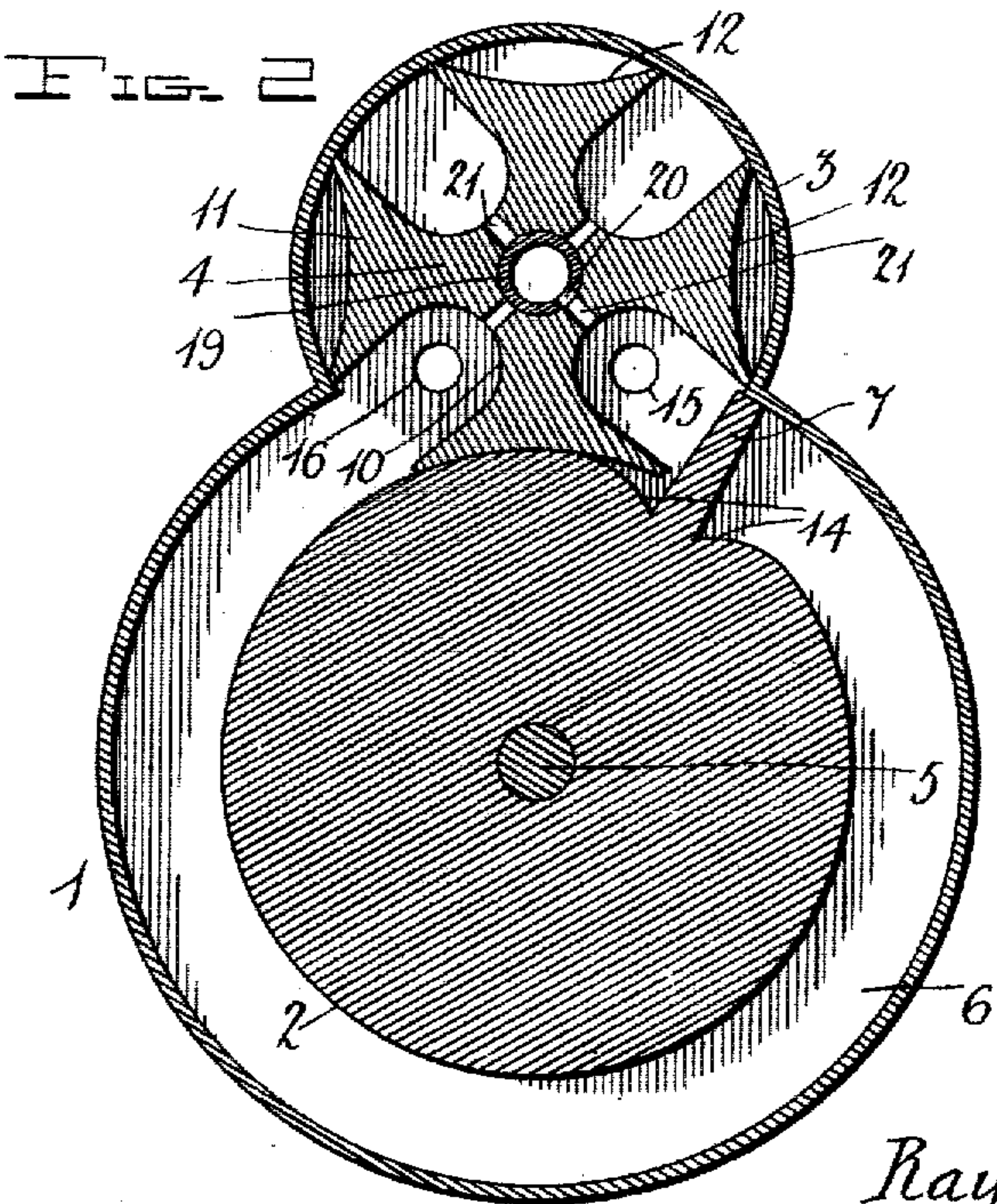
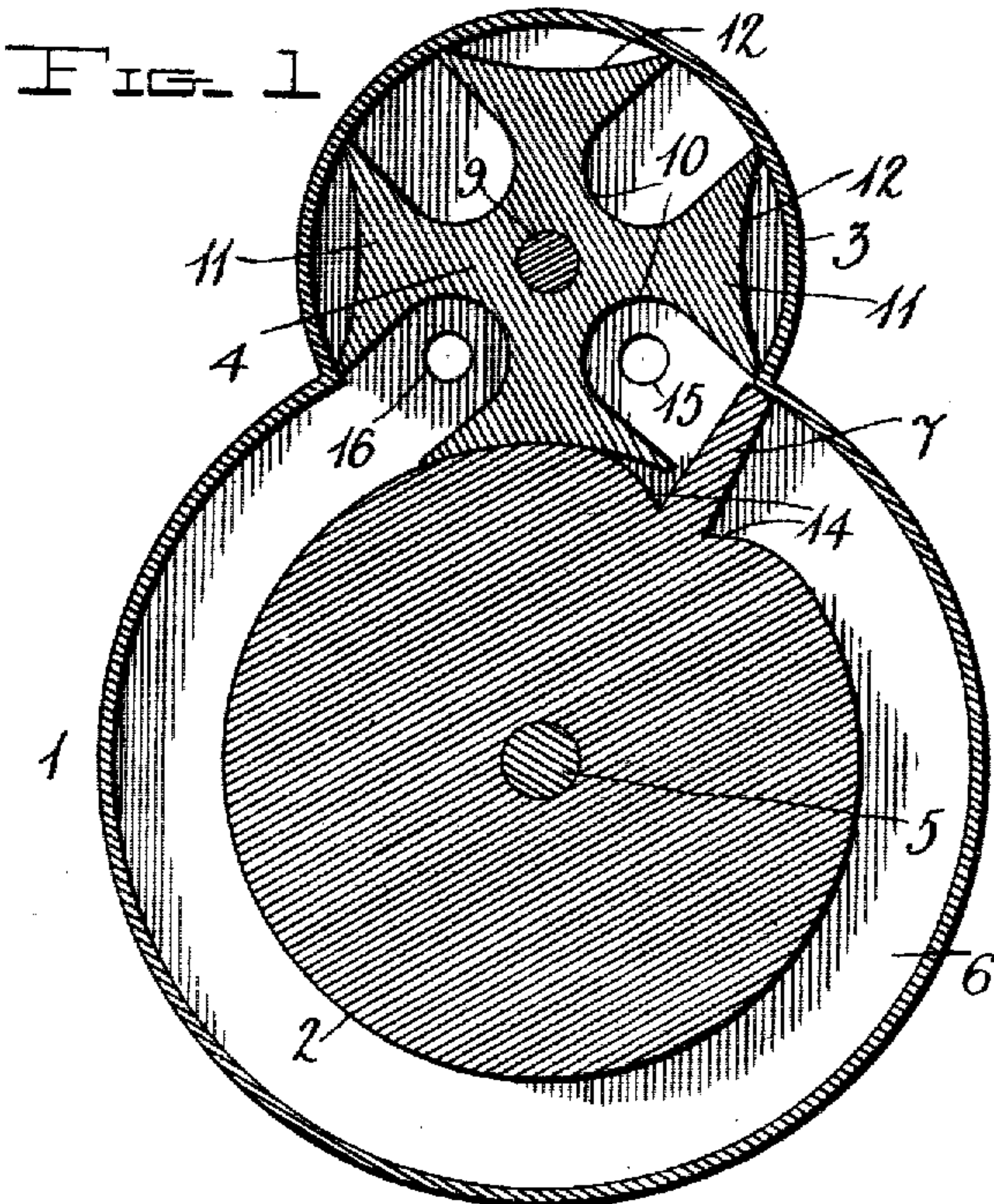


R. B. HINKLY.
ROTARY ENGINE.
APPLICATION FILED APR 10, 1905.



Witnesses
[Signature]
C. H. Griesbauer.

Inventor
Ray B. Hinkly,
by *[Signature]*
Attorney

UNITED STATES PATENT OFFICE.

RAY B. HINKLY, OF LUVERNE, MINNESOTA.

ROTARY ENGINE.

No. 814,044.

Specification of Letters Patent.

Patented March 6, 1906.

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To all whom it may concern:

Be it known that I, RAY B. HINKLY, a citizen of the United States, residing at Luverne, in the county of Rock and State of Minnesota, have invented certain new and useful Improvements in Rotary Engines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in rotary engines; and its object is to provide a simple, durable, inexpensive, and efficient machine of this character which may be operated by steam, gas, water, or other fluid and which may also be used as a rotary pump.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a sectional view through a rotary engine constructed in accordance with my invention. Fig. 2 is a similar view through a slightly-modified form.

Referring to the drawings by numeral, 1 denotes a casing which incloses a rotary piston 2 and which has an extension 3, which incloses a rotary valve 4. The piston 2 is circular in form and is mounted concentrically within the casing 1 upon a suitable shaft 5. The diameter of the piston is less than the inner diameter of the casing, so as to leave a circular or annular steam space or chamber 6, through which a blade or head 7 upon the piston 2 travels. The blade or piston-head 7 projects radially from the periphery of the piston 2 and is preferably formed integral therewith, as shown.

The valve 4 is mounted upon a shaft 9, so as to rotate within the extension 3 of the casing 1. This valve is substantially circular in form, and in its periphery is formed a series of radial pockets or recesses 10, which are adapted to receive the blade or head 7. These pockets 10 form between them radially-projecting wings 11, which have curved or concaved outer ends 12. The curvature of the ends or faces 12 is the same as that of the periphery of the piston 2, so that said faces are concentric with the piston when successively brought into contact therewith by the rotation of the valve. In order to permit the

outer ends 13 of these wings 11 to clear the piston and its head, said piston is formed with depressions or recesses 14, which are arranged in the periphery of the piston upon each side of its blade or head 7. As the piston 2 rotates in the casing 1 its head 7 will successively engage the pockets 10 in the valve 4 and rotate said valve to cause it to open and close inlet and outlet ports or openings 15 and 16, which are arranged in the casing upon opposite sides of a line drawn through the centers of the shafts 5 and 9, as clearly shown in the drawings. When steam or other motive fluid is admitted through the opening 15 behind the piston-head 7, the latter will be moved through the steam chamber or cylinder 6 in the direction of the arrow until it engages the wing 11 of the valve then in contact with the periphery of the piston and enters the adjacent pocket in said valve to cause the latter to make a partial rotation, so as to bring the next wing 11 into contact with the periphery of the piston. When this is done, the steam within the space 6 in front of the piston is permitted to exhaust through the opening 10, and live steam is admitted through the opening 15 in rear of the piston-head. Owing to the curvature of the faces 12 and their successive engagement with the periphery of the piston 2, it will be seen that the valve will be prevented from turning until it is rotated by the blade or head 7, the depressions 14 receiving the ends 13 of the wings 11 and permitting the piston and valve to clear each other.

It will be understood that either of the openings 15 16 may be used as an inlet or an outlet for steam, gas, water, or any other elastic fluid or fluid under pressure, so that the engine or motor may be driven in either direction and used as a steam, gas, gasolene, or water motor. It will also be understood that the machine may be employed as a rotary pump by applying power to the shaft 5, so as to rotate the piston 2.

In Fig. 2 of the drawings I have shown the shaft 19 of the rotary valve hollow in the form of a tube, through which live steam is to be admitted into the pockets 10 of said valve instead of through one or the other of the openings 15 16. The hollow shaft or tube 19 is formed with a slot or opening 20, which is adapted to aline with openings 21, formed in the central portion of the valve 4 and open-

ing into said pockets 10. When steam is admitted in this way, the ports or openings 15 and 16 are used as exhaust-ports, one only being used at a time. It will be seen that
5 when the parts are in position shown in Fig. 2 the exhaust 15 will be closed and live steam will pass through the shaft 19 and the openings 20 and 21 into the pocket 10 in rear of the blade or head 7 of the piston 2 and that
10 the steam in advance of said head will exhaust through the port 15. As the piston rotates the openings 21 will be brought successively into alinement with the slot or opening 20, and that when the shaft 19 is
15 turned to move its slot or opening 20 to the opposite side the direction of rotation of the engine will be reversed.

From the foregoing description, taken in connection with the accompanying drawings,
20 the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be
25 resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

A rotary engine comprising a revoluble piston having a peripheral head, a rotary valve to bear against one side of the piston and having radial pockets to successively clear the piston-head, said rotary valve having a central longitudinal bore and passages radiating therefrom and communicating respectively with the several pockets, a casing incasing the piston and valve and having ports communicating with the two pockets which are
30 35 40 45 next adjacent to the piston, and a hollow revolvably-movable shaft in the bore of and forming the journal for the revoluble valve and having a port to be turned into communication with either of the passages in the valve.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

RAY B. HINKLY.

Witnesses:

L. E. CONNELL,
C. C. DREW.