H. FAUROT.

TURBINE.

APPLICATION FILED JUNE 10, 1915.

1,187,293.

Patented June 13, 1916.

6 SHEETS—SHEET 1.

Fig. 1.

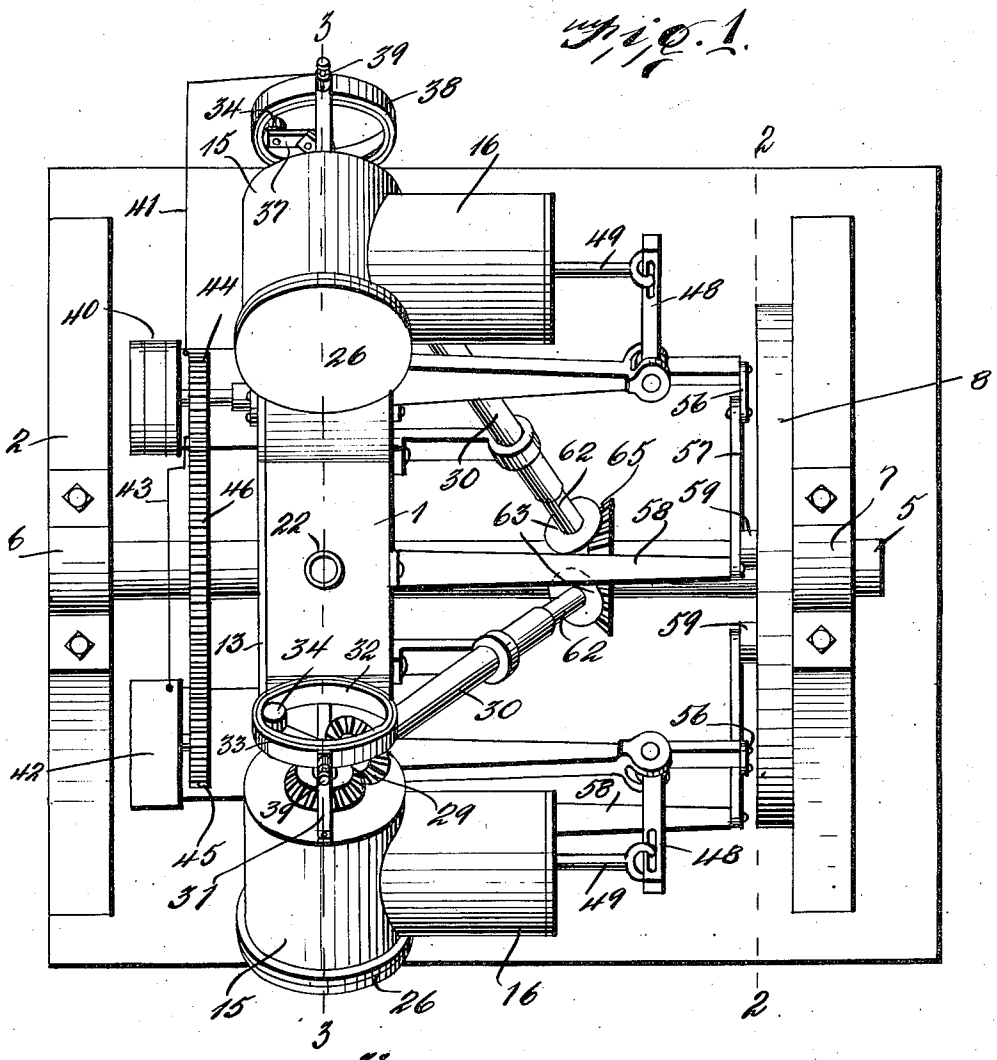
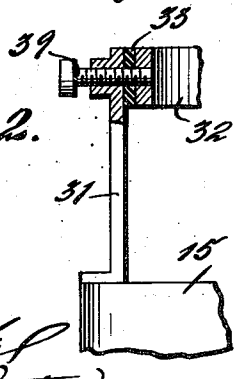


Fig. 12.



Witnesses

L. E. Whitesel

M. L. Rector

Inventor

H. Faurot.

By E. E. Goodman & Co.

his Attorney

H. FAUROT.

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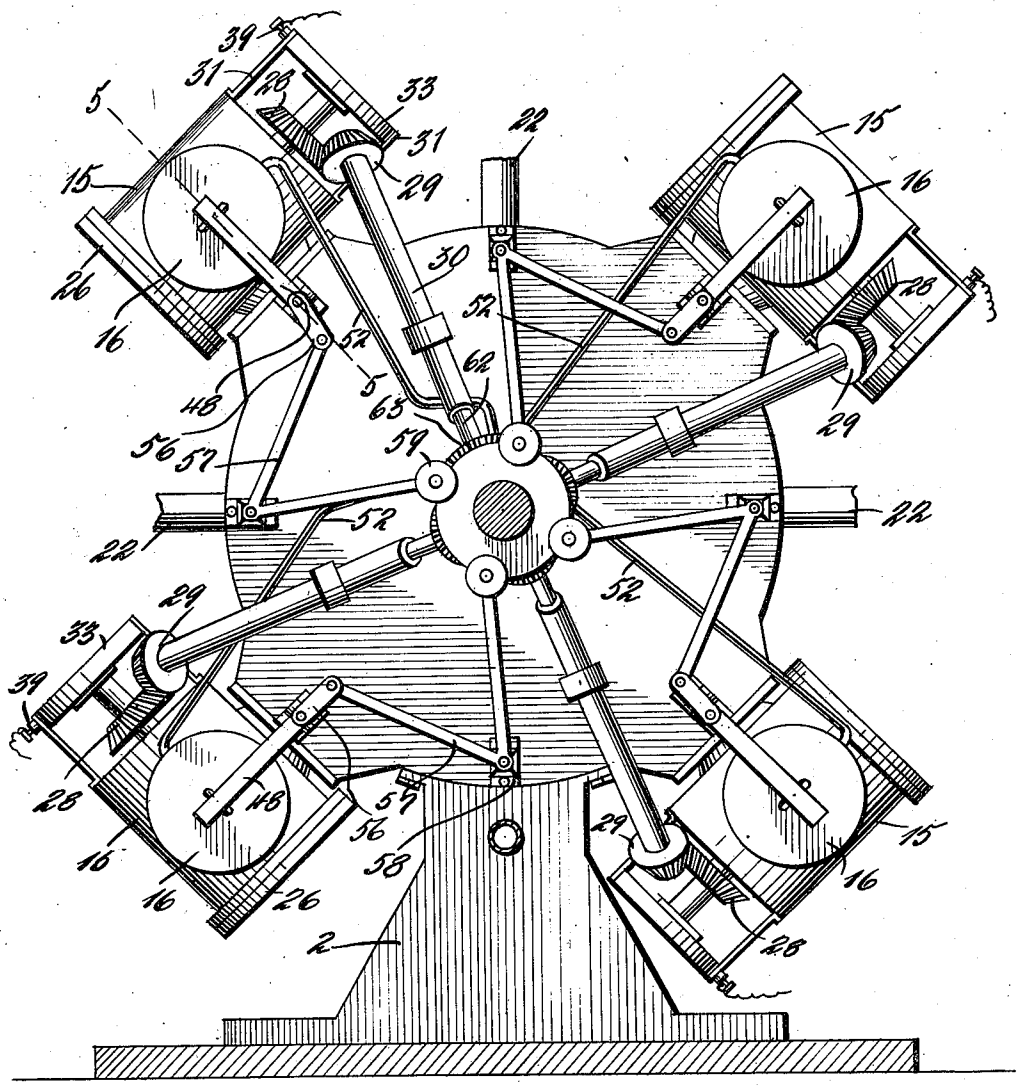

Fig. 2.

Witnesses

M. L. Rector

Inventor

H. Faurot,

By G. G. Crosby

his Attorney.

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6 SHEETS—SHEET 3.

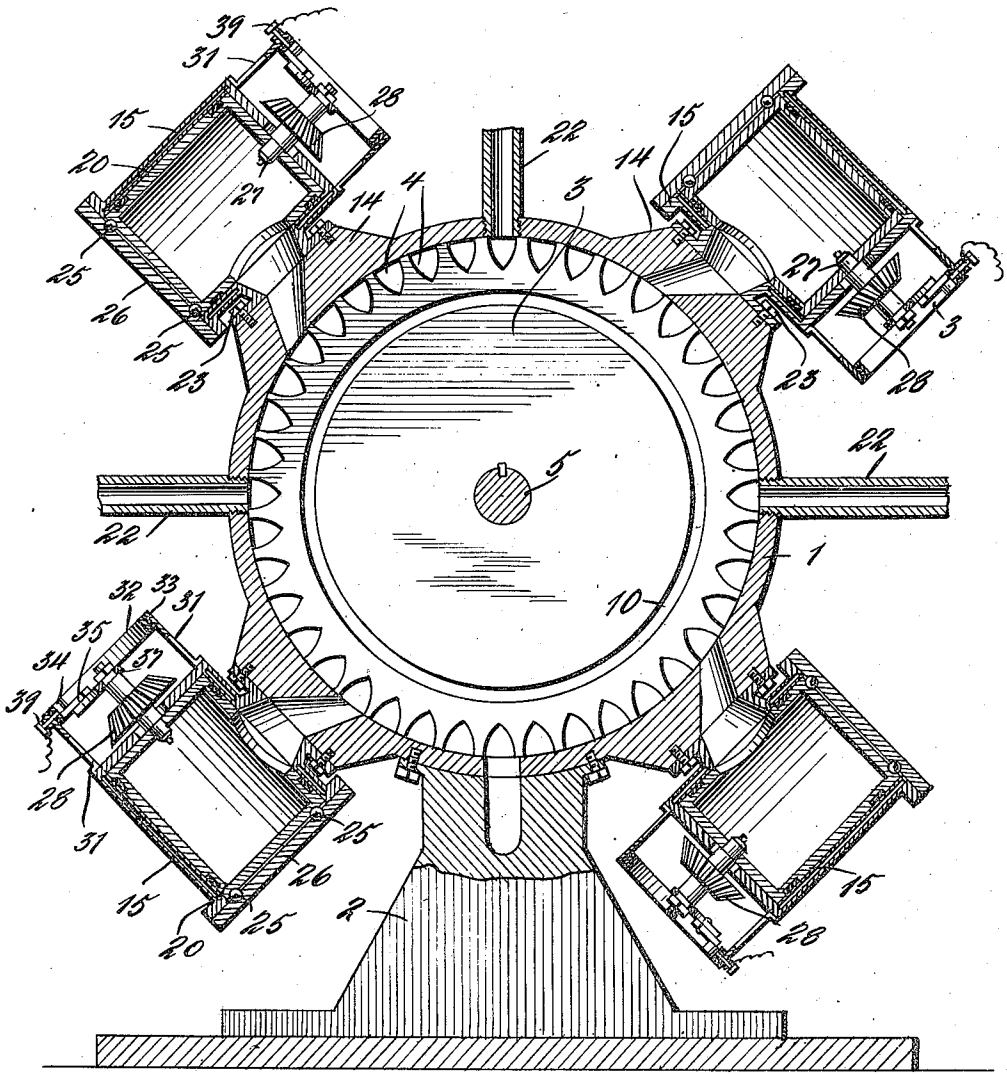

Fig. 3.

Witnesses

M. L. Rector

Inventor

H. Faurot.

By E. E. Thomas & Co.,

his Attorney

H. FAUROT.

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6 SHEETS—SHEET 4.

Fig. 4.

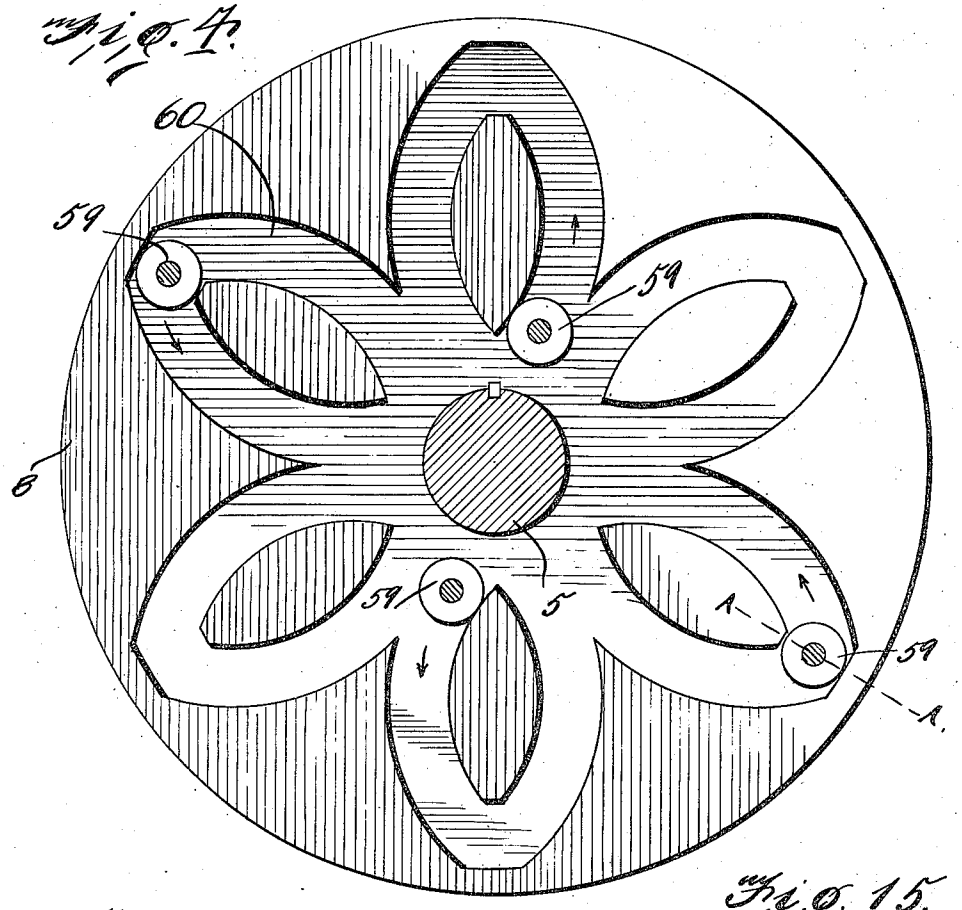


Fig. 14.

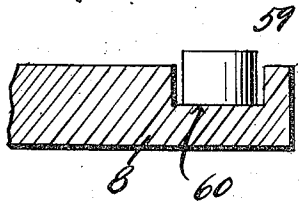
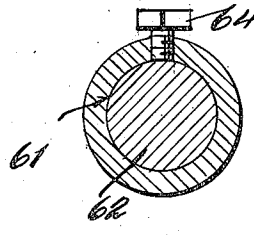


Fig. 15.



Inventor

H. Faurot.

Witnesses

M. L. Rector

By E. G. Siggers & Co.

His Attorneys

H. FAUROT.

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6 SHEETS—SHEET 5.

Fig. 5.

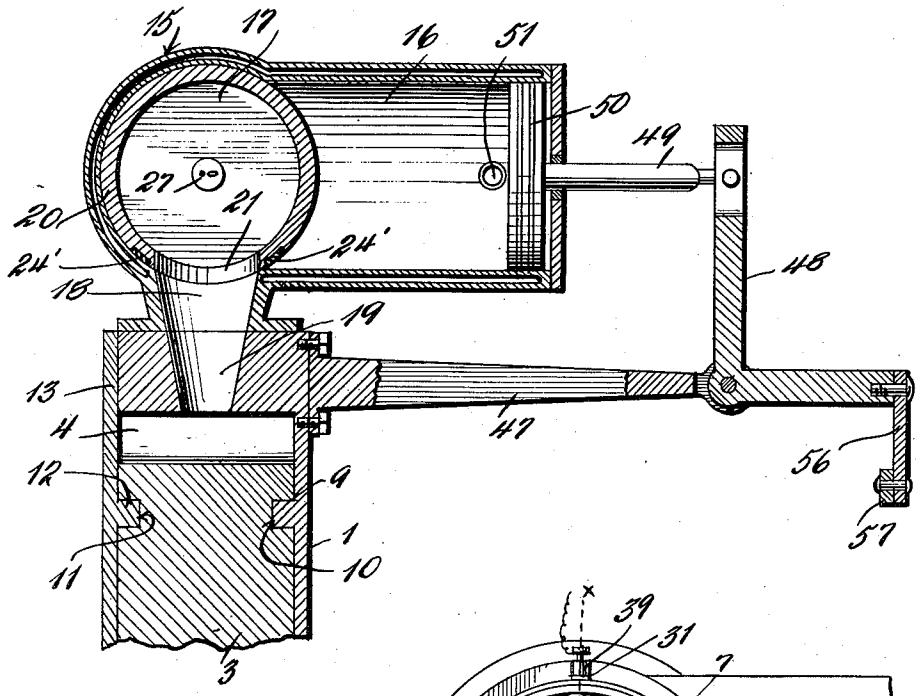


Fig. 6.

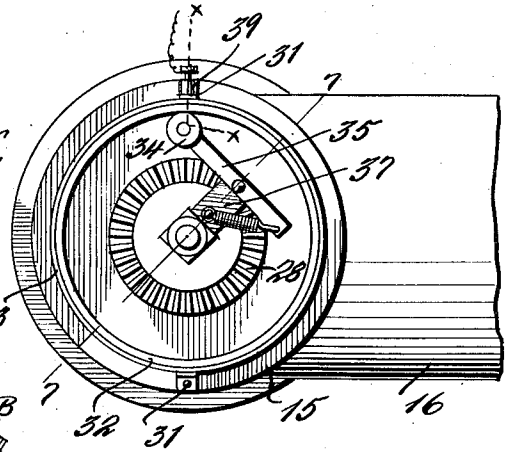
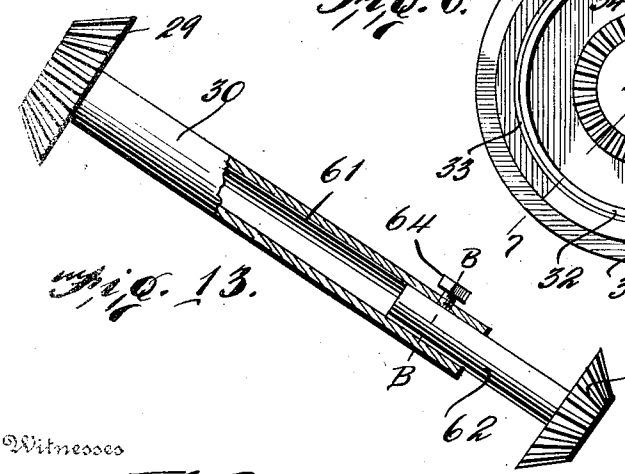


Fig. 13.



Witnesses

M. L. Rector

Inventor

H. Faurot.

By E. G. Siggers & Co.

his Attorneys.

H. FAUROT.

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6 SHEETS—SHEET 6.

Fig. 8.

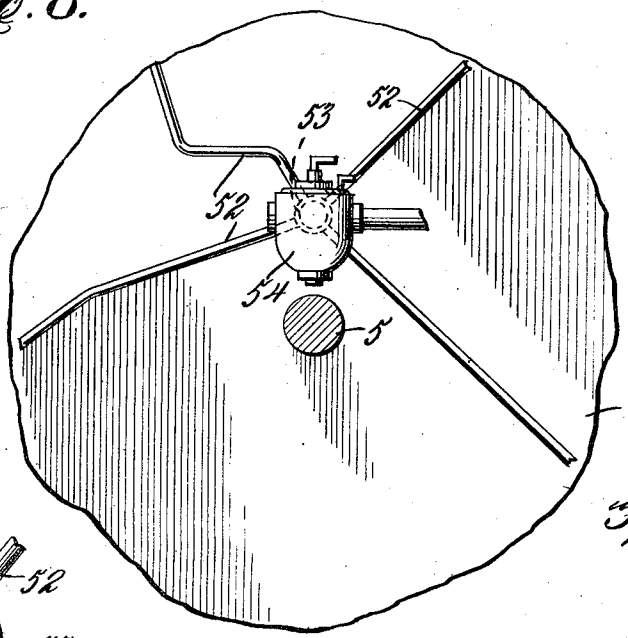


Fig. 9.

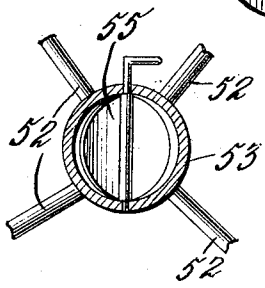


Fig. 10.

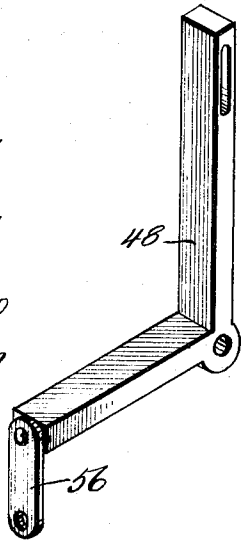


Fig. 7.

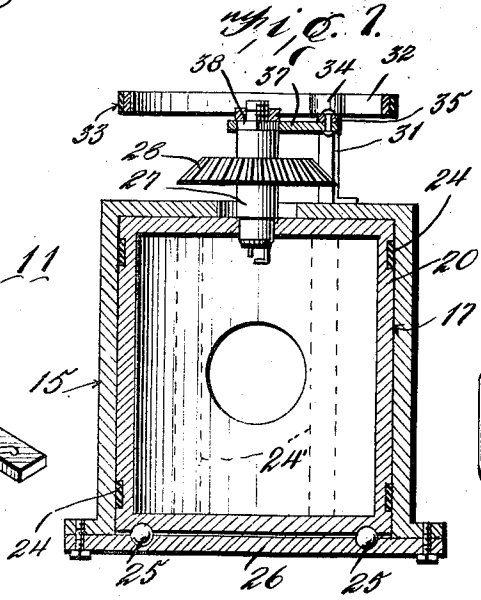
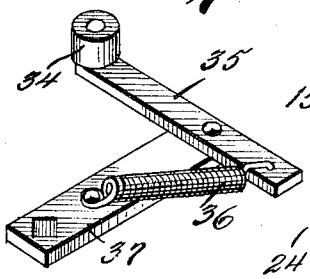


Fig. 11.



Witnesses

M. L. Rector.

Inventor

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By E. G. Crosby,

his Attorneys

UNITED STATES PATENT OFFICE.

HENRY FAUROT, OF COFFEYVILLE, KANSAS.

TURBINE.

1,187,293. Specification of Letters Patent. Patented June 13, 1916.

Application filed June 10, 1915. Serial No. 33,375.

To all whom it may concern:

Be it known that I, HENRY FAUROT, a citizen of the United States of America, residing at Coffeyville, in the county of Montgomery and State of Kansas, have invented certain new and useful Improvements in Turbines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to internal combustion engines and more especially to an internal combustion engine of the turbine type.

One of the principal objects of this invention is the production of a simple and efficient means for causing the explosion of the gases to take place and to be discharged upon the turbine rotor so as to efficiently drive the same.

Another object of this invention is the production of a simple and efficient means for compressing the gases after being delivered to the compression cylinder.

With these and other objects in view, this invention consists of certain novel combinations, constructions, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings: Figure 1 is a top plan view of the engine. Fig. 2 is a section taken on line 2—2 of Fig. 1. Fig. 3 is a section taken on line 3—3 of Fig. 1. Fig. 4 is a transverse sectional view through the driving shaft looking at the inner face of the cam plate. Fig. 5 is a section taken on line 5—5 of Fig. 2. Fig. 6 is a top plan view of the contact means between the rotary cylinder and the stationary support therefore. Fig. 7 is a section taken on line 7—7 of Fig. 6. Fig. 8 is a transverse section through the driving shaft of the engine, showing the relative position of the carbureter. Fig. 9 is a vertical transverse sectional view through the feed pipe leading from the carbureter showing the construction of the butterfly valve positioned in the feed pipe for controlling the discharge of gases from the carbureter. Fig. 10 is a perspective view of the angle lever used for facilitating the compression of the gases within the compression cylinder. Fig. 11 is a detailed perspective of the contact device carried by the explosive chamber. Fig. 12 is a section taken on the line X—X of Fig. 6. Fig. 13 is a longitudinal section through the auxiliary driving shaft positioned between the main driving shaft and the rotary cylinder of the explosive chamber. Fig. 14 is a section taken on line A—A of Fig. 4. Fig. 15 is a section taken on line B—B of Fig. 13.

Referring to the accompanying drawings by numerals it will be seen that the present device comprises a rotor casing 1 which is supported upon the base 2. The rotor casing 1 supports a rotary driving wheel 3, which rotary driving wheel 3 is provided with a plurality of pockets 4 formed upon the periphery thereof. The rotary driving wheel 3 is keyed to the supporting shaft 5 and this shaft 5 extends transversely of the casing 1 and has one end journaled upon the support 2 of the bearing 6. The opposite end of the shaft 5 is supported upon a bearing 7 and a cam plate 8 is also secured to this shaft 5.

The casing 1 is provided upon the inner face thereof with an annular rib 9, which annular rib 9 fits in the pocket 10 formed upon one face of the rotary driving wheel 3. The opposite face of the rotary driving wheel 3 is provided with a pocket 11 for receiving the annular rib 12 of the face plate 13. The casing 1 is provided around the periphery thereof with a plurality of projections 14 and upon each of these projections 14 is placed a casing 15 comprising a compression cylinder 16 and an explosive chamber 17, the compression chamber extending at right angles to the explosive chamber. The casing 15 is provided with a port 18 communicating with a port 19 formed in the casing 1, the port 18 communicating with the explosive cylinder 17.

A rotary cylinder 20 is mounted within the explosive chamber 17 and is provided with an aperture or port 21 upon one side thereof which port is adapted to discharge the exploded gases from the explosion chamber 17 when the aperture or port 21 registers with the port 18. A plurality of exhaust pipes or ports 22 are placed at proper intervals around the casing 1 for carrying off the exhaust gases after the gases have been utilized. Each casing 15 is detachably secured to the casing 1 by means of the bolts 23, illustrated in Fig. 3 of the drawings.

The explosive chamber 17, as stated above, carries a rotary cylinder 20, which rotary cylinder 20 is provided with a plurality of packing rings 24 and packing strips 24′ upon the outer face thereof, the cylinder 20 being mounted upon the bearings 25 carried by the ends plates or heads

26 of the cylinder 17. A spark plug 27 is mounted in the rotary cylinder 20 and is keyed thereto so as to rotate with the cylinder 20, the spark plug 27 carrying a beveled gear 28 for meshing with the beveled gear 29 carried by the rotating shaft 30, as hereinafter described.

A plurality of supporting brackets 31 are secured to the outer ends of the casing 17 and support the cylindrical bands 32 which are preferably formed of metal suitable for conducting electrical current, the outer face of the band being insulated by means of a mica or other insulated band 33. A roller 34 is adapted to travel upon the inner face of the band 33 and this roller 34 is carried by a pivoted lever 35 which lever engages a coiled spring 36 at its rear end, the coiled spring also engaging a supporting arm 37. Each supporting arm 37 fits over the squared portion 38 of the spark plug 27. It will be seen that the spring 36 will efficiently hold the roller 34 in contact with the band 32, thereby forming a continuous contact for supplying a current from the band 32 and through the spark plug 27. The current is supplied to the band 32 by means of a contact point 39, which contact point is electrically connected to the timer 40 by means of a wire 41, shown in Fig. 1, the timer being in turn connected to a magneto 42 by means of a wire 43. The timer 40 is driven by means of a gear 44 and the magneto 42 is driven by means of a gear 45. The gears 44 and 45 are in turn driven by the gear 46 driven by the driving shaft 5.

The casing 1 supports a plurality of latterally projecting arms 47 which arms support the bell crank levers 48, the bell crank levers 48 being connected to the plunger rods 49, which plunger rods 49 carry a plurality of heads 50 the plungers 50 working in the compression cylinder 16 for compressing the gases prior to the entrance of the same into the explosion chamber 17. The gases are admitted to the compression cylinder 16 through the port 51, the port 51 communicating with the supply pipes 52, which supply pipes communicate with a pipe 53, the pipe 53 communicating with the carbureter 54. The fuel is delivered to the carbureter in any suitable or desired manner. The flow of fuel from the carbureter through the pipe 53 is controlled by means of the butterfly valve 55. The bell crank levers 48 engage the links 56, which links in turn engage the bell crank levers 57 supported upon the arms 58. These bell crank levers 57 carry rollers 59 which rollers 59 travel in the cam grooves 60 formed in the inner face of the cam wheel or plate 8.

The rotating shaft 30 is provided with a socket 61 in which a stub shaft 62 is fitted, the outer end of which supports the beveled gear 63, the stub shaft 62 being secured in a set position in the socket 61 by means of a locking bolt 64. It will therefore be seen that by releasing the bolt 64 the shaft 62 may be rotated to the desired position, and again locked for changing the time of the explosion of each cylinder for the explosion and entrance of the exploded gases into the pockets 4 is controlled by the rotation of the shaft 30. Of course it should be understood that one of these rotating shafts 30 is employed for operating each rotating explosive cylinder 20. The gears 63 mesh with a common beveled driving gear 65 carried by the shaft 5.

From the foregoing description it will be seen that the operation of the device is as follows: The fuel is admitted into the compression cylinder 16 of each casing 15 whereupon the fuel is compressed and by the rotation of the cylinder 21 the gases will be admitted to the explosive chamber 17 when the port 21 registers with the compression cylinder or chamber 16. When the port 21 is brought into registry with the port 18, the time is so arranged as to cause an explosion of the gases for discharging the exploded gases into the pockets 4 and thereby driving the rotary wheel 3, the exhaust gases passing out through the discharge pipes 22. The reciprocation of the plunger 50 within the compression cylinder 16 is controlled by the rocking of the bell crank levers 48, which levers are rocked by m. ns of the bell crank levers 57 which carry the rollers 59, which rollers travel in the cam groove 60 formed in the cam plate 8.

What I claim is:—

1. An engine of the class described comprising a casing, a rotary driving wheel, a plurality of combustion chambers positioned upon said casing, each combustion chamber comprising a compression cylinder and an explosive cylinder, said compression cylinder extending at right angles to said explosive cylinder, a piston positioned within said compression cylinder, a bell crank lever supported upon said casing for operating said piston, an operating cam plate, and means coöperating with said cam plate and bell crank lever for rocking said bell crank lever and operating said piston.

2. An engine of the class described comprising a casing, a rotary driving wheel, a plurality of combustion chambers positioned upon said casing, each combustion chamber comprising a compression cylinder and an explosive cylinder, said compression cylinder extending at right angles to said explosive cylinder, a piston positioned within said compression cylinder, a bell crank lever supported upon said casing for operating said piston, an operating cam plate, a second bell crank lever, link means connecting said bell

crank levers, a roller carried by said last-mentioned bell crank lever, and said roller working upon said cam plate for rocking said last-mentioned bell crank lever as said cam plate is rotated for reciprocating said piston within said compression cylinder.

3. An engine of the class described comprising a casing, a driving wheel, a combustion casing, said combustion casing comprising a compression cylinder and an explosive cylinder, said explosive cylinder provided with a rotary cylinder formed therein, said rotary cylinder provided with a port adapted to be brought into registry with said compression cylinder for receiving a charge of compressed fuel therefrom, a spark plug carried by said rotating cylinder, a gear carried by said spark plug, a main driving shaft, a rotating shaft imparting rotary movement from said main driving shaft to said gear for rotating said rotating cylinder, means for causing an explosion within said rotating cylinder, a contact ring supported upon said explosion cylinder, a spring-pressed arm for yieldably forming a contact with said contact ring, means for supplying an electrical current to said contact ring, and a timer for controlling the spark in said explosion cylinder.

4. An engine of the class described comprising a casing, a rotary driving wheel, an explosion chamber communicating therewith, a rotary cylinder positioned within said explosion chamber, a spark plug carried by said cylinder, means for supplying a current to said spark plug for causing the ignition of gases in said chamber, a main driving shaft, a rotating shaft, a gear carried by each end of said rotating shaft, a gear carried by said spark plug, a gear carried by said main driving shaft, said rotating shaft provided with a stub shaft portion, a bolt for locking said stub shaft portion, in engagement with said rotating shaft and permitting said stub shaft portion to be rotated independently of the main portion of said rotating shaft for changing the time of ignition of the gases within said explosion chamber.

5. An engine of the class described comprising a casing, a driving wheel, a combustion casing, a compression cylinder communicating with said combustion chamber, means for delivering fuel to said compression cylinder, a contact ring supported upon said combustion casing, a rotating sleeve positioned within said combustion casing, a contact arm supported upon said sleeve and adapted to frictionally engage said contact ring for forming an electrical contact therewith, means for supplying an electrical current to said contact ring, a spark plug positioned within said explosive cylinder, and a timer for controlling the spark in said explosion cylinder.

In testimony whereof I hereunto affix my signature.

HENRY FAUROT.