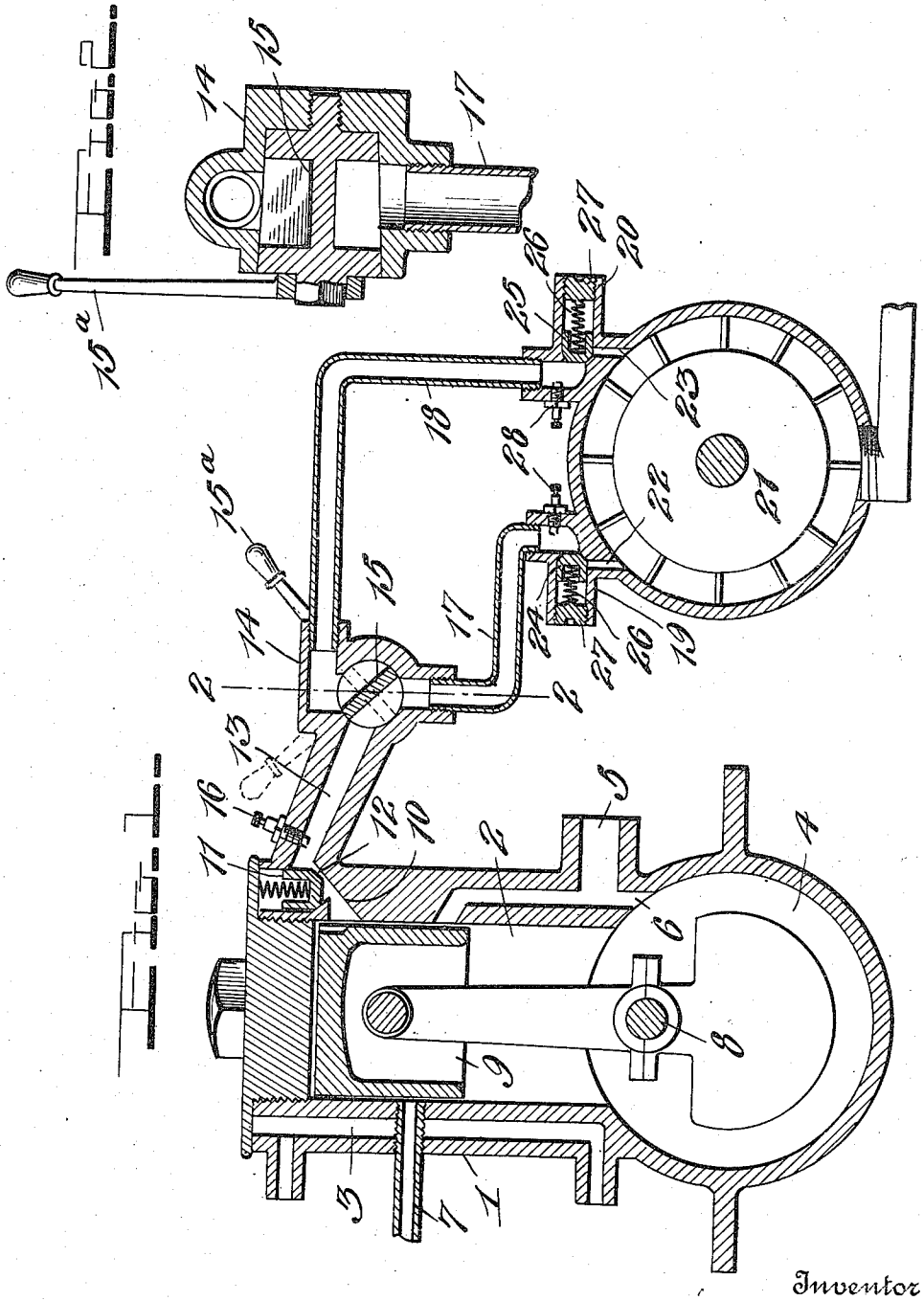
E. D. LEWIS.

MEANS FOR DRIVING ROTARY ENGINES.

APPLICATION FILED AUG. 25, 1910.

996,593.

Patented June 27, 1911.



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MEANS FOR DRIVING ROTARY ENGINES.

996,593. Specification of Letters Patent. Patented June 27, 1911.

Application filed August 25, 1910. Serial No. 578,816.

To all whom it may concern:

Be it known that I, EDWARD D. LEWIS, citizen of the United States, residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Means for Driving Rotary Engines; and I do 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.

This invention relates to an improved means for driving rotary engines.

One object of the invention is to provide a simple and improved means for operating rotary engines by the explosive force of compressed gases.

Another object is to provide a driving mechanism of this character in which an ordinary gasolene engine is employed for compressing the gas for driving a rotary engine.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is a vertical sectional view of my improved means for driving a rotary engine; Fig. 2 is a longitudinal sectional view through the reversing valve chamber and valve.

Referring more particularly to the drawings, 1 denotes an ordinary gasolene engine, comprising a gas compressing cylinder 2 having a water jacket 3. To the cylinder 2 is connected the usual crank chamber 4. The cylinder is provided with a gas inlet port 5 which communicates with the cylinder 2 and crank chamber 4 through a gas conducting passage 6. With the cylinder is also connected an exhaust pipe 7.

In the crank chamber is arranged the crank 8 of the engine, and to said crank is connected the piston 9 which is slidably mounted in the cylinder as shown, whereby the gas is drawn into the cylinder and crank chamber on the return stroke of the piston and is forced out by the working stroke thereof.

In the upper portion of the cylinder is formed a gas discharge port 10 in which is arranged a check valve 11 past which the gas is forced from the cylinder on the working stroke of the piston. The check valve 11 is provided with a by-pass 12, the purpose of which will be hereinafter described.

Connected with the discharge port 10 of the engine is a compression and explosion chamber 13 having on its outer end a valve casing 14 in which is arranged a reversing valve 15. The valve 15 may be of any suitable construction and is here shown as a rotary plug valve, to the stem of which is connected an operating handle 15^a. In the compression and explosion chamber 13 is arranged a sparking plug 16.

Connected with the valve casing 14 are conducting pipes 17 and 18 which also serve as compression and explosion chambers. The opposite ends of the pipes 17 and 18 are connected with check valve casings 19 and 20 which are arranged on and preferably form part of a rotary engine 21. The valve casings 19 and 20 are connected to the piston chamber of the engine through ports 22 and 23 which are so arranged that the impact or force of the explosion in the chamber 13 and pipes 17 or 18 will be directed onto the blades of the rotary piston to drive the same in one direction or the other. The direction of the rotation of the piston is determined by the position of the reversing valve 15 which is adapted to cut off one or the other of the conducting pipes 17 or 18.

In the valve casings 19 and 20 are arranged compression valves 24 and 25 which are provided with springs 26 held in position by screw plugs 27 whereby the valves are yieldingly held in closed position and which open under compression when the explosion takes place in the chamber 13 and either one or the other of the pipes 17 and 18, thus driving the engine piston in the desired direction.

In order to insure a perfect ignition of the gas in the pipes 17 and 18 I provide each of the valve casings 19 and 20 with a sparking plug 28. The sparking plugs 28 and the sparking plug 16 are operatively connected to a moving part of the engine and timed to ignite the fuel in the compression chamber 13 and pipes 17 and 18, at proper intervals for causing a continuous operation of the rotary engine piston at a uniform speed.

In the operation of my improved driving

mechanism the gas is compressed in the upper portion of the cylinder 2 of the engine 1 on the upstroke of the piston 9 and is forced through the discharge port 10 past the check valve 11 and into the explosion chamber 13 and through the valve casing 14 into either of the conducting pipes 17 or 18 according to the position of the reversing valve 15. When the compressed gas has thus been forced into the chamber 13 and one or the other of the conducting tubes the same will be ignited at the proper time by the sparking plugs 16 and 25 and will be thus exploded, the force of the explosion driving the air or gas in the chamber 13 and the conducting pipe connected therewith past the check valve 24 or 25 through the port 22 or 23 and into the piston chamber of the rotary engine whereby the impact of the exploded gas and air will act upon the blades of the rotary piston to drive the same in the desired direction. The direction in which it is desired to drive the piston of the rotary engine is readily controlled by means of the reversing valve 15 which is turned by the lever or handle 15^a to connect either of the conducting pipes 17 and 18 with the explosion chamber 13, thus conducting the compressed gas to one side or the other of the rotary engine casing. By means of the by-pass 12 in the check valve 11 the small charge of gas remaining in the cylinder 2 will be ignited from the explosion in the chamber 13 thus exerting a sufficient pressure upon the piston 9 of the engine 1 to operate said piston for the purpose of compressing the next charge of gas drawn into the cylinder 2. It will also be noted that by turning the controlling valve 15 to a vertical position, the gas will be directed equally to both sides of the motor wheel 21 so as to act as a brake and hold said wheel stationary.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

Having thus described my invention, what I claim is:

1. A driving mechanism for rotary engines comprising a gas compressing engine, an explosion chamber connected thereto and adapted to receive the compressed gas from said engine, a rotary engine, compressed gas conducting pipes adapted to connect said explosion chamber with the opposite sides of said rotary engine, a valve to connect one or the other of said pipes with said chamber, and a sparking mechanism arranged in said chamber and pipes whereby the compressed gas therein is exploded and the force of said explosion applied to the rotary engine for the purpose of driving the same.

2. A driving mechanism for rotary engines comprising a gas compressing engine, an explosion chamber connected with the cylinder of said engine, a check valve arranged between said chamber and the engine cylinder, a reversing valve casing arranged in said explosion chamber, a rotary engine having gas inlet ports arranged on opposite sides thereof, compression valves adapted to open and close said ports, gas conducting pipes adapted to connect the casings of said compression valves with said reversing valve casing, a reversing valve arranged in said casing and adapted to be operated to connect one or the other of said pipes with said explosion chamber, and sparking plugs arranged in said chamber and gas conducting pipes.

3. A driving mechanism for rotary engines comprising a gas compression engine having arranged therein a discharge port communicating with the upper end of the engine cylinder, a check valve adapted to open or close said port, said valve having formed therein a by-pass, an explosion chamber connected with the discharge port of said engine cylinder, a reversing valve casing arranged on said explosion chamber, a rotary reversing valve arranged in said casing, a rotary engine having gas inlet ports arranged in the opposite sides of its casing and communicating with the opposite sides of the piston chamber thereof, compression valve casings connected with said inlet ports, spring projected compression valves adapted to open and close said ports, gas conducting pipes adapted to connect said casings with said reversing valve casing whereby the connection between said explosion chamber, and said pipes is controlled and sparking plugs arranged in said explosion chamber and said gas conducting pipes whereby the compressed gas forced therein by the compression engine is ignited and the impact of the explosion therefrom applied to the piston of the rotary engine for the purpose of driving the same.

4. An engine comprising a gas compressor, an explosion chamber communicating therewith, a rotary motor wheel, gas conduits leading from the explosion chamber to opposite sides of the motor wheel, means to direct the compressed gas from the explosion chamber to either of said conduits, and means for igniting the gas in the conduits.

5. An engine comprising a gas compressor, a valved explosion chamber having a by-pass establishing constant communication with the compressor, a rotary motor

wheel, conduits leading from the explosion chamber to opposite sides of the motor wheel, means for directing the gas from the compressor into one or the other conduit, and means in the explosion chamber and each conduit for igniting the gas.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD DUDLEY LEWIS.

Witnesses:

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