No. 799,596. PATENTED SEPT. 12, 1905.

S. N. ELLIOTT.

ROTARY ENGINE.

APPLICATION FILED JAN. 25, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

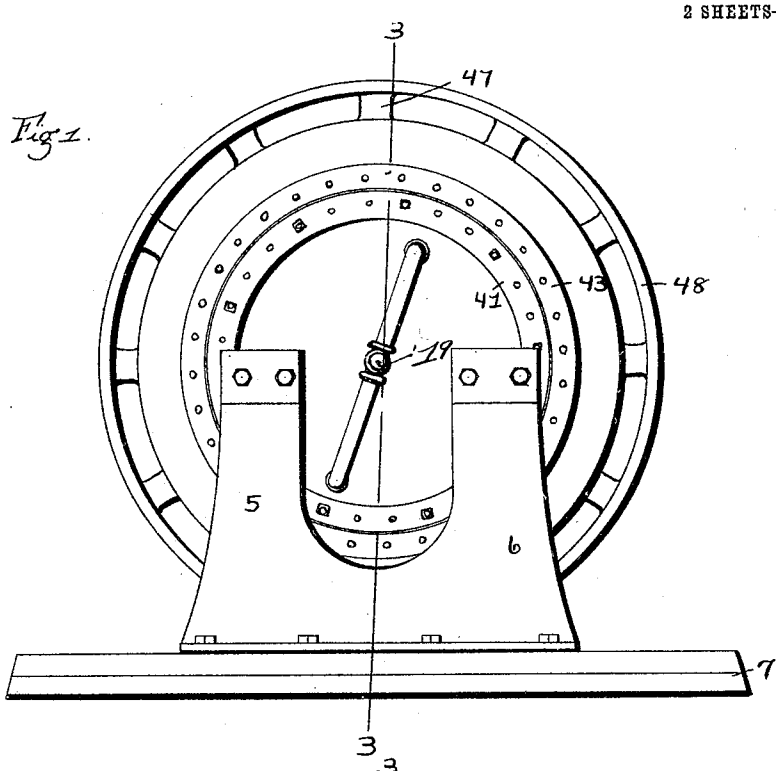
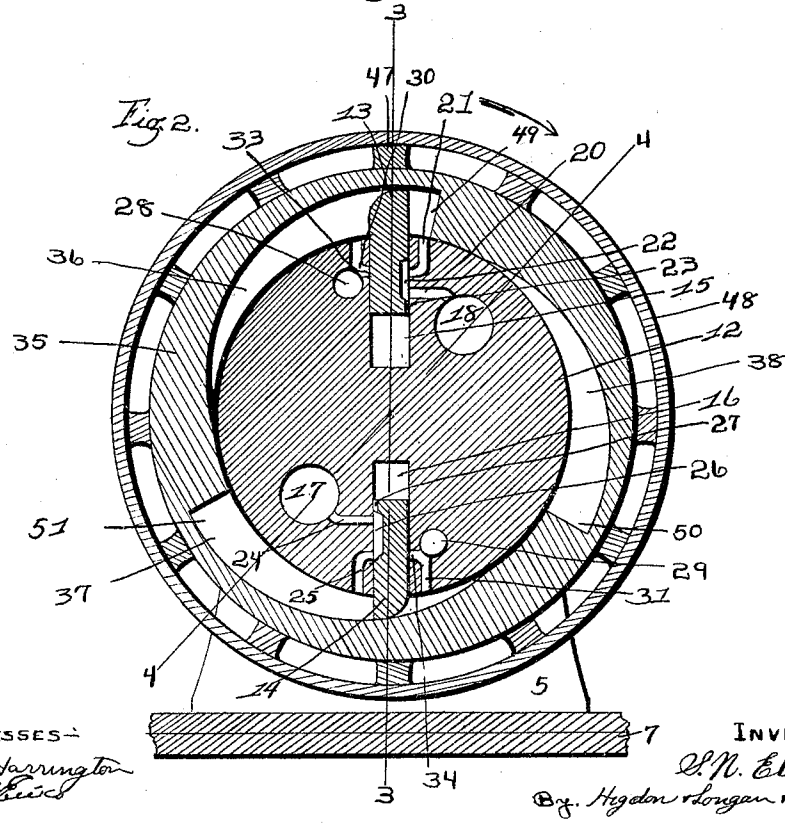


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

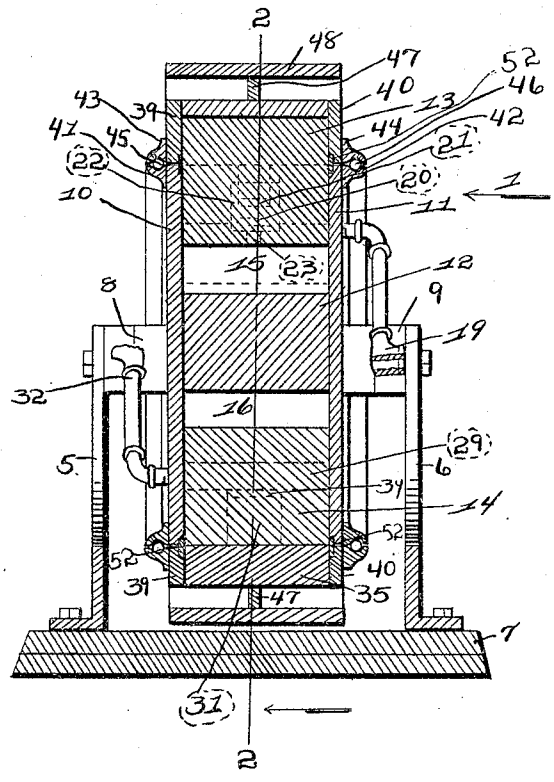
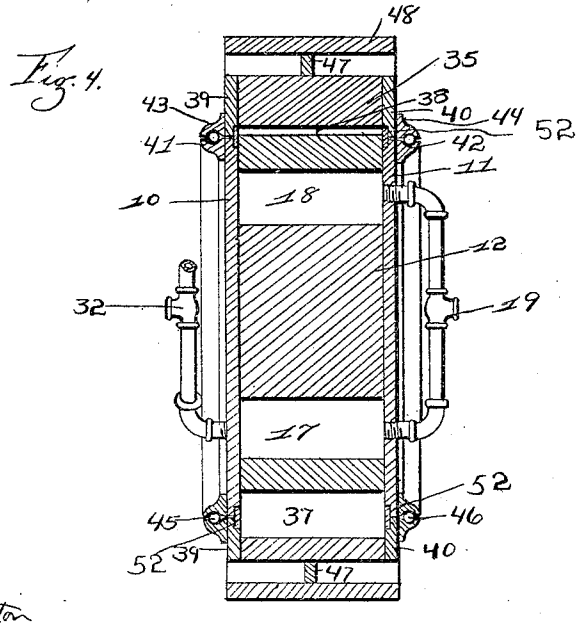


Fig. 4.



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UNITED STATES PATENT OFFICE.

SETH N. ELLIOTT, OF MARINE, ILLINOIS.

ROTARY ENGINE.

No. 799,596. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed January 25, 1905. Serial No. 242,619.

To all whom it may concern:

Be it known that I, SETH N. ELLIOTT, a citizen of the United States, and a resident of Marine, county of Madison, State of Illinois, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in rotary engines; and it consists of the novel features herein shown, described, and claimed.

In the drawings, Figure 1 is a side elevation of a rotary engine embodying the principles of my invention as seen looking in the direction indicated by the arrow 1 in Fig. 3. Fig. 2 is a sectional elevation on a plane parallel with Fig. 1 and taken on the line 2 2 of Fig. 3 and looking in the direction indicated by the arrow. Fig. 3 is a vertical cross-section on the line 3 3 of Figs. 1 and 2. Fig. 4 is a view analogous to Fig. 3, taken on the line 4 4 of Fig. 2.

Referring to the drawings in detail, the posts 5 and 6 extend upwardly from the base 7, the upper ends of the posts being bifurcated for convenience. Spacing-blocks 8 and 9 are attached to the upper ends of the posts 5 and 6 and extend inwardly, there being two blocks for each post. The rotary piston-heads 10 and 11 are attached to the blocks 8 and 9, and the rotary piston 12 connects the heads 10 and 11. The heads 10 and 11 are circular in form. Piston-valves 13 and 14 are slidingly mounted in the piston-valve chambers 15 and 16, said chambers being formed from the periphery of the piston 12 and diametrically opposite each other. The steam-inlet chambers 17 and 18 are bored through the piston 12, and the steam-supply pipe 19 connects said chambers. A port 20 leads from the chamber 18 to the chamber 15, and a port 21 leads from the chamber 15 to the periphery of the piston 12. A recess 22 is formed in the rear face of the valve 13 in position to connect the ends of the ports 20 and 21 when the valve is in its outer position and in position to disconnect said ports when the valve is driven back into the chamber 15. A small port or by-pass 23 leads from the recess 22 to the inner end of the valve, so as to deliver steam into the chamber 15 behind the valve and force the valve outwardly. A port 24 leads from the chamber 17 to the chamber 16, and a port 25 leads from the chamber 16 to the periphery of the piston 12. A recess 26 is formed in the rear face of the valve 14 in position to connect the ports 24 and 25 when the valve is in its outer position, and a small by-pass 27 leads from the recess 26 to the inner end of the valve, so as to deliver the steam to the chamber 16 and force the valve outwardly. Exhaust-chambers 28 and 29 are bored through the piston 12 upon the opposite sides of the valves 13 and 14 from the chambers 17 and 18. Ports 30 and 31 lead from the periphery of the piston to the exhaust-chambers, and an exhaust-pipe 32 is connected to the exhaust-chambers. Relief-ports 33 and 34 lead from the chambers 15 and 16 to the exhaust-chambers 28 and 29. The rotary casing 35 fits around the piston 12, there being eccentric segmental steam-expansion chambers 36, 37, and 38 in the internal face of the casing to receive the valves 13 and 14, there being three chambers for two valves so arranged that there will be no dead-center. The rotary-casing heads 39 and 40 are attached to the sides of the rotary casing to match the heads 10 and 11. Internal ball-races 41 and 42 are secured to the heads 10 and 11, and external ball-races 43 and 44 are secured to the heads 39 and 40 in apposition to the ball-races 41 and 42, and the balls 45 and 46 are mounted in the ball-races, so as to form ball-bearings between the casing 35 and the piston 12. Arms 47 extend outwardly from the periphery of the casing 35, and a band 48 is mounted upon the arms to serve as a belt-wheel, the intention being to drive the machinery by running the belt around the band 48.

When steam is turned on, the casing 35 will rotate in the direction indicated by the arrow in Fig. 2. The outer forward corners of the valves 13 and 14 are mounted so as to slide easily upon the inner faces of the casing 35. As before suggested, the pressure of the steam holds the valves outwardly against the inner faces of the casing and the valves are pressed inwardly by the concentric contour of these inner faces. At the forward ends of the expansion-chambers 36, 37, and 38 are radial abutments 49, 50, and 51, and the steam passes from the chambers 17 and 18 through the ports 21 and 25 behind the valves 13 and 14 into the expansion-chambers 36, 37, and 38 between the valves and the abutments 49, 50, and 51. The opposite ends of the expansion-chambers taper down to nothing, the inner faces of the casing contacting with the piston 12.

Packing-rings 52 break the joints between the plates 10 and 11 and the plates 39 and 40.

I claim—

1. In a rotary engine: the posts 5 and 6 rigidly mounted; the spacing-blocks 8 and 9 attached to the upper ends of the posts 5 and 6 and extending inwardly; the rotary piston-heads 10 and 11 attached to the blocks 8 and 9; the rotary piston 12 connecting the heads 10 and 11 so as to hold the piston rigid; the piston-valves 13 and 14 slidingly mounted in the rotary piston; there being steam-inlet chambers 17 and 18 through the piston; and there being ports 20 and 21 leading from the inlet-chambers to the piston-chambers; and there being recesses 22 and 26 in the valves; and there being ports communicating with said recesses and leading to the periphery of the piston; and a rotary casing fitting around the piston and having eccentric segmental steam-expansion chambers to receive the piston-valves.

2. In a rotary engine: the rotary piston 12 rigidly mounted; there being piston-valve chambers 15 and 16 open at the periphery of the piston; and there being steam-inlet chambers 17 and 18 through the piston; and there being a port 21 leading from the chamber 15 to the periphery of the piston; and a port 24 leading from the chamber 17 to the chamber 16; and a port 25 leading from the chamber 16 to the periphery of the piston; the piston-valves 13 and 14 slidingly mounted in the piston-valve chambers; there being a recess 22 in the rear face of the valve 13; and there being a recess 26 in the rear face of the valve 14; and there being by-passes 23 and 27 leading from said recesses; and the rotary casing 35 fitting around the piston and having eccentric segmental steam-expansion chambers 36, 37 and 38 to receive the valves 13 and 14.

3. In a rotary engine: the rotary piston 12 rigidly mounted; there being piston-valve chambers 15 and 16 open at the periphery of the piston; and there being steam-inlet chambers 17 and 18 through the piston; and there being a port 21 leading from the chamber 15 to the periphery of the piston; and a port 24 leading from the chamber 17 to the chamber 16; and a port 25 leading from the chamber 16 to the periphery of the piston; the piston-valves 13 and 14 slidingly mounted in the piston-valve chambers; there being a recess 22 in the rear face of the valve 13; and there being a recess 26 in the rear face of the valve 14; and there being by-passes 23 and 27 leading from said recesses; the rotary casing 35 fitting around the piston and having eccentric segmental steam-expansion chambers 36, 37 and 38 to receive the valves 13 and 14; there being exhaust-chambers 28 and 29 in the piston 12 and ports 30 and 31 leading from the periphery of the piston to the exhaust-chambers; and relief-ports 33 and 34 leading from the chambers 15 and 16 to the exhaust-chambers.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

SETH N. ELLIOTT.

Witnesses:

GEORGE J. ENSWINGER,

JOHN G. WEBER.