

J. W. WEGER.
ROTARY ENGINE.

APPLICATION FILED OCT. 8, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

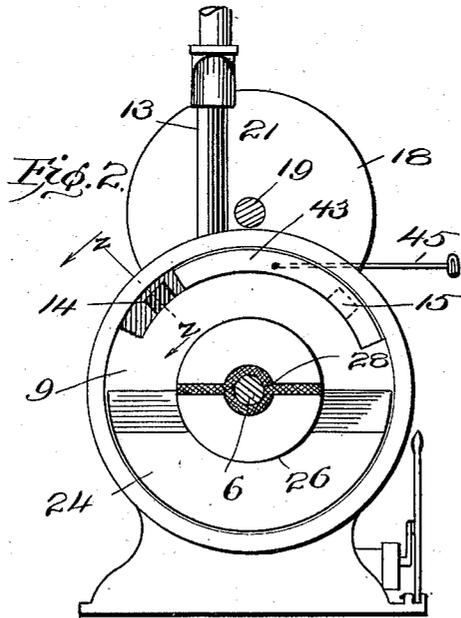
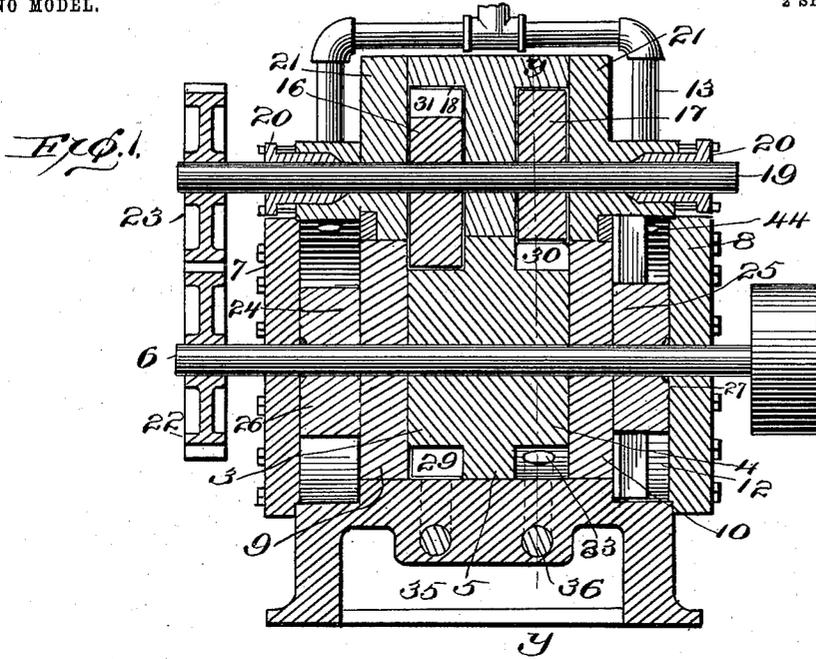
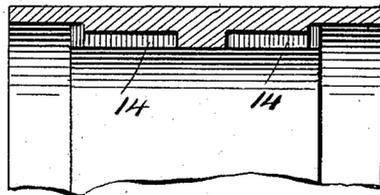


Fig. 5.

Witnesses
J. M. Fowler Jr.
H. L. Hill

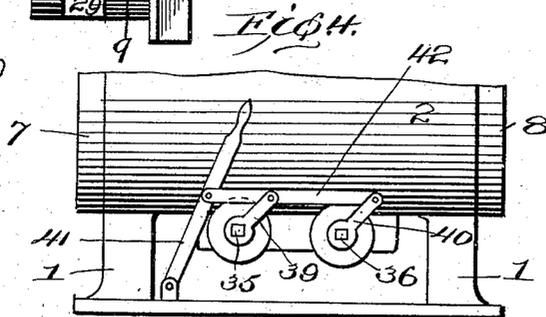
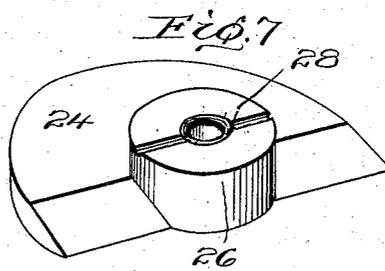
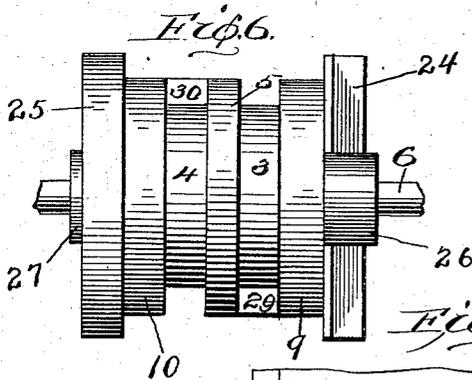
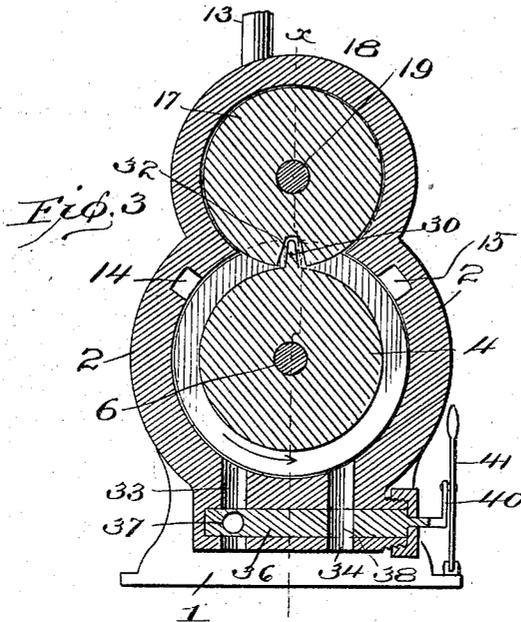


Inventor
J. W. Weger
 By *W. J. Fitzgerald & Co.*
 Attorneys

J. W. WEGER.
ROTARY ENGINE.
APPLICATION FILED OCT. 8, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses
J. M. Fowler
H. F. Hill

Inventor
J. W. Weger
 By *W. J. Fitzgerald*
 Attorneys

UNITED STATES PATENT OFFICE.

JOHN WILEY WEGER, OF COLBERT, INDIAN TERRITORY.

ROTARY ENGINE.

SPECIFICATION forming part of Letters Patent No. 748,243, dated December 29, 1903.

Applicator filed October 8, 1903. Serial No. 176,277. (No model.)

To all whom it may concern:

Be it known that I, JOHN WILEY WEGER, a citizen of the United States, residing at Colbert, in the Chickasaw Nation, Indian Territory, have invented certain new and useful Improvements in Rotary Engines; and I do hereby 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.

My invention relates to certain new and useful improvements in engines, and more particularly to that class known as "rotary" engines; and my object, among others, is to provide a device that will rotate in either direction and reliably perform its function.

A further object is to provide means whereby the rotation of the pistons in said engine may be quickly and easily reversed and caused to rotate in the opposite direction.

A still further object is to so construct and arrange the several parts of the interior mechanism whereby steam will be intermittently cut off from and admitted to the pistons, thus assuring the starting and rotation of said pistons at any and all times.

Other objects and advantages will be hereinafter made clearly apparent, reference being had to the accompanying drawings, which are made a part of this application, and in which—

Figure 1 is a central vertical longitudinal section of my improved rotary engine as seen from the line *xx* in Fig. 3. Fig. 2 is an end elevation thereof with the cylinder-head removed. Fig. 3 is a vertical transverse section as seen from the dotted line *yy* in Fig. 1. Fig. 4 is an elevation of the lower portion of my improved rotary engine, showing the exhaust-controlling mechanism. Fig. 5 is a detail sectional view as seen from the dotted line *zz* in Fig. 2, showing the ports leading from the steam-chest to the expansion-chambers. Fig. 6 is a side elevation of the main driving-shaft and the parts designed to rotate therewith removed from the cylinder, and Fig. 7 is a perspective view of one of the controlling-valves.

Referring to the drawings, in which similar reference characters designate corresponding parts throughout the several views, 1 indicates the base or supporting members of

my improved engine, upon which is carried or formed integral therewith a cylindrical member or body portion proper, 2, of the engine. Centrally disposed within said body portion 2 are the pistons 3 and 4, said pistons being formed integral with each other through the medium of the division or partition wall 5. Said pistons are rigidly secured to the transversely-disposed shaft 6, said shaft being mounted in suitable bearings in the cylinder-heads 7 and 8. Intermediate the cylinder-heads 7 and 8 and the auxiliary heads or division-walls 9 and 10 I provide chambers 11 and 12, which I will more properly designate as the "steam-chests." The steam is introduced into said chests through suitable inlet-pipes 13 and passes from the steam-chests into cooperation with the pistons 3 and 4 through ports 14 and 15, respectively. Designed to cooperate with the pistons 3 and 4 are the auxiliary pistons 16 and 17, said auxiliary pistons being mounted in a suitable housing 18, formed integral with the cylinder proper, 2, and preferably disposed upon the upper surface thereof. The pistons 16 and 17 are secured rigidly to and carried upon the transversely-disposed shaft 19, said shaft being carried in suitable bearings 20, provided in the heads 21. One end of the shafts 6 and 19, respectively, is provided with gear-wheels 22 and 23, said wheels intermeshing with each other and causing said shafts to travel in unison for a purpose to be hereinafter more clearly set forth.

Secured to the shaft 6 and disposed in the steam-chests 11 and 12 are controlling or cut-off valves 24 and 25, said valves being semi-circular and designed to be disposed relatively opposite each other upon said shaft. Said valves 24 and 25 are provided upon their outer surface with suitable hubs 26 and 27, the free ends of which bear against the inner sides of the heads 7 and 8, said hubs being provided with suitable grooves 28, into which is inserted packing, thus preventing leakage around the shaft 6 where it passes through the heads 7 and 8. The pistons 3 and 4 are each provided with a rib or flange 29 and 30, respectively, said flanges being located at directly-opposite points from each other upon the periphery of said pistons. The flanges 29 and 30 extend from the periphery of the

pistons to the inner wall of the cylinder 2, thus making an expansion-chamber of the space between said flanges and the auxiliary pistons 16 and 17. As the periphery of said auxiliary cylinders 16 and 17 and the periphery of the pistons 3 and 4 meet and travel upon each other at a given point, it is necessary to provide said auxiliary pistons 16 and 17 with suitable recesses 31 and 32, with which register said flanges 29 and 30, and by which means said pistons are permitted to rotate, as indicated more clearly in Fig. 3 of the drawings. Suitable exhaust-ports 33 and 34, intersecting the expansion-chambers at suitable points, are provided, said ports being operatively controlled by means of valves 35 and 36, said valves being provided with registering orifices 37 and 38, said orifices being so disposed in said valves that when they are turned to open one set of ports the opposite set of ports will be closed. In order to operate both of said valves simultaneously, I provide the outer ends of the valves 35 and 36 with crank-arms 39 and 40, said arms being pivotally secured to the controlling-lever 41 through the medium of the connecting-bar 42 and to which said crank-arms are pivotally secured. As it is desired to rotate the engine in either direction, I have provided sliding valves 43 and 44 in juxtaposition to the ports 14 and 15, said valves being provided with suitable controlling-handles 45. In operation the steam enters the steam-chests 11 and 12 through the pipes 13, thence through one set of the ports, (in this instance the ports 14, as the ports 15 are shown closed by the sliding valves 43 and 44.) The cut-off valves 24 and 25 are so located that but one of a set of ports will admit steam into the expansion-chamber at a time—that is, when the port 14 is admitting steam into the expansion-chamber from the end controlled by the valve 24 the port 14, at the opposite end, will be closed by the valve 25, and vice versa when the valve 24 is revolved sufficiently to close its port 14. The pistons 3 and 4 are caused to rotate by the steam expanding against the flanges 29 and 30, the steam being held from expanding in the opposite direction by the periphery of the pistons 3 and 4 and the auxiliary pistons 16 and 17, traveling upon each other.

Referring more particularly to Fig. 1 of the drawings, it will be seen that the flange 29 is disposed in its lowermost position in its path of revolution, while the flange 30 is in its uppermost position and intermeshing with its cooperating slot 32. It will therefore be seen that the steam will be confined between the flange 29 and the point of meeting of the pistons 3 and 16, and thus drive the engine by said piston 3. As soon, however, as the flange 30 has passed beyond the port 14, communicating with the steam-chamber 12, the valve 25 will have also passed beyond said port, and thus permit the steam to enter the expansion-chamber through the opposite end, while the flange 29 will have also passed beyond the

exhaust-port 34, thus permitting the steam upon this side to exhaust, and at the same time the cut-off valve 24 will have closed the port 14 at this end. It will therefore be seen that by so arranging these several ports they will be intermittent in their operation, obviating the possibility of a dead-center, and place the piston in operative position under all circumstances.

When it is desired to turn the engine in the opposite direction to that just described, the sliding valves 43 and 44 are thrown over, through the medium of the controlling-handles 45, until the ports 14 have been closed and the ports 15 opened, thus admitting steam to the expansion-chambers upon the opposite side of the meeting-point of the peripheries of the pistons 3 and 4 and 16 and 17, respectively. At the same time that the valves 43 and 44 are reversed to open the ports 15 the lever 41 is operated to rotate the valves 35 and 36 and close the exhaust-ports 34 and open the exhaust-ports 33, when the same operation will result as above described.

By referring to Fig. 6 of the drawings it will be seen that the pistons 3 and 4, heads 9 and 10, and valves 24 and 25 are designed to travel in unison and, if so desired, may be made contiguous, thus avoiding unnecessary wear and friction. This construction also places the lubricating-points in an accessible position.

It will thus be seen that I have provided an engine that will perform its work while rotating in either direction, and it will also be seen that I have provided means whereby the rotation of the pistons may be quickly reversed and caused to rotate in the opposite direction, and while I have described the preferred combination and construction of parts deemed necessary in carrying out my invention I wish to comprehend all substantial equivalents and substitutes which may 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—

An engine, of the class specified, comprising the cylindrical body portion having end sections or heads 7 and 8 and a housing 18, pistons rotatably mounted in said body portion, a shaft adapted to carry said pistons, and auxiliary pistons 16 and 17 rotatably mounted in the housing 18, a shaft 19 adapted to carry said auxiliary pistons, means carried by said shafts to cause said pistons and auxiliary pistons to travel in unison, chambers formed at either end of said body portion, suitable supply-pipes 13, ports 14 and 15, valves to control said ports, and exhaust-ports cooperating with said pistons, substantially as set forth.

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

JNO. WILEY WEGER.

Witnesses:

W. F. BELCHER,
E. K. SMITH.