

No. 760,441.

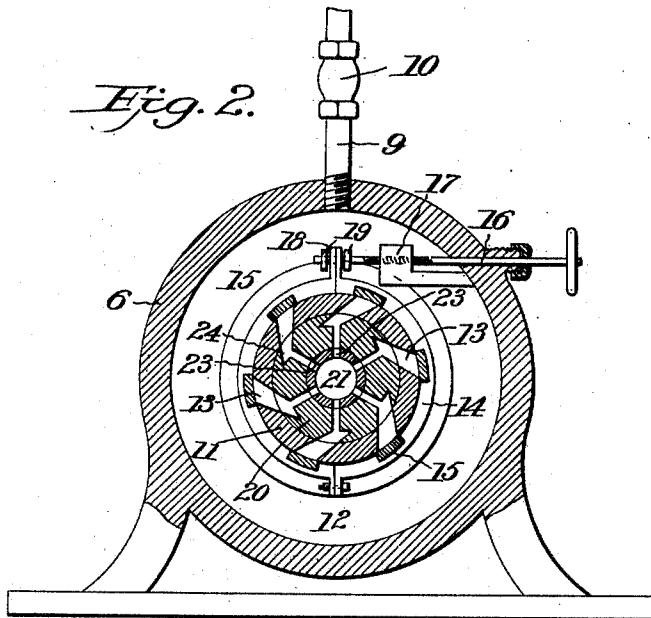
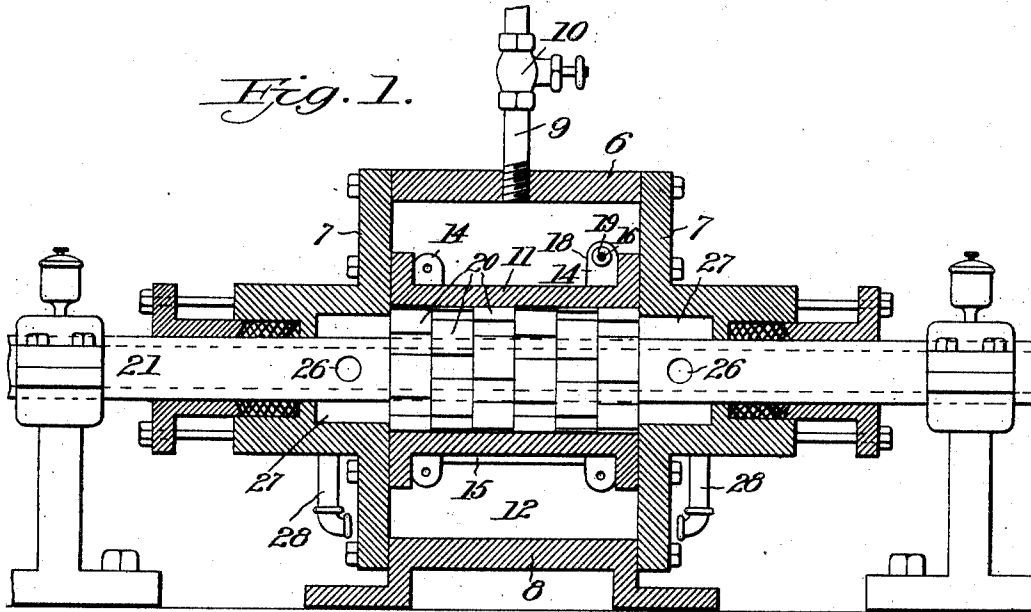
PATENTED MAY 24, 1904.

W. G. FRITZ.
ROTARY ENGINE.

APPLICATION FILED MAR. 21, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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Geo. E. Tew

INVENTOR

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2 SHEETS—SHEET 2.

Fig. 3.

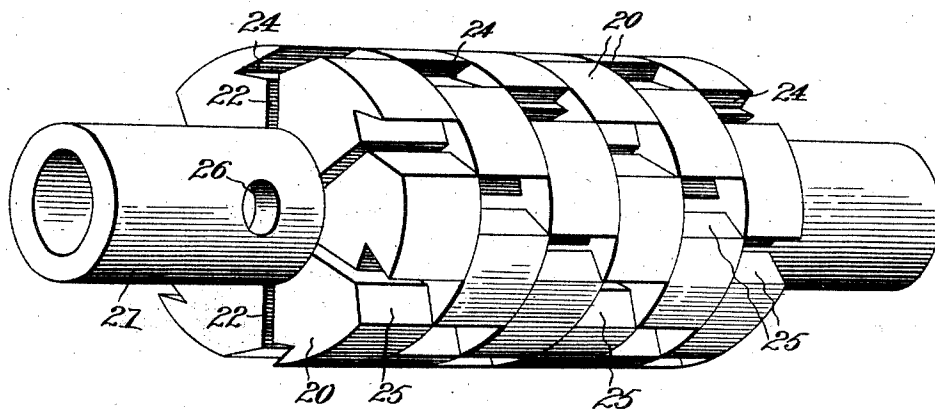
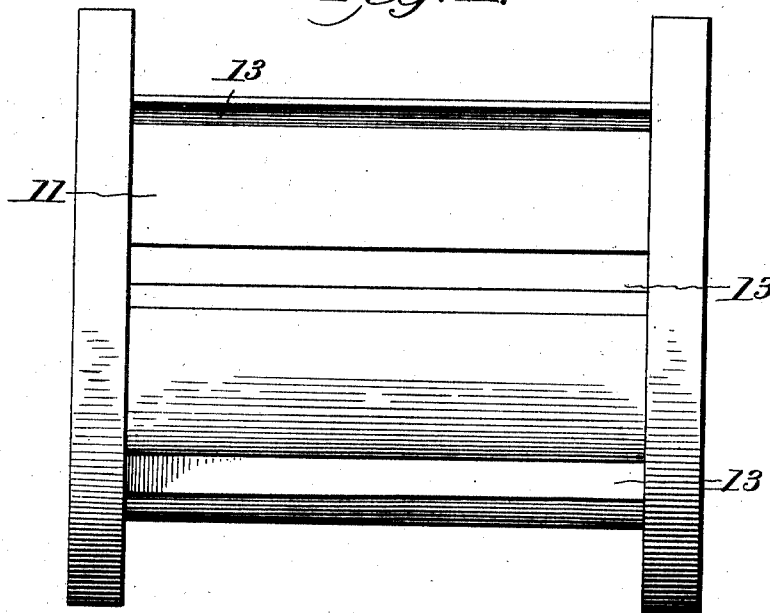


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM G. FRITZ, OF CLEVELAND, OHIO.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 760,441, dated May 24, 1904.

Application filed March 21, 1904. Serial No. 199,097. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. FRITZ, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to a rotary engine in which the impact, velocity, or head of steam or water may be utilized to produce rotary motion of the engine-shaft.

The object of the invention is to produce an improved engine of the kind including particularly outside and inner cylinders between which a steam-chest is produced, the inner cylinder having therein a rotary piston which receives the force of the driving medium through ports produced in the inner cylinder, and from the piston passages lead to a hollow shaft, through which the driving medium is exhausted.

In the accompanying drawings, Figure 1 is a longitudinal section of the engine. Fig. 2 is a cross-section. Fig. 3 is a perspective view of the piston. Fig. 4 is a side elevation of the inner cylinder, showing the ports.

Referring specifically to the drawings, 6 indicates the outer cylinder, which is closed by heads 7 and mounted upon a base 8. A steam-inlet pipe 9 enters the outside cylinder and is controlled by any suitable valve 10, as indicated.

The inner cylinder is indicated at 11, arranged and supported concentrically within said outer cylinder by being bolted to the heads thereof. The inner cylinder is considerably smaller than the outer, forming an annular steam-chest, as indicated at 12, extending around between the cylinders. The inner cylinder has a plurality of longitudinal slots 13 produced therein, inclined or arranged at an angle to the radius. These slots are regularly arranged the same distance apart around the cylinder. They form inlet-ports from the steam-chest to the piston.

To control the amount of driving fluid admitted through the ports, a throttling device is provided consisting of rings 14, which are mounted to turn upon the inner cylinder at the opposite ends thereof. These rings are

split to permit of their removal when desired and are connected by bars 15, which extend lengthwise of the inner cylinder and are of a width sufficient to cover the ports 13 when desired. These rings and the bars carried thereby may be shifted by means of a screw 16, which extends through the wall of the outer cylinder and through a bracket 17, formed on the inside thereof, and the inner end of the screw extends loosely through a lug 18 on one of the rings 14 and has collars 19. By turning the screw in or out the contact of the collars with the lugs 18 shifts the rings 14 and the bars 15 carried thereby one way or the other to cover or uncover the ports to the desired extent.

The piston is built up of a number of drums or disks each of which is formed of a plurality of segments 20. These fit and rotate within the inner cylinder, the segments being mounted upon the hollow shaft 21, which transmits the motion. The segments in each disk are spaced apart, forming passages therebetween, (indicated at 22,) which passages lead to longitudinal slots 23, made in the wall of the hollow shaft. At the outer or peripheral end of the passages the several disks have undercut recesses or pockets, (indicated at 24,) which receive the impact of the steam or other fluid admitted through the ports 13. The angle of the walls of these pockets corresponds to the angle of the walls of the slots to give a tangential impact, and for this purpose and effect the corner of the succeeding segment adjacent the passage 22 is cut away, as at 25.

The exhaust is through the passages 22 and 23, and thence through the hollow shaft and openings 26 therein and into the annular exhaust-chambers 27, produced in the cylinder-heads inside the stuffing-box through which the hollow shaft extends. The exhaust-pipes 28 lead away from the exhaust-chambers.

The pockets 24 and cut-away portions 25 are of such size that the peripheral opening is equal to the width of the slots 13, and the various segments of the several disks or drums are so arranged that the pockets follow each other in succession around the piston, whereby some of the pockets of the piston are always in register with the slots 13 and in posi-

tion to receive the impact of the fluid there-through. This insures an even balance and driving action and enables the motor to be started at any point.

5 In operation steam or other fluid having a head or pressure is admitted to the steam-chest between the outer and inner cylinders, and the throttling devices being in open position the fluid enters through the slots 13 and
10 by pressure or impact in the pockets rotates the piston and the shaft upon which it is mounted, the exhaust or escape being through the hollow shaft and the passages from the pockets leading thereto.

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

1. The combination of outer and inner cylinders having a space between, the inner cylinder having ports therethrough, a hollow
20 shaft in the cylinder, and a rotary piston on the shaft having peripheral pockets arranged to register with said ports, and exhaust-passages leading from the pockets through the piston and shaft.

25 2. The combination with the inner and outer cylinders having a space between, the inner cylinder having longitudinal slots forming ports, and a rotary piston within the inner

cylinder driven by fluid admitted through said ports, of the rings on the inner cylinder having longitudinal valve-plates therebetween, 30 arranged to open or close the slots, and means to shift the rings.

3. The combination with a cylinder having a chest for the driving fluid extending around 35 outside the same, and a series of equidistant longitudinal slots forming ports therethrough, of a hollow shaft extending through the cylinder, and a piston on the shaft comprising a series of drums or disks each formed of a plurality of segments spaced apart, the hollow 40 shaft having openings communicating with said spaces, said segments having pockets at the outer ends of the spaces arranged to register with the ports, the successive drums being 45 so arranged that the pockets thereof follow each other successively to register with the ports.

In testimony whereof I have signed my name to this specification in the presence of two sub- 50 scribing witnesses.

WILLIAM G. FRITZ.

Witnesses:

JOHN A. BOMMARDT,
LOTTIE NEWBURN.