

(No Model.)

T. H. HERNDON,
ROTARY ENGINE.

No. 431,462.

Patented July 1, 1890.

Fig. 1.

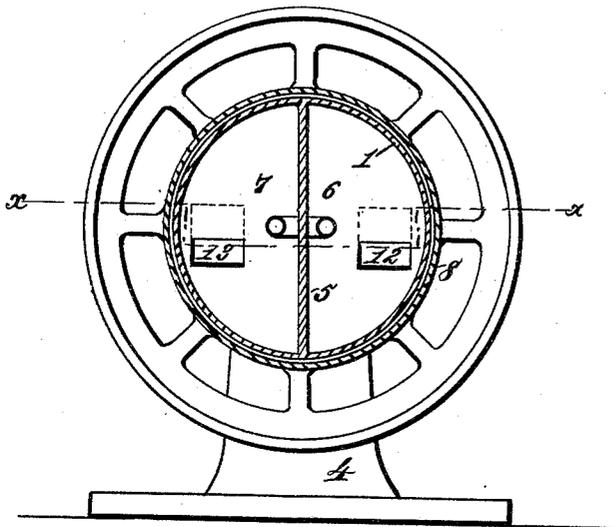


Fig. 2.

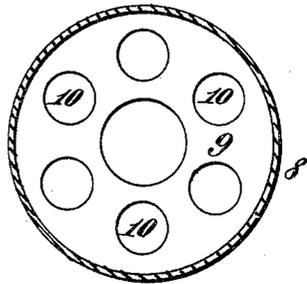


Fig. 3.

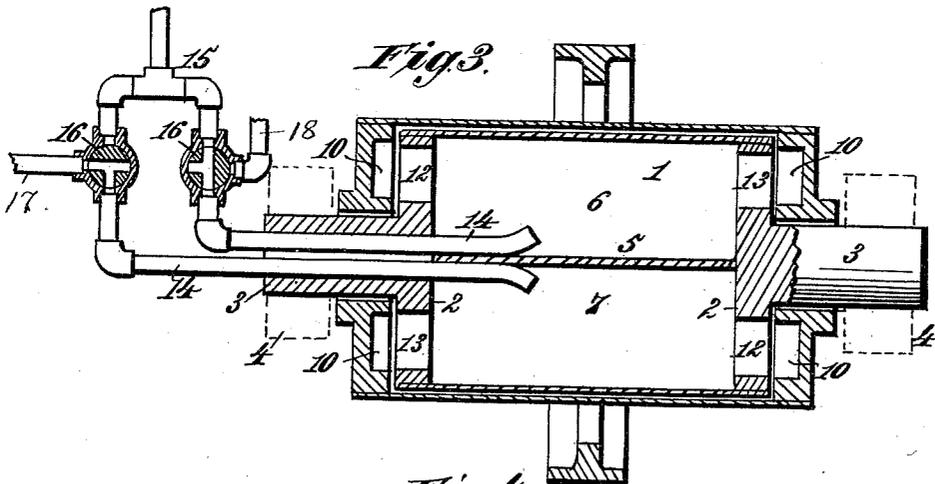
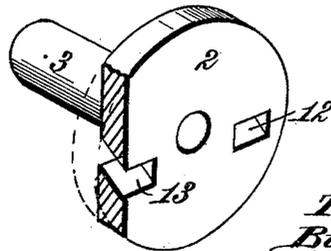


Fig. 4.



Witnesses:
Phil Everett.

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Inventor:

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By

James L. Norris.

atly.

UNITED STATES PATENT OFFICE.

THOMAS H. HERNDON, OF BIRMINGHAM, ALABAMA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 431,462, dated July 1, 1890.

Application filed March 26, 1890. Serial No. 345,385. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. HERNDON, a citizen of the United States; residing at Birmingham, in the county of Jefferson and State of Alabama, have invented new and useful Improvements in Rotary Engines, of which the following is a specification.

It is the purpose of my invention to provide a rotary engine capable of operation with either steam, compressed air, or gas, and having a simple construction whereby revolution may be given in either direction.

The invention consists in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims following this specification, the invention being an improvement upon that for which application for Letters Patent was filed by me upon the 13th day of July, 1889, Serial No. 317,405.

To enable others skilled in the art to practice my said invention, I will describe the same in detail, reference being made to the accompanying drawings, in which—

Figure 1 is a transverse section of the engine-cylinder. Fig. 2 is a vertical transverse section of the steam-drum, showing the inner face of one of the drum-heads. Fig. 3 is a central horizontal section of the engine upon the line *xx*, Fig. 1. Fig. 4 is a detail perspective of one of the heads of the steam-drum, showing the steam-ports.

In the said drawings, the reference-numeral 1 denotes what may be termed the "steam-drum" of the engine. It consists of a cylindrical barrel of suitable length, having its ends closed by rigid heads 2, having hubs or bearings 3, which project outwardly and are mounted and rigidly held in any suitable bracket-supports 4. The steam-drum is divided by a central longitudinal partition 5, which extends from end to end and unites with the heads 2, dividing the interior of the drum into two equal semi-cylindrical chambers 6 and 7.

Upon the steam-drum is mounted the engine-cylinder 8, which incloses the drum in such manner as to permit the revolution of the cylinder upon the stationary drum. The ends of the cylinder are closed by heads 9,

each having bearing upon the hubs 3 of the drum-heads 2 and being rigid with the cylinder. In each cylinder-head 9 is formed upon the interior face thereof a series of circular steam-pockets 10, arranged at equal intervals and at the same radial distance from the axes of said heads. These steam-pockets are simply circular chambers cut into the inner faces of the cylinder-heads to a suitable depth.

The cylinder-heads 9 lie closely against the outer faces of the heads 2 of the steam-drum, and in these heads are formed steam-ports 12 and 13, the former lying upon one side of the central partition 5 and the latter upon the other side of said partition. These ports are cut at an angle with the axis of the drum, as shown in Fig. 4, whereby the steam supplied by the live-steam port 12 is driven against the walls of the steam-pockets 10 in the direction of revolution of the steam-cylinder. As the steam-pockets pass to the other side of the partition 10 they register with the exhaust-ports 13, whereby the steam received by said pockets is exhausted therefrom into the semi-cylindrical chamber 7.

The steam is supplied to the live-steam chamber 6 of the steam-drum by a pipe 14, passing through one of the hubs 3 of the steam-drum and discharging at or about at the center of the said chamber 6. This live-steam pipe communicates with any suitable boiler or other steam-supply through a steam-yoke or T-coupling 15, one arm of which has communication with the live-steam pipe, while the other arm has communication with the exhaust. In each of the communicating-pipes is interposed a two-way valve 16, which may be revolved by any suitable means in such manner that direct passage of the live steam may be had from the boiler through either of the pipes 14 to either chamber 6 or 7, and from the other chamber, by way of an exhaust-pipe 17 on one side and 18 on the other side to any suitable point, the exhaust is discharged. It will be seen that by properly adjusting these valves the engine may be instantaneously reversed without the necessity of shutting off the live steam and awaiting a complete cessation of motion before throwing the live steam into the opposite side

of the drum. It is evident, also, that I may employ in an engine of this type either steam, gas, compressed air, or other expansive medium without material change.

5 What I claim is—

1. In a rotary engine, the combination, with a stationary steam-drum divided by a central partition into two equal semi-cylindrical chambers, and having rigid heads provided
10 with live-steam ports upon one side and exhaust-ports upon the other side of the central partition, said ports being cut at an angle to the axial plane of the drum, of a steam-cylinder fitted and adapted to turn upon the
15 steam-drum and having cylinder-heads fitting upon the hubs of the drum-heads, said cylinder-heads being each provided with a series of steam-pockets arranged at regular intervals and at equal radial distances from
20 the axis of the drum, and steam-pipes entering both of the semi-cylindrical chambers of the drum through one of the hubs of the latter, substantially as described.

2. In a rotary engine, the combination, with
25 a centrally-divided stationary steam-drum provided with rigid heads having outwardly-extending hubs supported in suitable bearings, each head being provided upon opposite sides of a central longitudinal partition dividing the drum into two equal semi-cylindrical steam-chambers, of a steam-cylinder revolving upon said drum and having cylinder-heads provided with steam-pockets upon their
30 inner faces, which lie closely against the outer faces of the drum-heads and receive live steam from one port therein and exhaust it through the other, a pipe leading a steam-supply and communicating through a T-coupling with either one of two pipes, which enter the steam-
35 drum through one of its hubs and have their open ends upon opposite sides of the central partition, and two-way valves lying in pipes connecting the T-coupling with the steam-pipes, each connecting-pipe having an exhaust-pipe communicating therewith, sub-
45 stantially as described.

3. In a rotary engine, the combination, with a stationary central longitudinally-divided steam-drum having rigid drum-heads provided with ports on opposite sides of the central partition and cut at an angle with the
50 axial horizontal plane of the drum, of a steam-cylinder adapted to turn upon the drum, and provided with heads having a series of steam-pockets in their inner faces, which lie closely
55 against the outer faces of the drum-heads, pipes entering the opposite chambers of the drums, and means for connecting either pipe with the live-steam supply and the other with an exhaust-pipe, substantially as described. 60

4. In a rotary engine, the combination, with a stationary steam-drum divided into two equal semi-cylindrical steam-chambers and provided with drum-heads rigid with said
65 drum and having inclined ports opening from each steam-chamber through the drum-heads, of a steam-cylinder adapted to revolve upon the drum and provided with cylinder-heads lying close to the drum-heads, having steam-bearings on the stationary hubs of said drum-
70 heads, said cylinder-heads being each provided with a series of steam-pockets cut in their inner faces and registering successively with one of the steam-ports in the drum-heads
75 and then with the other steam-ports on the other side of the partition, a steam-pipe leading from a boiler communicating with two pipes, which enter the semi-cylindrical chambers of the drum, one on each side of the central partition therein, each being provided
80 with an exhaust-pipe, and two-way valves arranged in said pipe communicating with the steam-pipe, whereby either pipe may be used as the live-steam pipe and the other as the exhaust, substantially as described. 85

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS H. HERNDON.

Witnesses:

J. J. SHAVER,
W. B. FAIR.