G. B. MASSEY.
No. 123,574.

Improvement in Rotary Engines.

Patented Feb. 13, 1872.

Fig: 1.

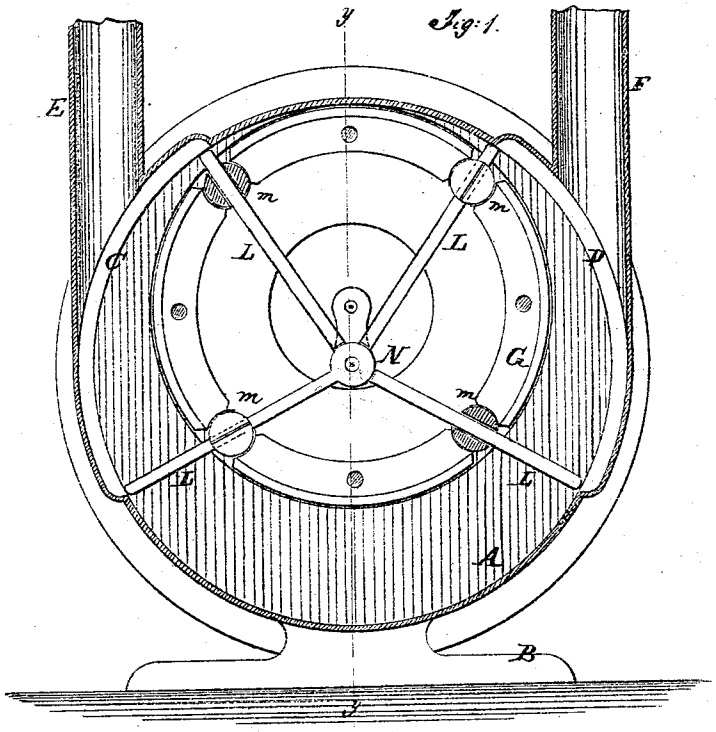

Fig: 2.

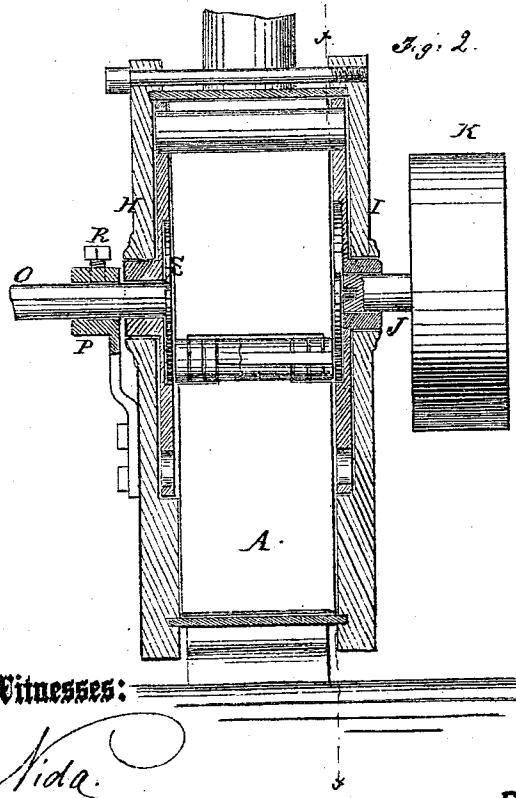

Fig: 3

Witnesses:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN ROTARY ENGINES.

Specification forming part of Letters Patent No. 123,574, dated February 13, 1872; antedated January 29, 1872.

CASE A.

To all whom it may concern:

Be it known that I, GIDEON B. MASSEY, of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Rotary Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to a new and useful improvement in the class of steam-engines known as rotating engines, where the application of power is unremitting; and it consists in construction, arrangement, and combination of parts hereinafter described.

In the accompanying drawing, Figure 1 represents a vertical section of the engine taken on the line *x x* of Fig. 2. Fig. 2 is a vertical cross-section taken on the line *y y* of Fig. 1. Fig. 3 is a detailed view of the piston-packing.

Similar letters of reference indicate corresponding parts.

A is the cylinder, which is stationary, and connected with the bed B. C is the induction-port. D is the eduction-port. These ports are long narrow slots through the cylinder, covered by the steam-pipe E and exhaust-pipe F. G is the rotating piston, which is confined in narrow recesses made in the cylinder-heads H and I. J is the driving-shaft, which is attached to one of the heads of the piston-wheel. K is the driving-pulley. L represents the pistons, four in number, which are jointed together after the manner of a butt-hinge, and not connected with any shaft. They are packed steam-tight through the piston-wheel by the circular packing-pieces *m*, which packing-pieces are confined in recesses in the wheel G, so that they readily turn as the pistons change their positions at each revolution of the wheel. The center, N, of the pistons is the center of the cylinder A. The pistons revolve the wheel by the pressure of the steam upon them, and work through and between the packing pieces *m* as they rotate in the cylinder.

By this arrangement it will be seen that the action of the steam on the pistons is constant. When one piston begins to take steam another allows it to exhaust.

The radial positions of the pistons are governed by the rotating wheels, and their ends sweep the inner surface of the cylinder steam-tight. The piston-wheel is designed to work steam-tight with the inner surface of the cylinder at one point, as seen in Fig. 1. Although the pistons at each revolution are constantly changing their radial lines, their common center N always occupies one position in the center of the cylinder.

The circular packing pieces *m* are seen in detail in Fig. 3, being a simple rod with a slot representing a cross-section of the piston through it, and divided longitudinally, as indicated. The ends of the rod thus formed and divided pass through the heads of the piston-wheel, and, although allowed to turn as the wheel is carried round and the pistons change their radial lines, they are always kept in their proper places without regard to the pressure of the steam or the speed of the engine.

O is a stationary shaft, supported by the head H and by the bearer P. R is a set-screw in the bearer, which is turned down onto the shaft to keep it in place. S is a disk rigidly attached to the inner end of this shaft, confined in a recess in the head of the piston-wheel. The center-pin of the piston-hinge N is fast in the disk S at one end. On the other end is an arm, which extends to the center of the driving-shaft J. On the arm there is a point, which is received by an indentation in the head of the piston-wheel. By this arrangement the friction on the other pistons is greatly reduced, the piston-joint is held rigidly to its place, so that the other pistons are not affected by the piston which is working, but each makes a part of its revolution without any friction on its outer end.

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

The pistons L, radiating from the center of the cylinder, and passing through packings *m*, combined, as described, with crank-shaped center-pin N, allowing the piston-wheel to revolve on it at one end, while the driving-shaft is held rigidly at the other, as and for the purpose specified.

G. B. MASSEY.

Witnesses:
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