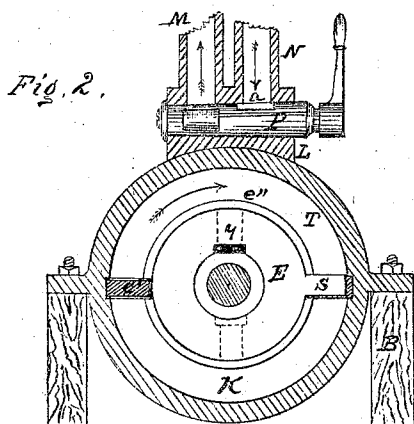
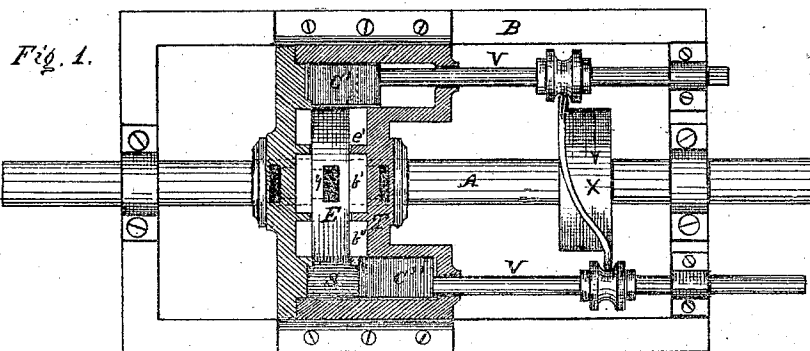


John Mc Gowan's
Rotary Engine.

117656

PATENTED AUG 1 1871



Witnesses—

John M. Lutz
Henry Lutz

—Inventor—
John Mc Gowan
by his attorney
Josiah W. Ellis

UNITED STATES PATENT OFFICE.

JOHN MCGOWAN, OF MIFFLIN TOWNSHIP, PENNSYLVANIA.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 117,656, dated August 1, 1871.

To all whom it may concern:

Be it known that I, JOHN MCGOWAN, of Mifflin township, in the county of Allegheny and State of Pennsylvania, have invented certain Improvements in Rotary Engines, of which the following is a specification:

This invention relates to an improvement in rotary engines of the class in which alternately-reciprocating slides or abutments are employed, in connection with a rotary disk or valve provided with a radial piston and induction and eduction-ports; and the invention consists in the construction and arrangement of certain parts specified in the claim, and hereinafter described in connection with others necessary to form a complete or operative mechanism.

Figure 1 represents a top view of my engine, partly in perspective, the cylinder being shown in horizontal section; Fig. 2, transverse vertical section of the cylinder and valve-chamber, exhibiting the operative parts of the engine; Fig. 3, vertical cross-section of the same; Fig. 4, transverse vertical section of the valve-chamber, showing the position of the exhaust-recess in the valve while the engine is running in one direction; Fig. 5, similar view, showing the position of this portion of the valve when the motion of engine is reversed; Fig. 6, horizontal section of the valve-chamber with valve therein.

B is the frame of the engine, which frame should be substantially constructed to resist the vibrations of the operating parts. Revolving in proper boxes at each end of this frame is a horizontal shaft, A, to which is attached a disk, E, fitted to work in contact with four projecting rings, e' e'' , two on each side, in the cylinder T, so as to leave two shallow annular concentric chambers or recesses, b' b'' , around its center. The most central of these recesses, b' , is always in communication with the valve-chamber L by means of the connecting side-pipes r' r'' , and may be opened to the supply-pipe N and exhaust-pipe M, through the faucet-valve P, which, by a quarter turn, will admit the steam to one side of the

piston and allow it to escape from the other side, or vice versa. The outer ring e'' is provided mainly for the purpose of economizing steam by practically reducing the size of the annular steam-space K, in which the piston moves, since it is evident that without it the said steam-space or chamber K would be in width the distance from the inner periphery of the case and the inner ring e' . Around the face of the disk E is a large annular piston-chamber, K, fitted with slides c' c'' , one of which is always in place to form a partition or abutment within the chamber; but each is withdrawn in its turn, by means of the cam x and rods V, in a direction parallel with the shaft A, to enable the piston S to pass in its revolution. The steam entering the induction-pipe N will flow down that side pipe r'' open to the recess a in the valve, and continue onward into the shallow annular chamber K on that side of the cylinder T; from thence it will pass through the radial opening y in the disk, communicating therewith, and into the large chamber K between the back of the piston S and closed slider c' , and give motion to the piston, disk, shaft, and other operative parts of the engine. The exhaustion is effected in front of the piston through passages on the opposite side of the disk precisely the same as those through which the live steam entered, which, by reason of the position of the valve P, are open to the eduction-pipe M; but, by a partial rotation of this valve, these passages may be opened to the ingoing live steam, and the exhaust effected on the opposite side of the piston, thus virtually reversing the motion of the engine; or, by a further rotation of this valve so as to close the inlet-port, the engine may be stopped.

I claim—

The inner rings e' e'' , valve E with radial eduction and induction-ports, and the side pipes r' r'' , constructed and arranged as shown and described.

Witnesses:

JOHN MCGOWAN.

JOHN R. LARGE,

HENRY LARGE, Jr.