W. SILLMAN, Sr. dec'd., & W. SILLMAN.
MARY SILLMAN, Admr'x

ROTARY ENGINE.

No. 180,662. Patented Aug. 1, 1876.

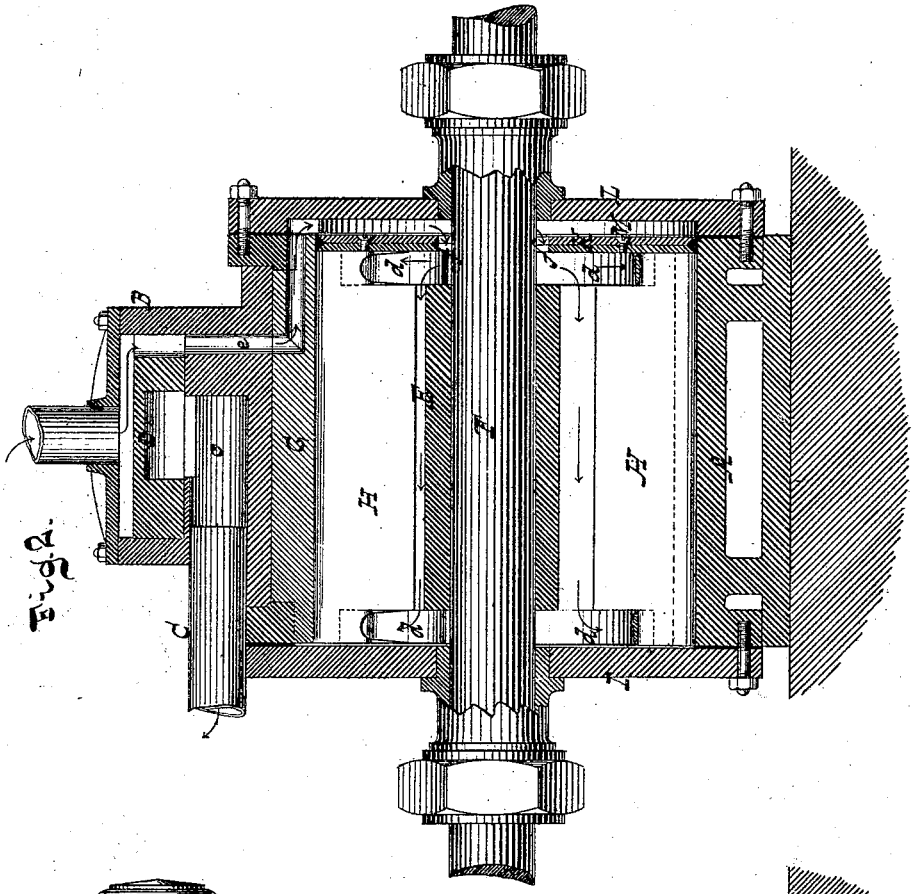

Fig. 2.

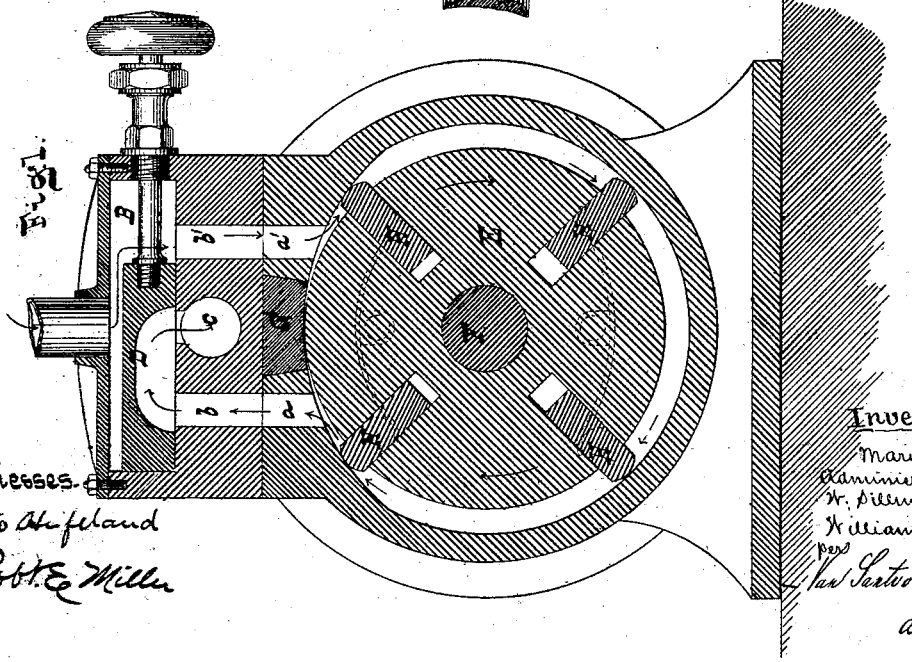

Fig. 1.

Witnesses.
Otto Schofield
Robt. E. Miller

Inventors
Mary Sillman
Administratrix of
W. Sillman deceased.
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per
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UNITED STATES PATENT OFFICE.

MARY SILLMAN (ADMINISTRATRIX OF WILLIAM SILLMAN, SR., DECEASED) AND WILLIAM SILLMAN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. **180,662**, dated August 1, 1876; application filed June 5, 1876.

To all whom it may concern:

Be it known that WILLIAM SILLMAN, Sr., late of Brooklyn, in the county of Kings and State of New York, deceased, and WILLIAM SILLMAN, of the same place, invented a new and Improved Rotary Engine, which invention is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical section in the plane *x x*, Fig. 2. Fig. 2 is a vertical section in the plane *y y*, Fig. 1.

Similar letters indicate corresponding parts.

This invention relates to certain improvements in rotary engines; and consists in the combination, with the steam-cylinder and piston-wheel, of a filling-piece, provided with a passage leading from the steam chest to the cylinder, and a disk adapted to be held against the end of the piston-wheel by the pressure of steam in a chamber to form a steam-space within said wheel, communicating with the recesses behind the sliding pistons of the same, as more fully hereinafter set forth.

In the drawing, the letter A designates the cylinder of the rotary engine, which connects by two ports, *a a'*, with the ports *b b'* in the steam-chest B. Between the ports *b b'* is situated the exhaust-port *c*, which communicates with the exhaust-pipe C, and in the steam-chest works the valve D, which is box-shaped, (see Fig. 1,) so that if the same is moved toward one side of the steam-chest the port *b* is brought in communication with the exhaust-port *c*, and the port *b'* is uncovered to admit steam to the cylinder, and if said valve is moved to the opposite end of the steam-chest the port *b* is uncovered, and the port *b'* is brought in communication with the exhaust-port. By moving the valve D, therefore, the motion of the engine can be reversed. If the valve is moved to the middle of the steam-chest steam is shut off and the engine is stopped.

The inner surface of the cylinder forms an unbroken curve, and in the interior of said cylinder works the piston-wheel E, which is firmly mounted on a shaft, F, that has its bearings in the cylinder-heads. Said piston-wheel is so situated in the cylinder that it comes in close contact with the inner surface of the same at one place, leaving an open space, which gradually diminishes toward the place of contact. At this place is situated a filling-piece, G, the inner face of which is curved to correspond to the curvature of the piston-wheel, and which is pressed in by a set-screw or by the pressure of steam on its back, so that said piston-wheel works steam-tight against the filling-piece. In the piston-wheel are four radial slots, which form the guides for the pistons H, and these pistons are held in contact with the inner surface of the cylinder by springs *d*, and by the pressure of the steam, as will be presently more fully explained.

As the piston-wheel revolves the pistons follow the curvature of the cylinder, and when said pistons approach the filling-piece G they are gradually pressed in until their outer edges become flush with the surface of the piston-wheel, and after having passed the filling-piece the pistons move out again gradually.

The filling-piece G is removable, so that when the same has become worn it can be taken out and replaced by another, and the joint between the steam side and the exhaust side of the cylinder can always be kept tight.

One end of the piston-wheel works steam-tight against the cylinder-head I, but its opposite end works against a plate, K, which is fitted into the end of the cylinder, and between which and the cylinder-head L is formed a chamber, M, which communicates through one or more channels, *e*, with the interior of the steam-chest. Between the plate K and the shaft F is an annular opening, *f*, through which the steam admittted to the chamber M passes behind the pistons H, so that said pistons are pressed out against the inner surface of the cylinder by the action of the steam.

By these means a rotary engine is obtained which works entirely noiseless, and which requires but little attention for the purpose of keeping the joint tight.

What we claim as new, and desire to secure by Letters Patent, is—

In combination with the cylinder A and

piston-wheel E, the filling-piece G, provided with the passage *e* leading from the steam-chest, the disk K, adapted to be held against the end of the wheel E by the pressure of steam in chamber M, to form a steam-space within said wheel communicating with the recesses behind the sliding pistons of the same, substantially as described.

In testimony that we claim the foregoing we have hereunto set our hands and seals this 31st day of May, 1876.

MARY SILLMAN. [L. S.]
Administratrix.
WILLIAM SILLMAN. [L. S.]

Witnesses:
E. F. KASTENHUBER,
J. VAN SANTVOORD.