

No. 719,996.

PATENTED FEB. 10, 1903.

R. B. CHRITTON.
ROTARY ENGINE.

APPLICATION FILED MAY 14, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

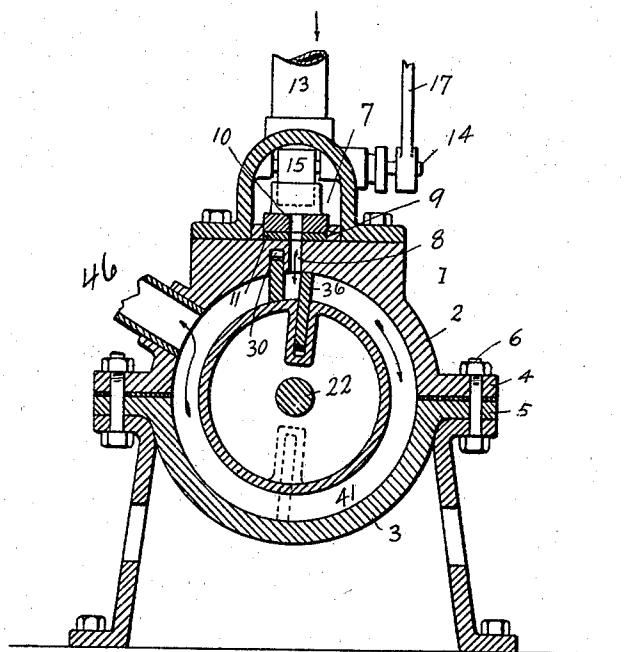
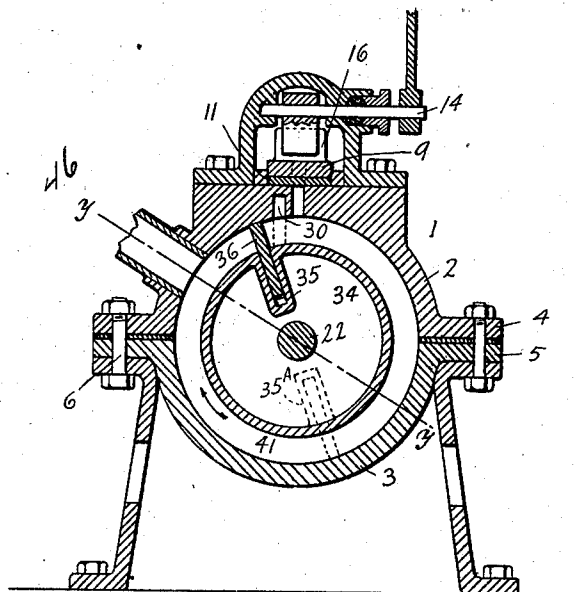


Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 5

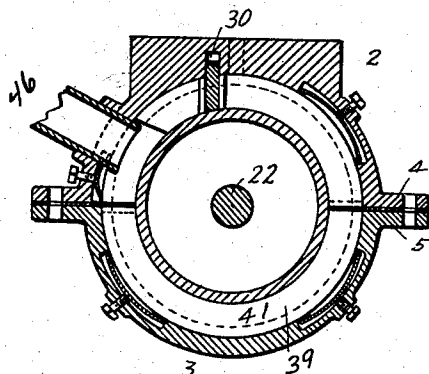


Fig. 6.

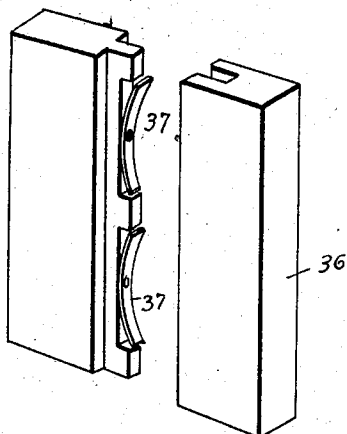


Fig. 8.

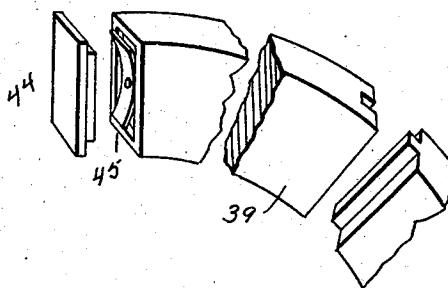
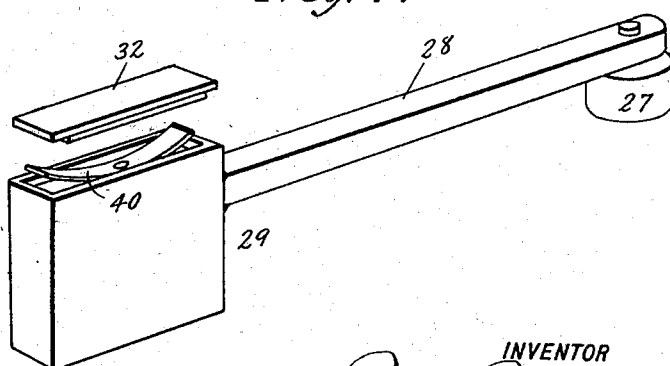


Fig. 7.



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3 SHEETS—SHEET 2.

Fig. 3.

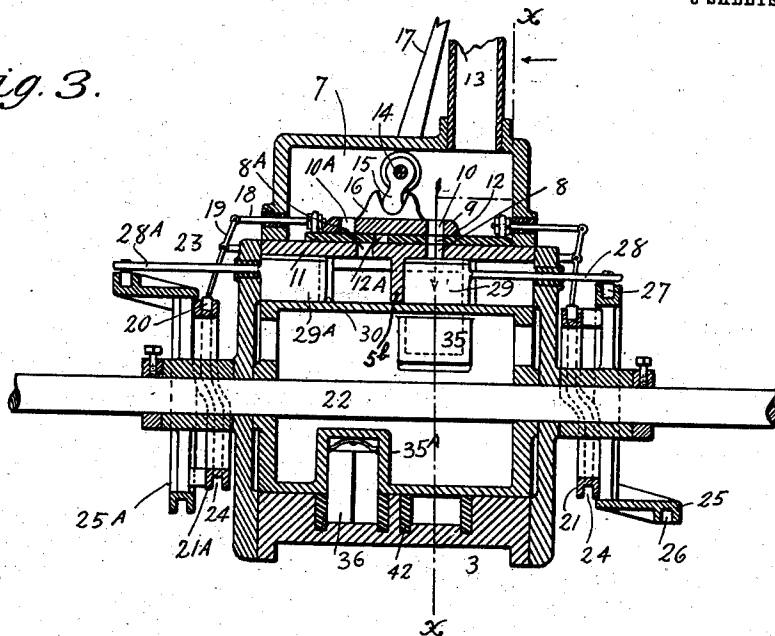
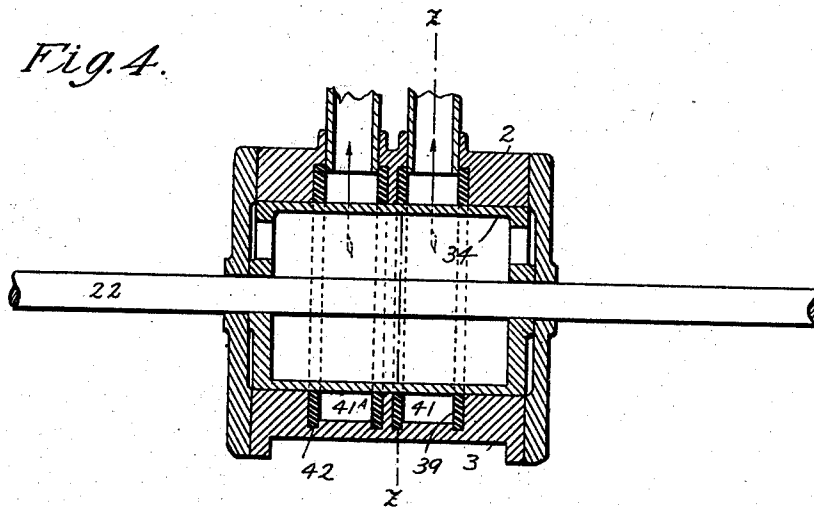


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT B. CHRITTON, OF ENID, OKLAHOMA TERRITORY.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 719,996, dated February 10, 1903.

Application filed May 14, 1902. Serial No. 107,258. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. CHRITTON, a citizen of the United States, residing at Enid, in the county of Garfield, Territory of Oklahoma, have invented a new and useful Improvement in Rotary Engines, of which the following is a specification.

This invention relates to rotary engines, and especially to improvements upon the construction disclosed in a patent granted to me May 8, 1900, No. 649,043.

The object of the present invention is to provide a rotary piston by which very effective results are obtained in compacting the expansion of steam.

Another object is the construction and arrangement of a series of cams adapted to operate the cut-off valve and slide-valve of the engine-cylinder; and a still further object is the novel construction and arrangement of a steam-lug, all of which will be more fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 represents a cross-sectional view taken on line X X of Fig. 3, showing the lug in position to receive steam and showing the sliding valve in its closed position. Fig. 2 is a similar view to Fig. 1, showing the sliding valve in its open position to allow the lug to pass the supply-ports to receive steam. Fig. 3 is a longitudinal section showing the mechanism for opening and closing the sliding valves and the upper cut-off valves. Fig. 4 is a sectional view taken on line Y Y of Fig. 2. Fig. 5 is a sectional view taken on line Z Z of Fig. 4, showing the means for adjusting the packing-strip. Fig. 6 is a perspective view of the male and female portion of the lug. Fig. 7 is a perspective view of the sliding valve, showing the spring-cushion and stud-roller; and Fig. 8 is a perspective view of a portion of the packing-strip.

Referring to the numerals of reference, each of which designates a corresponding part throughout the several views of the accompanying drawings, 1 indicates a cylinder, preferably comprising sections 2 and 3, provided with abutting flanges 4 and 5, secured together by bolts 6 to form a cylinder. The upper section 2 is provided, as usual, with a steam-chest, through which adjacent to one

end of the cylinder are located a pair of supply-ports 8 and 8^A. The ports 8 and 8^A are controlled by the upper cut-off valve 9, provided with two ports 10 and 10^A, and a lower cut-off valve 11, provided with two ports 12 and 12^A, located within the steam-chest 7, through which is led the steam through a steam or other fluid supply pipe 13. The ports 10 and 10^A are so related that they may be brought into coincident relation with the supply-ports 8 and 8^A alternately, whereby as the cut-off valve 11 is reciprocated its ports 12 and 12^A will register therewith and form a communication between the steam-chest 7 and the interior of the cylinder.

14 indicates a rock-shaft extending through the steam-chest 7 and carrying a rocker 15, seated in a cradle 16, constituting a part of the cut-off valve 9.

17 indicates a valve-lever upon the end of the shaft 14 at the outside of the steam-chest.

9 indicates the upper cut-off valve, adapted to slide upon the lower cut-off valve 11. It is provided with the ports 10 and 10^A.

18 indicates an arm secured to the cut-off valve 11 and projecting through an aperture in the steam-chest. To the outer end of this arm is pivotally connected a lever 19. The lower end of lever 19 is provided with a stud-roller 20, which is adapted to operate in a groove 24 in the cam 21. This arm is pivotally attached to a projection extending from the cylinder 1, as shown at 23.

21 and 21^A indicate the cut-off cams, attached to the shaft 22 by means of set-screws or other suitable fastenings. Said cams are provided with a groove 24, in which are adapted to operate the stud-rollers 20, thus imparting motion to the cut-off valve 11. In Fig. 3 the cam 21 is in such a position that the port 12 in the lower cut-off valve registers with the ports 10 and 8, while in the other section the cam 21^A is shown as closing the ports 8^A, 10^A, and 12^A, thus allowing the admission of steam through the ports 10, 12, and 8.

25 and 25^A indicate the slide-valve cams, which are attached to the shaft 22 by means of a set-screw or key. These cams are provided with a groove 26, in which are adapted to operate the stud-rollers 27. The stud-rollers 27 are attached to the arms 28 and 28^A.

These arms extend through an aperture in the ends of the cylinder 1 and are attached to the sliding valves 29^A and 29. As shown in Fig. 3, the cam 25^A holds the sliding valve 29^A in such a position to allow the lug 36 to pass the supply-ports and receive steam, while the cam 25 is shown as holding the valve 29 in the position after the lug 36 has passed the supply-ports and received steam.

29 and 29^A indicate the sliding valves, which are located in a valve-seat 30 in the upper part of the cylinder 1. These sliding valves are connected to the cams 25 and 25^A, respectively, by means of the arms 28 and 28^A. In Fig. 7 I have shown this sliding valve, which consists of an arm 28 and the stud-roller 27. One end of the arm 28 is rigidly secured to the valve. The upper end of the valve is mortised and adapted to receive the spring-cushioned top 32. A flat spring 40 is located in the top of the valve 29, its object being to keep the top 32 normally against the upper portion of the valve-seat 30.

34 indicates the rotary piston, which is adapted to operate within the cylinder 1 and which is rigidly attached to the shaft 22. This rotary piston is provided with two oppositely-disposed pockets 35 and 35^A, which receive the lugs 36. In Fig. 6 I have shown this lug, which consists of a male and a female portion, the male portion being provided with two flat springs 37, which are for the purpose of retaining the lug 36 compactly within the steam-channel 41.

39 indicates a packing-strip which is adapted to be placed in the grooves 42. This packing-strip is composed of several sections. The ends of the sections are mortised and adapted to receive the spring-cushioned top 44. A flat spring 45 is located in the mortised portion of the packing-strip. The purpose of this packing-strip is to avoid unnecessary friction and to maintain the steam-channel steam-tight at all times.

41 and 41^A indicate steam-channels located within the cylinder 1. These steam-channels are so situated relative to the supply-ports that steam from either of the ports 10 or 10^A will enter the said channels and come in contact with the lug 36, thus revolving the piston 34.

46 indicates the exhaust-pipe.

From the foregoing it will be apparent that by operating the cut-off valve 9, through the medium of the lever 17, the ports 10 and 10^A thereof will be alternately brought into alinement with the cylinder-ports 8 and 8^A, and as the cut-off valve 11 is reciprocated one of its ports will register therewith. The function of this hand-operated valve 9 is to reverse the engine, admitting steam into the engine-cylinder upon either side of the central partition 5^b thereof.

It is evident that slight changes may be made in the form and arrangement of the several parts herein described without departing from the spirit and scope of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a rotary engine, the combination with a rotary piston adapted to rotate within the cylinder, oppositely-disposed sliding valves provided with spring-cushioned tops and adapted to retain the steam within the steam-channel, a packing-strip provided with spring-cushioned ends, a cylinder provided with a series of steam-channels in which are adapted to operate lugs, substantially as described.

2. In a rotary engine, the combination with the cylinder formed with steam-inlet ports, and the steam-chest, of a shaft journaled in the cylinder, a piston mounted on the said shaft, a cut-off valve arranged in the said steam-chest and being provided with ports adapted to alternately register with the ports of the cylinder, cams mounted on the shaft, means actuated by the said cams for reciprocating the said cut-off valve, and a manually-operated cut-off valve, mounted on top of the first-named valve, said last-named valve being formed with ports, adapted to be alternately moved into alinement with the respective ports of the said cylinder.

In testimony that I claim the foregoing as my invention I have signed my name in the presence of two subscribing witnesses.

ROBERT B. CHRITTON.

Witnesses:

J. O. TRUITT,
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