J. RACLOT & C. ENDERLIN.

COMBUSTION COMPRESSOR.

APPLICATION FILED MAY 27, 1911.

1,083,943.

Patented Jan. 13, 1914.

3 SHEETS—SHEET 1.

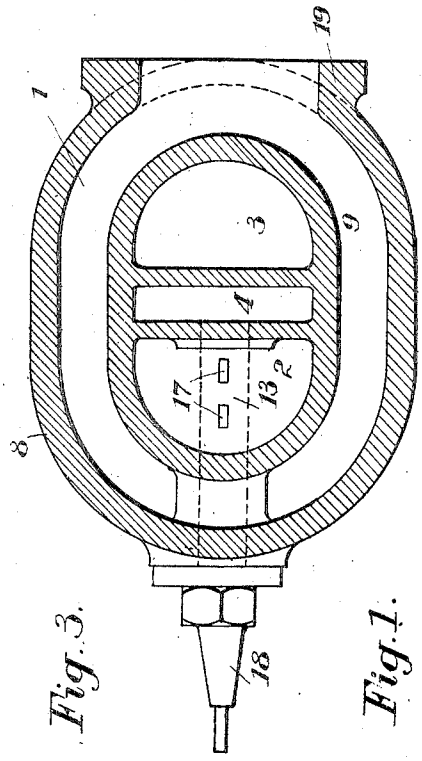


Fig. 3.

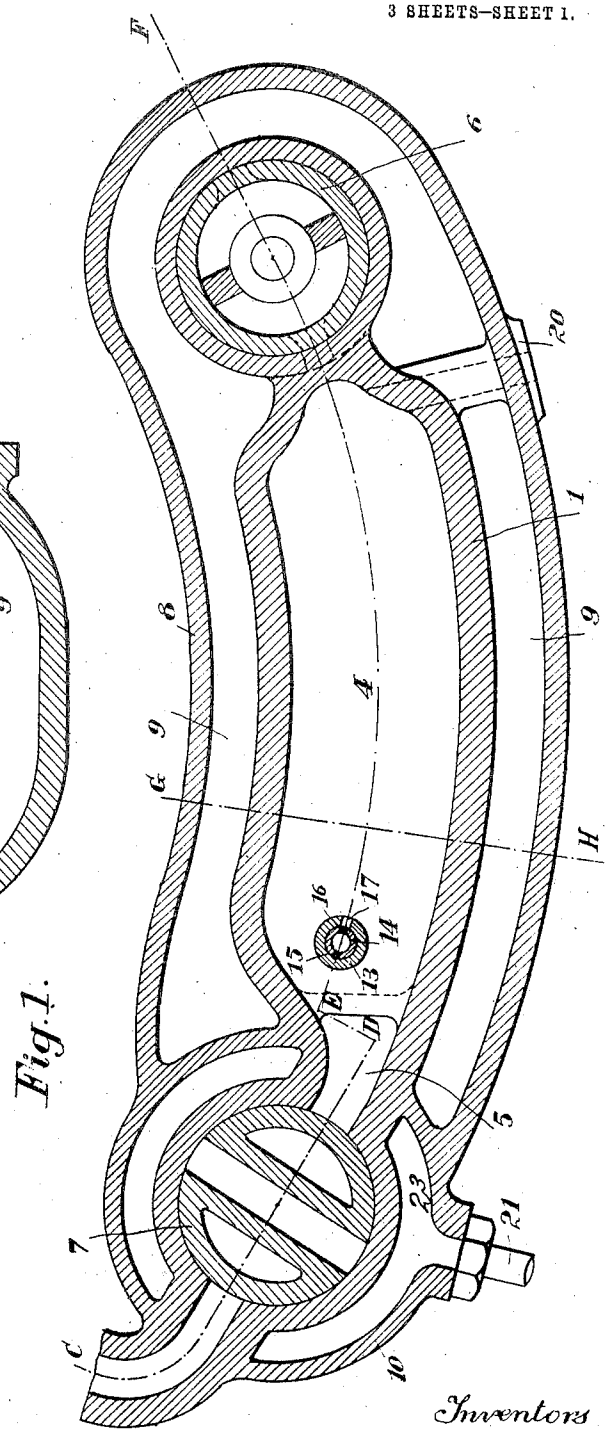


Fig. 1.

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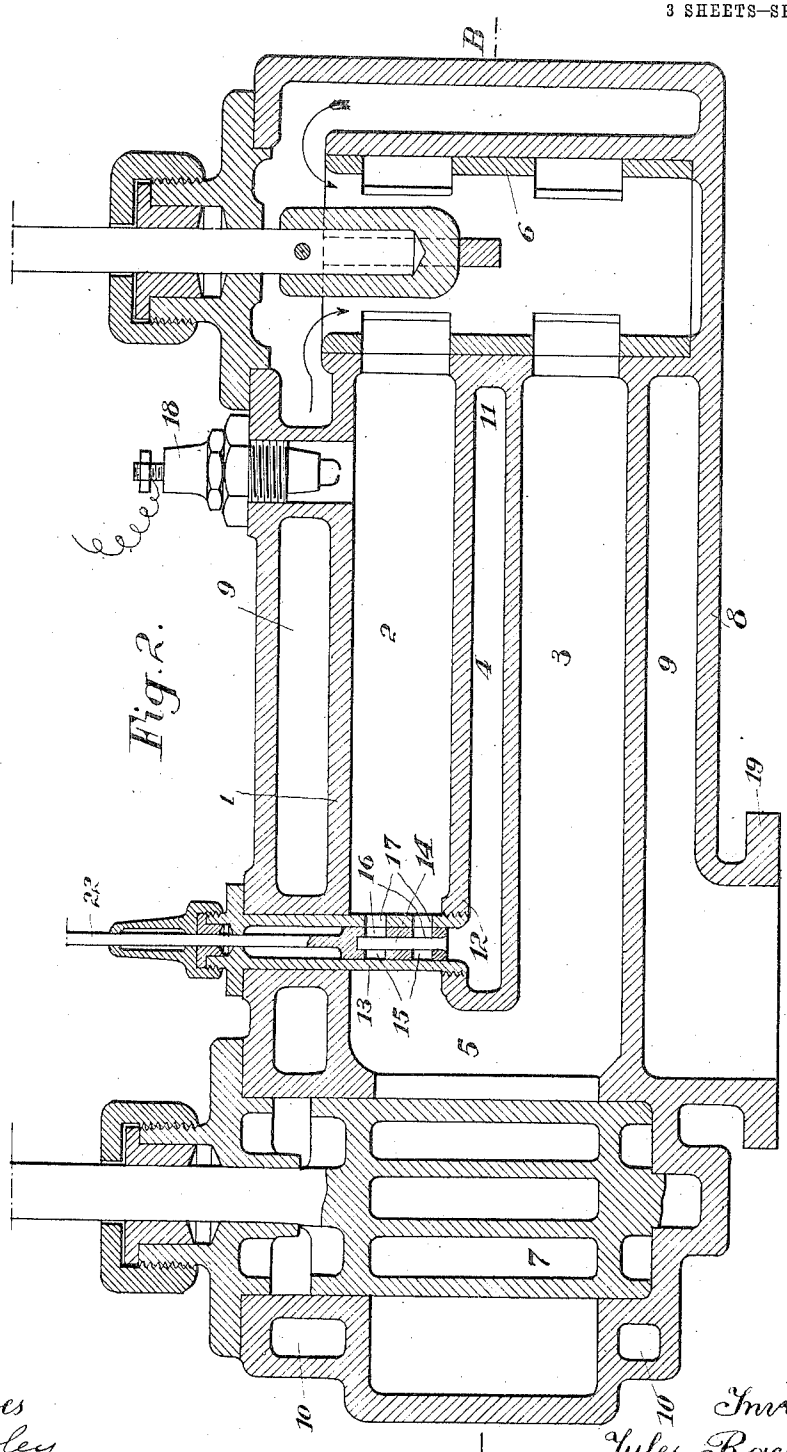


Fig. 2.

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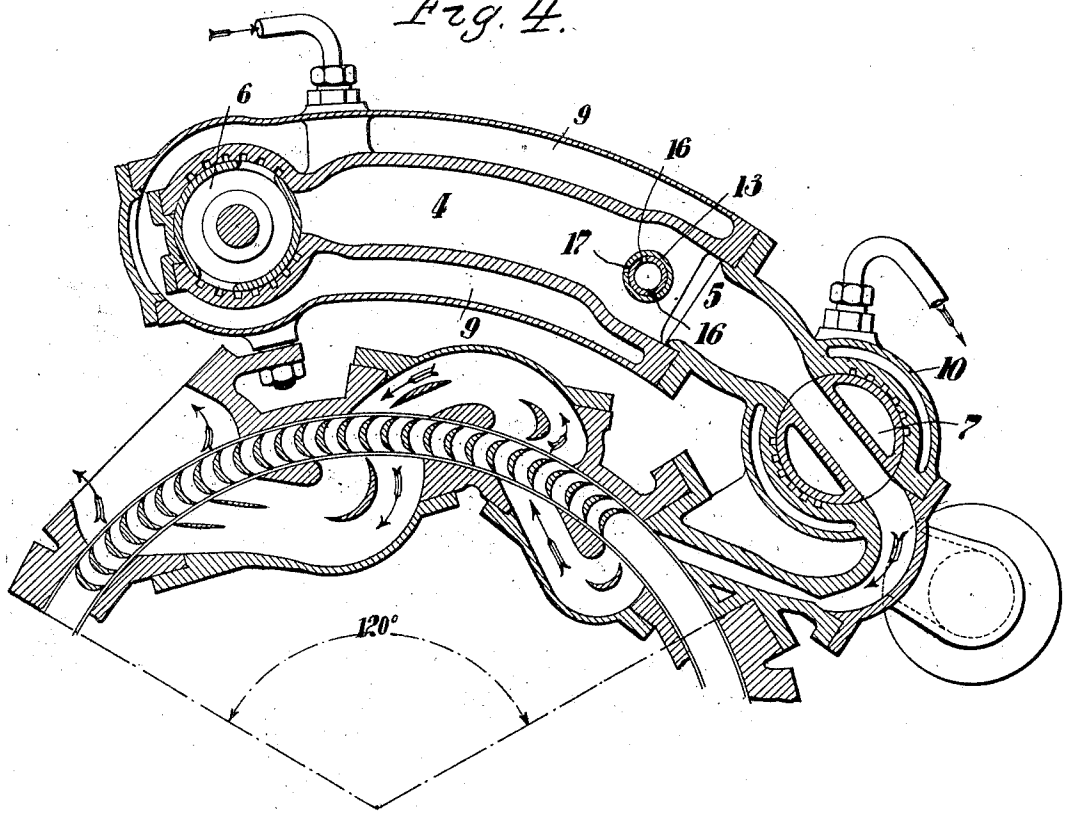
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3 SHEETS—SHEET 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JULES RACLOT AND CAMILLE ENDERLIN, OF ST. MAUR DES FOSSÉS, FRANCE.

COMBUSTION-COMPRESSOR.

1,083,945. Specification of Letters Patent. Patented Jan. 13, 1914.

Application filed May 27, 1911. Serial No. 629,929.

To all whom it may concern:

Be it known that we, JULES RACLOT and CAMILLE ENDERLIN, citizens of the French Republic, and residents of St. Maur des Fossés, France, have invented certain new and useful Improvements in Combustion-Compressors.

This invention has for its objects the following:—1. To obtain a considerable lowering of the temperature of the residual gases of combustion, prior to their escape into the atmosphere, and as a consequence the lowering of the temperature of the walls of the compressor. 2. The recovery of part of the heat stored up in the walls. 3. The avoidance of cooling devices. 4. An increase of thermal efficiency of the motor, that is to say, a reduction of the consumption of combustible, by horse-power-hour.

The accompanying drawings, given by way of example, show one form of the invention in which:—

Figure 1 is a longitudinal section on lines A—B of Fig. 2 of a combustion compressor having two valves. Fig. 2 is a longitudinal section on lines C—D—E—F of Fig. 1, of the same compressor. Fig. 3 is a cross section of the same on line G—H of Fig. 1. Fig. 4 is a view of the combustion compressor mounted upon the turbine; the compressor and turbine are shown in section for the purposes of showing the details of the construction more clearly.

The combustion compressor 1 is divided longitudinally into two compartments 2 and 3, by a double partition wall forming a flattened duct 4, the said compartments or chambers communicating with each other at 5. Rotary valves 6 and 7, are positioned at each end of the compressor. The casing 8 provides a jacket chamber 9, which conveys compressed air furnished by a compressor, actuated by a turbine, and communicating with the casing 8 by inlet 19. The rotary valve 6 controls ingress of compressed air into the combustion chamber. The valve 7 controls egress of the residual gases of combustion which are directed on the blades of the turbine wheel through a casing 10, leaving a chamber 23, wherein petroleum circulates.

The end 11, of the duct 4, is in communication with the chamber 23 of the rotary valve 7, by the tubular extensions 20 and 21. A pump driven by the turbine, delivers the petroleum to said chamber under a determined pressure. The other end of the duct 4 is provided with a threaded hole into which the open end of a cylindrical cock casing 13 is screwed, and which communicates with the interior of duct 4. Adapted to rotate in this cock casing is a hollow core 14, provided with four apertures 16 and 15 which register successively with apertures 17 provided in the casing 13. The core 14 is provided with a shaft 22 controlled in timed relation with valves 6 and 7. The core 14 is adapted to be moved longitudinally by the action of a governor of the machine, which acts upon the end of the shaft of the core, so as to vary the amount of fuel injected. The motion of the rotary valves and of the petroleum injecting core depend upon each other and are controlled as to their respective position, with reference to each other.

The apparatus described works as follows: The valve 7, and the core 14, are closed, the valve 6 is open, the compressed air delivered by the compressor enters the compartments 2 and 3, of the combustion chamber, until an equilibrium of pressure is obtained. At this moment, the valve 6 closes and the core 14, the apertures of which have been proportioned so as to give a determined output, allows the petroleum under pressure to enter, which petroleum has been heated successively in the chamber 23, and in the duct 4, which is subjected to the inner heat of the combustion chamber. Under the action of the high temperature thus obtained, the petroleum, as soon as it arrives in the compartment 2, into which the injection is made, is instantaneously vaporized and at once forms an explosive mixture. The volume of the compartment 2, and of the injected petroleum, are determined so as to obtain what has been called above, normal mixture. The successive operations are too rapid for the mixture flowing from the compartment 2 into the compartment 3. When the cock 14 has been closed again, and after a certain space of time necessary for the formation of an intimate mixture, a sparking plug 18 ignites the mixture contained in the compartment 2. The explosion expels the residual gases into the compartment 3; the air contained in the latter deadens and even entirely neutralizes the shock of the explosion. The whole of the gases is brought to the extreme temperature, that is to say, to the temperature of the dissociation, of the

residual gases. This temperature is attained while only burning the necessary amount of combustible, the combustion is therefore complete. At this moment, the valve 7 opens and allows the escape of the residual gases, which flow onto the turbine blades, while expanding adiabatically. The last named valve is controlled so as to close communication with the combustion pocket 1, or the compartments 2 and 3, only when the valve 6 has entirely begun to open so that a movement of air under pressure sweeps out all of the burnt gases.

The method of combustion described may also be applied to alternating explosion motors, wherein the bottom of the cylinder head is provided with partition walls so as to form two compartments which are similar to those of the combustion pocket 1.

We claim:

1. In a combustion compressor, the combination with a combustion chamber having valve controlled air ingress and explosive egress ports, a hollow fuel duct member dividing said chamber into separate communicating compartments, means for supplying fuel from said duct to one of said compartments, and ignition means in such compartments, substantially as described.

2. In a combustion compressor, the combination with a combustion chamber having a valve controlled ingress and explosion egress ports, a fuel duct member dividing said chamber into separate but communicating compartments, means for supplying fuel to one of said compartments from said duct, and ignition means in such compartments, and an air supply jacket surrounding said chamber and delivering to said air ingress port, substantially as described.

In testimony whereof, we have hereunto set our hands in presence of two witnesses.

JULES RACLOT.
CAMILLE ENDERLIN.

Witnesses:
H. C. Coxe,
L. Nigg.