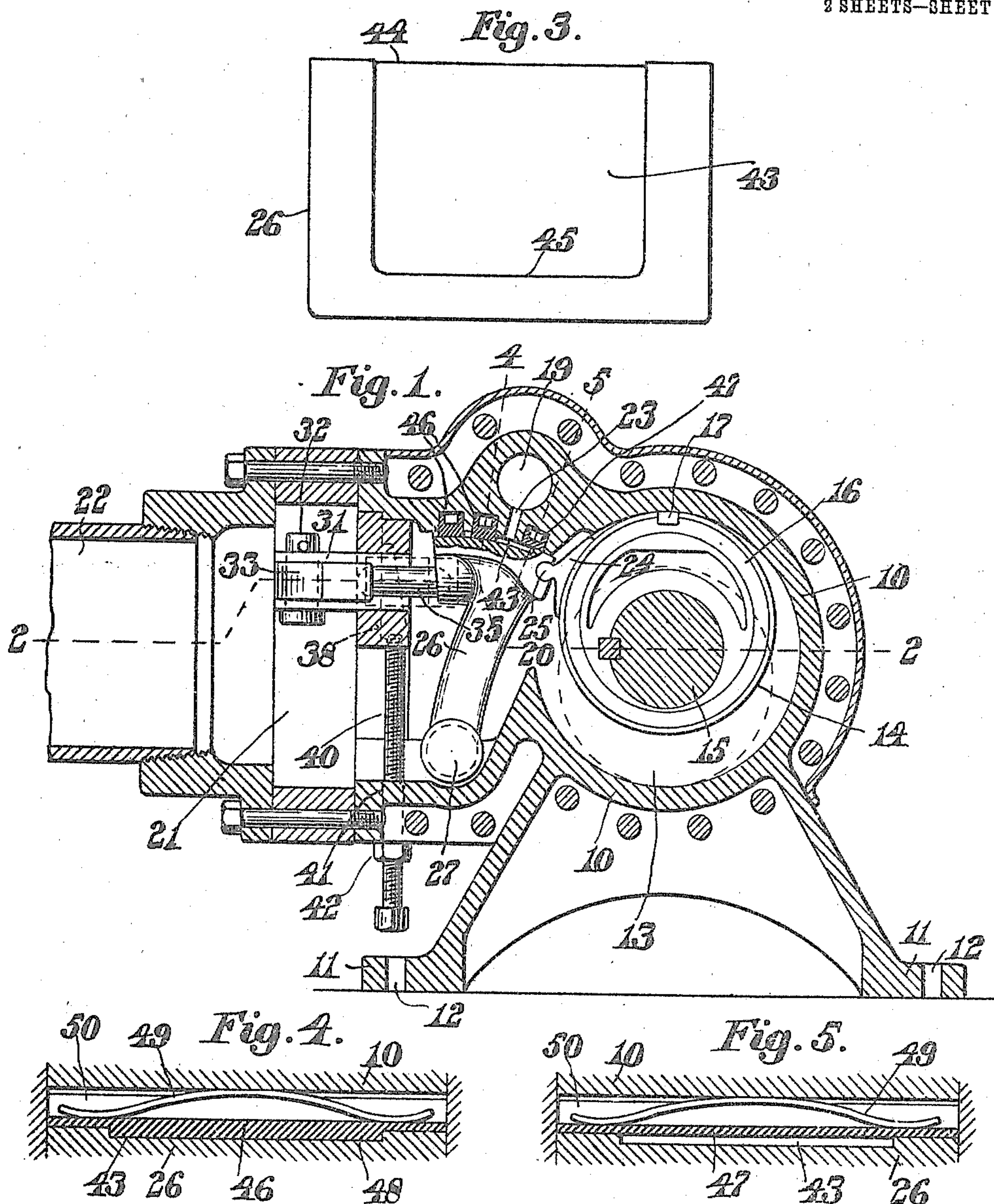


J. R. KINNEY.
 ROTARY ENGINE.
 APPLICATION FILED MAY 11, 1909.

951,735.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.



Witnesses:
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Inventor:
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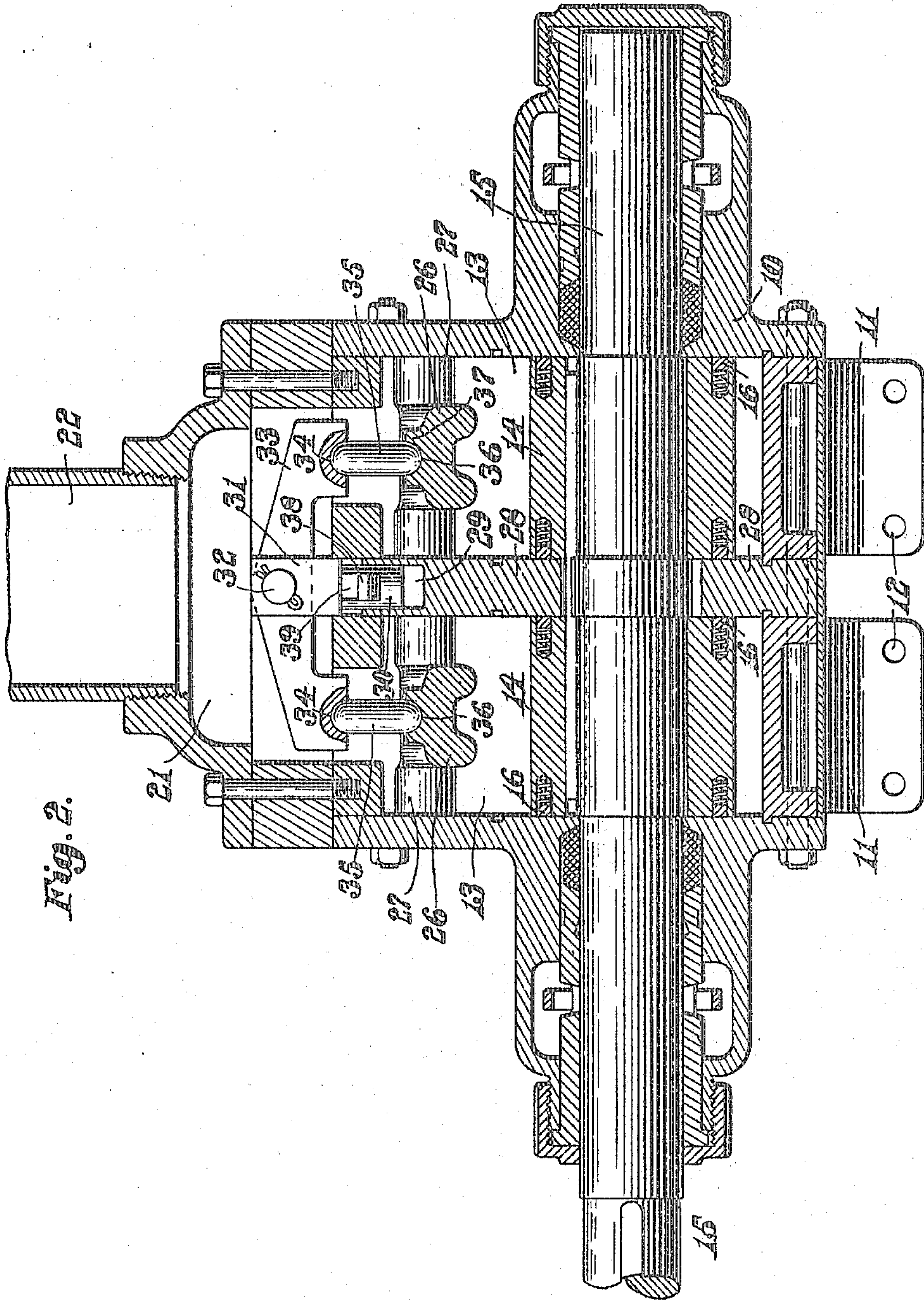


Fig. 2.

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UNITED STATES PATENT OFFICE.

JUSTUS R. KINNEY, OF DORCHESTER, MASSACHUSETTS.

ROTARY ENGINE.

951,735.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed May 11, 1909. Serial No. 495,552.

To all whom it may concern:

Be it known that I, JUSTUS R. KINNEY, a citizen of the United States of America, and a resident of Dorchester, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to rotary engines and has for its object a novel means of introducing the steam or other motive agent into the piston chamber by admitting it through a shallow groove in the end of a pivoted blade co-acting with the piston, this groove having a radial shoulder against which the motive agent acts to retain the shoe of the pivoted blade in contact with the piston throughout its rotation, the eccentricity of the piston serving to permit, during one portion of its rotation, the grooved portion of the pivoted blade to enter the piston chamber and admit the motive agent thereto, while during another portion of the movement or rotation of said piston the pivoted blade is moved into a position whereby the admission of the motive agent is cut off.

The invention consists in certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings: Figure 1 represents a vertical section of an engine embodying the features of this invention. Fig. 2 represents a horizontal section of the same, the cutting plane being on line 2—2 on Fig. 1. Fig. 3 represents an enlarged end view of the pivoted blade, and Figs. 4 and 5 represent respectively partial sections through the packing members, the cutting planes being on lines 4 and 5 of Fig. 1.

Similar characters designate like parts throughout the drawings.

In the drawings, 10 represents a suitable casing provided with supporting feet 11 having openings 12 therein by which the casing may be secured in position.

The casing is provided with two interior cylindrical piston chambers 13 in each of which is revolvably mounted an eccentric piston 14 secured to and revolvable with the shaft 15 centrally disposed within the piston chamber 13. Each side wall of the pistons 14 is provided with a packing 16 forced outwardly by means of a plurality of

springs into contact with the side walls of the piston chamber 13. That part of the periphery of the piston 14 farthest removed from the axis of the shaft 15 is provided with a packing member 17.

The steam or other motive agent is admitted to the interior of the casing 10 through an inlet pipe 19. Each piston chamber 13 is connected by means of a passage 20 with a chamber 21 with which communicates the outlet pipe 22. From the inlet pipe 19 a passage 23 communicates with the chamber 21.

Co-acting with the periphery of each piston 14 is a shoe 24 pivotally connected at 25 to a blade 26 pivoted at 27 to the casing 10. The two pistons 14 are oppositely disposed as indicated in full and in dotted lines in Fig. 1 of the drawings.

The division member 28 interposed between the two piston chambers 13 is provided with a socket 29 into which extends the slotted cylindrical stem 30 of a forked member 31 in which is pivoted on the pin 32 the rocker member 33.

Each end of the rocker member 33 is provided with a semi-spherical socket 34 in which rests the rounded end of a cylindrical strut 35, the opposite end of which is rounded and rests in a semi-spherical socket 36 formed in a boss 37 upon the pivoted blade 26.

The position of the pivot 32 relative to the axis of the revoluble shaft 15 is accurately determined so that in the rotation of the oppositely disposed pistons 14 the outward movement of one of the pivoted blades 26 will act upon the rocker beam 33 through one of the struts 35 to force the shoe 24 of the other pivoted blade 26 into engagement with the other piston 14. As the pistons 14 continue to rotate in their chambers 13 the outward movement of one of the pivoted blades 26 will always be acting through the rocker member 33 to retain the shoe 24 of the other pivoted blade 26 in engagement with the other piston throughout its rotation.

By providing the semi-spherical sockets 34 and 36 for the rounded ends of the struts 35 these struts are permitted to move in any direction to accommodate themselves to the various angular movements of the pivoted blade 26 and rocker members 33.

When any wear occurs upon the shoe 24 the wear may be taken up by means of the

wedge 38 extending through a slot 39 in the stem or shank 30 of the forked member 31. This wedge 38 is adapted to be moved transversely of said slot 39 by means of the revoluble member 40 threaded to the casing 10 at 41 and locked in adjusted position by means of the lock nut 42. It is obvious that by adjusting this member 40 the pivot pin 32 may be adjusted toward and from the revoluble shaft 15. This makes a positive device interposed between the two opposed pistons adapted to operate in such a manner that the movement of one piston against its pivoted blade will insure the contact of the other pivoted blade against the periphery of the other piston at all times.

The outer end of the pivoted blade 26 is made concentric to the pivot 27 and is provided with a shallow groove 43 open at one end, as indicated at 44, Fig. 3, while the opposite end is provided with a radial shoulder 45. Opposite to the end of the pivoted blade 26 and set into grooves in the casing 10 are the packing members 46 and 47.

The packing members 46 are each provided with extension 48 which accurately fit the shallow groove 43 in the end of the pivoted blade 26 and are held in position against the end of the blade 26 by means of the spring 49 resting in a groove 50 in each packing member, all as shown in Fig. 4 of the drawings.

The packing member 47 has no extension 48 thereon but simply bears upon the face of the end of the pivoted blade 26 on either side of the shallow groove 43. The motive agent therefor entering through the inlet pipe 19 and the passages 26 will be admitted to this shallow groove 43 and can pass through the groove 43 beneath the packing member 47 and act upon the radial wall 45 to retain the shoe 24 in contact with the piston 14 at all times. As the steam or other motive agent is admitted in the shallow groove 43 it is obvious that it acts upon one end of the pivoted blade to retain its pivoted end in its seat. Owing to the extensions 48 on the packing members 46 the steam admitted through the passages 23 is prevented from passing by these members 46 into the chamber 21. Whenever in the rotation of the piston 14 the pivoted blade 26 is moved about its pivot 27 sufficiently far to permit the radial shoulder 45 to pass beyond the opposing face of the casing 10, it is obvious that a communication will be made from the inlet pipe through the pas-

sages 23 and the shallow groove 43 with the interior of the piston chamber 13 and the steam or other motive agent will continue to be admitted in this manner until in the rotation of the piston 14 the blade 26 is moved in the opposite direction sufficiently far for the shallow groove 43 to be again covered by the opposing face of the casing 10 when further admission to the piston chamber will be cut off.

It is obvious that, owing to the two pistons 14 being oppositely disposed, when the steam is being cut off from one piston chamber it is being admitted to the other piston chamber and a continuous rotation of the shaft 15 is thus provided.

This provides a ready means for admitting the motive agent to the piston chamber at the proper times to effectually rotate the pistons therein and very effectually cut off the supply of steam to the chamber at such times during the rotation of the piston that it is necessarily a detriment to the proper operation of the piston.

Having thus described my invention, I claim:

1. In a rotary engine, the combination with a casing provided with a piston chamber; a piston revoluble therein and contacting with the wall thereof; a pivoted blade co-acting with said piston and having in its outer face a shallow groove closed at one end; a packing member in said casing bearing upon the outer face of said pivoted blade and provided with an extension extending into said groove; and an inlet to said groove between said packing member and the closed end of said groove.

2. In a rotary engine, the combination with a casing provided with a piston chamber; a piston revoluble therein and contacting with the wall thereof; a pivoted blade co-acting with said piston and having in its outer face a shallow groove closed at one end; a packing member in said casing extending into said groove and another packing member bearing against the face of said pivoted blade intermediate said groove packing member and said piston chamber; and an inlet to said groove between said groove packing member and the closed end of said groove.

Signed by me at 4 Post Office Sq., Boston, Mass., this 8th day of May, 1909.

JUSTUS R. KINNEY.

Witnesses:

WALTER E. LOMBARD,
NATHAN C. LOMBARD.