

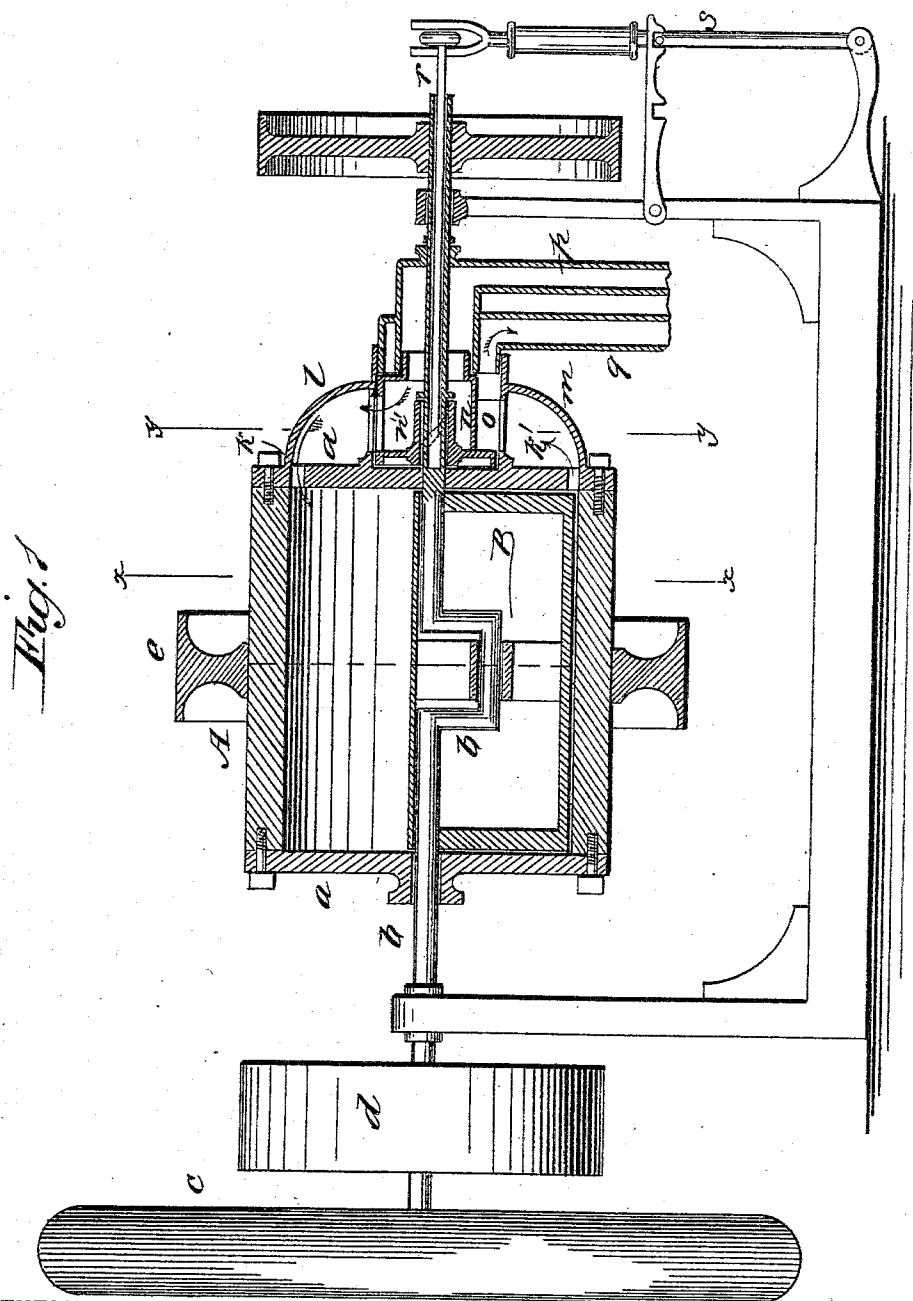
(No Model.)

J. C. WHARTON.
ROTARY ENGINE.

2 Sheets—Sheet 1.

No. 290,508.

Patented Dec. 18, 1883.



WITNESSES:

Francis McArdle,
C. Sedgwick

INVENTOR:

J. C. Wharton
BY *Munn & Co.*
ATTORNEYS.

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Fig. 2.

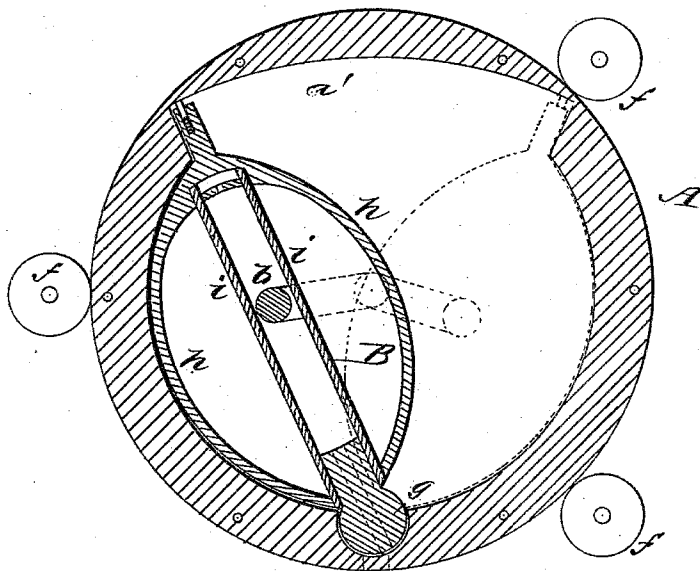
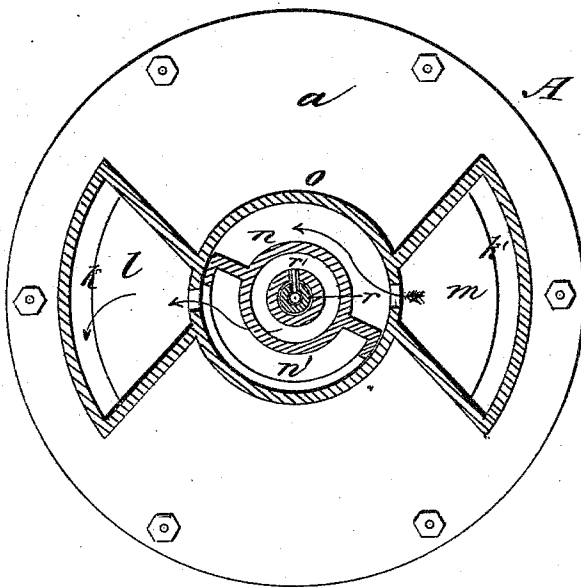


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN CRIDDLE WHARTON, OF NASHVILLE, TENNESSEE.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 290,508, dated December 18, 1883.

Application filed April 25, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. WHARTON, of Nashville, in the county of Davidson and State of Tennessee, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

My improved rotary engine consists of a cylinder containing a vibrating piston pivoted at one side of the cylinder, so as to swing upon a center of motion apart from the axis of the cylinder, and in connection with these a crank-shaft connected to the vibrating piston, so that in operation the shaft is revolved by the movements of the piston, or the shaft may be fixed and the cylinder revolved by the same movement, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section of a rotary engine embodying my invention. Fig. 2 is a cross-section on the line *xx*, Fig. 1. Fig. 3 is a cross-section of the valve mechanism on the line *yy*, Fig. 1.

A is the cylinder provided with heads *a a*, and supported upon a shaft, *b*, which is formed with a crank within the cylinder. The shaft *b* is supported in suitable bearings, and is provided with a balance-wheel, *c*, and pulley *d*, when the shaft is to be revolved; or, in case the cylinder is to be revolved, the shaft will be fixed and the cylinder provided with a pulley and balance-wheel, as shown at *e*, or the cylinder may be supported upon rollers, as shown at *f* in Fig. 2.

B is the vibrating piston, hinged at *g* in a recess at the side of the cylinder *A* and having its moving end extending into a recess, *a'*, formed in the side of the cylinder opposite to the hinge, in which recess the outer end of the piston moves.

The piston is composed of two segments, *h h*, shaped to conform to the inner surface of the cylinder, and is fitted lengthwise with two guide-plates, *i i*, between which the crank-shaft *b* passes.

In one head *a* of the cylinder are steam-ports *k k'*, and upon the same head are fitted two chambers, *l m*, covering the ports *k k'*.

Fixed upon the shaft *b*, in a case or chamber, *o*, and between the two chambers *l m*, is a rotary valve, *n*, having a semicircular chamber, *n'*, at one side, the outer face of the chamber *n'* being provided with an opening that is brought in connection with the chambers *l m* alternately by the revolution of the shaft.

To the chamber *n'* of the valve is connected a steam-supply pipe, *p*, and to the chamber *o* is connected an exhaust-pipe, *q*. The valve *n* is connected to the shaft *b* by a key, *r'*, on the end of a rod, *r*, and the valve is formed with an inclined or spiral slot that receives the key. The shaft *b* is tubular in order to receive the rod *r*, which projects from one end of the shaft *b*, where it is connected to a lever, *s*, so that by endwise movement of the rod *r* the valve *n* can be given a half-revolution upon the shaft for the purpose of reversing the engine.

It will be seen by the connection of the vibrating piston to the crank of the shaft *b*, as shown, that the movement of the piston will cause a rotary movement of the shaft, the crank sliding between the plates *i*; or, in case the crank-shaft is held fast, the movement of the piston will cause the rotation of the cylinder upon its central axis.

In the operation of the engine, the piston being in the position shown in Fig. 2, the valve-chamber *n'* is open to the chamber *l* and port *k*, and the steam being thus admitted behind the piston *B*, the piston is moved forward upon its axis *g*, causing the rotation of the shaft. When the piston reaches the position shown in dotted lines in Fig. 2, the opening to the chamber *l* has been closed and the chamber *m* opened thereto, allowing the steam to exhaust through port *k'*, chamber *l*, and the chamber *o* to the exhaust-pipe *q*. The valve now admits steam to the chamber *m* and port *k'*, thereby causing the return of the piston and the completion of the revolution of the shaft. The extension of the piston *B* into the recess of the cylinder forms an abutment between the two ports, and the opposite end of the piston is provided with suitable packing against the face of the recess in opposite side of cylinder.

It is evident that, in place of using a crank-shaft, the cylinder may be supported on rollers, as in Fig. 2, and the vibrating piston en-

gage a center on the cylinder corresponding to the crank.

I do not limit myself to any special construction, as that may be varied without affecting the essential parts, which are a steam cylinder or chamber with three parallel axes of motion, two of which are represented by the crank-shaft and the third by the hinge *g*. Any one or all of these axes of motion may be theoretically and practically extended to any suitable length, either within or without the cylinder; also, the slide bar or bars of the piston may slide over or through that portion of the crank upon which it operates, either within
15 or without the cylinder.

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

1. In a rotary engine, the combination, with the cylinder *A* and the crank-shaft *b*, of the piston *B*, pivoted at *g* to one side of the cylinder and provided with guide-plates *i*, between which the crank-shaft passes, substantially as herein shown and described.

2. In rotary engines, the combination of the
25 vibrating piston composed of the segments

h h and guide-plates *i*, and the crank-shaft *b*, extending between the guide-plates of the piston, with the cylinder *A*, substantially as described, for operation as set forth.

3. The combination of the vibrating piston *B* and crank-shaft *b*, with the cylinder *A*, having the recess *a'*, in which the piston moves, substantially as described.

4. In a rotary engine, the combination, with the cylinder *A*, provided with the ports *k k'*, and the steam-chambers *l m*, of the rotary valve *n*, provided with the chamber *n'*, and the valve-casing *o*, substantially as herein shown and described.

5. In a rotary engine, the combination, with the cylinder *A*, provided with the ports *k k'*, and the chambers *l m*, and the shaft *b*, having a tubular end, of the valve *n*, provided with a spiral slot, and the rod *r*, provided with the key *r'*, substantially as herein shown and described.

JOHN CRIDDLE WHARTON.

Witnesses:

I. TREGENDRICK,
B. D. SMITH, Jr.