

A. E. RASMUSSEN.
 ROTARY ENGINE.

APPLICATION FILED JULY 15, 1909.

Patented May 10, 1910

3 SHEETS—SHEET 1

957,799.

Fig. 1.

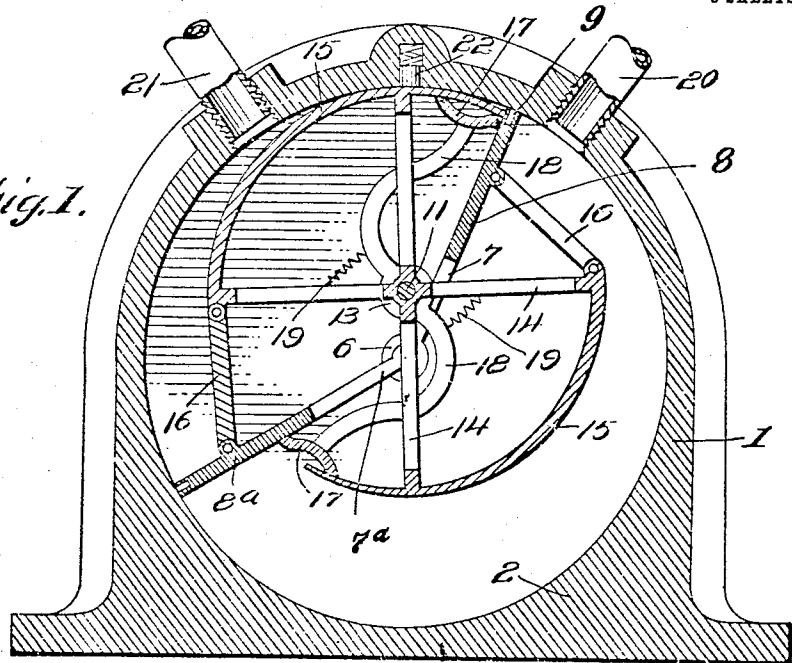
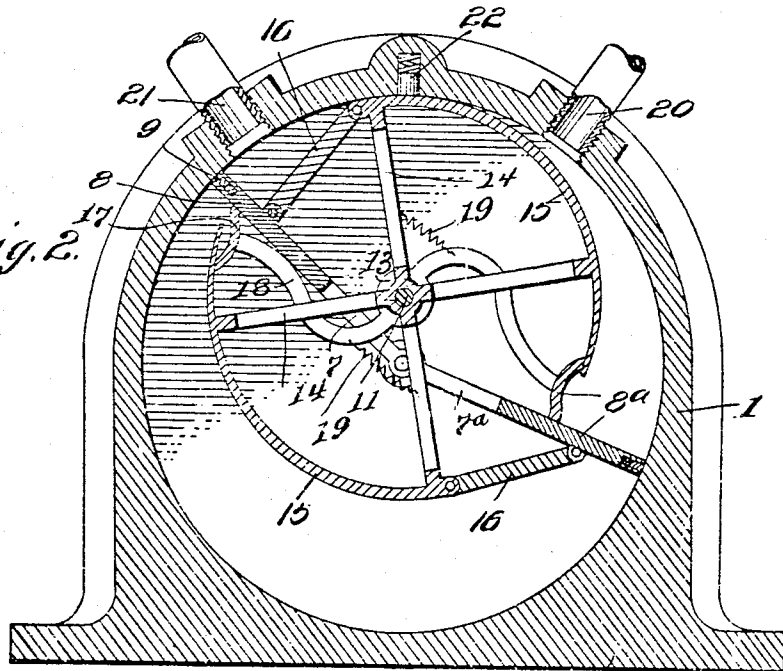


Fig. 2.



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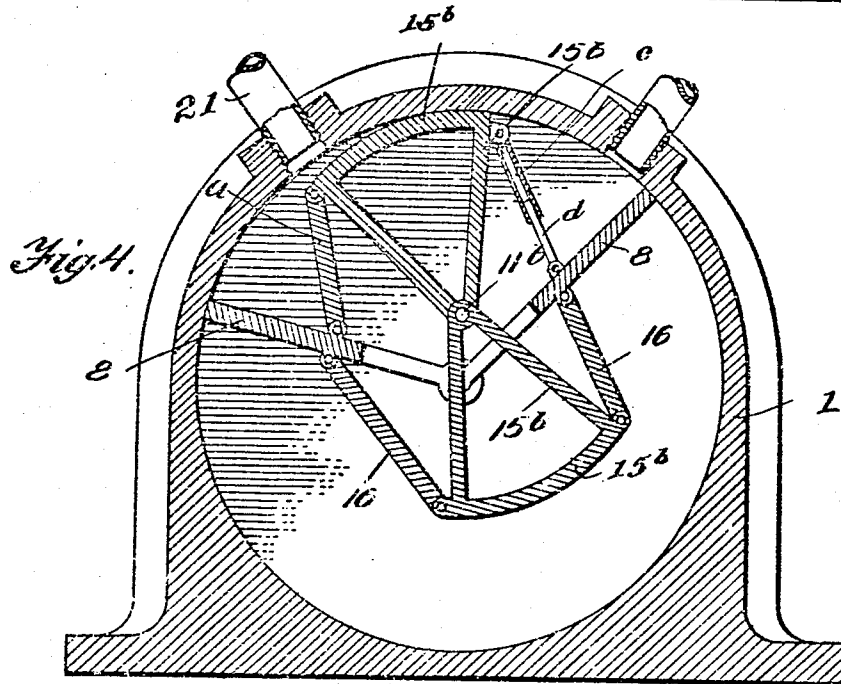
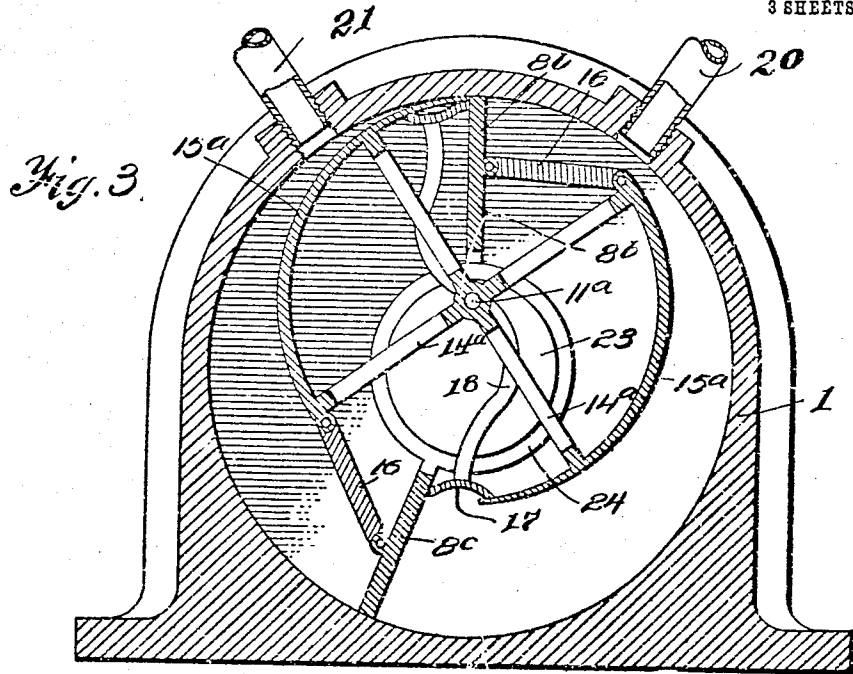
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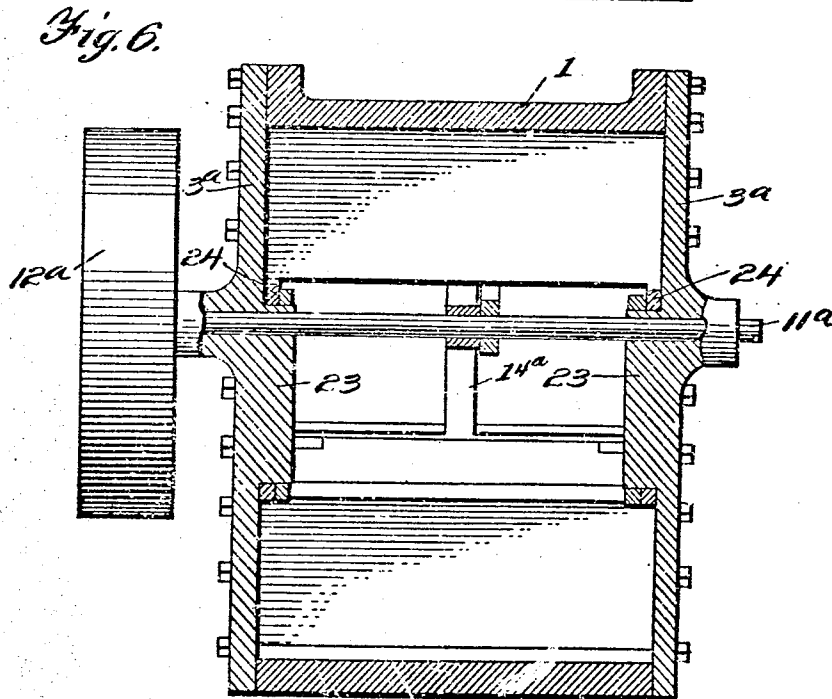
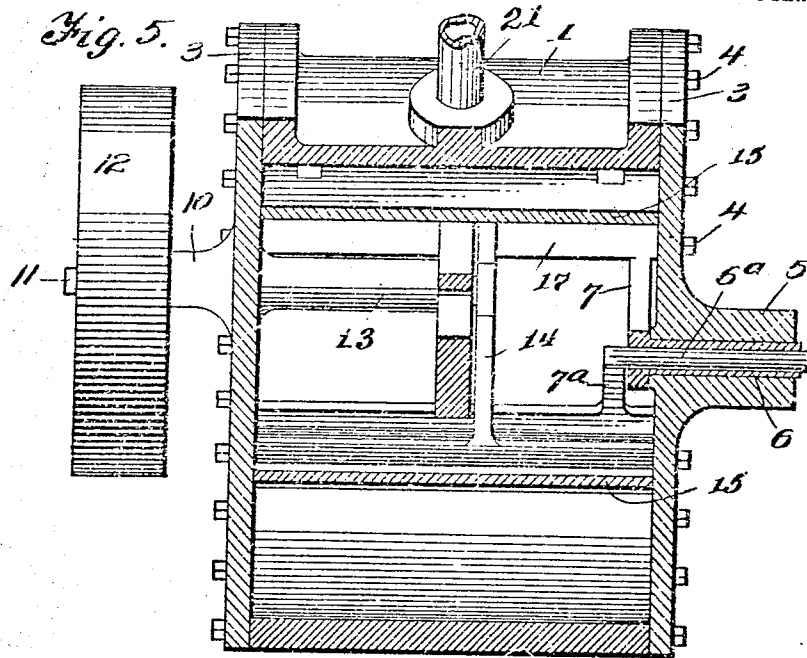
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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ROTARY ENGINE.

957,799.

Specification of Letters Patent.

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Application filed July 15, 1909. Serial No. 567,833.

To all whom it may concern:

Be it known that I, ALBERT E. RASMUSSEN, a citizen of the United States, residing at North Yakima, in the county of Yakima and State of Washington, have invented new and useful Improvements in Rotary Engines, of which the following is a specification.

This invention relates to rotary engines and one of the principal objects of the same is to provide an engine of simple construction, of compact form and one which can be readily reversed to rotate in either direction.

Another object of the invention is to provide a rotary engine which will work smoothly under varying conditions and which may be used as a steam engine, a gas engine or a compressed air motor, the operative elements being of simple construction and composed of few parts.

Still another object of the invention is to provide a rotary engine in which the pistons which rotate in the cylinder carry with them the sectors against which the motive element impinges to rotate the pistons.

These and other objects may be attained by the construction illustrated in the accompanying drawing, in which:—

Figure 1 is a central vertical section of a rotary engine made in accordance with my invention. Fig. 2 is a similar view with the operative parts in different position. Fig. 3 is a similar view illustrating a slightly modified form. Fig. 4 is also a section of similar character showing a still further modified form of my invention. Fig. 5 is a vertical section taken longitudinally of the engine shown in Figs. 1 and 2. Fig. 6 is a similar view of the engine shown in Fig. 3.

Referring to Figs. 1, 2 and 5 of the drawing the numeral 1 designates the cylinder provided with a suitable base 2 and provided with removable heads 3 secured in place by bolts 4. One of the heads 3 is provided with an outwardly extending centrally disposed boss 5 having a bore extending into the cylinder. Journalled in the bore of the boss is a sleeve 6 connected by integral arms 7 to a piston 8 having at its outer edge a suitable packing 9 which may be in the form of a yielding strip or a spring projected packing to insure contact of the outer edge of the piston with the interior wall of the cylinder. Another piston 8^a is connected by means of arms 7^a to a solid shaft 6^a extending through the sleeve 6. In this manner the two pistons are permitted to move independently. Pro-

jecting from the opposite head 3 of the cylinder is a boss 10 which is disposed eccentrically to the shaft 6^a. Mounted in the boss 10 is a shaft 11 carrying at its outer end a belt pulley 12. On the inner end of the shaft 11 a wheel is fixed said wheel comprising a hub 13 having a series of radially projecting spokes 14, said spokes carrying concentrically arranged sectors 15, the outer surfaces of which are designed to bear against the inner wall of the cylinder during their rotation. These sectors are carried around with the pistons by means of links 16 pivotally connected to the sectors and to the pistons. Gates 17 are connected to arms 18 mounted upon the shaft 11 and the arms 18 are connected by springs 19 to the spokes 14 of the wheel. An inlet port 20 communicates with the cylinder at one side of the center thereof and upon the opposite side is an exhaust port 21. It will be obvious that when the engine is reversed the port 21 will serve as an inlet port and the port 20 as an exhaust port. A suitable packing 22 is secured to the inner wall of the cylinder at a point between the two ports.

Referring now to Figs. 3 and 6 it will be seen that all the parts are of substantially the same construction as those already described excepting that the shaft 11^a is journalled eccentrically in bosses 23 formed upon the inner walls of the heads 3^a. The wheel carrying the sectors 15^a is provided with a series of spokes 14^a, and links 16 connect the sectors with the pistons 8^b and 8^c. These pistons are each connected to an eccentric strap 24 mounted upon the bosses 23 as shown more particularly in Fig. 6. The shaft 11^a carries a belt pulley 12^a.

Referring to Fig. 4 it will be seen that the gates 17 are omitted and that the sectors 15^b are each independently mounted upon the shaft 11^b. These sectors 15^b are also connected to the pistons 8 by means of links 16 and *a*. In lieu of the links 16 or *a* I may use a telescopic link comprising a tubular member *c* pivoted to the sector 15^b, while the solid telescopic member *d* is pivoted to the piston 8.

The operation of my invention may be briefly described as follows: The motive element being admitted through the inlet port 21 forces the pistons and the sectors around the cylinder. Referring to Fig. 2 it will be seen that the motive element bears directly upon the piston 8^a and impinges upon the

surface of the sectors 15 while the gates 8^a prevent the steam or motive element from passing back of the sector 15 while the springs 19 serve to force the gates against the pistons during every part of their operation. It will be obvious that the engine can be readily reversed by permitting the motive elements to enter through the port 21, the port 20 then serving as an exhaust port.

I claim:—

1. A rotary engine comprising a casing, independently mounted pistons in the casing, sectors mounted eccentrically to the pistons, links connecting the sectors and the pistons, and spring-actuated gates for closing the openings between the sectors and pistons.

2. A rotary engine comprising a cylinder, pistons independently mounted in the cylinder, a wheel mounted on a shaft disposed eccentrically to the center of rotation of said pistons, sectors carried by the wheels, links connecting said sectors and said pistons, said links being pivotally mounted at their ends, and gates connected by springs to said wheel for closing the space between the sectors and the pistons.

3. A rotary engine comprising a cylinder, pistons mounted concentrically in the cylinder, a wheel mounted eccentrically in the cylinder sectors carried by said wheel, said wheel and pistons being connected by pivoted links, inlet and exhaust ports in the casing, and gates actuated by springs for closing the openings between the sectors and the pistons.

4. A rotary engine comprising a casing, pistons mounted in the casing, one of said pistons being connected to a hollow shaft, the other piston being connected to a solid shaft mounted in the hollow shaft, a wheel journaled on a shaft mounted eccentrically in the casing, sectors carried by the wheel, links connecting the sectors with the piston, said links being pivoted, and gates carried by arms mounted on the wheel shaft and actuated by springs to close the openings between the pistons and the sectors.

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

ALBERT E. RASMUSSEN.

Witnesses:

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FRED A. CLEVELAND.