J. H. CORTHESY, Sr. & J. H. CORTHESY, Jr.

TURBINE.

APPLICATION FILED MAR. 30, 1912.

1,052,800. Patented Feb. 11, 1913.

Fig. 1.

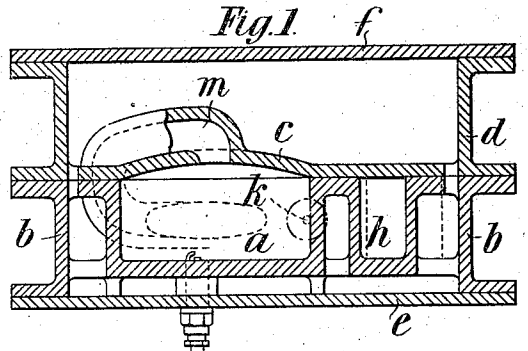


Fig. 2.

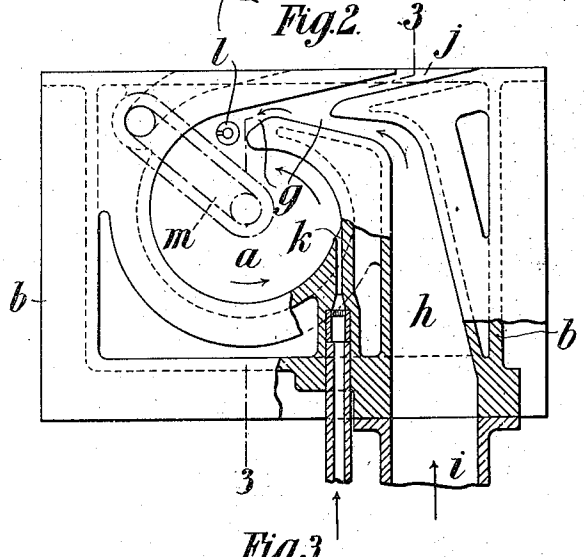
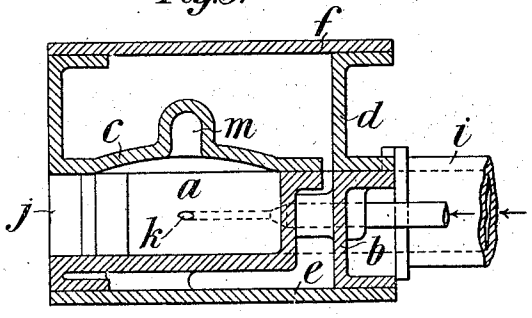


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TURBINE.

1,052,800. Specification of Letters Patent. Patented Feb. 11, 1913.

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To all whom it may concern:

Be it known that we, JULES HIPPOLYTE CORTHESY, Sr., residing at 50 Thornhill Houses, Barnsbury, London, England, and JULES HIPPOLYTE CORTHESY, Jr., residing at 72 Hemberton road, Clapham, London, England, both citizens of Switzerland, have invented new and useful Improvements in and Relating to Turbines, of which the following is a specification.

This invention relates to the combustion chambers of internal combustion turbines and has for its main objects to enable the air for the explosive charges to be obtained from a continuous supply and fed into a combustion chamber through the passage through which the exploded charges are projected from the said chamber, without the use of valves for preventing the air from passing to the rotor when supplying the chamber, and to effect a thorough mixing of the constituents of the combustible charges.

According to the invention we provide a chamber having a passage opening into it which serves both as an inlet for the air for the explosive mixture and for the discharge of the exploded gases against the turbine rotor, the said passage being so formed that the air will pass to the chamber without affecting the rotor and will be cut off from the chamber by each explosion.

In a suitable arrangement for carrying out the invention the chamber is formed circular or approximately circular with walls either straight or curved in a direction parallel to the axis of the chamber. The combined inlet and outlet passage is arranged tangentially to the combustion chamber and is directly connected to the air supply and has a branch or aperture for directing the explosion gases on to the rotor, the said branch being arranged at an acute angle to the main passage but in practical alinement with the end of the latter which opens into the chamber, so that when the air is forced into the said chamber it will flow past the mouth of the branch without entering the latter to any material extent and when each explosion occurs the pressure of the explosion gases will oppose that of the air and momentarily stop the flow of the latter into the combustion chamber.

The tangential opening serves to direct the air into the combustion chamber so that it flows around the latter and forms a kind of vortex which materially assists in mixing the air with the gas or hydrocarbon spray.

For scavenging the combustion chamber of the residual gases after each explosion an outlet or chimney is provided in such a position that the said gases are driven through it by the incoming air for the next charge.

The combustion chamber is provided with a water or steam jacket to prevent overheating and such steam or the steam generated therein can be used for propulsive or other purposes.

To enable the invention to be fully understood we will describe the same by reference to the accompanying drawing, in which:—

Figure 1 is a sectional elevation of a combustion chamber of an internal combustion engine constructed according to our invention. Fig. 2 is a sectional plan thereof with the upper part removed, and Fig. 3 is a vertical section on the line 3—3 Fig. 2.

a is the combustion chamber which is shown in Fig. 2 as being of approximately circular form, with the walls straight in a direction parallel to the axis of the chamber. It may, however, be quite circular and the walls may be curved. The said chamber is advantageously constructed integral with a water jacket *b* and is provided with a cover *c* also formed integral with a water jacket *d*, the said jackets *b* and *d* being closed by covers *e* and *f*, respectively.

g is the tangential passage opening into the chamber *a* and directly connected to the air supply passage *h* which is connected by a pipe *i* with a suitable pump or compressor, for instance, a rotary air compressor.

j is the branch of the passage *g* for directing the explosion gases from the chamber *a* on to the turbine rotor, not shown, the said branch being arranged at an acute angle to the passage *g* but in practical alinement with the end of the latter which opens into the said chamber.

k is the inlet for a hydrocarbon oil spray (or a gas supply) for the combustible mixture the said inlet being preferably arranged tangential to the chamber *a* and so that the spray (or gas) will pass therein and flow around the chamber in the same direction as the incoming air and thoroughly mix with the latter.

l is a sparking device for firing the explosive charges. By the described construc-

tion when air is forced under pressure through the passage *g* in the direction of the arrows, Fig. 2, into the chamber *a* it will flow past the mouth of the branch *j* without entering the latter to any material extent and when each explosion occurs the pressure of the explosion gases will oppose that of the air and stop the flow of the latter, the said gases being projected through the branch *j* and on to the rotor so as to propel the latter.

m is the outlet or chimney with which the chamber *a* is provided for scavenging the latter of the residual gases after each explosion, the said chimney being arranged at the center of the upper part of the chamber so that the said gases are driven out of the chamber by the incoming air for the next charge, which air sweeps around the chamber before entering the chimney. This outlet *m* is advantageously arranged as shown to discharge the said gases on to the rotor so as to assist in propelling the latter.

The improved combustion chamber may be used with any form of rotor and any number of such chambers may be employed to actuate the latter.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In an internal combustion turbine, a combustion chamber having a common passage for the inlet of air for the explosive mixture and for the discharge of the explosion gases, the said common passage being so formed that the air will pass to the combustion chamber in a direction opposite the direction of the outgoing explosion gases whereby the inflow of air will be cut off from the chamber by each explosion.

2. An internal combustion turbine comprising a combustion chamber having a common passage for the inlet of air for the explosive mixture and for the discharge of the explosive gases, said chamber being approximately circular in form and the air inlet being arranged tangentially thereto.

3. An internal combustion chamber of the kind described, provided with a passage for the inlet of air, a main air passage leading to said inlet passage and a branch passage opening into the main passage at an acute angle thereto.

4. An internal combustion chamber having a common passage for the inlet of air for the explosive mixture and for the discharge of the explosive gases, said chamber being approximately circular in form and being provided with a chimney so located with relation to the walls of the chamber, that the air supply to the chamber sweeps around the latter before entering said chimney with the residual gases.

5. An internal combustion chamber of the kind described provided with a passage for the inlet of air, a main air passage leading to said inlet passage, a branch passage opening into the main passage at an acute angle thereto, and a fuel supply passage.

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