

P. A. DARRACQ.
EXPLOSION ENGINE.
APPLICATION FILED OCT. 8, 1909.

961,938.

Patented June 21, 1910.

3 SHEETS—SHEET 3.

FIG. 3.

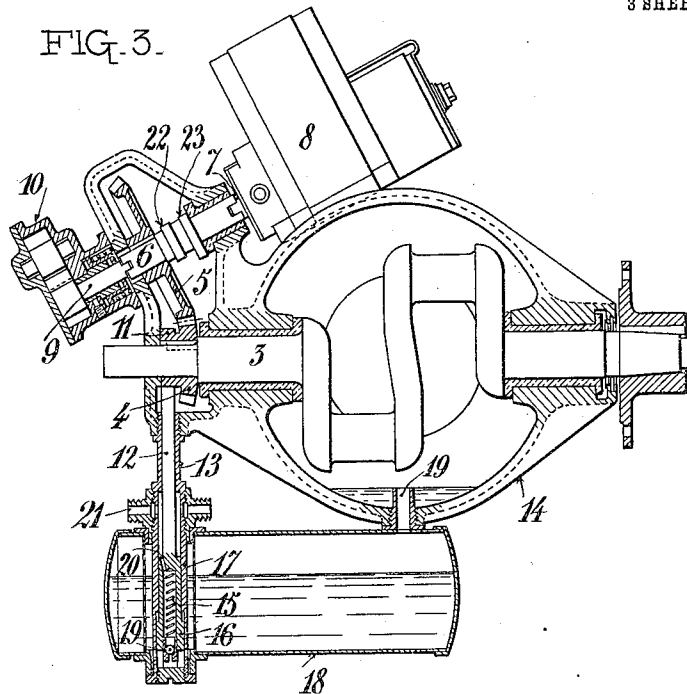
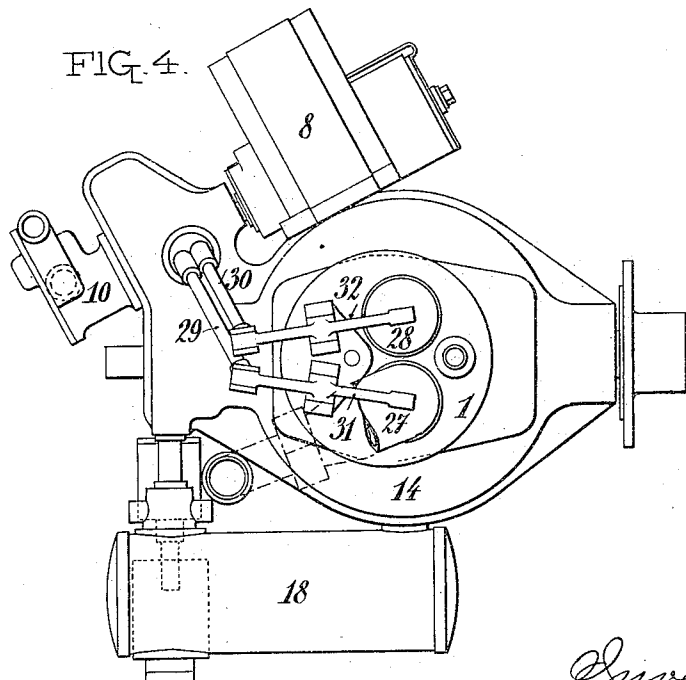


FIG. 4.



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UNITED STATES PATENT OFFICE.

PIERRE ALEXANDRE DARRACQ, OF SURESNES, FRANCE, ASSIGNOR TO SOCIÉTÉ A. DARRACQ & CIE. (1905) LIMITED, OF SURESNES, FRANCE.

EXPLOSION-ENGINE.

961,938.

Specification of Letters Patent. Patented June 21, 1910.

Application filed October 8, 1909. Serial No. 521,749.

To all whom it may concern:

Be it known that I, PIERRE ALEXANDRE DARRACQ, a citizen of the French Republic, and residing at Suresnes, France, have invented certain new and useful Improvements in Explosion-Engines, of which the following is a specification.

This invention relates to an explosion engine provided with an improved arrangement of the valve gear parts, of the oil and water pumps as well as of the magneto for ignition, the said parts being controlled by only two toothed wheels, the whole arrangement producing a light, very strong engine, which can be applied for general purposes and more particularly for aviation.

A construction according to this invention is illustrated in the accompanying drawing applied by way of example to an engine with two opposite cylinders.

In the said drawing Figure 1 is an elevation of the said engine with a partial section through one of its cylinders, Fig. 2 is a plan, Fig. 3 a cross-section on line A-A of Fig. 1, and Fig. 4 is an end elevation.

The engine is provided with two opposite cylinders 1 and with pistons 2 connected at 180° to the same crank shaft 3. To the latter is keyed a pinion 4 engaging with a pinion 5 having twice the diameter of 4. The inclined spindle 6 drives at one end the spindle 7 of the armature of the ignition magneto 8, and at the other end drives one of the spindles 9 of the pump 10 for circulating water in the engine, the ends of the spindle 6 being connected by claws or mortises to the spindles which they drive for the purpose of facilitating the dismantling and inspection of the magneto and pump.

The hub of the pinion 4 is provided with a cam 11 acting on a rod 12 guided in a sleeve 13 adjoining the crank case 14 of the engine, the said rod being kept in contact with the cam 11 by a spring 15. The rod 12 is provided at its end opposite to the cam 11 with a piston 16 traveling in a cylinder 17 forming a continuation of the sleeve 13. The cylinder 17 passes right through a tank 18 containing a reserve of oil. The cylinder 17 is closed at its base by a plug provided with a valve 19 for the oil which at each compression effected by the cam 11 is conveyed through the conduit 20, branches

21 and suitable pipes, to the different parts to be lubricated.

The tank 18 is connected at the top to the crank casing 14 of the engine by means of an overflow branch 19' which at the same time insures a constant level in the said crank case 14. This combination of the oil pump with the lubricating tank 18 and the crank casing with a constant level of oil makes it possible to insure a continuous circulation for lubrication of the parts of the engine. On the spindle 6 carrying the pinion 5, are also mounted two cams 22, 23 acting respectively and successively on the drivers or push rods 24 25 operating the inlet valves 27 and exhaust valves 28 by means of rods 29 30 and trip levers 31 32 arranged on the cylinders 1.

As will be seen from this general arrangement, all the parts for controlling the valve gear, the magneto, and the water pump are arranged on a spindle placed at an angle with the axis of the oil pump. This arrangement enables the number of parts to be reduced to a minimum, many intermediate parts being done away with, so that a strong, powerful engine of great lightness is obtained.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In an explosion engine the combination with a cylinder, a piston therein, a crank shaft and a member connecting the piston to the crank shaft, of valve mechanism, ignition mechanism and water circulating mechanism, a spindle, means arranged on said spindle to operate the said three mechanisms, an oil pump arranged with its axis at an angle with the said spindle, and a pinion and cam on the crank shaft adapted to drive respectively the spindle and the oil pump.

2. In an explosion engine the combination with a cylinder, a piston therein, a crank shaft and a member connecting the piston to the crank shaft, of valve mechanism, ignition mechanism and water circulating mechanism, a spindle, means arranged on said spindle to operate the said three mechanisms, an oil pump arranged with its axis at an angle with the said spindle, and means on the crank shaft adapted to drive respectively the spindle and the oil pump.

3. In an explosion engine the combination with a cylinder, a piston therein, a crank

shaft, a casing for the crank shaft and a member connecting the piston to the crank shaft, of a valve mechanism, ignition mechanism, and water circulating mechanism, a
5 spindle, means arranged on said spindle to operate the said three mechanisms, an oil pump arranged with its axis at an angle with the said spindle, means on the crank shaft adapted to drive respectively the spindle and the oil pump, an oil tank adapted to

hold the oil pump, and a pipe connection between the crank casing and the oil tank for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of 15 two subscribing witnesses.

PIERRE ALEXANDRE DARRACQ.

Witnesses:

HENRI ELLINN,

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