J. D. SHAW.

FOUR-STROKE CYCLE ENGINE.

APPLICATION FILED OCT. 19, 1912.

1,104,075. Patented July 21, 1914.

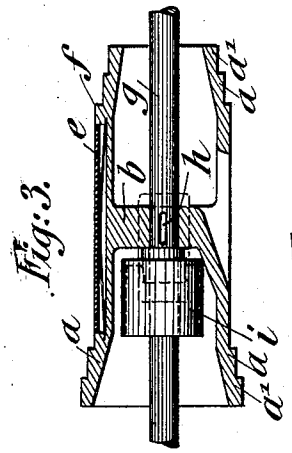


Fig. 3.

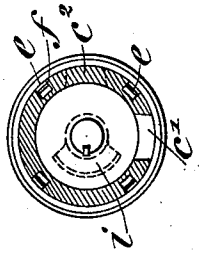


Fig. 4.

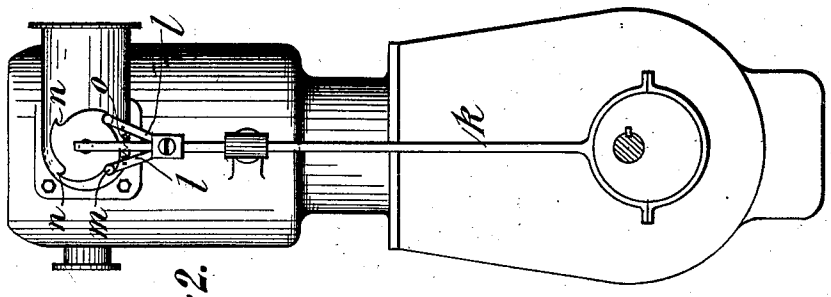


Fig. 2.

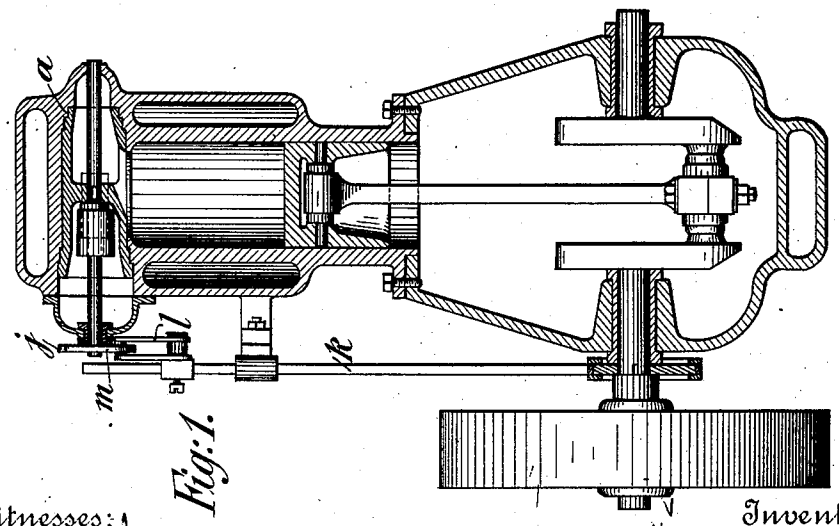


Fig. 1.

Witnesses:
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UNITED STATES PATENT OFFICE.

JUAN DIEGO SHAW, OF BUENOS AIRES, ARGENTINA.

FOUR-STROKE CYCLE-ENGINE.

1,104,075. Specification of Letters Patent. Patented July 21, 1914.

Application filed October 19, 1912. Serial No. 726,739.

To all whom it may concern:

Be it known that I, JUAN DIEGO SHAW, citizen of Argentina, residing at No. 870 Venezuela street, Buenos Aires, Argentina, have invented certain new and useful Improvements in Four-Stroke Cycle-Engines, of which the following is a specification.

The present invention has for object a novel method of distribution for four stroke cycle engines. This novel method is realized by using a rotary cylinder, such as *a*, situated at the upper part of the ordinary cylinder of engines of the internal combustion type.

The accompanying drawings illustrate the manner of carrying the invention into practice.

In said drawings, Figure 1 is a longitudinal horizontal section of the engine. Fig. 2 is an outer side elevation of the same, the fly wheel having been omitted. Fig. 3 is a longitudinal section of the distributing cylinder, and Fig. 4 is a cross section of Fig. 3.

The distributing device is divided into two parts by a partition *b*, the ends being left open. The smaller end registers with the tube of the carbureter and the larger one with the exhaust pipe. In the side wall of the cylinder are provided two openings of rectangular shape of a width nearly equal to one eighth of the circumference; these dimensions should be calculated very exactly in order to obtain the highest yield of the engine. These two openings are placed at an angle of 90° one from the other. The opening c' corresponds to the carbureter side, and the other opening c^2, to that of exhaust. The extremities of the cylinder comprise two parts, *d* and d^1, of a larger diameter than the central part of the exhaust side, and smaller than the carbureting side, so as to form stops which assist to avoid leakages. Besides, in order to be able to tighten any place of leakage in a lateral direction, there are arranged four pieces *e*, placed at four recesses of the cylinder wall, below which pieces are placed the springs *f* which act to always press said pieces snugly against the inner wall of the hole which receives the cylinder *a*. An axle *g* fixed by means of the pin *h* to the cylinder, imparts to the same a rotary motion. The piece *i*, placed opposite the exhaust port, has for purpose to prevent the gas from striking against and heating the opposite wall of the cylinder. The end of the cylinder at the carbureting side is smaller than the central part, and that of the exhaust side is larger. The axle *g* bears at its end, on the exhaust side, a toothed piece *j* (Fig. 1), provided with four teeth *n*. The distributing device is driven by a cam *k*, with two connecting rods *l*, at its upper part, and is provided with a finger *m*, adapted to engage with a tooth of the piece *j*. The two connecting rods are pressed against the piece *j* by means of a spring *o*.

The working is as follows:

First period—admission.—The piston is at its highest position and commences to descend; the cam descends also and by means of the connecting rod of the left causes the cylinder *a* to perform one quarter of revolution, so as to establish communication with the carbureter. Exhaust is kept closed.

Second period—compression.—The piston rises and at the same time the cylinder realizes a second quarter of revolution pushed along this time by the right connecting rod. The cylinder of the engine is closed for the time being.

Third period—explosion and expansion.—The piston descends and the cylinder performs a third quarter of revolution, being driven along by the left connecting rod. Communication between the cylinder and outside is cut off.

Fourth period—exhaust.—The piston rises and the distributing device realizes the last quarter of revolution under the action of the right connecting rod, so as to open the communication with exhaust.

I declare that what I claim and desire to secure by Letters Patent, is:

1. In an internal combustion engine, the combination of a cylinder having a transverse bore; a crank shaft, a piston rod and a piston for the engine; an eccentric on the shaft; a cylindrical distributing device in said bore and having a transverse partition providing a carbureter chamber and an exhaust chamber, each chamber being provided with an opening one opening being about 90° in advance of the other and both adapted to communicate with the cylinder; a toothed piece secured to said device and having four backwardly opening undercut teeth; an eccentric rod engaging the eccentric; and a pair of spring pressed fingers pivoted to said rod and engaging in said teeth.

2. In an internal combustion engine, the combination of a cylinder provided at its upper end with a transverse bore; a piston in the cylinder; a shaft operatively connected therewith; an eccentric on said shaft; a cylindrical distributing device snugly disposed in said bore and having a transverse partition providing a carbureter chamber communicating with the carbureter and with an exhaust chamber communicating with the exhaust, each of said chambers provided with an opening one opening being about 90° in advance of the other and each adapted to establish communication between its chamber and the cylinder; spring pressed packing strips in the outer face of said device; a shaft passing through said device and projecting at one end; a baffle piece on said shaft in said exhaust chamber to prevent the exhaust striking the opposite wall of the chamber; a toothed piece on said projecting end of the shaft and having four undercut teeth having their shoulders disposed to the rear of the direction of rotation of the teeth; an eccentric rod connected to said eccentric and disposed near said tooth piece; and a pair of spring pressed fingers pivoted to said rod and adapted to engage the said teeth.

In testimony whereof I affix my signature in presence of two witnesses.

JUAN DIEGO SHAW.

Witnesses:
J. DE MARVA,
A. R. LÉRES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."