

(No Model.)

G. H. CHAPPELL.  
ROTARY GAS ENGINE.

No. 441,865.

Patented Dec. 2, 1890.

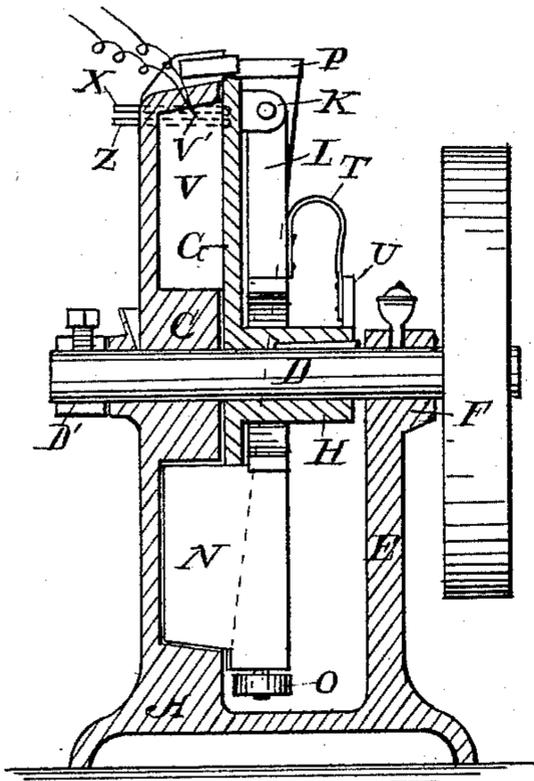


Fig. 1.

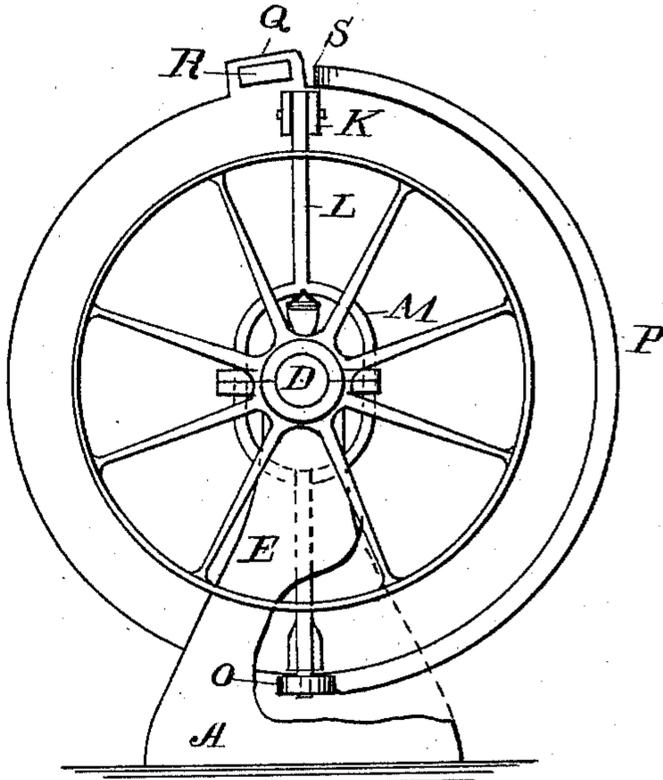


Fig. 2.

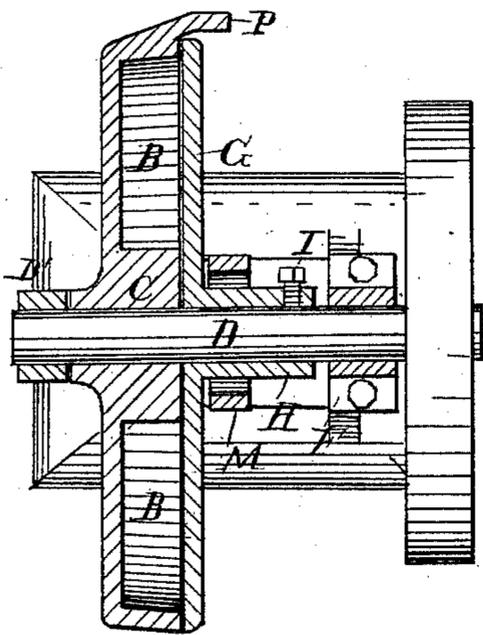


Fig. 3.

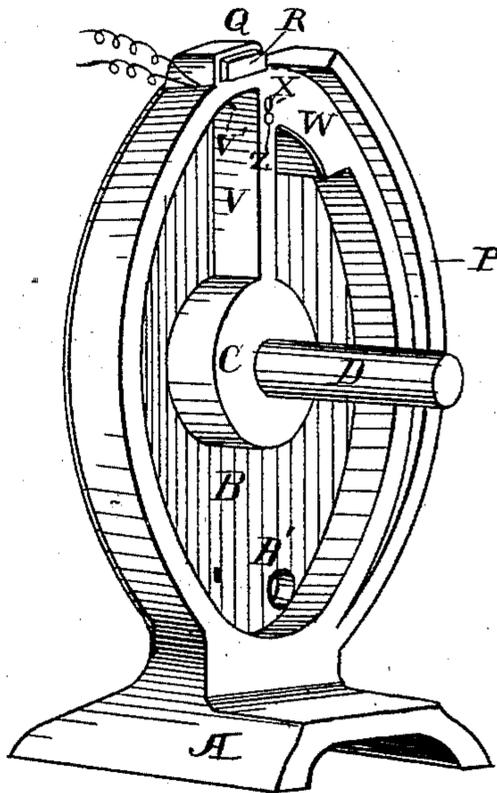


Fig. 4.

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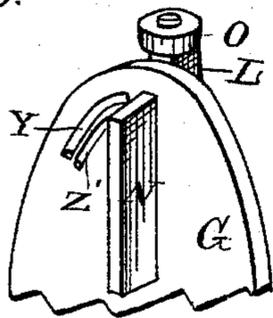


Fig. 5.

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# UNITED STATES PATENT OFFICE.

GEORGE H. CHAPPELL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO  
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## ROTARY GAS-ENGINE.

SPECIFICATION forming part of Letters Patent No. 441,865, dated December 2, 1890.

Application filed August 18, 1890. Serial No. 362,290. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. CHAPPELL, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Rotary Gas-Engines, of which the following is a specification.

The object of my present invention is to provide a rotary gas-engine; and it consists of a fixed annular chamber having within one or more radiating partitions and centrally a shaft journaled therein, which carries a rotating disk having a slot and a blade in said slot, and hinged at its extremity to the outer face of the disk. This blade carries at its free end a roller or wheel which travels during a portion of the rotation of the disk over an inclined way, whereby the blade is gradually drawn out of the chamber, so as to ride over and clear the partition in the chamber. A spring or other equivalent means is employed to drive the blade back into the chamber at the proper point, all of which will be set forth in detail.

Figure 1 is a central vertical longitudinal section of the rotary gas-engine. Fig. 2 is a side view of the same; Fig. 3, a central horizontal section; Fig. 4, a perspective view of the stationary chamber and shaft with the rotating disk removed; and Fig. 5, a perspective view of a portion of the rotating disk, showing the position of the blade and the port for the admission of air.

The engine is constructed with a suitable base A, having cast therewith the annular chamber B, surrounding the boxing or housing C, for the shaft D, and the standard or post E, having the boxing F. The shaft D, therefore, revolves in the boxing C F. One face or side of the chamber B is open, and placed on the shaft D, on the open side of the chamber, is a disk G, having the hub H, through which I place the set-screw I and the key J, or both, in order to hold the same firmly to the shaft. This disk has on one side a radial slot, which coincides with the width of the chamber B, and on the opposite side the outer face of the disk has near its edge two ears K, between which is hinged the end of an arm L. This

arm extends across the face of the disk, having a loop M centrally where it passes the shaft D, and its free end is provided with a blade N, which passes through the slot in the disk and extends into the chamber B. The outer end of the arm L has a small roller or wheel O and this travels over the concentric inclined way P, which is cast with the chamber-casing. This inclined way commences at the lowest point of the casing and gradually inclines outwardly, reaching its farthest limit at the top of the casing, where it abruptly terminates. Directly to the left of the end of this inclined way is a housing Q, which has seated therein a cushion R, constructed of any suitable material, so that when the roller O travels around on the inclined way P and rolls off the end at S it will strike the cushion R, and thus break the force of the impact, or otherwise the blade N would strike the walls of the chamber B with such force as to damage the same. A spring T between the arm U on the hub H and arm L serves to drive in the blade N as the disk G rotates.

The chamber B has a radiating partition-wall V, extending from the boxing C, and a portion of the chamber on the right side of this wall is filled in, as shown at W. In this filled-in space is located the air-inlet X. Corresponding to this inlet X, and coinciding therewith, the inner face of the disk G has a short concentrically-disposed channel Y, located behind the blade N. The wide face of the portion W thus prevents the air or gas from passing back into the chamber as the disk rotates and the close proximity of the inlet X to the chamber in the left side of the partition-wall V enables me to supply air. Directly below this inlet in the portion W is the gas-inlet Z, and corresponding therewith in the face of the disk is a channel or groove Z', corresponding with the channel Y. It will thus be observed that both the air and gas are cut on and off by the simple movement of the channels past the inlets and that the air and gas are commingled within the chamber between the blade N and the partition-wall V, the igniting-point being located at V', as shown in Fig. 4.

In order to be able to tightly bind the disk

G against the face of the chamber-casing, and at the same time permit the disk to revolve freely, I have placed a collar D' on the outer end of the shaft D. Any other suitable means for holding the disk and chamber together may be employed.

The exhaust-port B' is located in the wall of the chamber at a point directly opposite the point of ignition.

In operation the blade, after leaving the inclined way P, enters the chamber B, and immediately the air and gas enter through their respective channels Y Z', and being ignited the expansive force acts on the blade N until it reaches the port B'—a point half-way around in the rotation of the disk. If desired, the disk can be provided with more than one of these blades, so that a continuous propulsive force may be exerted; but such mechanism is reserved for future applications, together with specific means for holding said disk to the chamber-casing, as the essential features of this invention relate to the construction and arrangement of the chamber and the rotating disk and blades with their relations to each other.

What I claim as new is—

1. In a rotary gas-engine, a stationary annular chamber, one side of which is open, having a radiating partition-wall therein, provided on the exhaust side with the offset or enlargement contiguous to the gas and air inlets, and a concentric inclined way around one side, with a rotating disk having a hinged arm and a blade, which latter passes through said disk and moves in and out of the chamber by the action of the inclined way on said arm, substantially as herein set forth.

2. A rotary gas-engine composed of a casing having an annular chamber with a radiating partition-wall, said casing being open at one

side, in combination with a disk on the shaft in contact with the open face of the chamber, said disk having a movable blade entering the annular chamber and connected to said disk by means of a yoke-lever, substantially as herein set forth.

3. A rotary gas-engine having a revolving disk provided with a radial slot, in one side of which is placed the blade of a yoke-lever, one end of which is hinged to the disk, and having a roller at its free end, in combination with an inclined way on the chamber-casing, substantially as herein set forth.

4. A rotary gas-engine having a fixed or stationary annular chamber provided with a radial partition-wall therein and an inclined way on one side of the casing exteriorly, in combination with the drive-shaft having thereon a disk provided with a radial slot, and a blade attached to a yoke-lever, adapted to enter said slot, the free end of said yoke-lever having a roller, and the spring for holding the arm and returning the blade into the chamber, substantially as herein set forth.

5. A rotary gas-engine having a stationary annular chamber with a radial partition-wall therein, one side of chamber-casing being open, said partition-wall being provided with air and gas inlets, in combination with a rotatable disk carrying a movable blade and two concentrically-disposed grooves or channels coinciding with the location of the air and gas inlets, substantially as herein set forth.

Signed at New York, in the county of New York and State of New York, this 16th day of August, A. D. 1890.

GEORGE H. CHAPPELL.

Witnesses:

J. S. ZERBE,  
I. S. ELKINS.