C. F. JENKINS.

EXPLOSION ENGINE.

APPLICATION FILED DEC. 4, 1909.

972,380. Patented Oct. 11, 1910.

Fig. 2.

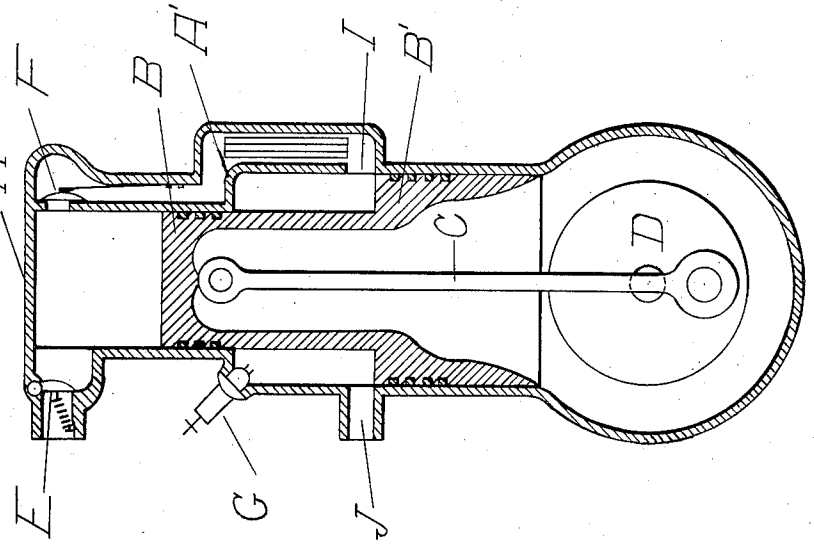
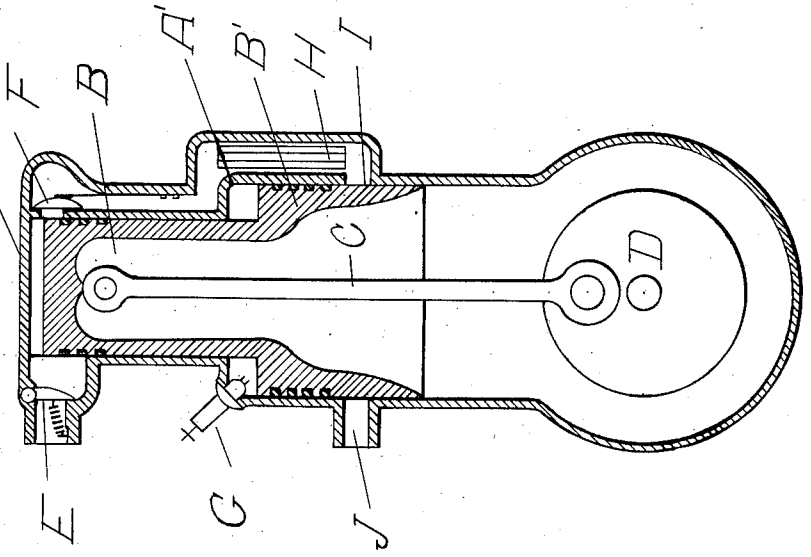


Fig. 1.



WITNESSES:

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EXPLOSION-ENGINE.

972,380. Specification of Letters Patent. Patented Oct. 11, 1910.

Application filed December 4, 1909. Serial No. 531,362.

To all whom it may concern:

Be it known that I, CHARLES FRANCIS JENKINS, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Explosion-Engines, of which the following is a specification.

This invention relates to that class of apparatus known as gas engines, and has for its main object a more efficient construction, especially in engines of the two-cycle type.

In the drawings, Figure 1 is a sectional view, with the piston at the beginning of its working stroke and Fig. 2, a sectional view with the piston at the end of its working stroke.

In both the drawings like symbols refer to like parts in which—

A is a cylinder having an enlarged portion A′, in which the parts B and B′, respectively of the piston, work. Between the parts of the cylinder there is an abrupt annular offset and there is a like or corresponding offset between the parts of the piston. Piston B is connected by crank arm C to crank D. Valves E and F open, respectively, into and out of the cylinder, and spark plug G is located in operative position in the enlarged portion A′ of the cylinder.

H represents tubular means (the subject of application, Serial No. 529,736) for suppressing back-firing in the transfer passage leading from the opening covered by valve F to the inlet port I.

The port J is the exhaust port.

The operation of the engine is as follows: A gaseous mixture is sucked into the cylinder A past the valve E on the downward stroke of the piston B. This charge is driven (on the return stroke) into the transfer passage past the valve F, which latter catches and holds the charge trapped in the transfer passage until the piston has completed its second downward stroke, when, as the port I uncovers, the charge rushes into the cylinder space A′. On the second upward stroke of the piston this charge is compressed, and thereupon fired by the spark at the points of the plug G, producing a power stroke. This cycle of events continues as long as the gas supply continues, and the igniting spark explodes it.

In simplest terms, the top of the piston acts as a pump for supplying gas, under pressure, to the power piston which is the enlarged portion.

Two very valuable advantages are secured by this construction, *i. e.*, a very much higher compression, in the transfer port between the pump piston and the power piston, which gives a remarkably flexible engine, one capable of working from the very lowest rotative speed to the highest speed or the highest power or both combined; and a long crank arm, with the impact of the explosion applied below the upper end of the arm.

Having thus described my invention, what I claim as my invention, and wish to protect by Letters Patent of the United States, is:

1. In a gas engine, the combination with a power cylinder having a smaller axial extension forming a compression chamber and a transfer passage leading from the end portion of the compression chamber to the opposite end of the working chamber and adapted to contain a working charge, of a power piston working in the power cylinder, provided with an axial extension working in the compression chamber and itself arranged to uncover the transfer passage in nearing the limit of its working stroke, and a check valve preventing the return of the compressed charge from said passage into said compression chamber.

2. In a gas engine, the combination with a power cylinder having an axial extension of less diameter forming a compression chamber, of a power piston fitting the power cylinder and having an axial extension fitting the compression chamber, said power cylinder being provided with valveless inlet and exhaust ports near the outer limit of the power piston's path and said extension, with valved induction and eduction ports near the opposite end of the compression chamber, and with a passage leading from said eduction port to the inlet port, substantially as set forth.

3. In a gas engine, the combination with a power cylinder and an alining compression chamber of less diameter forming an extension of the same, of a piston working in said cylinder and provided with an extension projecting centrally from its working face and working in the compression chamber, said cylinder having near the outer limit of the path of said face inlet and exhaust ports and said chamber having near the inner limit of the path of the piston's exten-

sion a valved induction port and a valved eduction port communicating with a conduit leading to said inlet port, and means for preventing flame from passing through said conduit; whereby the return stroke of the piston compresses a charge in the power cylinder and also a future charge in the compression chamber, forcing the latter past the eduction valve into said conduit, and on its power stroke uncovers both inlet and exhaust ports and sucks a charge into the compression chamber.

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