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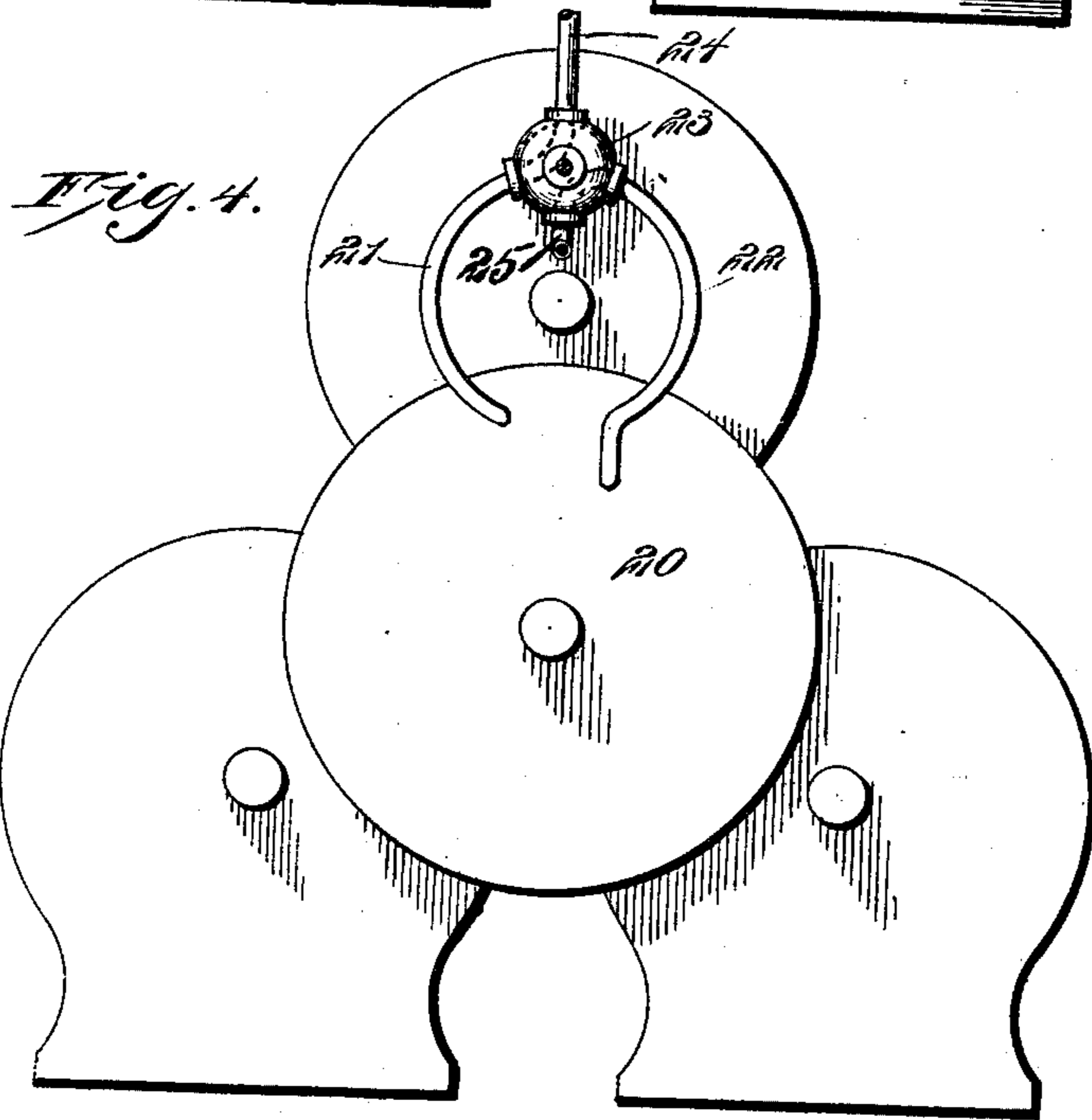
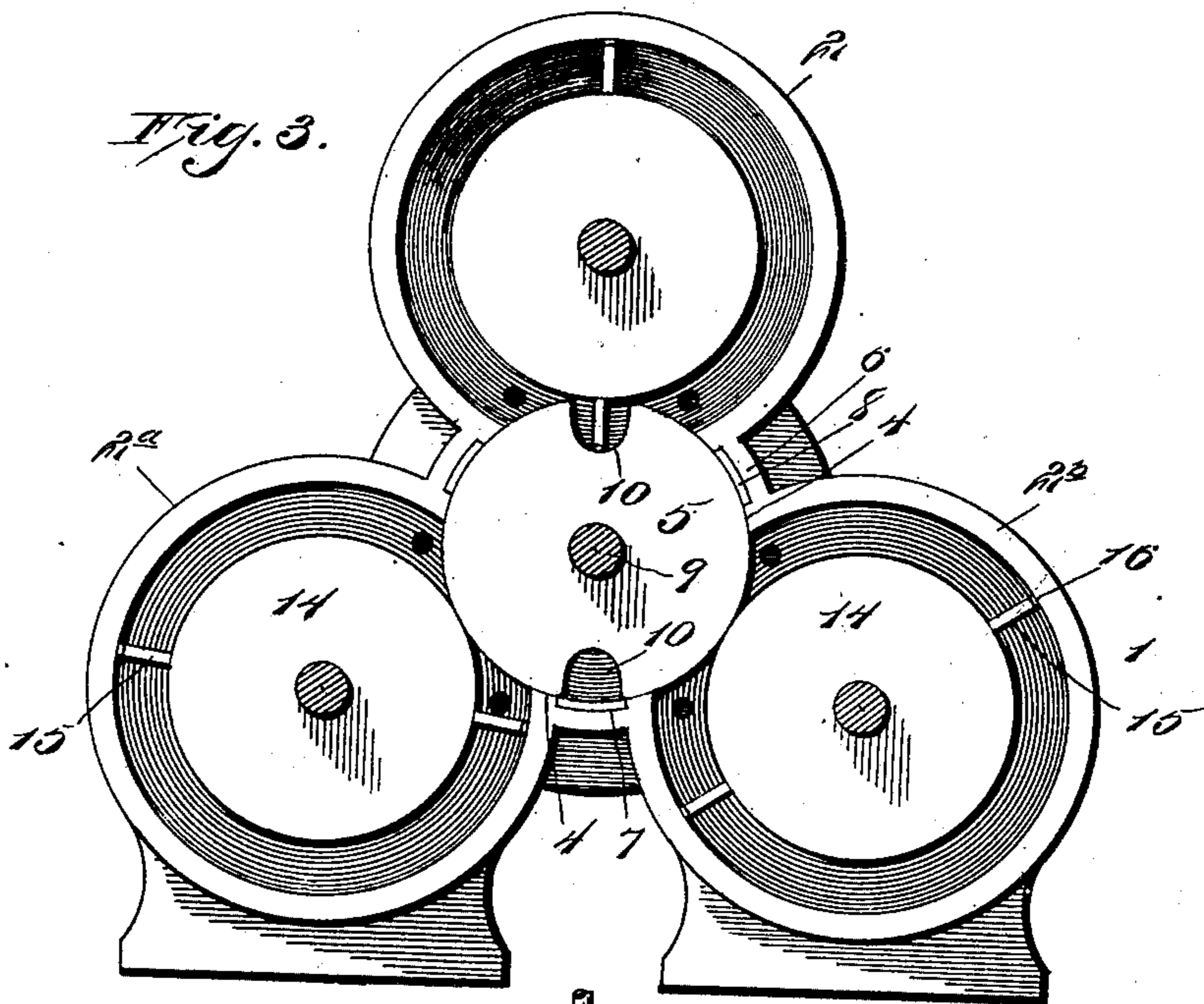
J. E. PECK, JR.
ROTARY ENGINE.

Patented Feb. 26, 1901.

(No Model.)

(Application filed June 11, 1900.)

3 Sheets—Sheet 2.



Witnesses

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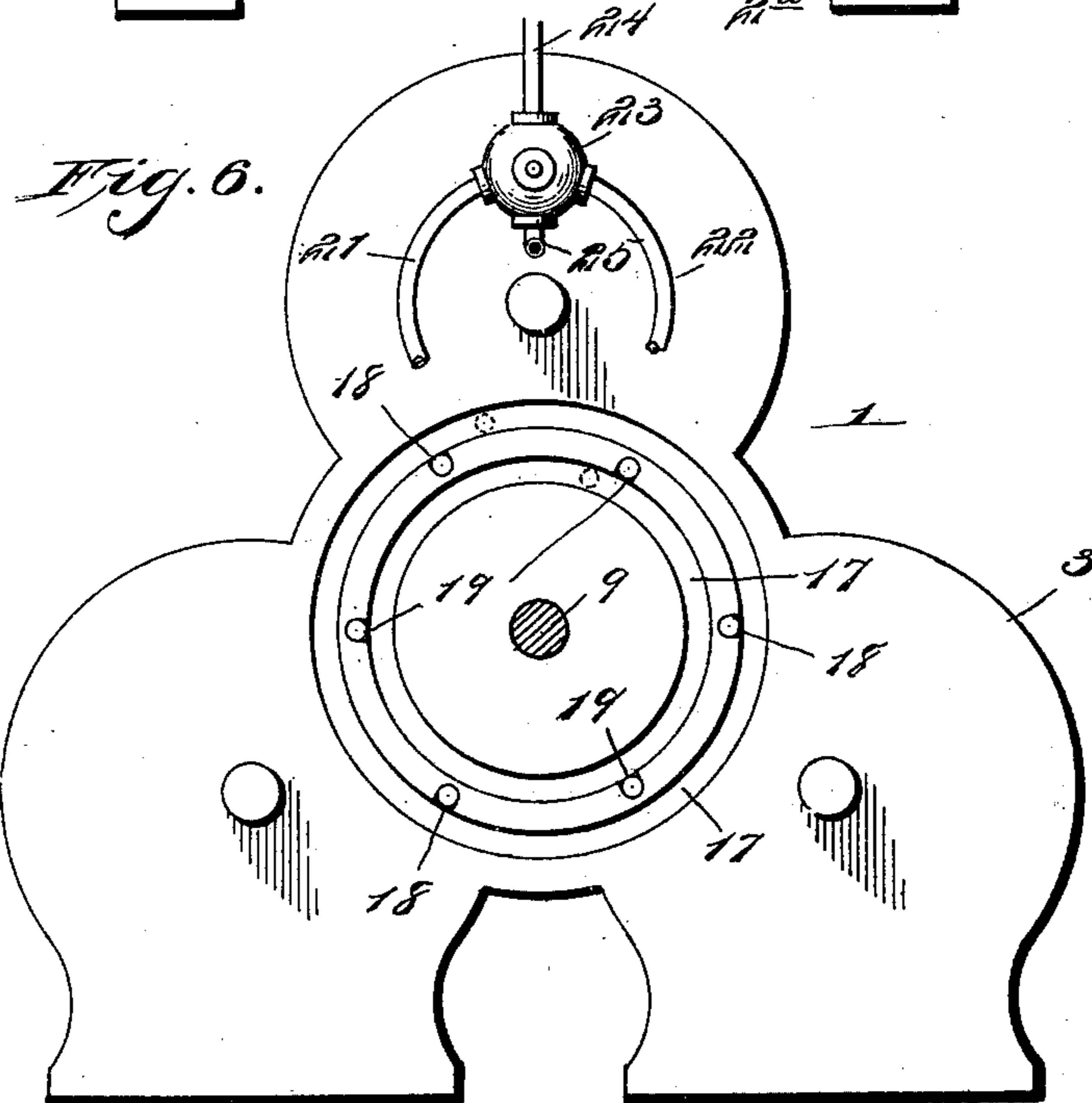
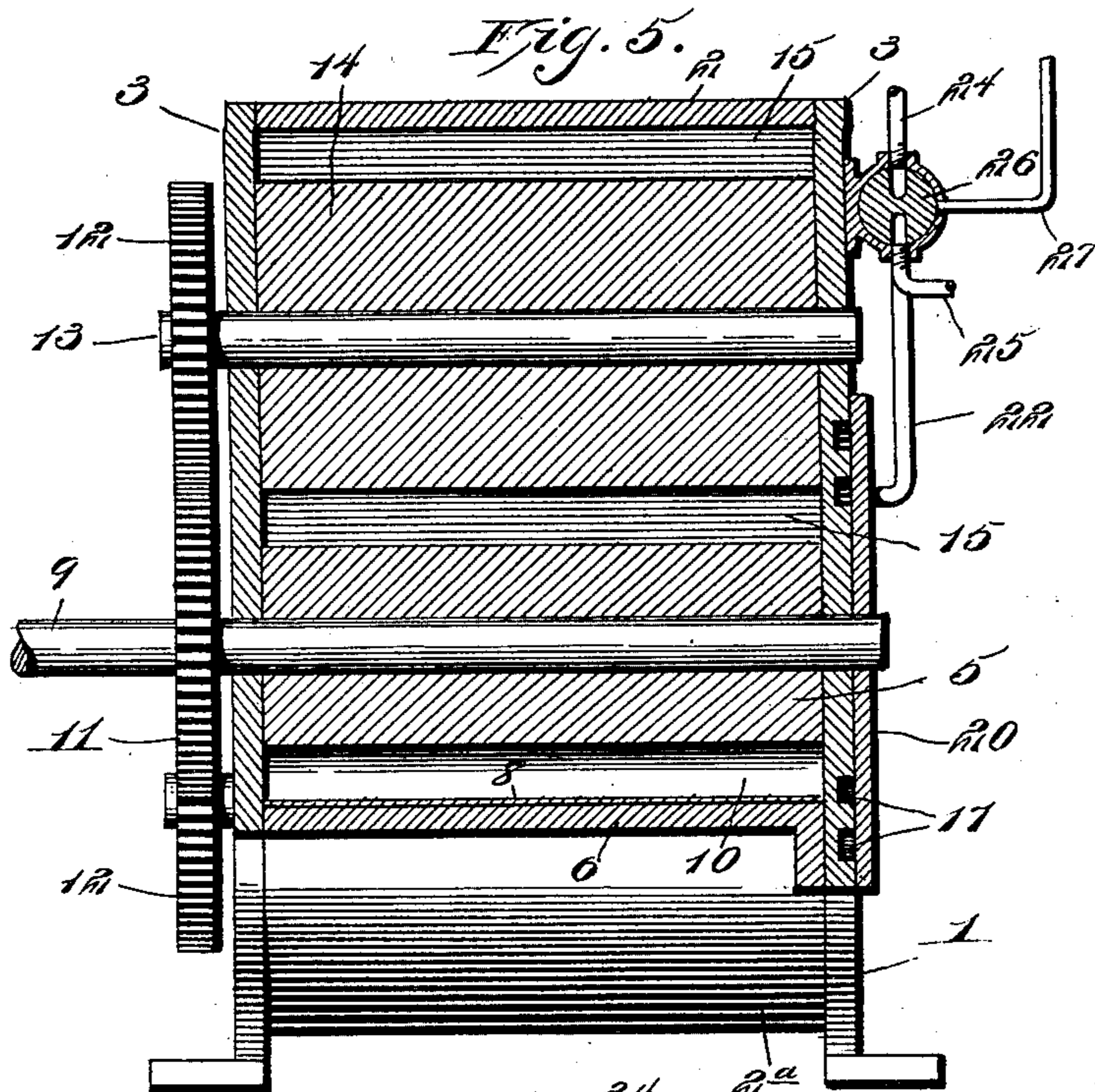
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UNITED STATES PATENT OFFICE.

JOHN EDWIN PECK, JR., OF LOGAN, WEST VIRGINIA.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 669,000, dated February 26, 1901.

Application filed June 11, 1900. Serial No. 19,923. (No model.)

To all whom it may concern:

Be it known that I, JOHN EDWIN PECK, Jr., a citizen of the United States, residing at Logan, in the county of Logan and State of West Virginia, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to new and useful improvements in rotary engines; and its primary object is to provide a device of simple construction adapted to attain the maximum amount of speed through the utilization of the minimum amount of steam.

A further object is to provide a device of this character having two or more pistons provided with a common steam cut-off so constructed as to permit the free passage of the piston-heads thereover without causing the slightest variation in motion, the loss of steam, or an instant of dead-center.

Another object is to arrange the pistons and their heads within their respective casings in a novel manner, whereby the maximum direct pressure, the greatest expansive force, and the means of the two are utilized at the same time, thereby securing a constant pressure and converting all of the steam into motive energy.

A further object is to provide a novel arrangement of inlet and exhaust ports within each of the casings of the pistons, all of which open into a common supply and exhaust pipe.

A still further object is to provide a valve of peculiar construction whereby the exhaust-ports of the casings may be readily and simultaneously converted into inlet-ports, and vice versa.

To these ends the invention consists in the novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is an elevation thereof, showing the gears which impart motion from the pistons to the shaft. Fig. 2 is a side elevation of the device. Fig. 3 is an elevation similar to Fig. 1 with the casing removed. Fig. 4 is a front elevation. Fig. 5 is a central transverse section through the device, and Fig. 6 is a front elevation with the face-plate removed.

Referring to said drawings by numerals of reference, 1 is a casing of any suitable form and material and preferably constructed of three cylinders 2 2^a 2^b, arranged in the manner shown in the drawings and mounted between end plates 3. These cylinders are each provided with longitudinally-extending slots 4 therein, adapted to receive a portion of a cylindrical steam cut-off or abutment 5, and said cylinders are connected at the edges of the slots 4 by longitudinally-extending walls 6, provided, preferably, with recesses 7, within which is seated suitable packing, as 8, which bears upon the periphery of the cut-off.

The cylindrical cut-off 5 may be formed of any desired material and may be hollow or solid, as preferred. This cut-off is fixed to and movable with a shaft 9, which extends through the end plates 3 of the casing and whereby motion may be imparted to the desired machinery. The cut-off 5 is provided at diametrically opposite sides with longitudinally-extending substantially elliptical grooves 10, the innermost points of which are adapted to pass into alinement with the periphery of the inner wall of each of the cylinders 2 2^a 2^b.

Mounted upon the shaft 9, at a point without the casing, is a gear 11, which is adapted to mesh with similar gears 12, each one of which is secured to a shaft 13, extending through one of the cylindrical casings 2 2^a 2^b. These gears 11 and 12 are similar in size and are adapted to revolve in unison and at the same speed.

Upon each of the shafts 13 is secured a cylindrical piston 14, which may be either hollow or solid, as desired, and at diametrically opposite points on which are secured longitudinally-extending piston-heads 15, which are provided with suitable packing, as 16, to form a tight and smooth bearing upon the inner wall of the casing.

The front end plate of the casing is provided with three sets of passages, each set of which extends into one of the cylinders 2 2^a 2^b. These passages are arranged between the pistons 14 and the walls of the casings at points adjacent to the walls of the slots 4.

The front plate of the casing 1 is provided within its outer face with two concentric circular grooves 17, and the passages hereinbe-

fore referred to communicate alternately with these grooves, as shown in Fig. 6. Those passages communicating with the outer groove are numbered 18, while the passages opening into the remaining groove are numbered 19. From the foregoing it will be seen that the casing of each piston 14 is provided with a passage 18 and a passage 19.

A face-plate 20 is secured to the front of the casing 1 and over the grooves 17, and to this plate is secured a supply-pipe 21, which opens into one of the grooves 17, and an exhaust-pipe 22, which opens into the second groove 17. Each of these pipes 21 and 22 is secured at its upper end to a valve-casing 23, mounted upon the end plate 3 and having a supply 24 and a discharge 25, secured thereto at diametrically opposite points equidistant from the pipes 21 and 22. A valve 26 is mounted within the casing 23 and may be operated in any suitable manner, as by means of a handle 27. As shown in dotted lines in Fig. 4, this valve is provided with two passages, adapted when in one position to permit the free passage of steam from supply 24 to pipe 21 and from pipe 22 to exhaust 25. By turning said valve one-quarter of a revolution it will be seen that the passages therein will bring into communication the supply 24 and the pipe 22 and the pipe 21 and the exhaust 25.

In operation steam is admitted to the pipe 24, into, say, the pipe 21, and thence into the outer groove 17 within the face-plate. From this groove the steam will pass into each cylinder 2^a 2^b through its passage 18, exerting a pressure upon the piston-head exposed to the pressure thereof. It will be seen that the direct passage of steam from one passage 18 to the other passage 19 is prevented by the cut-off 5. As the pistons revolve under the pressure of the steam admitted to the casings motion will be imparted to the cut-off through gears 12 and 11 and the same will revolve, the pistons 14 and their heads 16 being so arranged as to move within the grooves 10 of the cut-off 5 when reaching said cut-off.

In Fig. 3 the lower piston-head of the upper piston is shown in position within one of the grooves. Each of the pistons and the cut-off are supposed to be moving in the direction of the arrows shown thereon. The lower head, within the cylinder 2^b, has moved downward out of engagement with the lower groove 10, while the inner head, within the cylinder 2^a, is moving toward said groove and will rest therein until the same has passed across the slot 4. This operation is continued in each of the cylinders, the steam in front of the heads exhausting through the passages 19 into the inner groove 17 and thence out through the pipe 22 and exhaust 25. It will be seen that by turning the valve 26 into its second position the motion of the engine will be promptly reversed.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that

modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of my 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 a casing; having concentric similar cylindrical portions thereto; of an end plate having concentric circular grooves therein; and passages communicating with each of said grooves alternately, one passage of each groove extending into each cylindrical portion of the casing.

2. In a rotary engine, the combination with a casing having similar cylindrical portions thereto; of an end plate to the casing having concentric circular grooves therein, and passages connecting each groove with each of the cylindrical portions of the casing; a plate secured over said grooves; a valve secured to a supply and an exhaust; pipes connecting each groove with the valve and the supply and the exhaust respectively.

3. In a rotary engine, the combination with a casing; of cylindrical portions thereto; an end plate having concentric circular grooves therein; passages connecting each of said grooves with each of the cylindrical portions; a plate secured over said grooves; a valve-casing mounted upon the end plate; a supply and a discharge connected thereto at diametrically opposite points; a valve within the casing having passages therein; and pipes extending from said casing to each of the grooves respectively.

4. In a rotary engine, the combination with a casing having similar cylindrical portions thereto; of pistons therein, heads projecting from the pistons, a cut-off contacting with each piston and movable therewith, an end plate having concentric circular grooves therein, and passages communicating with each of said grooves alternately, one passage of each groove extending into each cylindrical portion of the casing.

5. In a rotary engine, the combination with a casing having similar cylindrical portions thereto; of a piston mounted within each cylindrical portion, a head projecting from each piston, a rotary cut-off having grooves therein and contacting and movable with each of said pistons, the heads adapted to engage the grooves alternately, an end plate to the casing having concentric circular grooves therein and passages connecting each groove with each of the cylindrical portions of the casing, a plate secured over the said grooves, a valve secured to a supply and an exhaust, pipes connecting each groove with the valve and the supply and the exhaust respectively.

6. In a rotary engine, the combination with a casing having cylindrical portions thereto; of pistons mounted therein and having heads projecting therefrom, a rotary cut-off having

diametrically opposite longitudinally-extending grooves therein and contacting and movable with said pistons, the heads adapted to engage the grooves alternately, passages for
5 each piston upon opposite sides of its point of contact with the cut-off, an end plate having concentric circular grooves therein, passages connecting each of said grooves with each of the cylindrical portions, a plate secured over the said grooves, a valve-casing
10 mounted upon the end plate, a supply and a discharge connected thereto at diametrically opposite points, a valve within the casing having passages therein, and pipes extending
15 from said casing to each of the grooves, respectively.

7. In a rotary engine, the combination with a casing having similar cylindrical portions thereto; of pistons mounted therein, heads

projecting from the pistons, shafts to said 20 pistons, gears upon the shafts, a central gear meshing with each of said gears, a shaft thereto, a cylindrical cut-off movable with the shaft and contacting with each of the pistons, said cut-off having grooves therein 25 for the reception of the piston-heads alternately, an end plate to the casing having concentric circular grooves therein, and passages communicating with each of said grooves alternately, one passage of each groove extending into each cylindrical portion of the casing. 30

In testimony whereof I affix my signature in presence of two witnesses.

JOHN EDWIN PECK, JR.

Witnesses:

H. P. SPURLOCK,
W. A. BRAZIE.