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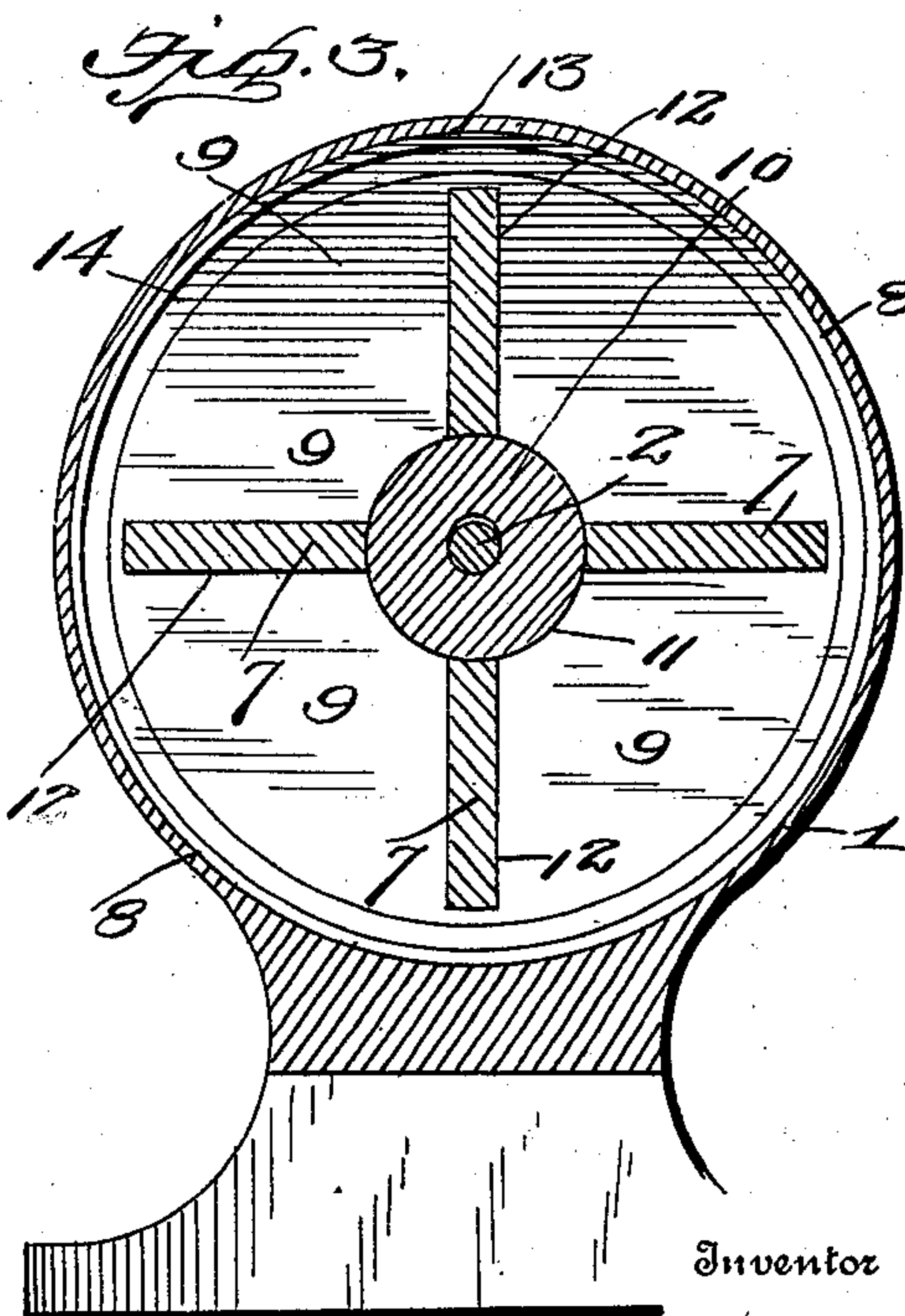
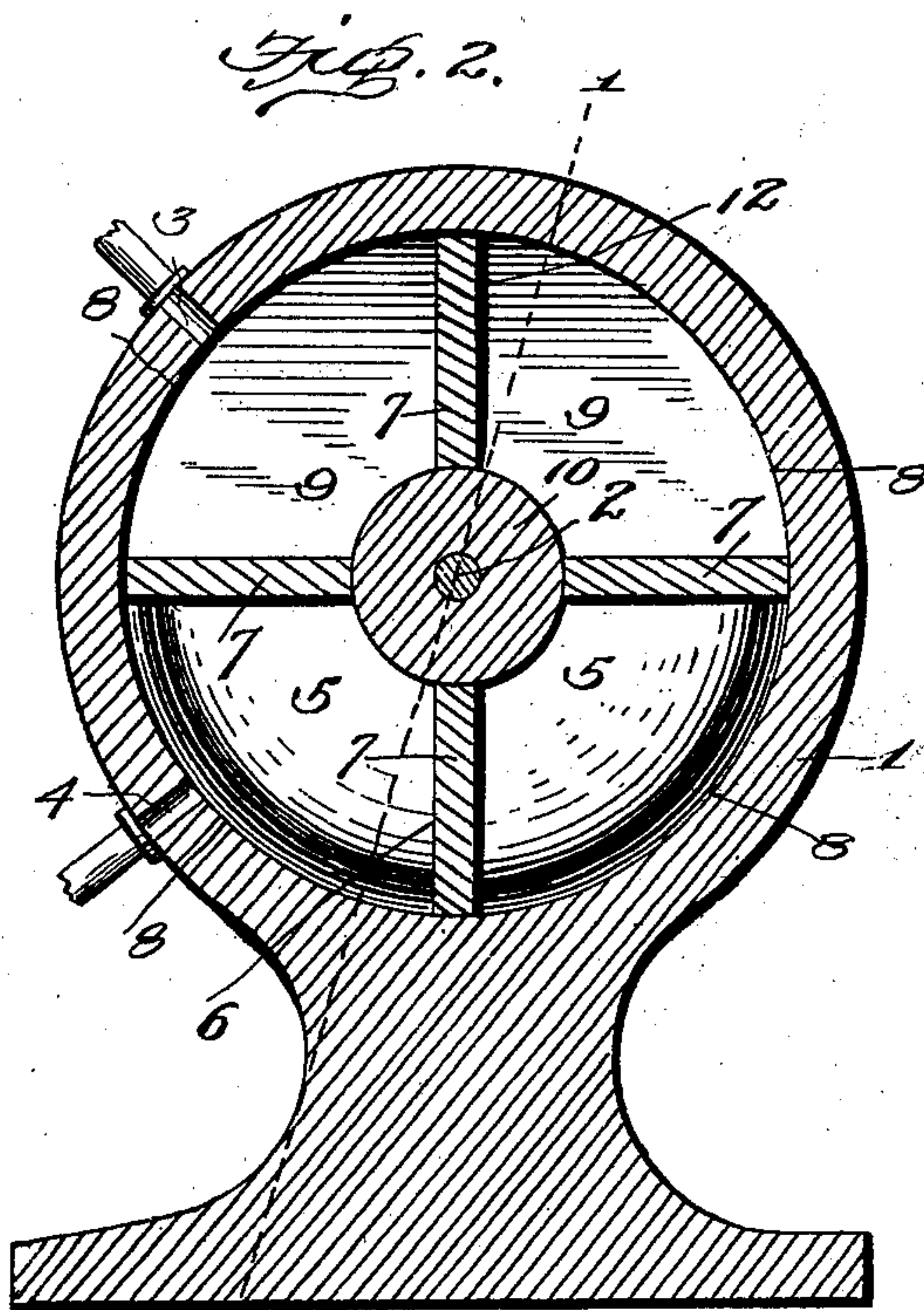
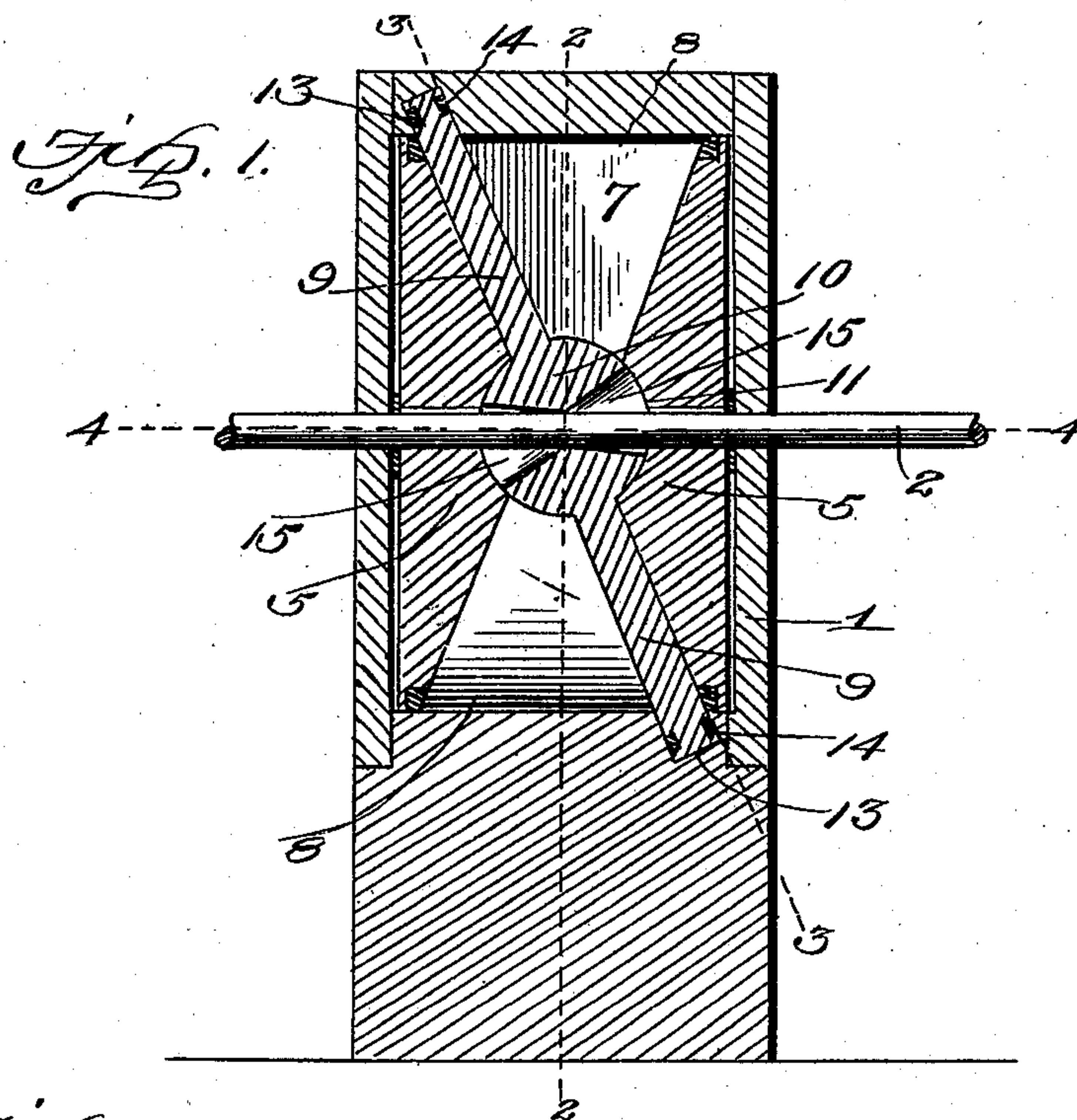
Patented May 20, 1902.

T. J. PERRIN.
ROTARY ENGINE.

(Application filed Feb. 10, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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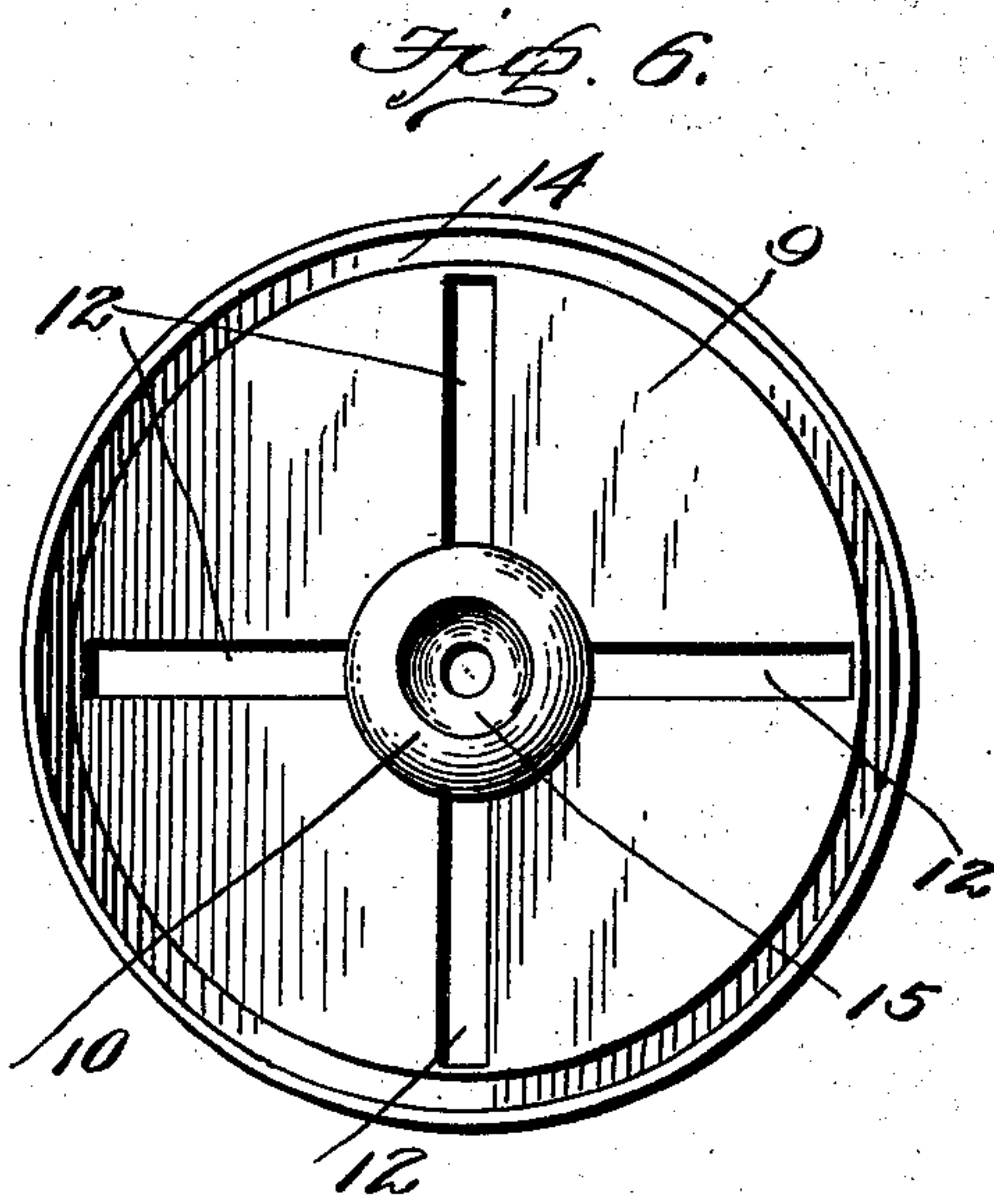
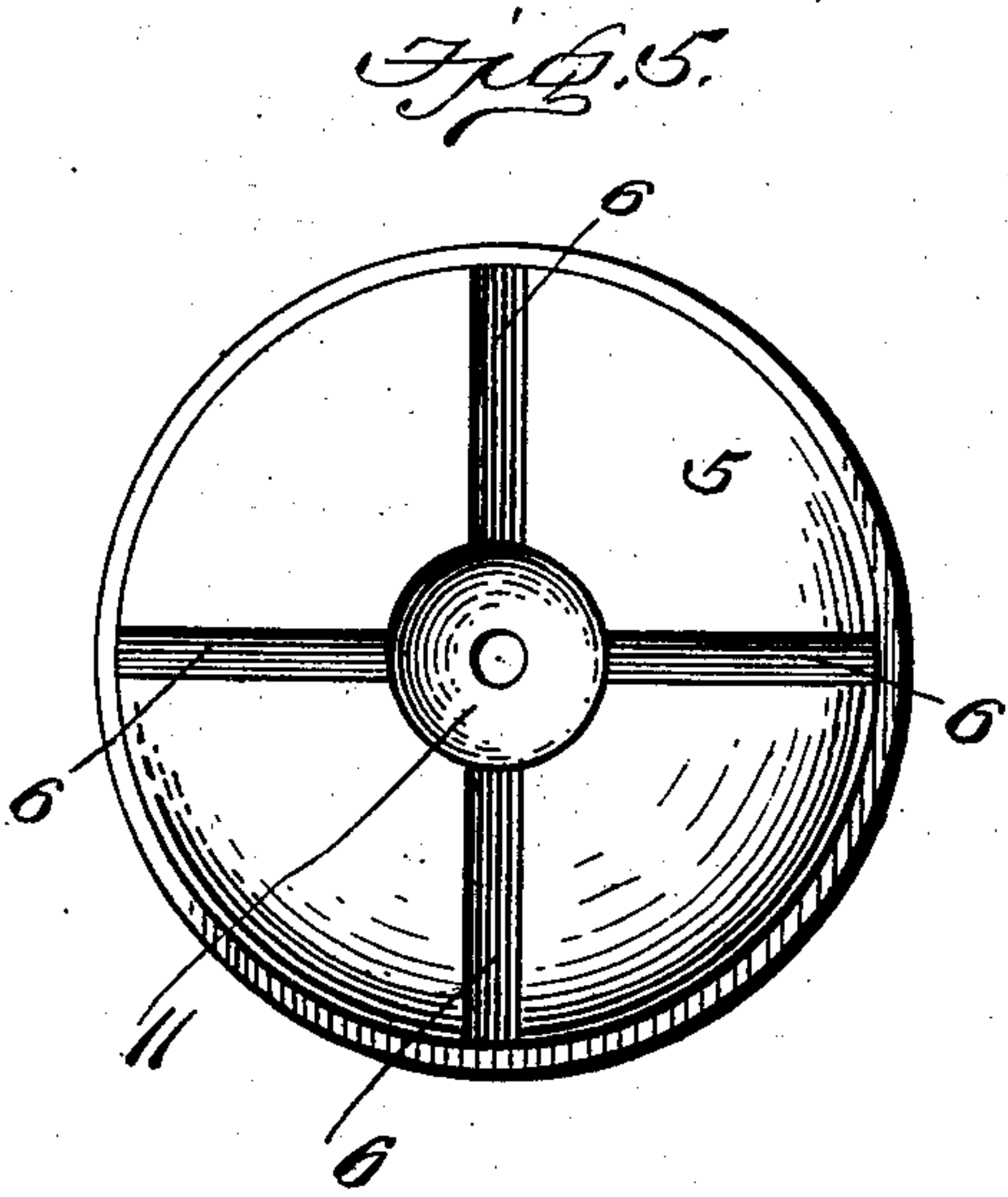
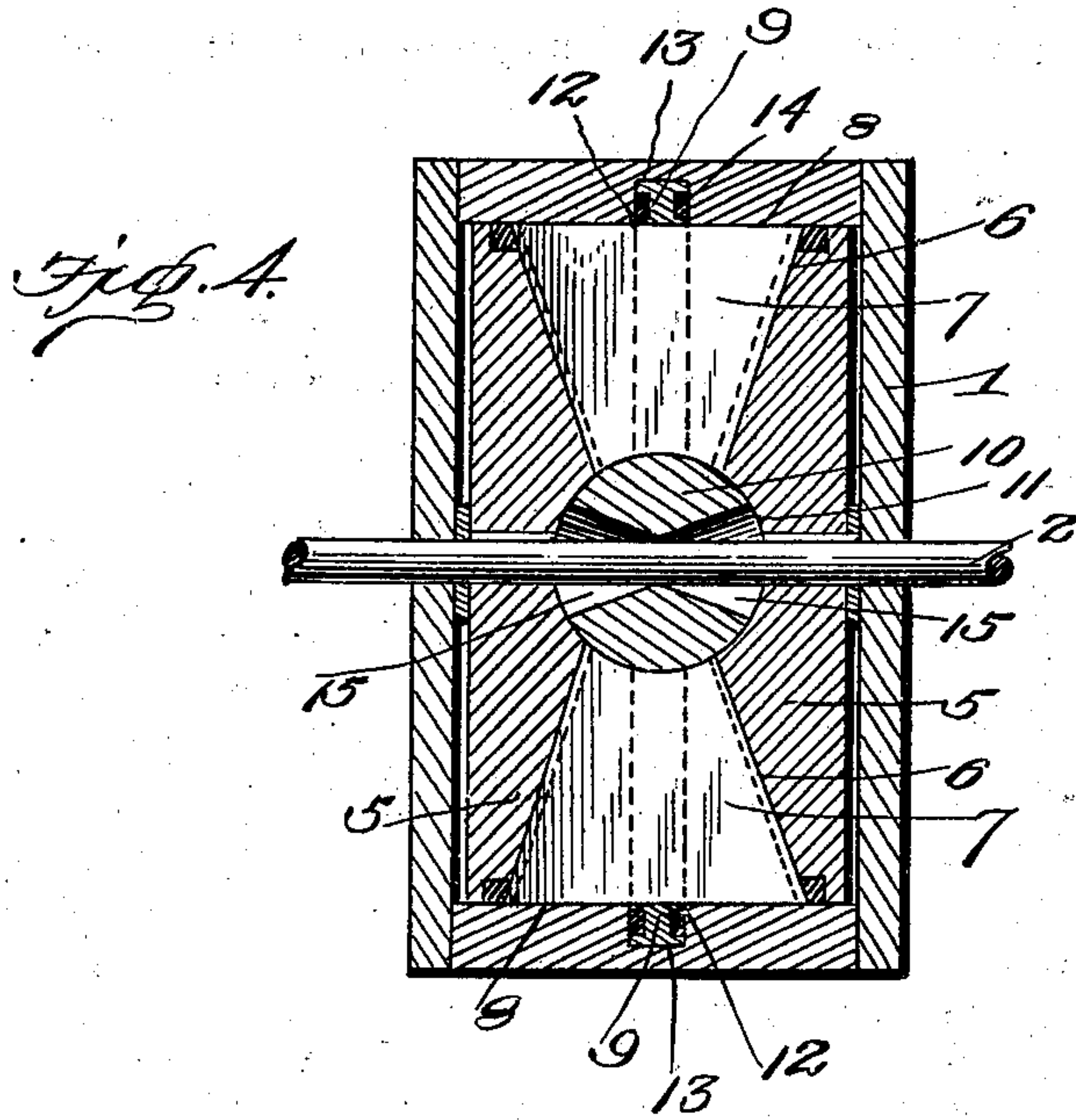
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UNITED STATES PATENT OFFICE.

THOMAS J. PERRIN, OF KOSHKONONG, MISSOURI.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 700,557, dated May 20, 1902.

Application filed February 10, 1902. Serial No. 93,400. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. PERRIN, a citizen of the United States, residing at Koshkonong, in the county of Oregon and State of Missouri, 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 has for its object to provide an engine of this character which has no centers, which has a continuous motion under practically the same pressure at all times, and which permits of the expansive action of the steam.

The invention consists of certain novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a central vertical section taken on the line 1 1 of Fig. 2. Fig. 2 is a vertical section taken at right angles to Fig. 1; the plane of section being indicated by the line 2 2 of Fig. 1. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 is a section on the line 4 4 of Fig. 1. Fig. 5 is a face view of one of the disks or heads. Fig. 6 is a side view of the piston-disk.

Referring now more particularly to the drawings, the numeral 1 represents the engine-cylinder; 2, the driving-shaft; 3, the admission-port, and 4 the exhaust-port. These parts may be of any approved form and construction to suit the purpose and any desired expansive motor fluid may be used.

Keyed upon the shaft 2 are two frusto-conical heads 5, whose convex surfaces are inwardly disposed and face each other. These heads are provided upon the inner or convex faces with radial recesses 6 to receive the edges of wings or vanes 7, which are thus fixed to the heads to turn therewith and with the shaft 2. These vanes form a series of pockets 8 for the steam or expansive fluid.

Arranged between the two heads 5 is a piston-disk 9, which is provided upon its oppo-

site sides with rounded journals or bearing-bosses 10, which seat and turn within bearing-sockets 11, formed in the flattened centers of the convex faces of the said heads 5. The disk is loose upon the shaft 2, but is made to turn therewith through the instrumentality of the vanes or wings 7, which extend through radial transverse slots 12, formed in said disk.

The peripheral edge of the piston-disk fits and travels in an annular groove 13, formed in the cylinder 1, which groove is disposed at a diagonal angle to the transverse axial line of said cylinder in a plane at right angles to the shaft 2. A packing-ring 14 around the edge of the disk prevents the escape of steam from one to the other side of said disk. By the construction above described it will be seen that each pocket 8 is formed by two contiguous vanes or wings 7, the piston-disk 9, and the convex or flaring face of one of the heads 5. The bosses 10 have flaring bores 15, which permit them to have the necessary play on the shaft 2.

In the operation of the engine the heads 5 and vanes or wings fixed thereto travel in a path at right angles to the direction in which the shaft 2 extends, while the disk 9 travels in a plane at a diagonal angle thereto, by means of which said disk is caused to act as a cut-off, which during the rotation of the pockets 8 moves from one side to the other side of each pocket, thereby gradually increasing the size of each pocket during the first half of the revolution and decreasing the size of the pocket upon the second half of the revolution. By reference to the drawings it will be seen that the admission and exhaust ports 3 and 4 are so arranged that steam is supplied to each pocket at the time it is contracted to its smallest size and allowed to exhaust therefrom at the time it has attained its maximum size, from which it will be clear that the impact of the entering steam is first utilized by the impingement of the same against the walls of the contracted pocket and that then the pocket gradually enlarges to allow the steam to expand, whereby both the impact and expansive energy of the steam are used. After each pocket attains its maximum size it comes opposite the port 4, through which the steam exhausts. The piston-disk practically has a sliding motion across each pocket to effect the described

result and the action of the steam is practically continuous, so that the piston has no centers or dead-points and rotates at a substantially uniform speed.

5 The supply and exhaust ports may be arranged on opposite sides of the cylinder, and the steam is delivered to each pocket by a groove running from the supply or admission port to the pocket. An admission-port is preferably arranged each quarter-way around
10 the circumference of the cylinder, just a fraction less than a quarter of the way from the smallest size of the pocket. This allows the following wing to close the port before the
15 head wing opens the exhaust. By having admission and exhaust ports at the points indicated the engine is made reversible. When the engine is running one way, the ports may be so arranged as to deliver the steam to the
20 pockets when the latter are of smallest size and the steam allowed to exhaust from the pockets when they reach their maximum size. Any suitable construction and arrangement of the admission and exhaust ports may, however, be employed.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation, and advantages of my improved rotary engine will,
30 it is thought, be readily apparent without requiring an extended explanation.

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

Having thus described my invention, what

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

1. In a rotary engine, the combination with
40 a casing provided with admission and exhaust ports, and a shaft; of a piston comprising heads fixed to the shaft, a series of independent radial vanes extending between the heads and forming a series of radial pockets, a piston-
45 disk loose upon the shaft to have axial play and disposed between the heads, said disk being formed with slots for the passage of the vanes, and means controlling the rotation of the disk in a plane at a diagonal angle to the
50 plane of rotation of the shaft and heads, substantially as described.

2. In a rotary engine, a piston-disk provided with a central opening and slots radiating therefrom, a shaft extending through the central opening, heads fixed to the shaft on opposite sides of the disk and having sockets in their inner faces, bearing-bosses on the disk seated in said sockets, said bosses having flaring bores allowing the piston to wobble on the
60 shaft, radial vanes extending through the slots and between the heads and forming a series of radial pockets, a casing inclosing the parts, and means controlling the rotation of the disk in a plane at a diagonal angle to the plane of
65 rotation of the shaft and heads, substantially as and for the purpose described.

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

THOMAS J. PERRIN.

Witnesses:

LULA PERRIN,
JOHN SOUTHER.