No. 612,815. Patented Oct. 25, 1898.

T. C. BRIGHT.

ROTARY ENGINE.

(Application filed May 21, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 4.

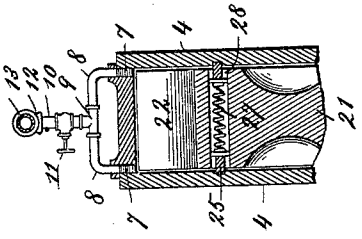


Fig. 5.

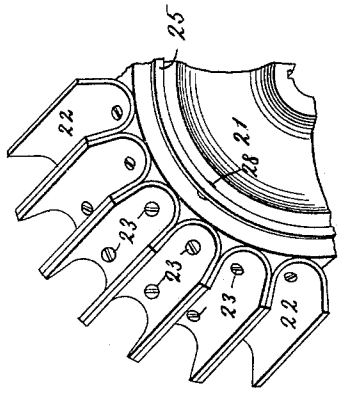
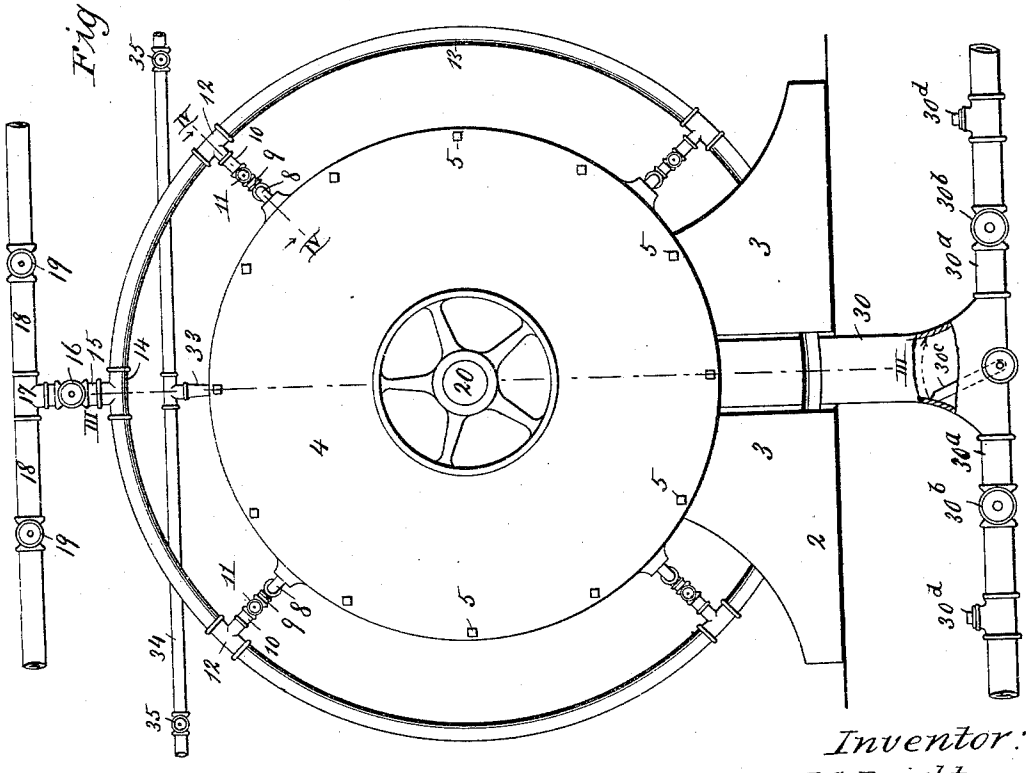


Fig. 1.



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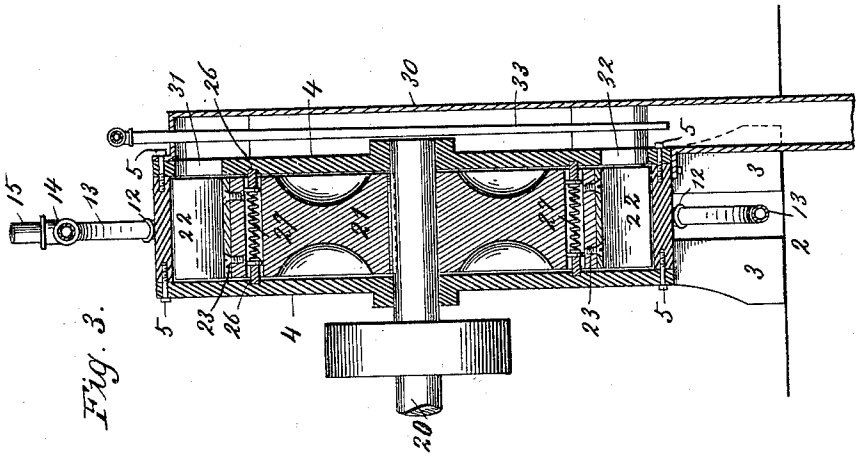


Fig. 3.

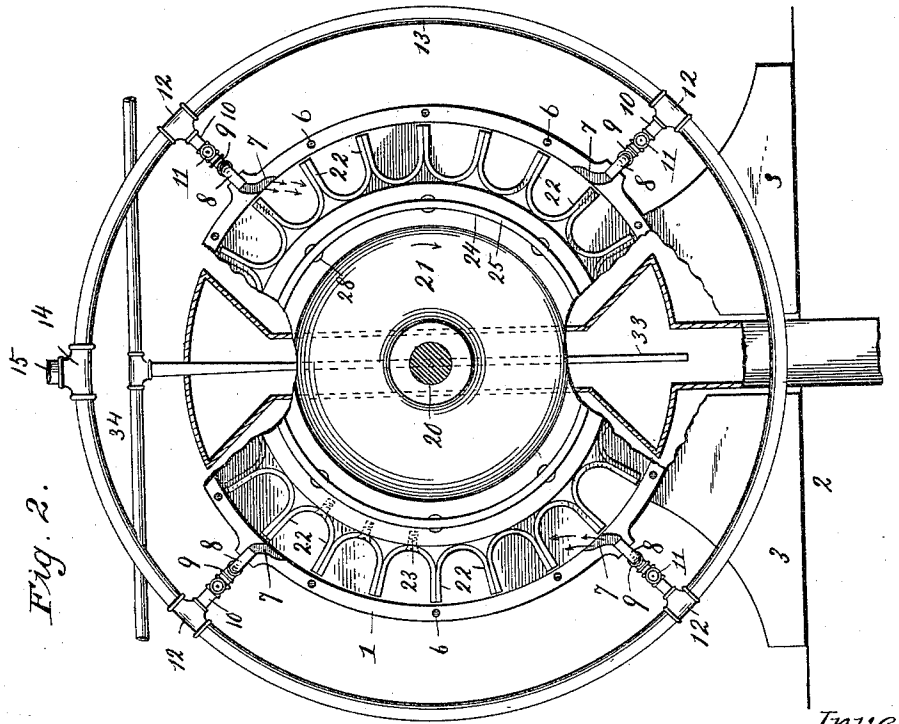


Fig. 2.

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UNITED STATES PATENT OFFICE.

THOMAS C. BRIGHT, OF KANSAS CITY, MISSOURI.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 612,815, dated October 25, 1898.

Application filed May 21, 1897. Serial No. 637,644. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. BRIGHT, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in rotary engines; and my object is to produce an engine of this character which is durable and simple in construction and inexpensive to manufacture.

A further object is to arrange the ports and the piston in such a manner that said piston may be rotated with equal facility in opposite directions.

The invention may be further said to consist in the novel arrangement and combination of parts, as hereinafter set forth, and pointed out in the claims.

Referring now to the drawings, which illustrate the invention, Figure 1 represents a side elevation of my engine. Fig. 2 is a broken front elevation of same with one of the side plates removed. Fig. 3 is a vertical cross-section of the engine, taken on line III III of Fig. 1. Fig. 4 is a broken sectional view taken on line IV IV of Fig. 1. Fig. 5 is a broken detail in perspective of a portion of the rotary piston.

In constructing my invention I provide a cylinder 1 with a base portion 2, formed integral therewith. Said base is preferably divided into four sectional parts 3 to permit the passage of the pipes hereinafter described. The sides of the cylinder are closed with removable side plates 4, secured in position by set-screws 5, which pass through said plates and enter the internally-threaded holes 6, located at intervals around in the opposite sides of the cylinder.

7 indicates inlet-ports arranged diagonally to each other in the cylinder. These ports are located in the opposite sides of the cylinder, making eight in all, and receive the inner ends of pipes 8, which extend outwardly a slight distance and then bend toward each other and are connected by T-joints 9, the central flanges of which receive radially-disposed pipes 10. The flow of the propelling gases or liquid through said pipes is controlled by valves 11. The outer ends of pipes 10 connect with the central flanges of T-joints 12, which communicate with a circular pipe 13, extending around the periphery of the cylinder a suitable distance therefrom.

Circular pipe 13 is provided at its upper portion with a T joint or coupling 14, which is connected at its central flange to a vertical pipe 15, controlled by a valve 16. Pipe 15 is connected at its upper end to a T-joint 17, communicating with a supply-pipe 18, having valve 19 disposed upon the opposite sides of T 17, in order that the steam or other propelling force may also be conducted to another engine (not shown) when a multiple of the same are employed.

The side plates of the cylinder are centrally bored to receive a shaft 20, which extends therethrough.

21 indicates a rotary piston, which is centrally bored to receive shaft 20, upon which it is rigidly mounted in the cylinder. Said piston consists of a disk smaller in diameter than the interior of the cylinder, and its periphery is provided with a series of transverse U-shaped troughs 22, arranged in juxtaposition to each other and secured at their inner portions to the piston by set-screws 23, their outer open ends almost contacting with the interior of the cylinder, and their sides also extend to within a very slight distance of the sides of the cylinder in order to confine the propelling force in its proper channel.

To prevent the steam or other propelling force from escaping between the sides of the cylinder and the adjacent sides of the piston, I provide the sides of the latter with grooves 24, which receive expansible packing-rings 25. These rings are forced into adjacent circular grooves 26, located in the side plates of the cylinder by coil-springs 27, arranged in transverse openings 28, extending through the piston.

30 indicates an exhaust-pipe located at one side of the cylinder and extending from the upper portion thereof down below the base, where it communicates with a horizontal branch pipe 30^a. Said pipe has hand-valves 30^b, located on opposite sides of the exhaust-pipe, one of which may be opened to permit the steam to return to the boiler, in which

case the other is closed; but when two engines are connected together the valve permitting the steam to return to the boiler is closed and the opposite one opened to allow the exhaust-steam from one engine to be utilized in driving the other.

Pipe 30^a at its junction with the exhaust-pipe is provided with a leaf-valve 30^c for directing the exhaust into one side or the other of pipe 30^a, which has also check-valves 30^d to prevent back pressure in the exhaust-pipe. The exhaust-pipe communicates with outlet-ports 31 and 32, respectively, arranged in the upper and lower portions of one of the side plates, and steam is drawn therethrough from the cylinder by a suction created in the exhaust-pipe by steam discharged from a nozzle 33, which terminates just below the lower outlet-port. This nozzle connects at its upper end to a supply-pipe 34, provided with oppositely-disposed valves 35, one of which, however, may be dispensed with when only one engine is employed, in which case the supply-pipe 34 would not continue beyond its connection with the steam-nozzle.

Operation: When it is desired to rotate the piston in the direction indicated by the arrow, the upper right-hand valve 11 and the lower one, located diagonally therefrom, are opened. The steam is discharged against the U-shaped troughs on the piston, in the direction indicated by the above-mentioned arrow, at the same time valve 35, located between the engine and the boiler, is opened, and steam is discharged from the nozzle 33, which creates a suction at the outlet-ports of the cylinder and exhausts the steam therefrom. Should it be necessary to rotate the piston in the opposite direction, the two valves just above mentioned are closed and the two oppositely located therefrom are opened.

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

1. In a rotary steam-engine, a cylinder having inlet-ports; an exhaust-pipe located on one side of said cylinder; outlet-ports connecting one side of the cylinder to the exhaust-pipe; and a steam-nozzle which terminates just below one of said ports, substantially as shown and described.

2. In a rotary engine, a cylinder provided with inlet and outlet ports; a rotary piston mounted therein, U-shaped troughs arranged around the periphery thereof; circular grooves in the opposite sides of the piston, packing-rings located therein; transverse openings communicating with the circular grooves; and expansion-springs located in the openings with their opposite ends pressing against the packing-rings, substantially as set forth and described.

3. In a rotary engine, a cylinder provided with inlet-ports; side plates secured to the cylinder, one of which is provided with outlet-ports; an exhaust-pipe communicating with the outlet-ports; a nozzle arranged in the exhaust-pipe; a branch pipe communicating with the exhaust-pipe; and a leaf-valve for directing the exhaust-steam in either direction in said branch pipe, substantially as described.

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