No. 713,301. Patented Nov. 11, 1902.

J. C. HAGERTY.

ROTARY ENGINE.

(Application filed Mar. 12, 1902.)

(No Model.) 2 Sheets—Sheet 1.

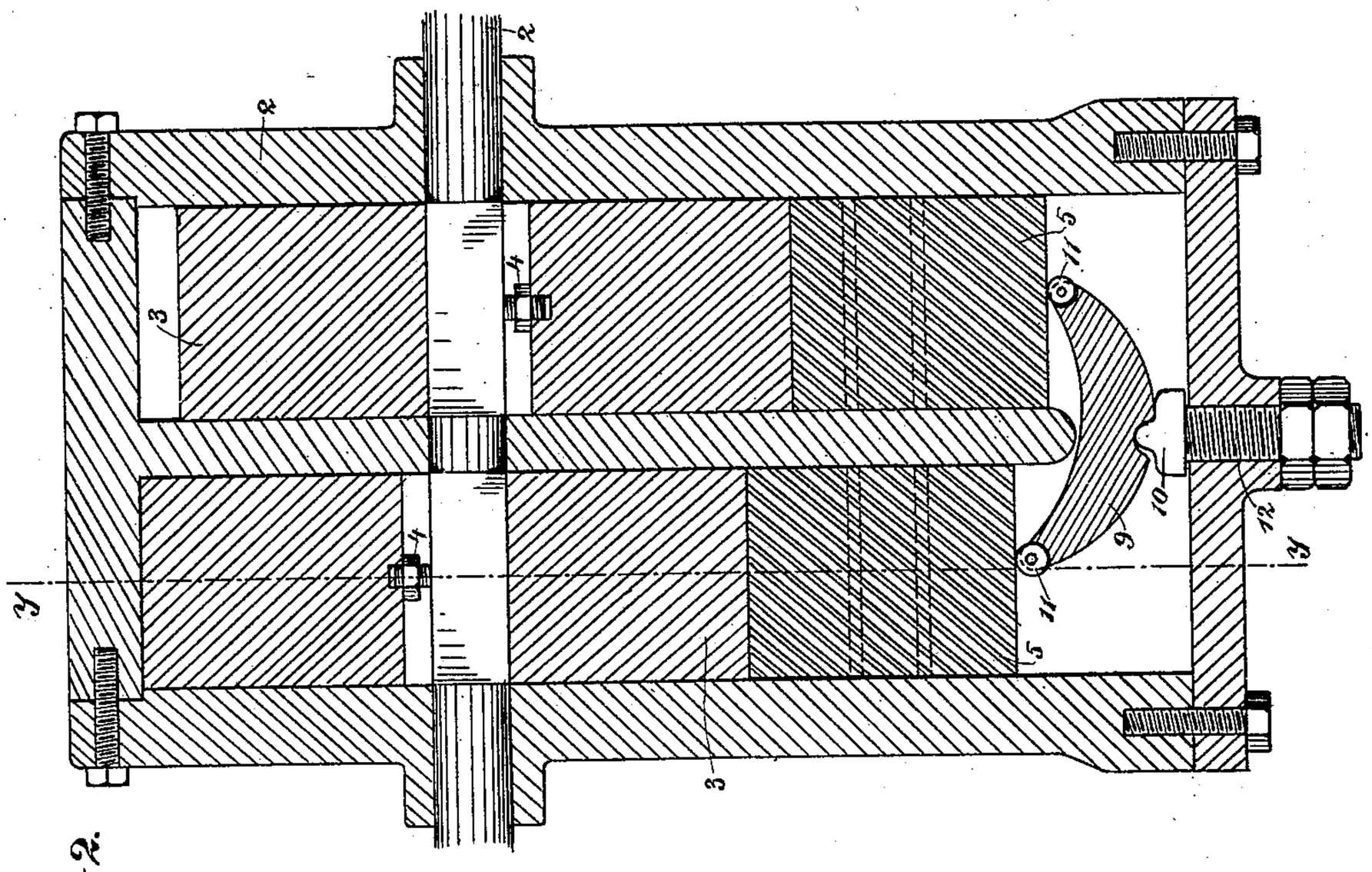

Fig. 2.

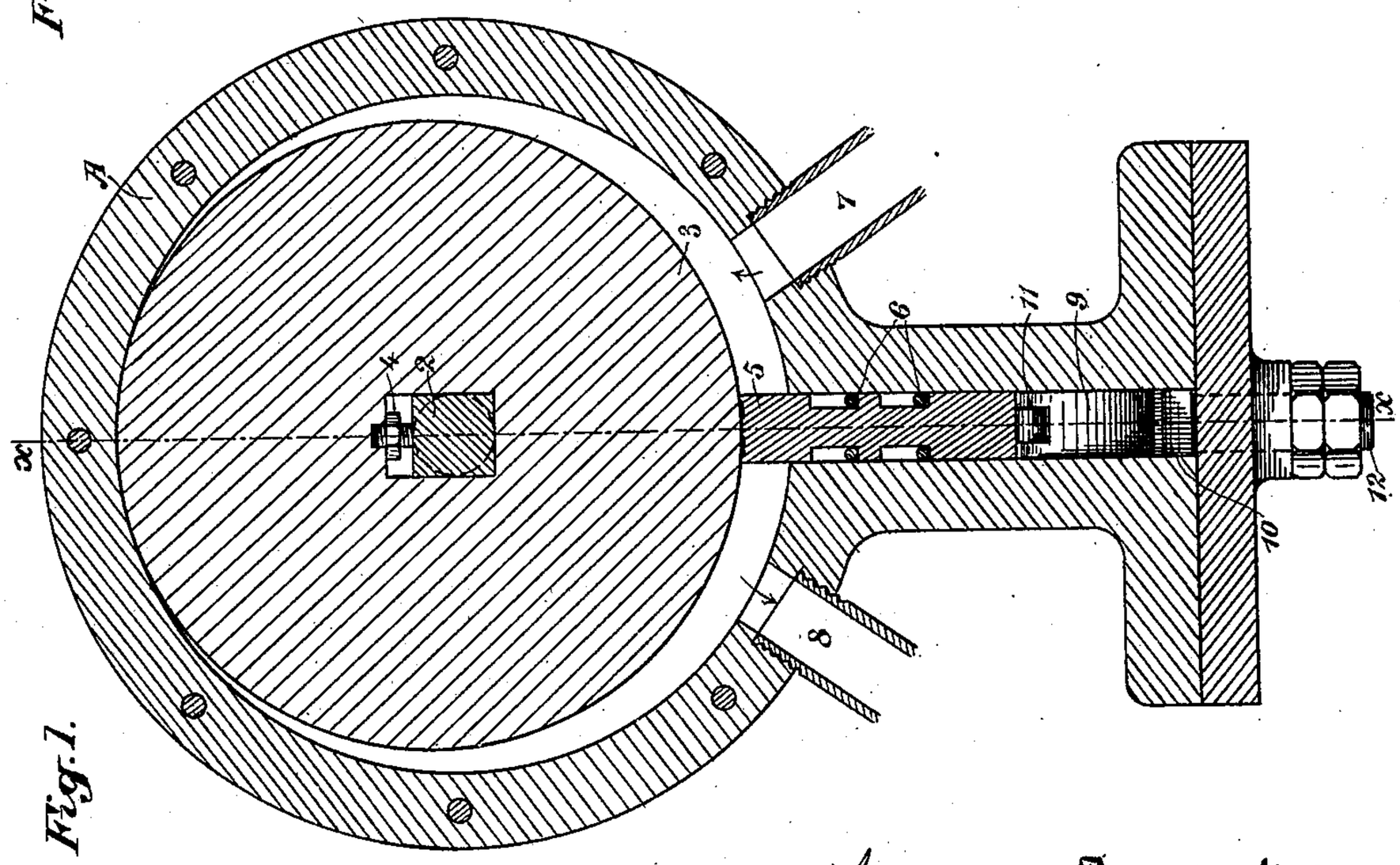

Fig. 1.

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Fig. 5.

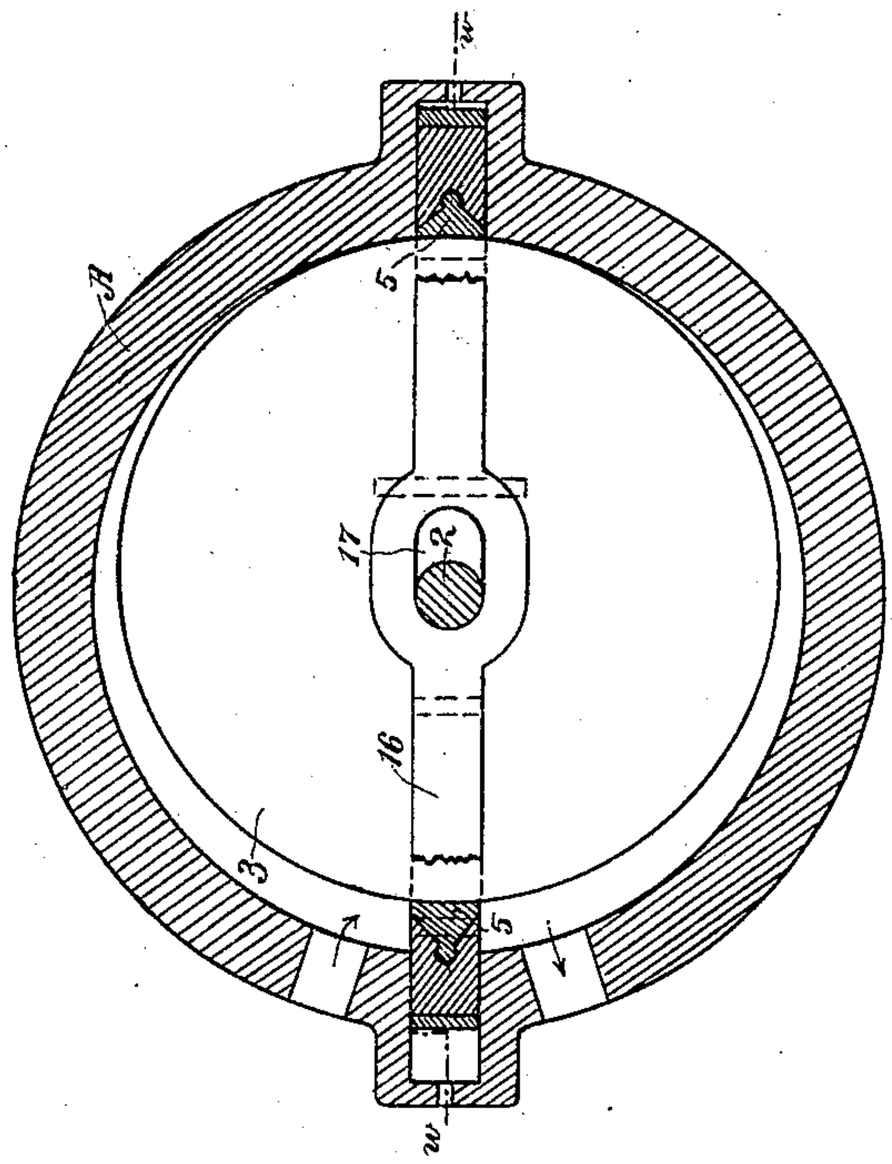


Fig. 6.

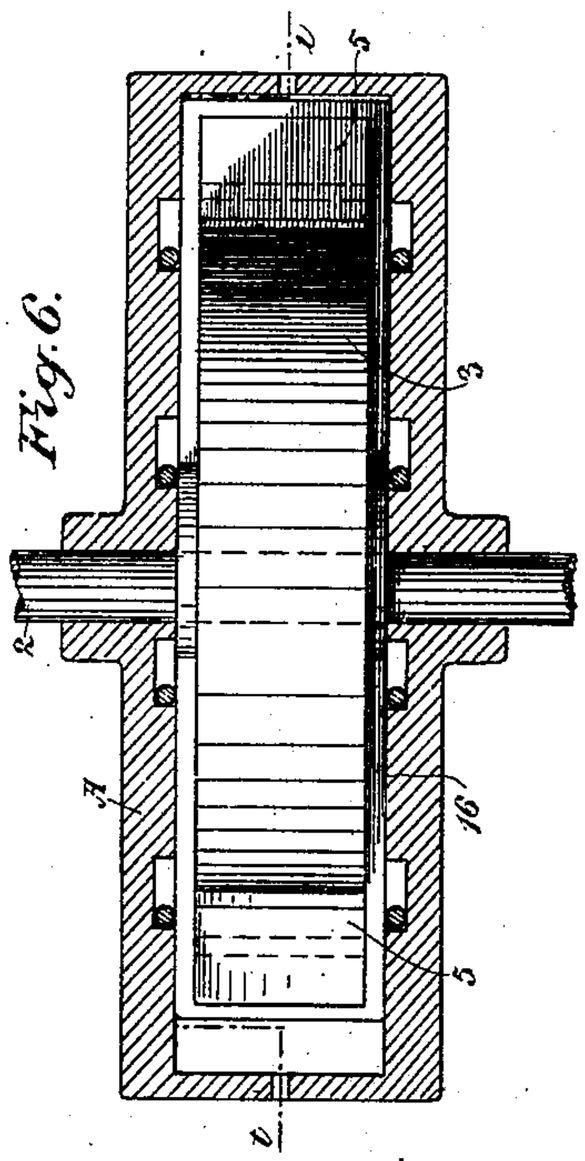


Fig. 3.

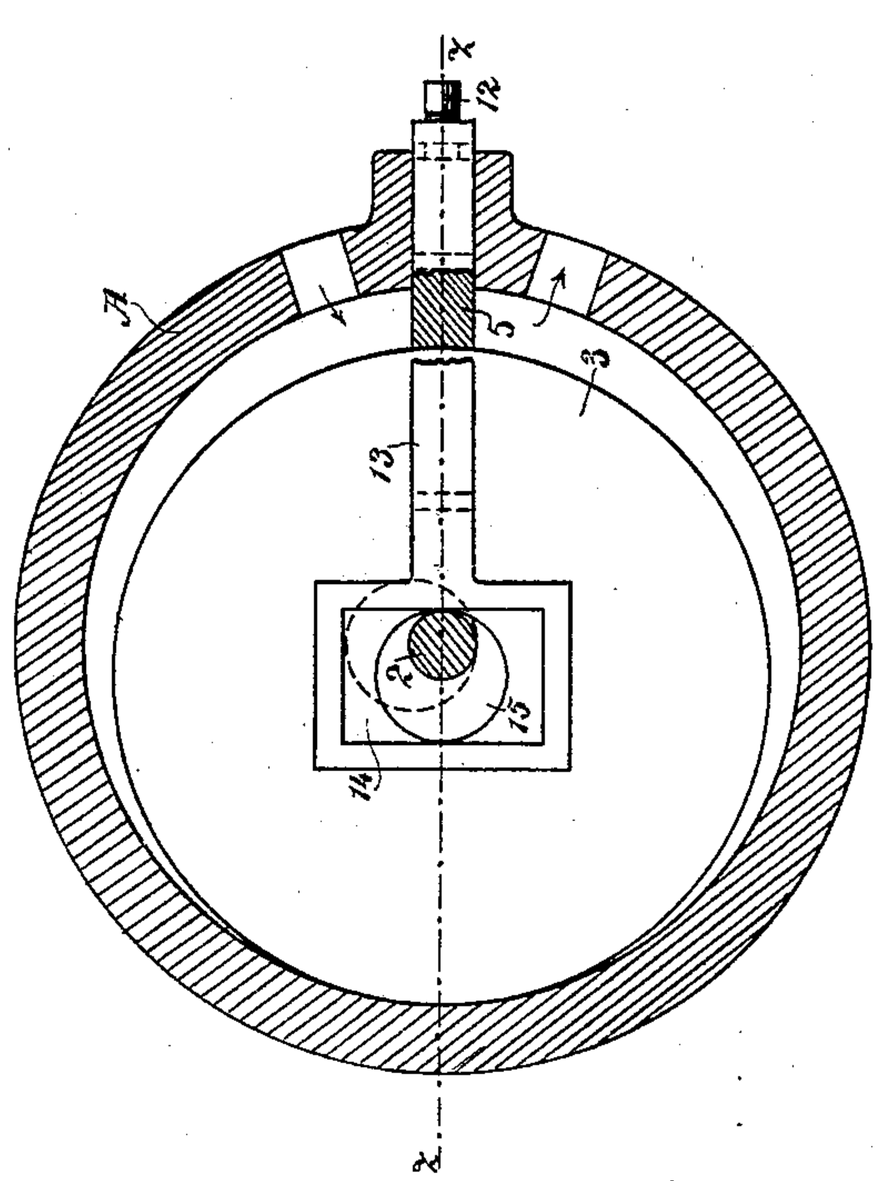
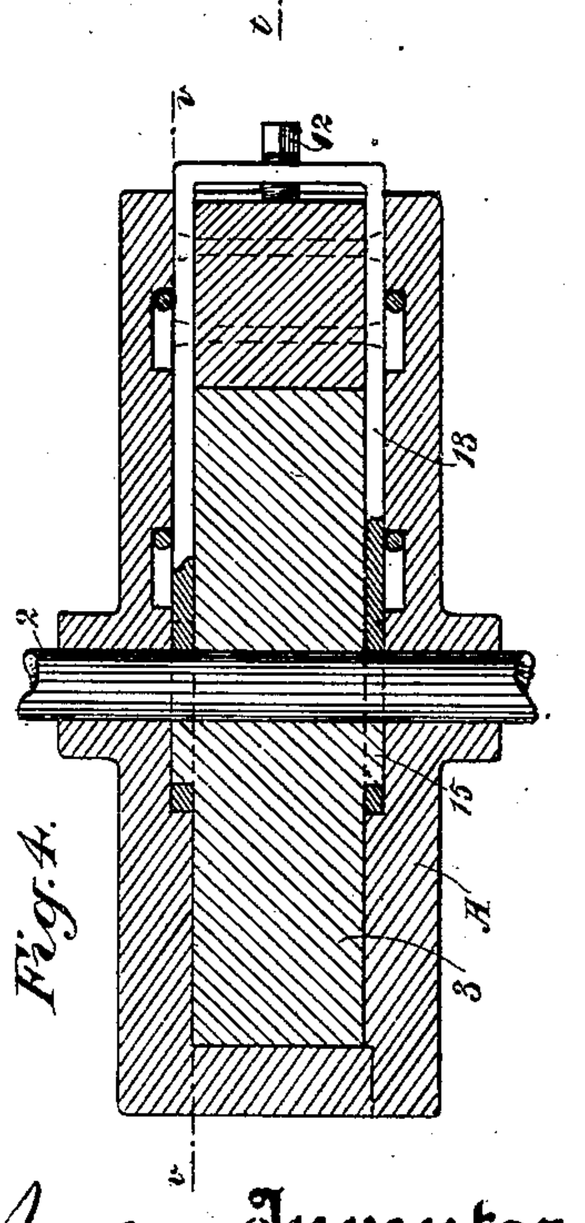


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN C. HAGERTY, OF SANTA CRUZ, CALIFORNIA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 713,301, dated November 11, 1902.

Application filed March 12, 1902. Serial No. 97,827. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HAGERTY, a citizen of the United States, residing at Santa Cruz, county of Santa Cruz, State of California, have invented an Improvement in Rotary Engines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an engine or mechanism to be propelled by a medium under pressure.

It consists of a smooth circular disk eccentrically mounted within a circular casing, so that at one side the periphery of the disk forms a tight joint with the interior of the casing as the eccentric revolves, an abutment slidable in line with the shaft and means for moving it to maintain it continually in contact with the periphery of the revolving eccentric, means for admitting a medium under pressure upon one side of the abutment between the eccentric and the casing, so that the pressure will act upon the larger diameter of the eccentric, and means for exhausting the medium from the opposite side of the abutment.

My invention also comprises devices for adjusting the eccentric to maintain the joint between it and the casing, means for adjusting the mechanism by which the sliding abutment is actuated, and details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the engine on line *y y*, Fig. 2. Fig. 2 is a similar section on line *x x*, Fig. 1. Fig. 3 is a vertical section on line *v v*, Fig. 4, showing a modification. Fig. 4 is a horizontal section of the same on line *z z*, Fig. 3. Fig. 5 is still another modification in section on line *t t*, Fig. 6. Fig. 6 is a horizontal view of the same on line *w w*, Fig. 5.

A is a cylindrical casing which may be divided by diaphragms into a plurality of chambers, or, if preferred, a plurality of separate casings may be mounted axially in line upon the same base or support. Through the center of these casings passes a suitably-journaled shaft 2, and upon this shaft is fixed in each of the chambers an eccentric-disk 3. The eccentricity of this disk is such that at the largest part of its throw it contacts with the interior of the casing and forms a sufficiently tight joint at the point of contact to prevent the escape of steam or other medium under pressure which may be employed to impel it. These eccentrics are so mounted upon the shaft that they may be adjusted for wear by means of a nut and screw, as shown at 4, so as to keep the periphery of the eccentric in proper adjustment with relation to the interior of its casing.

The sides of the casing are sufficiently close to the side of the eccentric to form a steam-tight joint therewith, or such joint may be formed by means of packing-rings between the eccentric and the casing.

At suitable points around the periphery of the casing channels are made for the reception of sliding abutments 5. One, two or more of these channels and abutments may be used. If two are used, they can be placed opposite to each other, and the abutments are slidable radially with relation to the shaft or axis 2. These abutments are suitably fitted in their guides and may have roller or equivalent bearings, as at 6, to relieve friction. They may also have a suitable packing to prevent leakage. These abutments are moved in unison with the movements of the eccentric, so as to follow the periphery of the eccentric and to maintain close joints with each eccentric. If two of the chambers and eccentrics be used, the eccentrics may be set either opposite to each other or in any other suitable relation. If more than two be used, the eccentrics may be so set upon the shaft that the throws of the eccentrics would be equidistant from each other. The sectional view shows an arrangement of one eccentric within its casing, and this represents each of any number which may be employed in the construction of the engine.

7 represents the admission-port, and 8 the exhaust-port, of each chamber, and when the medium under pressure is admitted through the port 7 the pressure exerted upon the periphery of the larger part of the eccentric is equivalent to the same pressure exerted upon a piston the area of which is equal to the cross-section of the major diameter of the eccentric, and by this pressure the eccentric will be continually driven around within the

casing until the contact portion of the eccentric passes the exhaust-passage 8, when the medium will exhaust at this point.

The abutment 5 is constantly moved in unison with the movements of the eccentric, so as to maintain it in contact, and this movement may be effected by any suitable or desired mechanism.

I have shown in Figs. 1 and 2 a device which is suitable for two chambers and eccentrics standing side by side and having the eccentrics set with the throws opposite to each other. In this case the ends of the slides 5, within their guide-chambers, rest upon the ends of a rocker-arm 9, which is centrally supported upon a rounded cap, as at 10, the center of the rocker being channeled to fit upon the cap, or it may be supported upon a fixed oscillating shaft. The ends of the rockers are preferably fitted with antifrictional rollers, as at 11, where they contact with the slides, thus reducing friction to a minimum. The movement of one slide which is being forced out of its chamber by the revolution of the eccentric will be communicated through the rocker to simultaneously move the other slide into the chamber and cause it to follow its eccentric, thus keeping tight joints in both.

Suitable packing of any description may be fitted to the ends of the slides, which contact against the eccentric to maintain an adjustable joint. Any wear of these parts may be taken up by means of screws, as at 12, the ends of which act against the cap 10, on which the rocker-arm oscillates, thus moving the rocker, with the cap, so as to keep its tips in constant adjustment with the slides.

In Figs. 3 and 4 I have shown another form, in which the slides are moved by rods, as at 13. The outer ends of said rods are connected with the slides, and the inner ends have rectangular openings made in them, as at 14. Within these openings eccentrics 15 are revoluble, these eccentrics being fixed upon the shaft 2. The rectangular yoke is of such length transversely as to allow the throw of the eccentric without contact with the ends of the opening; but in the line of movement of the slides the space is just wide enough to admit the eccentric, so that the throw of the eccentric is communicated to the yoke and its arms, and thus acts to reciprocate the slide, as previously described.

In Figs. 5 and 6 I have shown the yokes extending entirely across from one side to the other of the casing, as at 16, and in this case the central portion is slotted to fit over the shaft, as at 17, the slot being long enough to allow the proper throw. The arms 16 at one end connect with one of the slides and at the other end with the opposite slide, so that the outward movement of one of the slides acts through these arms to produce an inward movement of the other slide, the two operating in unison.

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

1. A rotary engine consisting of circular casings, eccentrics mounted upon journal-shafts extending axially through the casings, said eccentrics having a throw which maintains the end of the greater radius in constant contact with the interior of the casing, abutments slidable radially, and means maintaining said abutments in constant contact with the periphery of the eccentrics, and radially-adjustable devices for adjusting the eccentric with relation to its shaft to maintain the joint between it and the casing.

2. A rotary engine consisting of circular casings, eccentrics mounted upon journal-shafts extending axially through the casings, said eccentrics having a throw which maintains the end of the greater radius in constant contact with the interior of the casing, abutments slidable radially, and means maintaining said abutments in constant contact with the periphery of the eccentrics, a radial screw-and-nut mechanism for adjusting the eccentric with relation to its shaft, and an adjustable support for adjusting the sliding abutments whereby the joint between the eccentric and the casing and between the abutments and the eccentric are maintained.

3. The combination in a rotary engine of a plurality of cylindrical casings having a common axis and journal-shaft extending therethrough, eccentrics mounted upon said shaft in each casing having their major axes such as to form a constant joint with the interior of the casings and opposite to each other, radial screw and nut mechanisms for adjusting the eccentrics with relation to the shaft, slidable abutments guided and movable in line with the axis, rocker-arms with which the outer ends of the abutments contact whereby the outward movement of one abutment acts to move the other one inwardly and maintain its contact with the periphery of its eccentric, and an adjustable support upon which the rocker-arm is seated.

4. The combination in a rotary engine of two casings side by side having a common axis and a journal-shaft extending therethrough, eccentrics fixed upon said shaft to have diametrically opposite throws in their respective casings, and revoluble with their greater radius in constant contact with the interior of their casings, radially-slidable abutments, means by which said abutments are caused to move in unison and maintain constant contact with the peripheries of their respective eccentrics, roller-guides between which the abutments are movable, and rocker-arms and an adjustable support therefor said arms engaging the outer ends of the abutments.

5. The combination in a rotary engine of two casings side by side having a common axis and a journal-shaft extending therethrough, eccentrics fixed upon said shaft to have diametrically opposite throws in their

respective casings, and revoluble with their greater radius in constant contact with the interior of their casings, radially-slidable abutments, means by which said abutments are caused to move in unison and maintain constant contact with the peripheries of their respective eccentrics, said means consisting of a centrally-pivoted rocker-arm, rollers journaled in the ends of said arm and contacting with the outer ends of the abutments, and means for adjusting the bearing of the rocker-arm whereby the abutments are simultaneously adjusted to contact with the eccentrics.

In witness whereof I have hereunto set my hand.

JOHN C. HAGERTY.

Witnesses:
S. H. NOURSE,
JESSIE C. BRODIE.