N° 16,761 A.D. 1914

(*Under International Convention.*)

Date claimed for Patent under Patents and Designs Act, 1907, being date of first Foreign Application (in Italy), 15th July, 1913

Date of Application (in the United Kingdom), 14th July, 1914

At the expiration of twelve months from the date of the first Foreign Application, the provision of Section 91 (3) (a) of the Patents and Designs Act, 1907, as to inspection of Specification, became operative

Accepted, 3rd June, 1915

COMPLETE SPECIFICATION.

Improvements in or relating to Internal Combustion Engines.

I, ADALBERTO GARELLI, of 3, Via Montevecchio, Turin, in the Kingdom of Italy, Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to two stroke cycle internal combustion engines of the type in which, within two cylinders arranged parallel to each other and communicating through their heads, two pistons are adapted to operate at the same speed and are connected with the crank shaft by means of a single connecting rod.

Engines of this type have heretofore been proposed in which the cylinders are in the plane of the crank shaft and one piston controls the terminal admission port and the other the terminal exhaust port the introduction of the combustible mixture into the crank chamber being controlled by means of a distributor and conduits external of the cylinders; furthermore, engines have been proposed in which the cylinders are in a plane transverse to the crank shaft, one piston controlling the terminal admission port and the other the terminal exhaust port and the admission port to the compression chamber which is formed by the closed lower end of the cylinder, the pistons being controlled by means of independent rods connected to a sliding shoe provided on the connecting rod.

According to the present invention in the interior of two cylinders communicating at their heads and having their axes in a plane containing the axis of the crank shaft, two pistons are adapted to operate connected to a single connecting rod, the cylinder wall being formed with ports in such a manner that the mixture admitted to the crank case through an opening which is uncovered by one of the pistons at the end of its ascending stroke and compressed during the succeeding stroke passes through the interior of the pistons to the admission passages to the cylinders.

The invention also comprises the connection of the connecting rod with the end of the pistons and the disposition of an air duct between the contiguous walls of the cylinders.

The annexed drawing shews diagrammatically, an embodiment of the invention

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in which the engine is illustrated in sectional elevation, the section being taken in a plane containing the axis of rotation.

Referring to the drawing, 1 designates the body of the two cylinders formed together with the single compression chamber and provided with cooling ribs 2; the transverse disposition of the cylinders with respect to the direction of movement of the vehicle (as will be perceived from the position of the pulley) and the passage of air between the two cylinders facilitates their cooling and constitute features of this engine.

6, 6 are the two pistons interconnected by the spindle 5 which through the medium of the connecting rod 4 serves to operate them. If the pistons are of equal weight their inertia should be equal, in which case the pressure transmitted by a piston to the connecting rod should be substantially the same as that transmitted by the other piston.

The movement of the two pistons and of the connecting rod will therefore be equilibrated. Owing to the fact that the connecting rod is connected with the two pistons at the lower ends thereof, the result will be obtained that the pressure which they exert on the wall of the cylinders owing to the thrust of the connecting rod, is supported by the lower portions of the cylinders, that is to say in the zone where the cylinder is least heated and therefore better lubricated. The central part of the spindle upon which the connecting rod bears, is raised with respect to the lateral parts thereof thus preventing a displacement of the said spindle relatively to the pistons. The disposition obviously avoids grooving of the cylinders by the ends of the spindle which latter is immovable. When in operation, the connecting rod moves in a slot 3 formed between the two cylinders, the section of which must be ascertained in each separate case, and permits of the use of a single connecting rod without increasing substantially the height of the engine.

As will be perceived from the drawing, the engine in question operates with suction in the crank casing according to the well known system of opening one or more ports uncovered by the piston at the end of the compression stroke.

In this case, the suction ports 7 formed in the wall of a cylinder, open in a conduit 8 surrounding the two cylinders and which connects with a tube 9 coming from the carburetter.

The fuel mixture drawn into the casing of the engine through the ports 7 is compressed therein during the descending stroke of the pistons; towards the end of this stroke, one of the pistons 6 uncovers the port or ports 10 through which the products of the combustion in the upper chamber of the cylinders are exhausted into the atmosphere; subsequently the other piston 6 uncovers, in turn, the port or ports 11 formed in the corresponding cylinder, thus permitting the carburetted air compressed in the casing, to pass through the ports 12 of the piston and penetrate the cylinder expelling the residues of the combustion.

The lubrication is effected by mixing the oil with the fuel in the reservoir so as to draw therefrom into the casing a quantity in accordance with the output of the engine.

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

1. Two-stroke internal combustion motor in which in the interior of two cylinders communicating at their heads and having their axes in a plane containing the axis of the crank shaft, two pistons are adapted to operate connected to a single connecting rod, the cylinder wall being formed with ports in such a manner that the mixture admitted to the crank case through an opening which is uncovered by one of the pistons at the end of its ascending stroke and compressed during the succeeding stroke passes through the interior of the pistons to the admission passages to the cylinders.

2. Two-stroke internal combustion motor according to Claim 1, in which the

axis of the pin connecting the connecting rod to the two pistons, is located in the plane of the lower edge of the two pistons themselves for the purpose of reducing to a minimum the length of the connecting rod and so that the lateral component of the thrust acts on the colder and better lubricated lower portion of the cylinders.

3. A motor according to the preceding claims in which between the adjacent walls of the two cylinders, a space is left for the passage of the air, if necessary traversed by wings interconnecting the two opposed walls.

4. Two-stroke internal combustion engine, constructed and arranged substantially as described and as illustrated.

Dated this 14th day of July, 1914.

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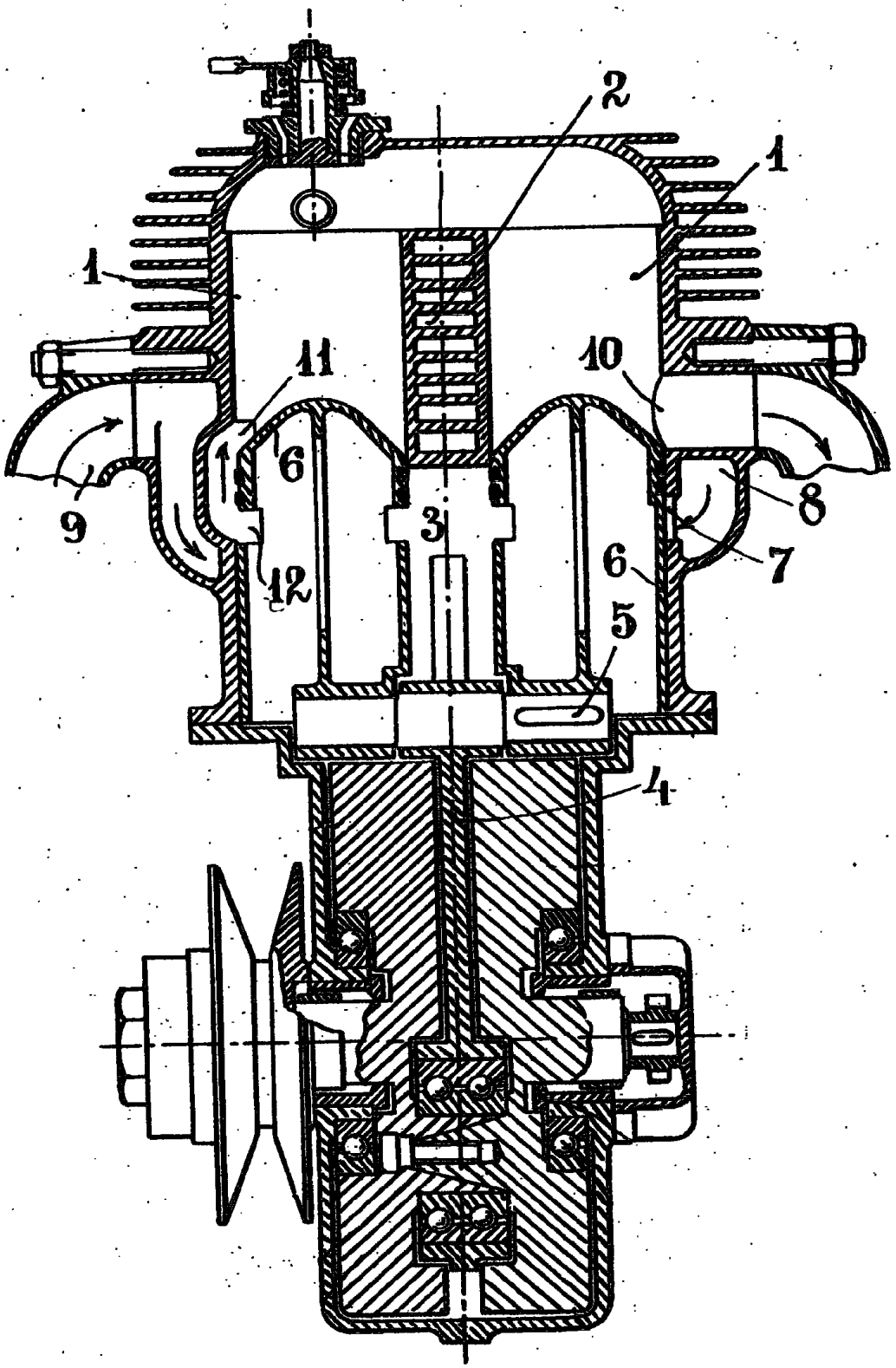
GARELLI'S COMPLETE SPECIFICATION.

(1 SHEET)



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