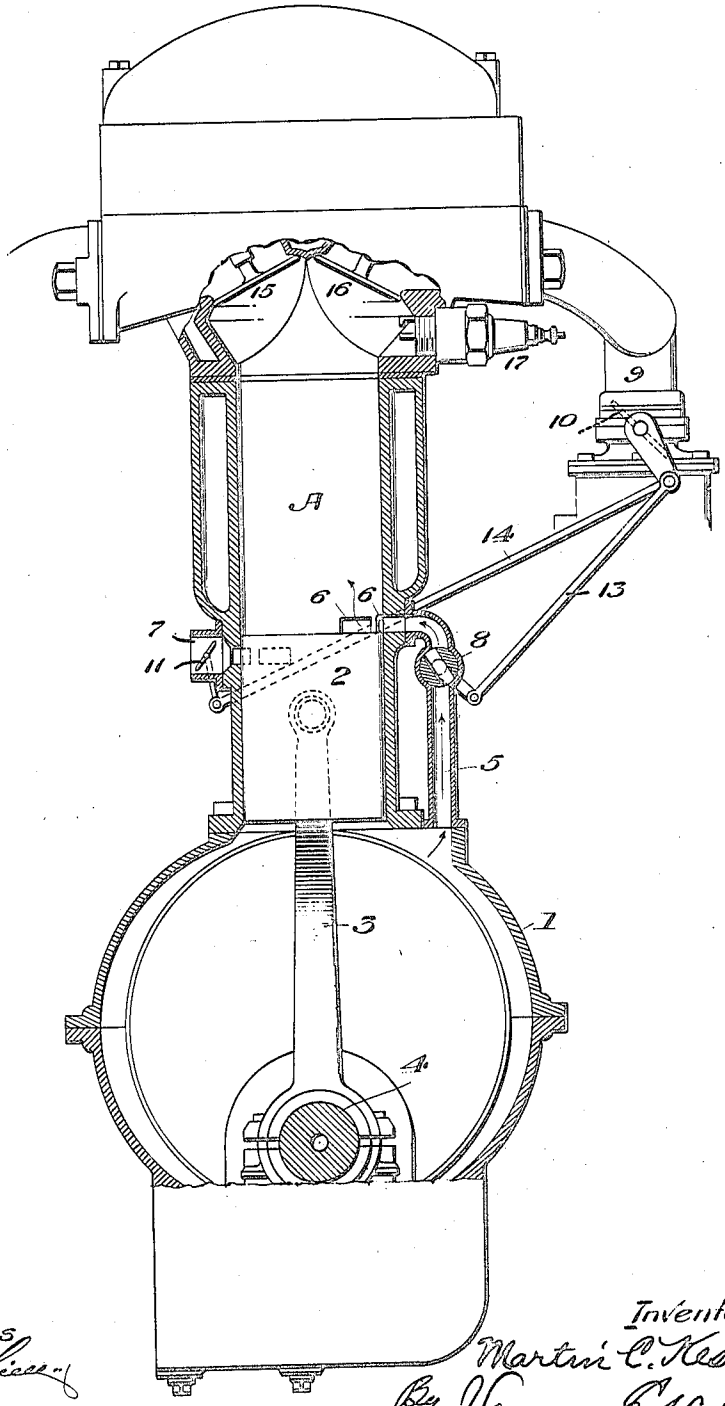
Dec. 11, 1923. 1,477,363

M. C. KESSLER

EXPLOSIVE ENGINE

Original Filed Dec. 21, 1917



Witnesses

Inventor
Martin C. Kessler
By Vernon E. Hodgdon
his Attorney

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UNITED STATES PATENT OFFICE.

MARTIN C. KESSLER, OF DETROIT, MICHIGAN, ASSIGNOR TO KESSLER MOTOR COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

EXPLOSIVE ENGINE.

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To all whom it may concern:

Be it known that I, MARTIN C. KESSLER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Explosive Engines, of which the following is a specification.

My invention relates to an improvement in explosive engines of the internal combustion type.

The present invention is a super-charge engine of the four-cycle type, in which air is admitted and compressed in the crank case and transferred into the cylinder above the piston approximately at the end of its inward stroke, meaning the stroke toward the crank shaft, said admission and transfer of air being within the control of the operator while the engine is in operation, and this control is accomplished by means of valves in the admission and transfer ports.

Another feature of this invention is a means whereby both the normal cylinder intake and the crank case intake and transfer may be under one and the same control, and consequently regulated simultaneously.

The accompanying drawing is a sectional view through one cylinder and crank-case, with minor parts in elevation.

A, represents the cylinder, and the numeral 1 the crank-case; 2 is the piston, and 3 the connecting rod extending from the crank 4 to the piston in the usual manner.

The numeral 5 indicates a by-pass from the crank-case 1, to the cylinder A, from which air discharges into the cylinder through ports 6, when cleared by the piston at the end of the instroke.

Port 7 admits air to the crank-case when cleared by the piston on its outstroke.

The passage of air through by-pass 5 is controlled by a valve 8 in this by-pass, and this valve is within control of the operator.

The cylinder intake pipe 9, is provided with a valve 10. Port 7 is provided with a valve 11, and valves 8 and 10 are connected by connecting-rod 13, and valves 10 and 11 are connected by connecting-rod 14, so that these valves may operate together, thus regulating the air supply from the crank-case in harmony with the supply of fuel. In other words, these valves may be simultaneously operated, and under a single control from the operator of the engine.

With each outward stroke of the piston, the port 7 is opened to the crank-case, restoring normal atmospheric pressure therein. On the instroke, the port 6 is first closed by the piston, then the port 7, and consequently the air within the crank-case is compressed and discharged into the cylinder directly over the head of the piston approximately at the end of the instroke of the piston, (as shown in the drawing), and a greater or less quantity of this crank-case air is injected into the cylinder, and a greater or less amount of fuel fed in through the intake pipe 9 accordingly as the valves 8, 10, and 11, are opened to a greater or less degree by the operator.

The numerals 15 and 16 represent the usual intake and exhaust valves, and 17 is the spark-plug located at the outer end of the cylinder.

I claim:

1. A four-cycle engine having a cylinder, crank case, piston, the cylinder having inlet and exhaust valves, the crank case having inlet and transfer ports with valves therein, a fuel control valve for regulating the admission of fuel to the cylinder inlet valve, and means for simultaneously operating the fuel control valve and the crank-case inlet and transfer port valves.

2. A four-cycle engine having a cylinder, crank case, piston, the cylinder having inlet and exhaust valves, the crank case having inlet and transfer ports, said transfer port having a valve therein, a fuel control valve for regulating the admission of fuel to the cylinder inlet port, and means for simultaneously operating the fuel control valve and the transfer port valve.

3. A four cycle internal combustion engine comprising a cylinder, a closed crank case, a piston working in the cylinder and valve mechanism operated by said piston for inducing a charge of air into the crank case upon the compression stroke of the piston and for trapping the same within the crank case during the power stroke of the piston and for admitting said compressed charge above the piston upon the exhaust stroke thereof for scavenging the exhaust gases, means governing the admission of the charge to the cylinder and means operating in conjunction therewith for governing admission of the charge to the crank case.

4. A four cycle internal combustion en-

gine comprising a cylinder and a closed crank case, a piston working in the cylinder and valve mechanism operated by said piston for inducing a charge of air into the crank case on the exhaust stroke of the piston and for trapping the same within the crank case during the intake stroke to thereby effect compression of said air in the crank case during the intake stroke of the piston and for then admitting said compressed charge of air above the piston during the compression stroke thereof to thereby combine said compressed air charge with the charge taken in on the intake stroke of the piston, means governing the admission of the charge to the cylinder and means operating in conjunction therewith for governing admission of the charge to the crank case.

5. A four cycle internal combustion engine comprising a cylinder, a closed crank case, a piston working in the cylinder and valve mechanism operated by said piston for inducing a charge of air into the crank case upon the compression stroke of the piston and for trapping the same within the crank case during the power stroke of the piston and for admitting said compressed charge above the piston upon the exhaust stroke thereof for scavenging the exhaust gases and means for automatically proportioning the charges admitted to the cylinder and to the crank case respectively.

6. A four cycle internal combustion engine comprising a cylinder and a closed crank case, a piston working in the cylinder and valve mechanism operated thereby for inducing a charge into the crank case on the compression stroke of the piston and for trapping said charge in the crank case upon the power stroke of the piston to thereby compress said charge within the crank case, and to admit said compressed charge above the piston upon the exhaust stroke thereof to thereby scavenge the exhaust gases, said valve mechanism being further constructed to induce a second charge in the crank case upon the exhaust stroke of the piston, to trap and compress the same therein upon the intake stroke of the piston and to admit said second compressed charge above the piston upon the compression stroke thereof, said valve mechanism including ports for independently admitting the scavenging and compression charges to the crank case and means for independently controlling the flow through one of said ports.

7. A four-cycle internal combustion engine comprising a cylinder and a closed crank case, a piston working in the cylinder and valve mechanism operated by said piston for inducing a charge into the crank case on the exhaust stroke of the piston and for trapping the same within the crank case during the intake stroke to thereby effect compression of said charge in the crank-case during the intake stroke of the piston and for then admitting said compressed charge above the piston during the compression stroke thereof to thereby combine said compressed charge with the charge taken in on the intake stroke of the piston, a throttle for the engine and means for admitting or increasing the charge admitted to the crank case as said throttle is opened.

8. A four-cycle internal combustion engine comprising a cylinder, a crank case, a piston working in the cylinder and valve mechanism operated by said piston for inducing a charge into the crank case on the exhaust stroke of the piston and for trapping and compressing the same within the crank case during the intake stroke of the piston and for admitting said compressed charge above the piston on the compression stroke thereof and means for automatically proportioning the charges admitted to the cylinder and to the crank case respectively.

In testimony whereof I affix my signature.

MARTIN C. KESSLER.