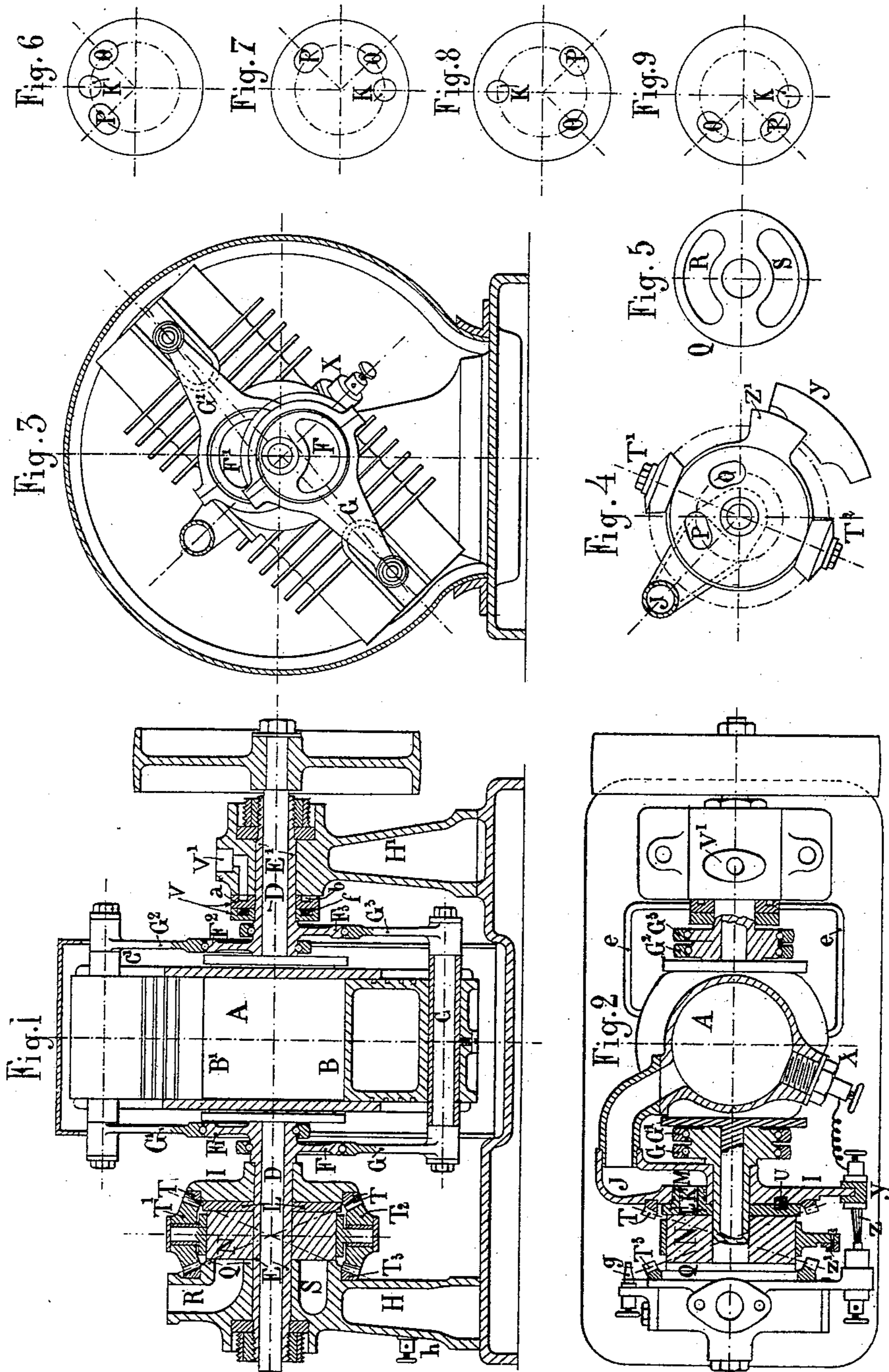


(No Model.)

P. AURIOL.
MOTOR.

No. 602,652.

Patented Apr. 19, 1898.



Witnesses.
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UNITED STATES PATENT OFFICE.

PAUL AURIOL, OF PARIS, FRANCE.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 602,652, dated April 19, 1898.

Application filed October 26, 1896. Serial No. 610,058. (No model.)

To all whom it may concern:

Be it known that I, PAUL AURIOL, a citizen of the Republic of France, residing in Paris, France, have invented a certain new and useful Improved Motor, of which the following is a specification.

The improved motor forming the subject of this invention is characterized by the special method of transforming the rectilinear alternating movement of the pistons into a continuous circular movement, and next by the method of distribution.

In the accompanying drawings, Figure 1 represents a longitudinal sectional elevation of my engine. Fig. 2 is a plan of the same with a partial section. Fig. 3 is an end view of the same, the left standard and the means for distribution being removed. Fig. 4 is a part view of the distributing devices, the valve-face Q being removed. Fig. 5 is a front view of the valve-face Q. Figs. 6, 7, 8, and 9 are diagrams showing different phases of the distribution.

A is the cylinder.

B B' are the two pistons.

C C' are oscillating shafts in the pistons B B'.

D is the shaft, which is rigidly connected with the cylinder.

E E' are two fixed sleeves in which the shaft D turns.

H H' are two standards in which the sleeves E E' are mounted.

F F' F² F³ are four eccentrics, forming one piece with the sleeves E E'. These sleeves are keyed two and two at one hundred and eighty degrees to each other—that is to say, F F³ are strictly keyed alike and F' F² are both keyed alike, but at one hundred and eighty degrees from F F³.

G G' G² G³ are the respective straps of the eccentrics F F' F² F³, the friction of these eccentrics being reduced by balls.

The eccentric-straps are fixed as follows:

The straps G G³ are fixed to the extremities of the shaft C of the piston B and the straps of G' G² to the extremities of the shaft C' of the piston B'.

I is a part which is firmly connected to the cylinder A by means of a hollow extension communicating with the central part of the

cylinder and with the part I, to which it is connected.

J is a pipe which connects the orifice of the part I to the middle of the cylinder A. 55

L is a distributing valve-face furnished with a pipe K, which fits with a tight joint into the orifice M, formed in the part I.

N is another valve-face pierced with two orifices O P. 60

Q is a fixed valve-face pierced with an orifice R for the admission and an orifice S for the exhaust.

T T' T² T³ is a series of differential bevel gear-wheels, of which T forms one piece with the part I, T³ forms one piece with the valve Q, and T' T² are revolvably mounted upon the periphery of the valve-face N. This series of gear-wheels enable me to turn the valve-face N at half the speed of the valve-face L. 70

U are springs which press the valve-face L against the face N.

V is the automatic lubricator, formed with a crown *a*, provided with a channel *b*, in which oil runs from a reservoir V'. From this channel *b* pass the pipes *c*, which convey the oil to the parts to be lubricated. Springs *f* press the crown *a* against the standard H', forming a valve-face. 75

X is the ignition device, which is connected to the contact Y, which rubs at the desired moment upon the brush Z, which is connected to the induction-coil. 80

Z' is the contact, which turns with the valve-face N and forms the inducing-circuit, which will rub upon the insulated contact *g*. 85

h is the return terminal for the inducing and induced currents.

The mixture being introduced and ignited at the desired time, the pistons exert their force upon the fixed eccentrics through the medium of their straps, and thus produce a more or less oblique result relatively to the longitudinal axis of the cylinder A, which is thus caused to make a rotary movement about its transverse shaft D. This arrangement enables me to obtain a much greater rotary velocity than with the arrangement shown in my application, Serial No. 587,950, while the same velocity of the pistons is insured. For the distribution, referring to Figs. 6, 7, 8, and 9, it will be seen that at the 95 100

commencement the orifice K of the valve-face L is between the two orifices O P of the valve-face N, (these orifices O P being perceptibly at ninety degrees from each other.)

5 When the rotation takes place, the orifice K passes in front of O and the admission takes place, (because O is in front of the orifice R for the admission in the valve-face Q,) and when K has made half a turn it will have
10 passed beyond the orifice O, which has made only a quarter of a turn, and all the orifices will be in the position of Fig. 7. K turning through one hundred and eighty degrees the compression of the mixture is effected, be-
15 cause K will pass in front of the solid part of the valve-face N. The orifices will then be in the position shown in Fig. 8, and the ignition takes place. K turning for the third time through one hundred and eighty de-
20 grees all the orifices have passed to the position shown in Fig. 9. K turning further encounters the orifice P, which is in front of the exhaust-orifice S in the valve-face Q. The exhaust then takes place, and K passing a
25 fourth time through one hundred and eighty degrees all the orifices have again passed to the position shown in Fig. 6.

It will be observed that the pistons are both always far away from the center and that
30 therefore I obtain the equilibrium of the driving forces and inertia.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

35 1. In a motor, the combination with a cylinder, of a rotatable part actuated by said cylinder, a valve-disk located adjacent to

said rotatable part and carrying a gear meshing with a gear located on the rotatable part, a stationary gear with which the gear on the 40 valve-disk meshes, and valve-ports in said disk and rotatable part having communication with said cylinder, substantially as described.

2. In a motor, the combination with a cyl- 45 inder, of a rotatable part actuated thereby and having communication with said cylinder, a bevel-gear carried by said rotatable part, a rotating valve-disk provided with inlet and exhaust ports and carrying upon its 50 periphery a gear meshing with said bevel-gear, a stationary support abutting against said rotating disk and provided with inlet and exhaust ports, and a bevel-gear carried by said support and meshing with the gear 55 on the valve-disk, substantially as described.

3. In a motor, the combination of a rotatable cylinder mounted upon a shaft adapted to rotate therewith, a reciprocating piston in said cylinder, a rotating valve mechanism 60 provided with inlet and exhaust ports, a hollow extension from said cylinder to establish communication with said valve mechanism, an eccentric located upon a fixed support between said valve mechanism and cylinder, 65 and means connecting said piston and eccentric, substantially as described.

Signed at Paris, France, this 21st day of September, A. D. 1896.

PAUL AURIOL.

Witnesses:

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