No. 780,312. PATENTED JAN. 17, 1905.

S. WEBSTER.

ROTARY ENGINE.

APPLICATION FILED AUG. 29, 1904.

2 SHEETS—SHEET 1.

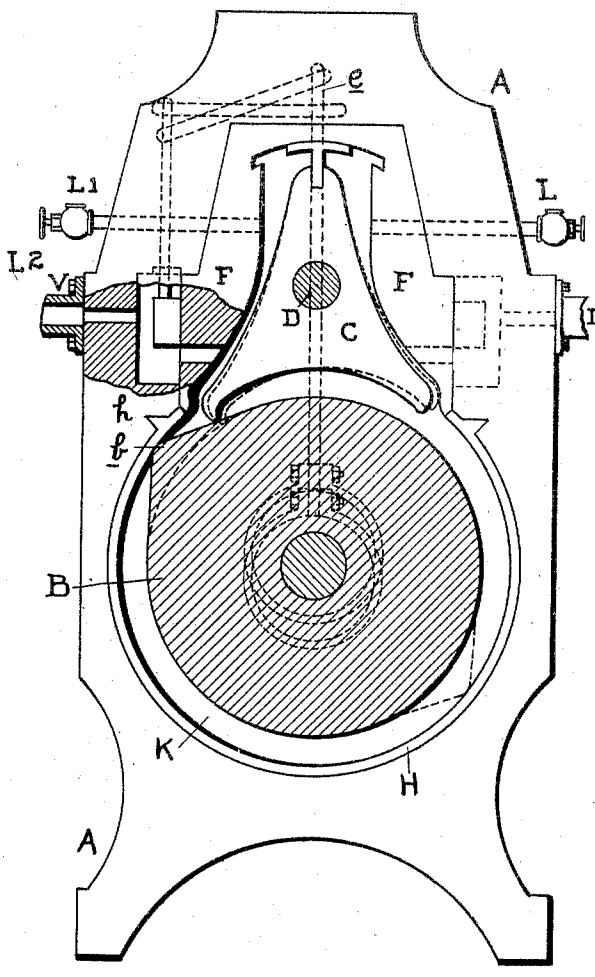


Fig-1

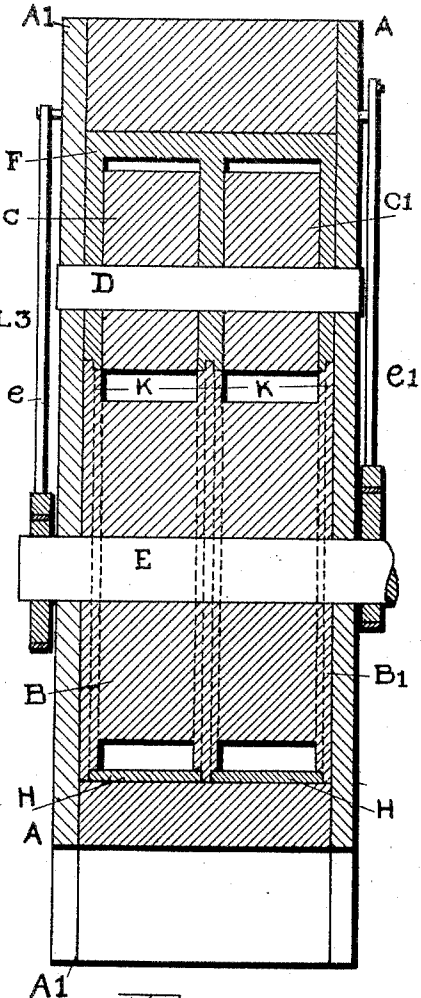


Fig-2

WITNESSES.

Lotta Lee Hayton.

William B. Norton,

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Attorneys.

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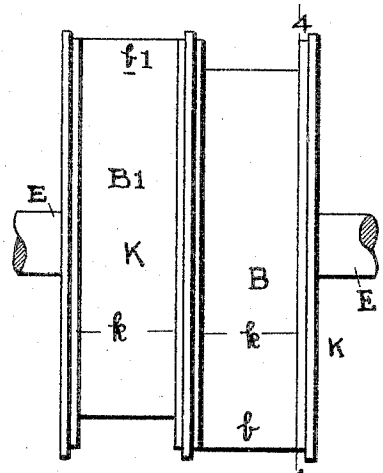


Fig-3

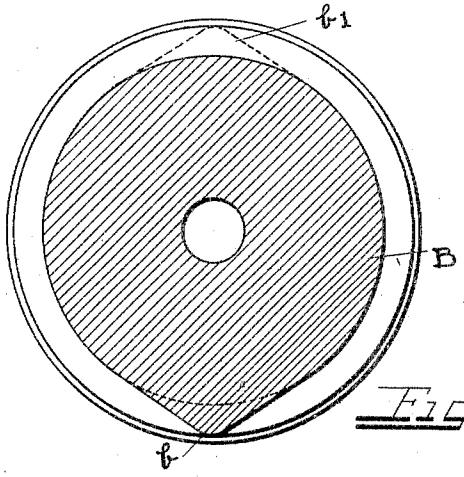


Fig-4

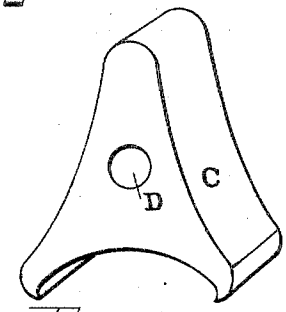


Fig-5

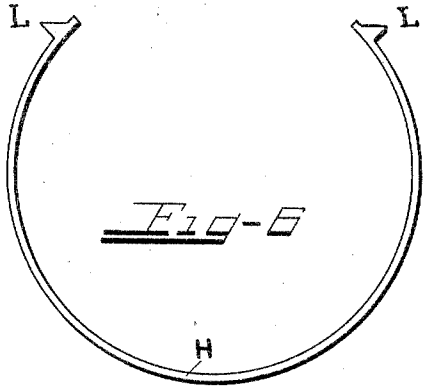


Fig-6

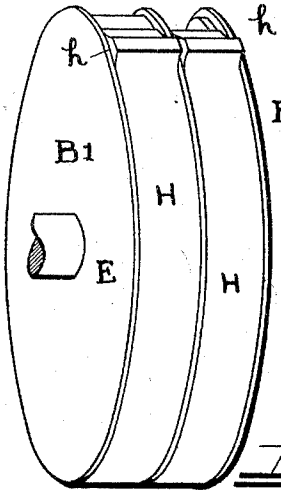


Fig-7

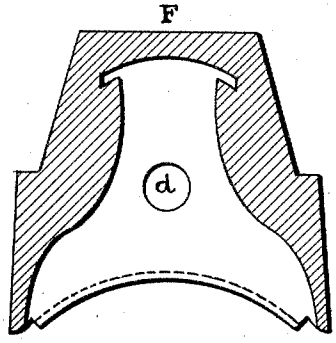


Fig-8

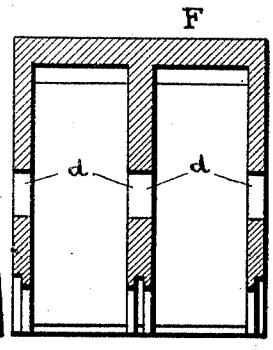


Fig-9

WITNESSES.

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No. 780,312. Patented January 17, 1905.

UNITED STATES PATENT OFFICE.

STEWART WEBSTER, OF ST. IGNACE, MICHIGAN.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 780,312, dated January 17, 1905.

Application filed August 29, 1904. Serial No. 222,486.

To all whom it may concern:

Be it known that I, STEWART WEBSTER, a citizen of the United States, residing at St. Ignace, county of Mackinac, State of Michigan, have invented a certain new and useful Improvement in Rotary Engines; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to rotary engines; and it consists in the improvements hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation, the side plate of the casing being removed and the end of the rotary piston cut off on the line 4 4 of Fig. 3. Fig. 2 is a detail vertical section. Fig. 3 is a side elevation of the rotary piston. Fig. 4 is an elevation of the same, the end being cut away, as indicated by the line 4 4 in Fig. 3. Fig. 5 is a detail perspective view of one of the rocking valves detached from the rest of the mechanism. Fig. 6 is a detached plan view of one of the packing-rings. Fig. 7 is a perspective view of the piston, showing the packing-rings in place thereon. Fig. 8 is a detail section of the valve-box. Fig. 9 is a detail section taken at right angles to that of Fig. 8.

A is the casing, having a cylindrical opening at its center, into which fits the rotary piston B. Through the center of the piston B passes the main shaft E, and the piston is secured in said shaft. The piston B is double, having two parts similarly constructed marked B and B′. (See Figs. 3 and 7.) The cylindrical portion of the piston B is provided with a projection *b* and the piston B′ with a small projection *b*′. Upon the ends of the pistons B B′ are formed projecting flanges K K, having grooves *k k* around their peripheries. The projection *b*′ is diametrically opposite the projection *b*. In the chamber extending from the cylinder or opening in which the piston B revolves is placed a pivoted valve C, adapted to rock about a shaft D. The valve C is cut out at its lower ends, so that it will touch the periphery of the piston B at one of its corners, the other corner being raised up sufficiently to permit the passage of the projection *b*.

There is a rocking valve C or C′ adapted to operate with each part of the piston B or B′. The cavity or chamber in which the rocking valves C C′ operate is formed in a valve-casing F or valve-box which fits into the part of the casing A that is formed to receive it.

The valves C C′ have a somewhat larger surface exposed to the steam below than about the shaft D, so that the pressure of the live steam shall tilt the valve and press it against the periphery of the piston.

H is a resilient ring formed into the arc of a circle, comprising about three-fourths of the entire circumference of said circle. The ring H is provided with lugs *h h* at its ends. The ring H fits into the grooves *k k* of the pistons B B′ and by reason of its resiliency clasps against the bottom of said grooves.

When the piston is in position in the casing A, the lugs *h h* fit into apertures formed to receive them in the casing A adjacent to the valve-cavity. The lugs *h h* prevent the rings H from revolving. The projections *b b*′ fit tight against the interior surface of the rings H.

V is an admission-valve, which may be operated from an eccentric on the shaft E. The valve V is set to admit steam into the valve-cavity when the projection *b* has just passed under the end of the ring H and to cut off the steam at any desired portion of the revolution of the piston.

There is of course a valve V to each piston B or B′, and there may be also one upon each side of the casing A for the purpose hereinafter described.

L L′ are pipes leading into the valve-cavity. The pipes L L′ may be closed by cocks, as indicated. L^2 L^3 indicate inlet-pipes. Where the engine is to be reversed, there will be two inlet-pipes L^2 L^3 and two valves controlling the inlet, only one of which, V, is shown, the other being a duplicate upon the other side of the casing and controlling the inlet from the pipe L^3. If the piston is to be rotated in the opposite direction to that of the hands of a watch, the pipe L^2 is opened to permit the entrance of steam and the pipe L is opened to

permit the exit of the exhaust. If the engine is to run in the opposite direction, the steam is admitted through the pipe L^3, the pipe L^2 being closed and also the pipe L and the pipe L′ is opened to permit of the exhaust. The passage of the live steam always keeps the valve C in close contact with the periphery of the piston, and the contact of the lug *b* or *b*′ with the rings H form a tight joint. Those conversant with the art will of course understand that the piston is revolved by the pressure of the steam against a lug *b* or *b*′.

What I claim is—

1. The combination of a casing having an aperture therein, a cylindrical piston in said aperture provided with a projection extending from its periphery, and provided with end flanges extending beyond its periphery, and a ring adapted to contact said flanges, and the end of said projection, an abutment adapted to coact with said piston, and means for preventing the rotation of said ring in said casing.

2. The combination of a casing having a cylindrical aperture therein, a cylindrical piston in said aperture provided with a projection extending from its periphery and provided with end flanges extending beyond its periphery, said flanges being provided with interior grooves about their periphery, and a ring adapted to fit into said groove and to contact said flanges and the end of said projection, an abutment adapted to coact with said piston, and means for preventing the rotation of said ring in said casing.

3. The combination of a casing having an aperture therein, a cylindrical piston in said aperture provided with a projection extending from its periphery and provided with end flanges extending beyond its periphery, a divided ring adapted to contact said flanges and the end of said projection, means for preventing the rotation of said ring in the casing and a pivoted valve extending between the ends of said ring and having two points adapted to contact the piston alternately.

In testimony whereof I sign this specification in the presence of two witnesses.

STEWART WEBSTER.

Witnesses:
J. J. THOMPSON,
W. H. WOOD.