

(No Model.)

G. A. THOMSON.
ROTARY ENGINE.

No. 459,424.

Patented Sept. 15, 1891.

FIG. 1.

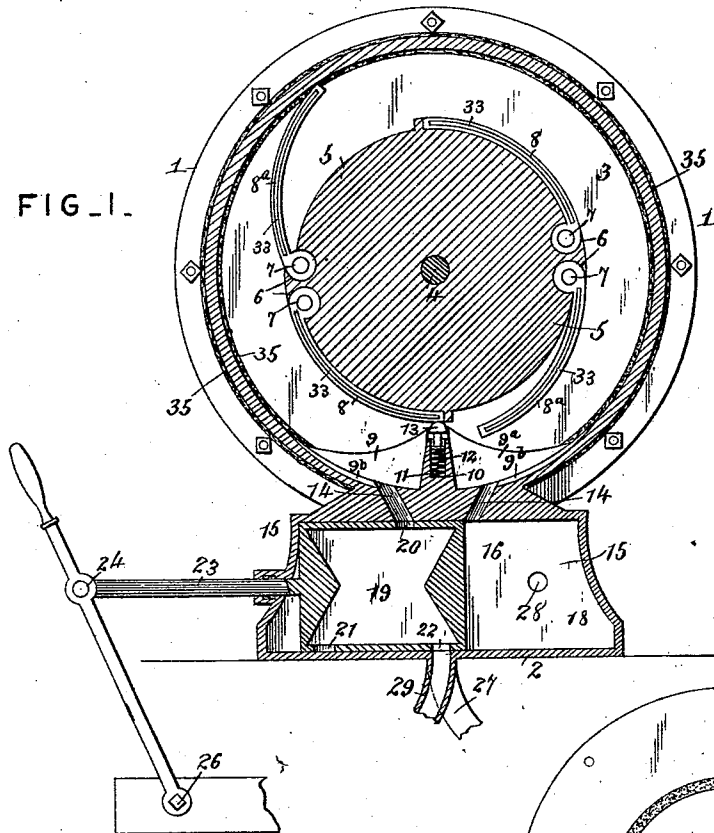


FIG. 2.

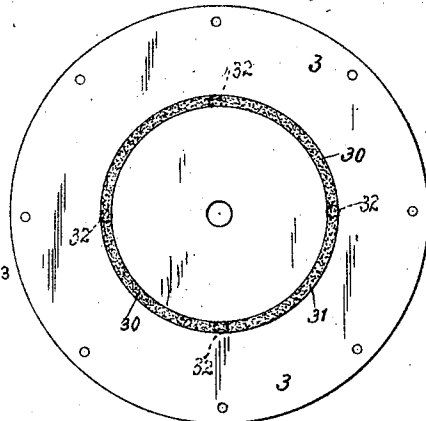


FIG. 4.

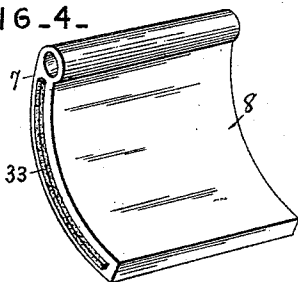


FIG. 5.

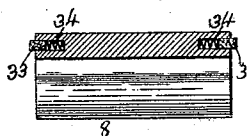
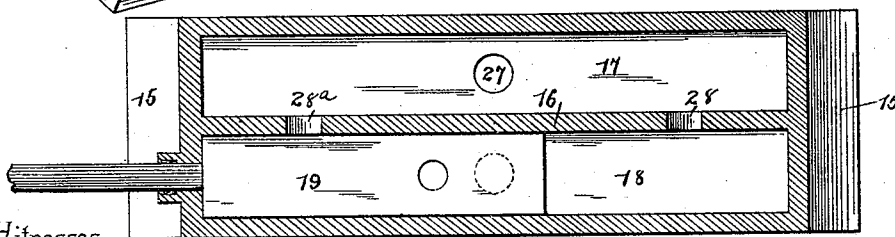


FIG. 3.



Witnesses

Inventor

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UNITED STATES PATENT OFFICE.

GILBERT A. THOMSON, OF STOCKVILLE, NEBRASKA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 459,424, dated September 15, 1891

Application filed November 5, 1890. Serial No. 370,370. (No model.)

To all whom it may concern:

Be it known that I, GILBERT A. THOMSON, a citizen of the United States, residing at Stockville, in the county of Frontier and State of Nebraska, have invented a new and useful Rotary Engine, of which the following is a specification.

My invention relates to improvements in rotary engines which are adapted to be operated by either steam, gas, or any other fluid pressure, its objects being simplicity, cheapness, durability, and perfect packing of the parts; and it consists in features of construction to be hereinafter described, and then pointed out in the claim.

In the accompanying drawings, Figure 1 is a sectional view of a rotary engine constructed in accordance with my invention. Fig. 2 is a view of the inner side of one of the cylinder plates or closures. Fig. 3 is a horizontal section of the steam-chest. Fig. 4 is a perspective view, and Fig. 5 a sectional view, of one of the wings.

In said drawings, 1 represents a steam-cylinder, which is supported on a steam-chest 2. The ends of the cylinder are closed by circular plates or closures 3. Axially through these plates 3 passes a shaft 4, on which is fixed within the cylinder a cylindrical piston-head 5, that is adapted to revolve within it. The periphery of the piston-head 5 is provided with a number of transverse grooves 6, larger at the bottom than at the top, so as to receive and retain within them the rounded or beaded ends 7, that may be inserted transversely therein, of the curved wings 8^a, which conform to the curvature of the piston-head, fitting snugly against the head. These curved wings are arranged in diametrically-opposite pairs 8, and between the two wings 8 are arranged the diametrically-opposite wings 8^a, the arrangement being such that when the piston-head is turned one of the wings 8^a will fall against one side of the cylinder, whereas one of the wings 8 will not fall against the same side, thus adapting the piston-head to be operated in a reverse direction.

9^a are ribs curving from opposite sides of the cylindrical casing and meeting at the abutment 10 at the bottom of the casing. The abutment 10 is provided with a recess 11 to

receive springs or spring 12, adapted to project normally outward a stop or contact-piece 13, that when the wings are passing over it engages them and brings them into contact with the piston-head, thus constituting a closure or partition in the lower side of the casing. Communicating with the steam-chest 15 are ports 14 at the bottom of the casing, one port on each side of the abutment 10.

As shown in Fig. 4, the steam-chest 15 is provided with a vertical partition 16, extending from end to end, thus dividing the steam-chest into two parts or chambers 17 18. A hollow valve 19, having a port 20 at top and ports 21 and 22 at the bottom, is adapted to slide back and forth within chamber 18, being provided for operation with a valve-stem 23, to which is pivoted at 24 a lever 25, fulcrumed at 26 on a suitable support. The pipe 27 opens through the steam-chest into the chamber 17, the partition between the chambers 17 and 18 being provided at each end with openings 28 28^a, through which the steam or gas passes into the chamber 18, one of said openings, however, being closed by the valve 19 when the other is open, according as to whether the piston-head is to be rotated in one or the other direction. The position of the parts being as shown, steam or other fluid under pressure will enter through the inlet-pipe 27 into the chamber 17 through the opening 28 into part of the chamber 18 not occupied by the valve and pass up through the port 14 into the steam-cylinder acting on the wings 8^a, said wings receiving the steam on their inner side, whereby they are projected out against the inner side of the casing. As the piston-head continues to revolve, the steam will be exhausted through the other port 14, said steam passing through port 20 at the top of the chamber within the valve and pass out through port 22 and exhaust-pipe 29. When the valve 19 is shifted to the other end of the chamber 18, the working of the parts will be reversed and the wings 8 be acted on instead of the wings 8^a.

Concentric with the centers of the circular plates or closures 3 are annular grooves 30 in the inner side of each circular plate, said grooves receiving packing-rings 31 of suitable material, which are kept in close contact

with the ends of the piston-head by means of springs 32 in the bottoms of the grooves. These packing-rings, by reason of the pressure of the springs thereupon, will always form a steam-tight joint between the ends of the casing and the piston-head.

Let into the sides of the wings 8 and 8^a are curved packing-strips 33, which are kept in close contact with the ends of the casing by means of springs 34 behind the strips. To form a steam-tight joint between the end plates and the casing, I provide packing-rings 35.

In order to prevent back-pressure upon the wings 8 and 8^a, I form in the bottom of the cylindrical casing between the ribs 9 and 9^a grooves 9^b, which extend slightly beyond said ribs, and which, when the ribs are approached by the wings are being actuated by the steam or vapor, shall permit a portion of said vapor to pass to the exhaust in advance, thus relieving the wings of the back-pressure which would otherwise result.

What I claim is—

In a rotary engine, the combination of the cylindrical casing having the abutment 10, guides 9 9^a, and ports 14 on opposite sides of said abutment, the rotary piston-head having hinged wings 8 8^a 8^b, the steam-chest 15, having a longitudinal partition 16, provided with openings 28 and separating said steam-chest into chambers 17 and 18, the latter of which connects with the ports 14, the hollow slide-valve fitted in the chamber 17 and having openings 20 and 22, and the steam and exhaust pipes connected, respectively, with the chambers 17 and 18 of the steam-chest, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

GILBERT A. THOMSON.

Witnesses:

C. S. WARNER,
CAREY T. BEGGS.