

No. 753,262.

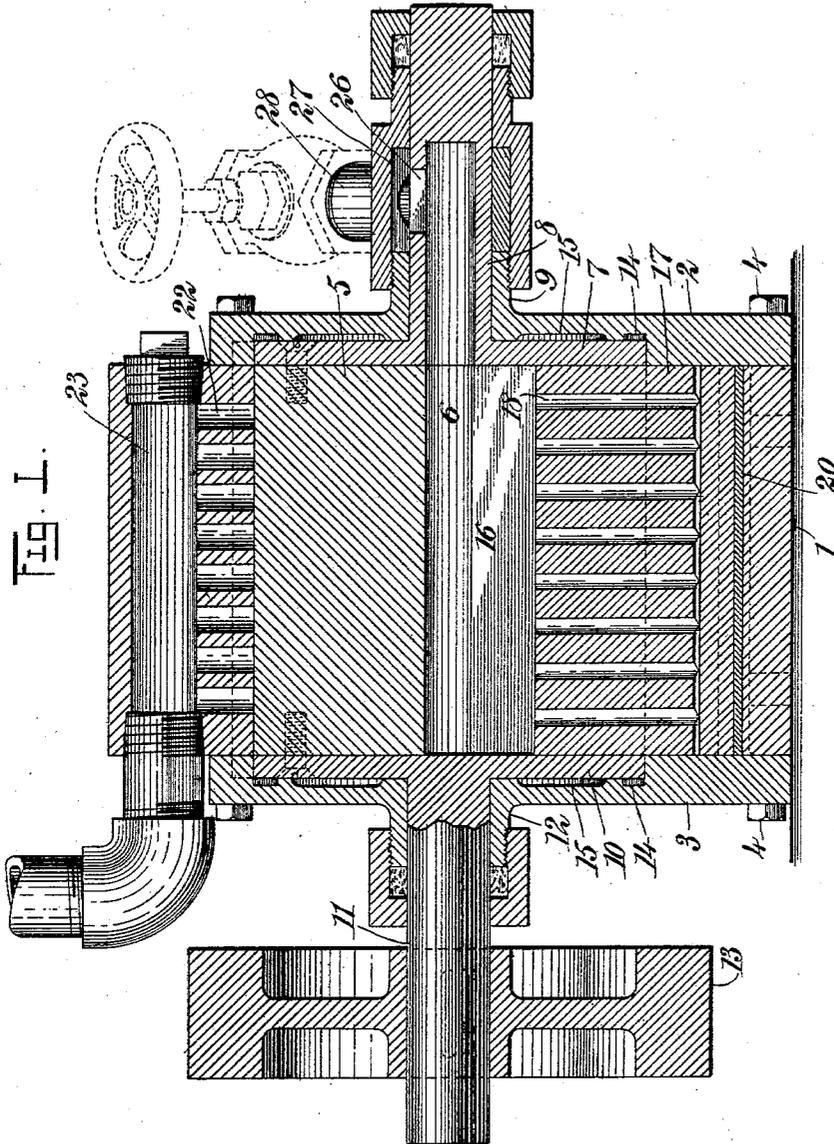
PATENTED MAR. 1, 1904.

J. J. HORAN.  
ROTARY ENGINE.

APPLICATION FILED JUNE 30, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

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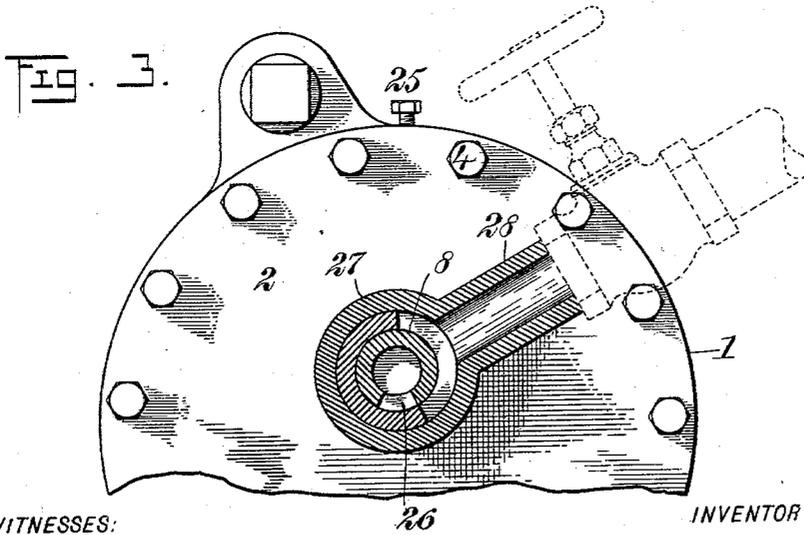
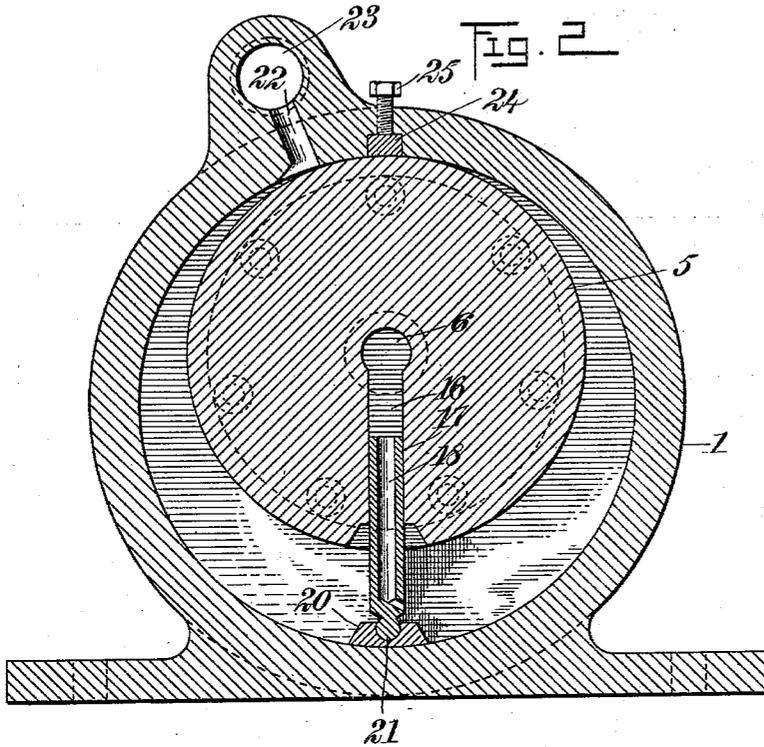
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

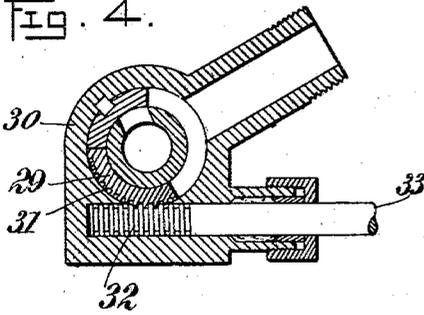


Fig. 5.

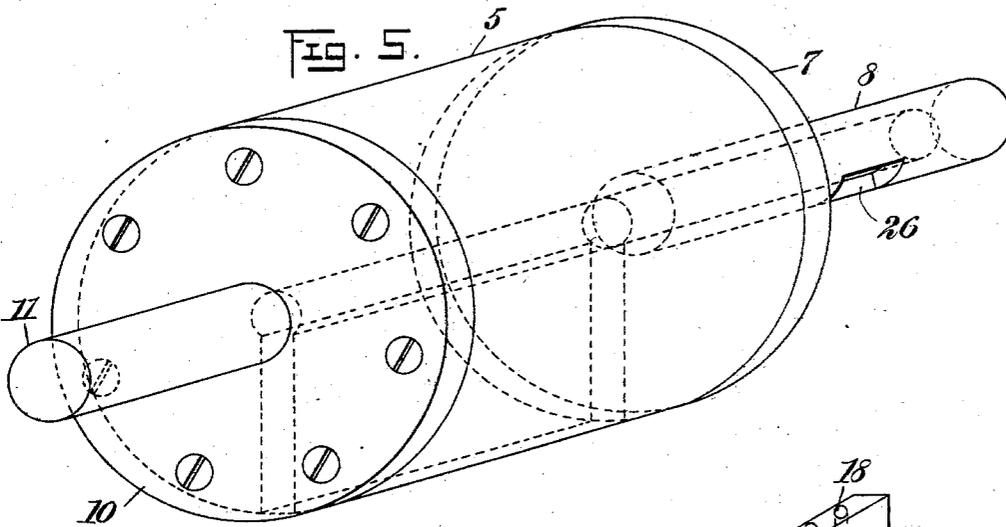
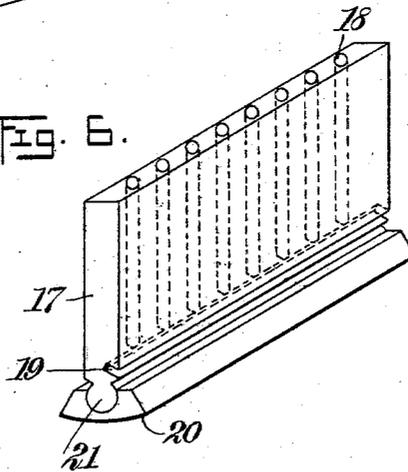


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOHN J. HORAN, OF NEW YORK, N. Y.

## ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 753,262, dated March 1, 1904.

Application filed June 30, 1903. Serial No. 163,739. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. HORAN, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Rotary Engine, of which the following is a full, clear, and exact description.

This invention relates to improvements in rotary engines, an object being to provide an engine of this type that shall be very simple in construction, having no parts liable to get out of order; comparatively inexpensive, and in which high speed and efficiency are secured with an economical use of motive agent.

I will describe a rotary engine embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of a rotary engine embodying my invention. Fig. 2 is a transverse section thereof. Fig. 3 is a fragmentary end view and a section through the valve mechanism. Fig. 4 is a section showing a modification in the valve mechanism. Fig. 5 is a perspective view of the piston, and Fig. 6 is a perspective view of the piston-wing.

Referring to the drawings, 1 designates the cylinder of the engine, to which the heads 2 3 are secured by any suitable means. As here shown, the said heads are attached to the cylinder by means of bolts 4. Mounted eccentrically in the cylinder is a rotary piston 5, which has an axial opening 6, forming a passage for steam, as will be hereinafter described. Attached to one end of the piston 5 is a disk 7, having a tubular shaft 8, which communicates with the opening 6 and has its bearing in an offset 9 on the head 2. Secured to the opposite end of the piston 5 is a disk 10, from which a shaft 11 extends through a bearing 12 in the head 3, and on the outer end of this shaft 11 is a balance-wheel 13.

The inner sides of the heads 2 3 are recessed or chambered to receive the said disks 7 and

10, and in the walls of these chambers are packing-rings 14, and to reduce the bearing of said disks against the heads to a minimum the said heads may be circumferentially channeled, as indicated at 15.

An outward slot or opening 16 extends from the opening 6, and in this outward opening is mounted to slide a ported piston-wing 17, here shown as provided with a plurality of ports 18, which at their outer ends communicate with a cross-channel 19, the upper wall of which is shown as inclined downward and outward, so as to direct the steam or other motive agent against the inner surface of the cylinder 1. The outer edge of this wing 17 is provided with a rocking shoe 20. As here shown, the shoe is provided with a channel in which a rounded member 21 on said wing engages, whereby said shoe may rock to conform to the varying angles during rotation and maintain its close contact with the cylinder at all times. The outer surface of the shoe 20 is transversely curved to conform to the curvature of the cylinder, so as to bear closely thereon.

At the upper portion of the cylinder is a motive-agent outlet, here shown as a plurality of exhaust-ports 22, and these ports communicate with an exhaust-chamber 23. The upper portion of the piston 5 bears closely against the interior of the cylinder, and therefore the cylinder forms an abutment for the motive agent. Preferably, however, I employ in the upper portion of the cylinder and extended across the same a plate 24, said plate being seated in a channel and adjustable relatively to the piston by any suitable means. I have here shown screws 25 for causing such adjustment. This plate 24 practically forms the abutment, and by adjusting it the wear may be taken up.

The shaft member 8 is provided with a port 26, which communicates at intervals with the interior of a sleeve 27, surrounding said shaft and receiving steam through a pipe 28. The shaft 8 and the sleeve 27, therefore, form a supply and cut-off valve, as the said part 26 is cut off by the sleeve during a portion of the piston's rotation.

Instead of the valve mechanism above described I may employ an adjustable valve, as shown in Fig. 4, whereby the entrance and cut-off of steam may be regulated. As shown in said Fig. 4, a segmental plate 29 is arranged in a sleeve 30, and this plate 29 is provided with worm-teeth 31, engaged by a screw or rack 32 on a shaft 33, that may be manually operated to regulate the opening for entrance of the motive agent.

In the operation steam is admitted to the cylinder just as the shoe 20 passes the abutment part of the cylinder or passes the abutment-plate 24, and at about one-half of the revolution of the piston the port 26 passes the opening in the sleeve and cuts off the motive agent, which then acts by expansion through the remainder of the movement of the piston. The piston blade or wing is held outward both by centrifugal action and by steam-pressure thereon, and of course as the piston rotates toward its upper position the blade or wing will be moved inward against the resistance of the steam by its pressure on the interior of the cylinder.

While I have here shown and described two forms of valves that may be employed, it is to be understood that I do not limit my invention thereto, as obviously other forms of valves may be employed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A rotary engine comprising a cylinder, a rotary piston eccentrically mounted therein, the said piston having an axial opening, and a radial opening leading therefrom, a tubular shaft-section extended from one end of the piston and communicating with the axial opening, the said tubular shaft having a port for receiving steam, and a wing mounted to slide in said

radial or outward opening, the said wing being provided with a plurality of ports.

2. A rotary engine comprising a cylinder, a rotary piston eccentrically mounted therein, the said piston having an axial opening and a radial opening therefrom, a tubular shaft-section extended from one end of the piston and communicating with the axial opening, the said tubular shaft having an outwardly-opening port, a steam-receiving sleeve surrounding said shaft, and a wing mounted to slide in said radial or outward opening, the said wing being provided with a plurality of ports.

3. A rotary engine comprising a cylinder, the inner surfaces of the heads thereof being provided with eccentric recesses, a piston having its ends extended into said recesses, the said piston having an axial opening and a radial opening leading therefrom, a piston-wing movable in the radial opening, the said wing having a plurality of ports, and a channel with which the outer ends of said ports communicate, and means for controlling the inlet of motive agent to the interior of said piston.

4. A rotary engine comprising a cylinder, a tubular piston mounted eccentrically therein, a tubular shaft member extended from one end of the piston, said shaft member having an outwardly-opening port, a sleeve surrounding the shaft member, a cut-off plate adjustable in said sleeve, and having teeth and an adjusting-rack engaging said teeth.

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

JOHN J. HORAN.

Witnesses:

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