W. H. McCRORY.

ROTARY ENGINE.

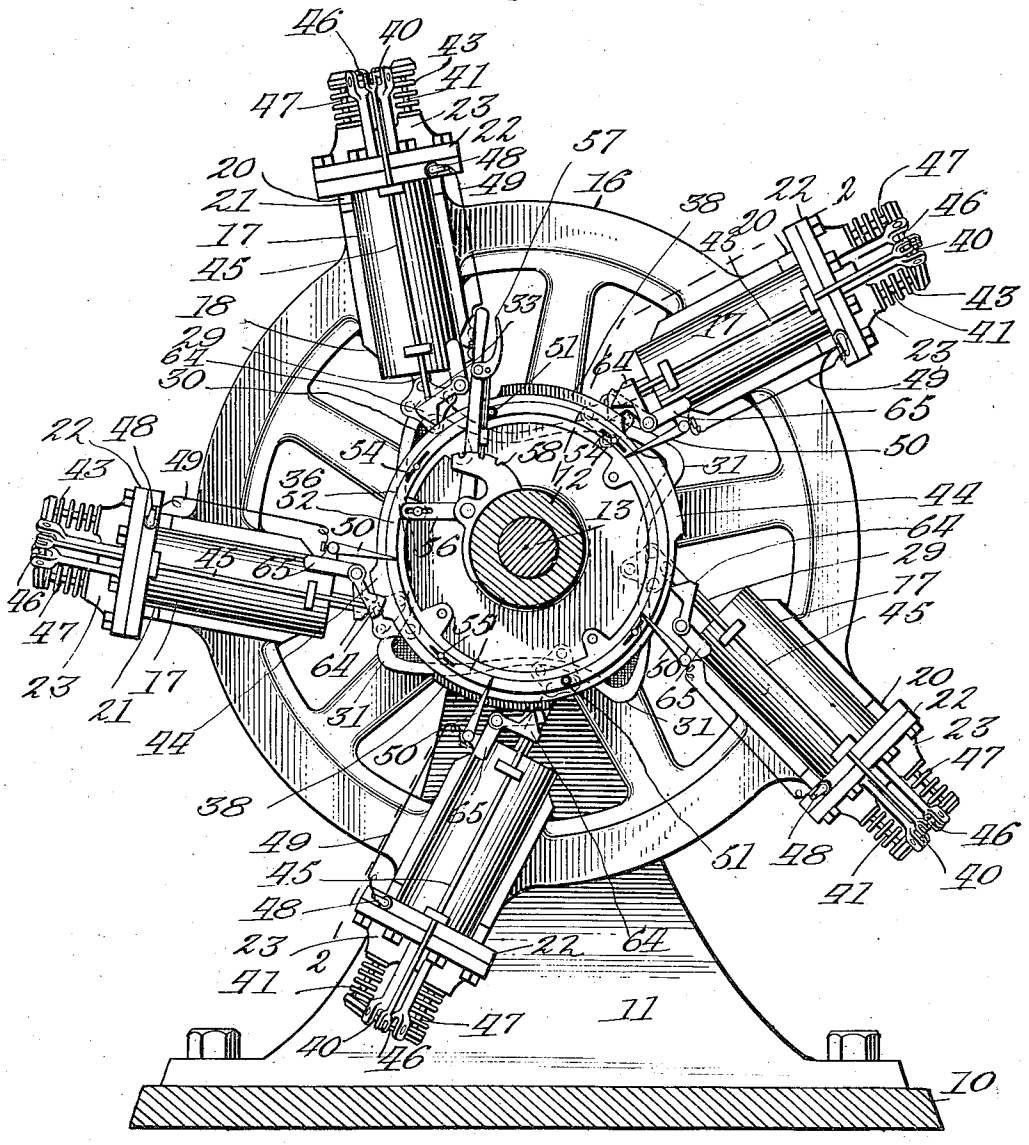
APPLICATION FILED JUNE 29, 1910.

1,149,528.

Patented Aug. 10, 1915.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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4 SHEETS—SHEET 2.

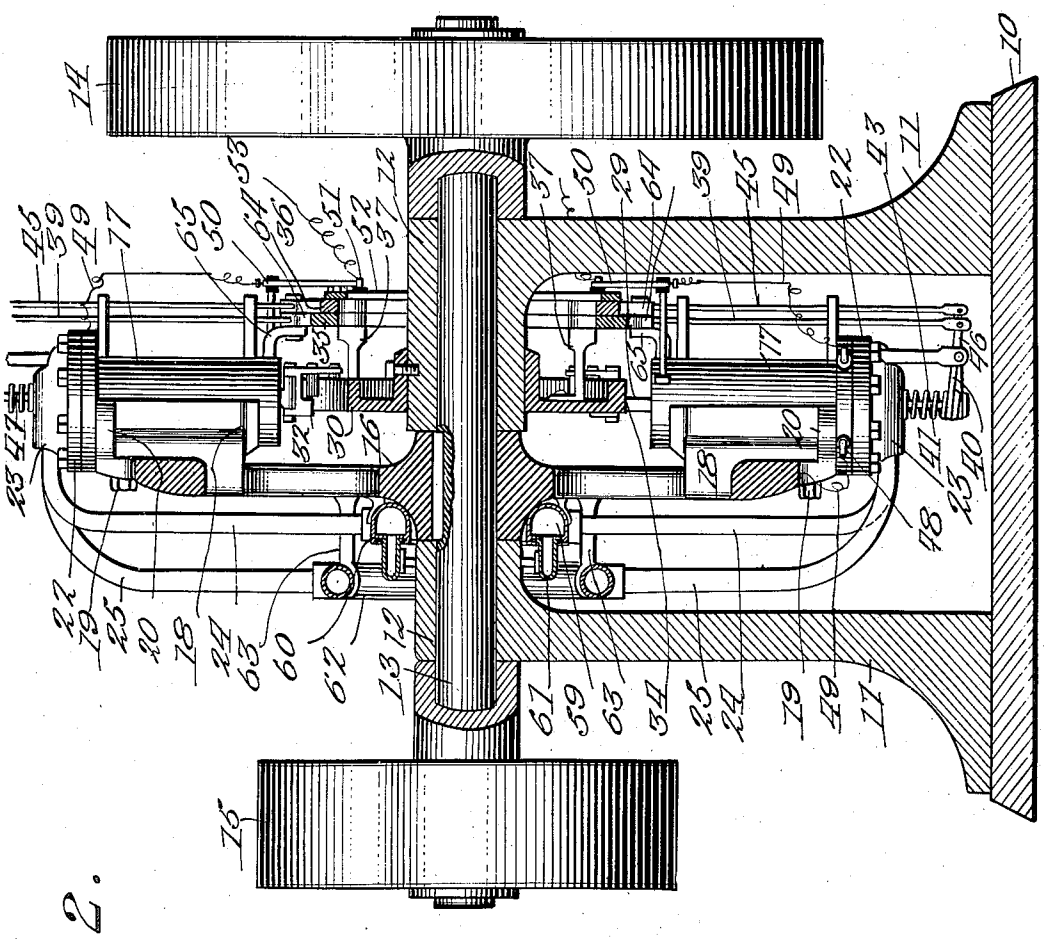


Fig. 2.

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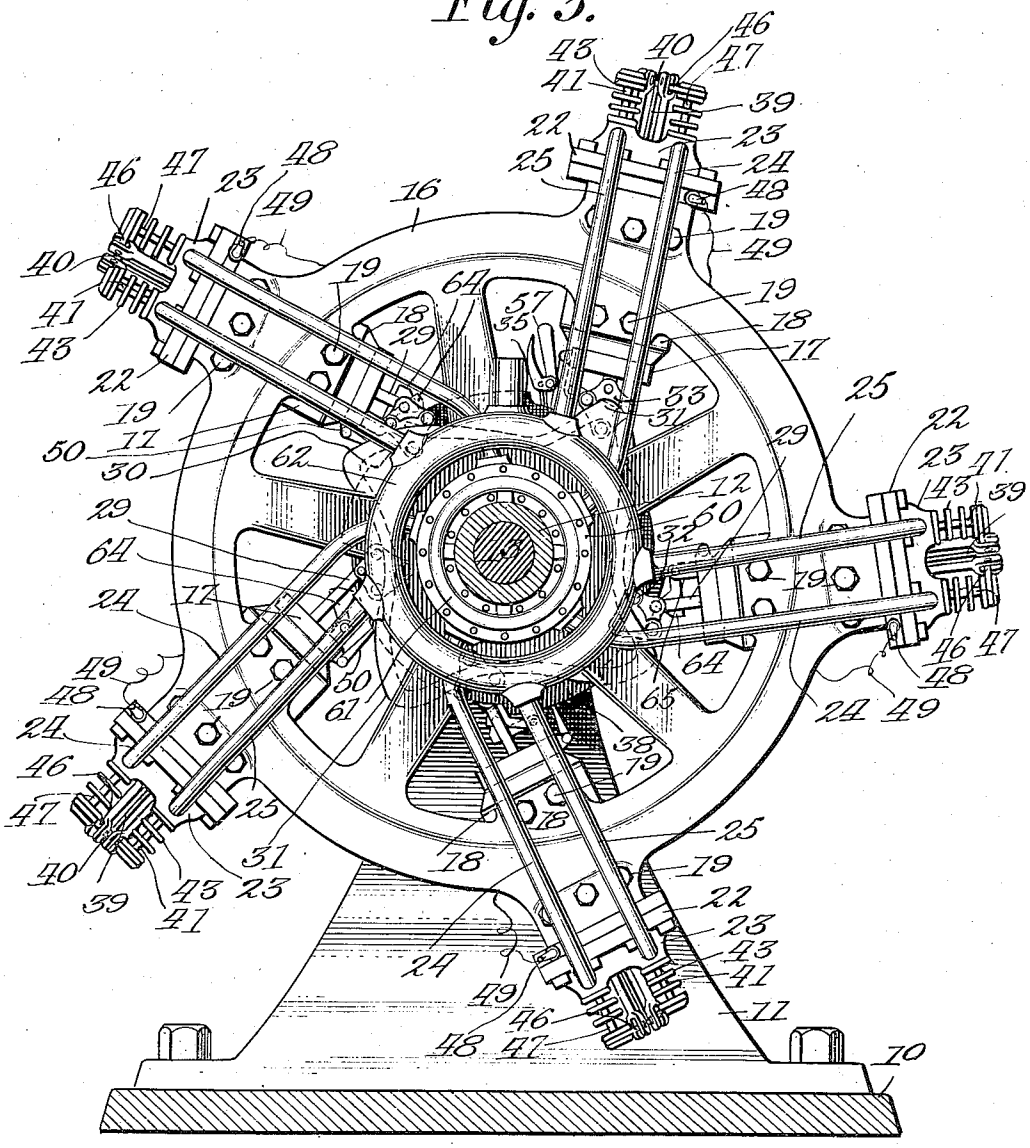
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 4.

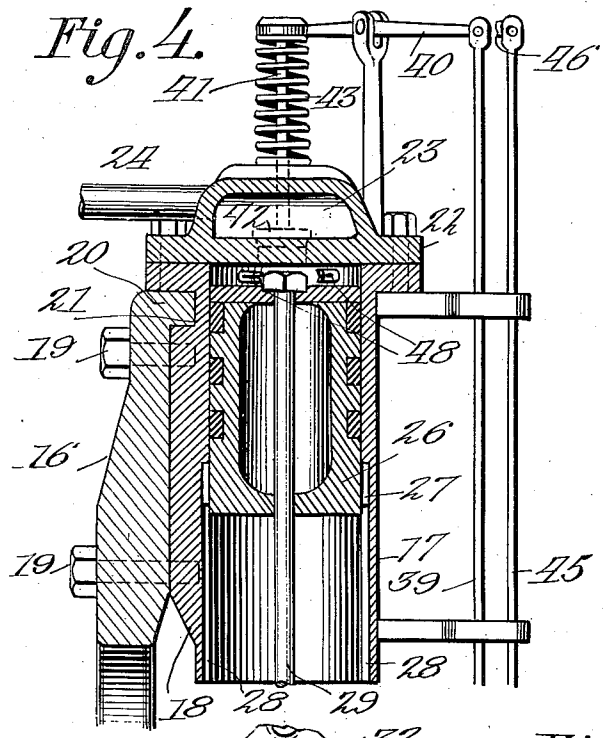


Fig. 5.

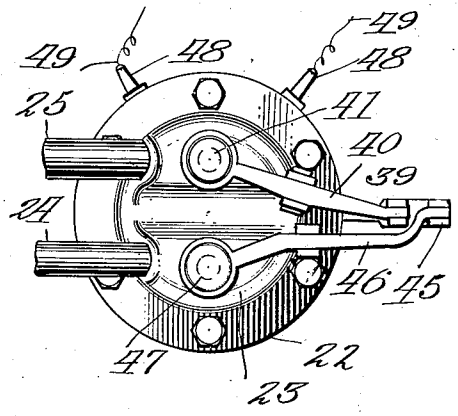


Fig. 6.

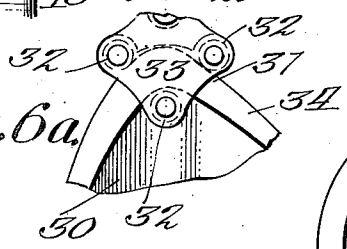
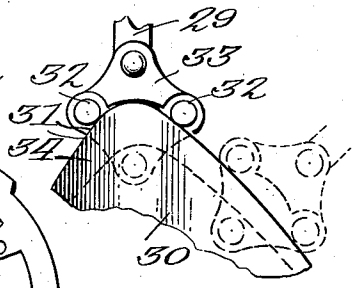


Fig. 6a.

Fig. 7.



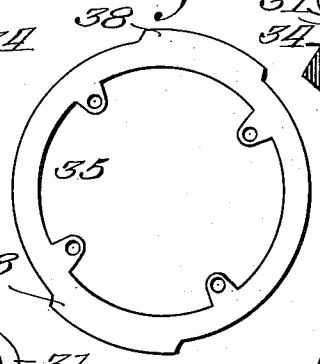


Fig. 8.

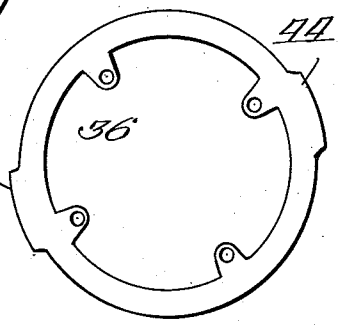


Fig. 9.

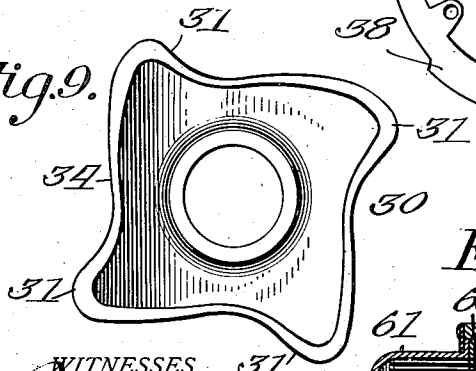
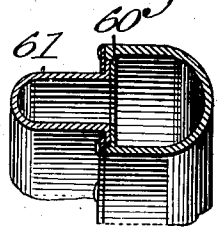


Fig. 10.



WITNESSES

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UNITED STATES PATENT OFFICE.

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ROTARY ENGINE.

1,149,528. Specification of Letters Patent. Patented Aug. 10, 1915.

Application filed June 29, 1910. Serial No. 569,561.

To all whom it may concern:

Be it known that I, WILLIAM H. McCRORY, a citizen of the United States, residing at 901 Eighth street, Three Rivers, county of St. Joseph, State of Michigan, have invented certain new and useful Improvements in Rotary Engines, of which the following is a specificatiotn, reference being had therein to the accompanying drawing.

This invention relates to a rotary gas engine and particularly to a construction involving a plurality of rotating cylinders cooperating with a relatively fixed part to produce a rotation of the cylinders through the connection of the pistons therein.

The invention has for an object to provide a novel and improved construction of means for controlling the valve movement of a series of rotating pistons and also transmitting power therefrom to a rotating member mounted to be driven thereby.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings, Figure 1 is a front elevation with the bearing standard in section; Fig. 2 is a vertical section on line 2—2 of Fig. 1; Fig. 3 is a rear elevation with the standard in section; Fig. 4 is a detail section of one of the cylinders and valve connections therewith; Fig. 5 is a top plan of one cylinder; Fig. 6 is a detail elevation of the driving cam showing the cylinder connection therewith; Fig. 6ª is a similar view of the opposite side of this cam; Fig. 7 is an elevation of the cam controlling the cylinder exhaust; Fig. 8 is a similar view of the cam controlling the inlet; Fig. 9 is an elevation of the driving cam; and Fig. 10 is a detail section of the fuel feed connection for the cylinders.

Like numerals of reference refer to like parts in the several figures of the drawings.

The numeral 10 designates the base of the engine upon which supporting standards 11 are mounted and these standards are provided with bearings 12 adapted to receive a shaft 13 which may, if desired, be provided with a fly or balance wheel 14 and have a power transmitting pulley 15. Upon this shaft a wheel or frame 16 is keyed, as shown in Fig. 2, and provided with a series of cylinders 17 disposed concentric to the shaft 14. These cylinders may be mounted upon the frame in any desired manner, for instance by means of an extension 18 at one side of the cylinder and adapted to be secured to the frame by means of bolts 19, while the frame is also provided with a rib or flange 20 adapted to set in a groove 21 formed in the extension 18 from the cylinder. The cylinder may be provided at its outer end with a head 22 having a chamber 23 with which the inlet pipe 24 for fuel communicates and also the exhaust pipe 25, This cylinder is also provided with a piston 26 which has at opposite sides guide lugs 27 adapted to travel in ways 28 formed in the cylinder and power is transmitted from said cylinder by means of the rod 29 which is adapted to coöperate with a relatively fixed part 30 carried by one of the standards 11, as shown in Fig. 2.

The part 30 is preferably formed as a cam having faces 31 against which the piston rods from the cylinders act to rotate the wheel or frame by which the cylinders are carried and this connection may comprise rollers 32 carried by a plate 33 upon the rod 29 and adapted to traverse the inner and outer faces of the flange 34 carried by the periphery of the part 30 as shown in Figs. 6 and 6ª. Supported from the part 30 are cams 35 and 36 for controlling the exhaust and inlet to the cylinders, respectively. For that purpose, a bracket 37 extends laterally from the part 30 as shown in Fig. 2 and the cam 35 is provided with operating faces 38 which contact with valve rods 39 connected with a lever 40 at the outer ends of the cylinders. The lever 40 is provided with a valve stem 41 extending to an exhaust valve 42 and these parts are held under tension by means of a spring 43 disposed between the cylinder head 22 and the lever 40.

The inlet cam 36 is provided with operating faces 44 which contact with a valve rod 45 connected to a lever 46 which carries a stem 47 of the inlet valve. This valve is held under tension by a spring as described in connection with the exhaust valve. Each of these valve rods is operated by a contact lever 64 carried by an extension 65 from the cylinder and contacting with the operating cam and with the valve rods, as shown in Fig. 1. The cylinder 17 is also provided with a suitable spark or firing device 48 which may be connected by a line 49 in circuit with a contact finger 50 adapted to engage a contact 51 carried by a ring 52 sup-

ported from the bracket 37 and in relatively fixed position to the rotating cylinders. The contacts 51 are charged by an electric connection 53 from any suitable source of power. As shown in Fig. 1, the ring 52 is adjustable to vary the explosion period of the cylinder and this may be accomplished by means of the slot 54 in the ring through which a fixed pin 55 extends, while the shifting of the ring is effected by means of a bell crank lever 56 connected thereto and adapted to be retained in adjusted position by means of a latch 57 mounted to engage a sector 58.

The fuel feed to the inlet pipes 24 may be arranged in any desired manner to coöperate with the rotating cylinders, for instance by means of an annular chamber 59 mounted upon the wheel 15 to rotate therewith and having a sliding contact 60 with a fixed supply ring 61 as shown in Fig. 10. The exhaust pipes 25 from the cylinders all communicate with a pipe 62 supported from the wheels 16 by means of brackets 63.

In the operation of the engine, the fuel fed through the inlet pipes supplies the cylinder with an explosive mixture admitted at the inlet valve controlled by the cam shown in Fig. 8. This fuel is compressed by the inward movement of the piston and exploded by the action of the contact ring for that purpose. This drives the piston toward the shaft and through its connection with the driving cam, produces a rotation of said shaft. At the proper period in this rotation, the exhaust cam shown in Fig. 7, operates the exhaust valve permitting the free return of the piston to its initial position as shown in Fig. 4. This piston is guided within its cylinder by means of the lugs operating in the grooves therein while the roller connection from the piston rod to the driving cam effects a continuous rotation of the frame carrying the cylinders with a minimum of frictional resistance with the cam flange. The fuel feed connection permits a proper supply to the cylinders during their rotation and prevents the escape of fuel, while the exhaust connection conducts the escaping products of combustion from the cylinder. It will be seen that the invention presents a simple, efficient and economically constructed form of rotary gas engine in which the number of cylinders used and their relative location may be varied in accordance with the requirements of the engine.

Having described my invention and set forth its merits what I claim and desire to secure by Letters Patent is—

1. In a rotary engine, the combination with a rotary supporting member having a lateral flange, of a grooved cylinder fitting over said flange and secured thereto, pistons working in said cylinder, a fixed cam track arranged within the path of said cylinders, a connection from said piston to said cam track, firing devices upon said cylinders, a firing ring having contacts to make circuit with said firing devices, and means for oscillating said ring.

2. In a rotary engine, the combination with a rotary supporting member, cylinders having an interlocking connection with said member, pistons carried by said cylinders, a fixed cam track within the path of said cylinder, connections from said piston to said cam track comprising plates having anti-friction rollers, firing connections upon said cylinders, a firing ring having a contact to make circuit with said firing connections, a lever having a sliding connection with said ring, and means for locking said lever in adjusted position.

3. In a rotary engine, the combination with a rotary supporting member, cylinders carried by said member, pistons working in said cylinders, a fixed cam track within the path of said cylinders, plates carried by said pistons, rollers carried by said plates working upon the opposite sides of said cam track, valves and operating connections therefrom carried at the outer ends of each cylinder, and a fixed valve operating cam supported to actuate said connections.

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

WILLIAM H. McCRORY.

Witnesses:
J. DANIEL BROSY,
H. C. KLETT.