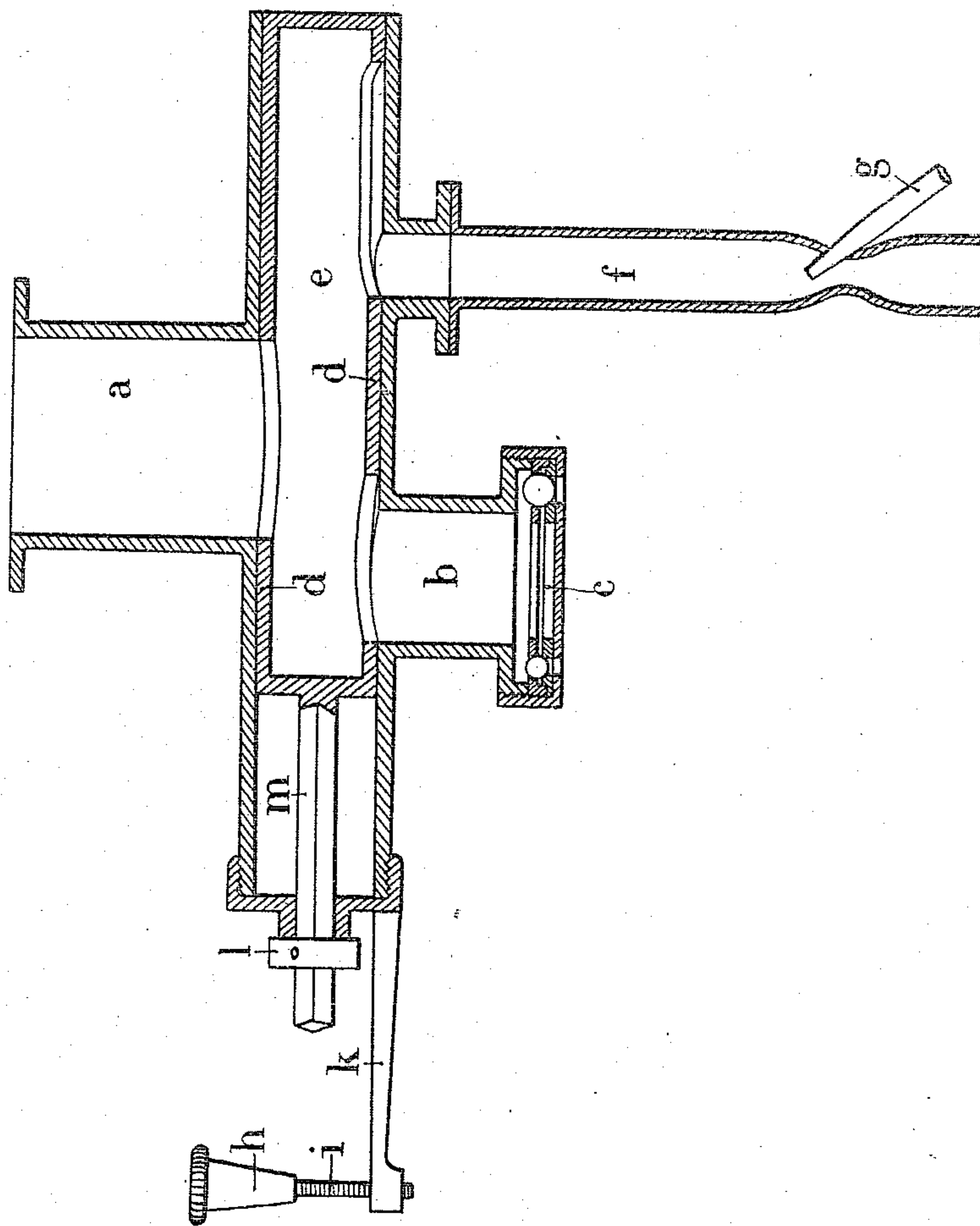


P. J. GROUVELLE, E. H. ARQUEMBOURG & L. J. JORET.  
CARBURETER.

APPLICATION FILED JAN. 4, 1910.

985,670.

Patented Feb. 28, 1911.



WITNESSES

*J. P. Davis*  
*C. S. Rollhaus*

INVENTORS

*Philippe Jules Grouvelle*  
*Emile Henri Arquembourg*  
*Leon Jean Joret*

BY

*Mundel*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

PHILIPPE JULES GROUVELLE, EMILE HENRI ARQUEMBOURG, AND LÉON JEAN JORET,  
OF PARIS, FRANCE.

CARBURETER.

985,670.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed January 4, 1910. Serial No. 536,331.

*To all whom it may concern:*

Be it known that we, PHILIPPE JULES GROUVELLE, EMILE HENRI ARQUEMBOURG, and LÉON JEAN JORET, all residents of 71 Rue du Moulin Vert, in the city of Paris, Republic of France, engineers, and all citizens of the French Republic, have invented an Automatically and Hand Controlled Carbureter, of which the following is a full, clear, and exact description.

Explosion motors, especially those used on motor vehicles must work at widely different speeds and exert also at each of the speeds, different powers according to the conditions of the load and to the profile of the road followed. On the other hand, the gas sucked in by the motor must always have the chemical composition most favorable to the combustion and it is for this purpose that controllable carbureters have been conceived, which can supply to the motor the mixture of hydrocarbons and air suited to its normal working. Actually, the controllable carbureters are of two types: First, those designated under the name of automatically controlled carbureter, are arranged in such manner that the suction of the motor, which is varied by means of a slide valve, butterfly valve or other equivalent device, determines the admission of the fuel and air; the admission of the air is varied automatically by the arrangement of a special system of flap valve, of suitable form, loaded with a weight or spring which is often connected to a piston or diaphragm on which acts the depression of the motor. Second, those designated under the name of hand controlled carbureter. In these apparatus, the driver operates, by means of a handle, a rectilinear, cylindrical, circular, rotary or other slide valve opening and closing simultaneously the suction inlet of the motor and the pure air inlet.

The automatic carbureter presents this disadvantage, that for starting, the pure air flap valves are lifted and, consequently, the fuel which then must be in excess is not sucked in in sufficient quantity. This is also true when the speed of the motor is not very great. The hand controlled carbureter has also the following disadvantage: When the motor must exert all its power, either for starting, or when going uphill and that it is then necessary to open entirely the suction

inlet of the motor, the latter slows down under the tractive force to be produced and does not suck a sufficient quantity of fuel.

The present invention is intended to remedy these defects and consists in a device which combines the hand control and the automatic control.

The accompanying drawing shows by way of example a method of construction of this device.

In this drawing, *a* is the suction pipe of the motor.

*b* is the extra pure air inlet provided with an automatic valve *c* for instance a multiple ball valve, the shape of this opening *b* is such as to admit the proper amount of air under all conditions.

*d* is a slide valve moving in the direction of its longitudinal axis and controlling the suction inlet *a* and the pure air inlet *b*; *e* is the mixing chamber formed in the interior of this slide valve.

*f* is the pipe leading to the carbureter and by which arrives the fuel issuing from the spraying nozzle *g* and already mixed with a certain quantity of air.

By means of this device, when the motor exerts its full power for instance when going uphill, and when the suction inlet of the motor is completely opened, the pure air inlet is opened at the same time, but as it is closed by the ball valve *c* or by any other equivalent automatic device, the pure air inlet admits air only if the suction is sufficient. In these conditions, the disadvantage inherent to the hand control is prevented and the disadvantage due to the automatic control is also prevented.

It is desirable in order that the motor may not exceed its minimum speed when running light that the inlet valve *a* for the gas be opened as little as possible and to permit the driver to control the amount of opening. The carbureter combined as indicated above is preferably provided with a movable abutment consisting of a cone *h* having a screw threaded rod *i*, which engages a threaded opening in the stationary support *k* extending laterally from the frame of the apparatus. A flange *l* is secured to the operating rod *m* of the slide valve *b* and toward the ends of the stroke, the said rod presses against the abutment *h*. By moving the abutment toward or from the support *k* the



time at which the end of the rod *m* engages the cone may be varied and consequently the degree of opening of the slide valve.

The above arrangements are given only by way of example and it is to be understood that the invention is independent from the arrangements of the various parts which constitute the same. For instance, the carbureter may be of any type and the slide valve *d* instead of having a to-and-fro rectilinear movement could be constituted by a kind of shell or seat of a cock rotating on itself. Moreover, the ball valve *c* may be replaced by any other system of spring valve or valve loaded with a weight which opens more or less to an extent depending on the suction of the motor.

Claim—

In a carbureter, the combination of a body of tubular form having a primary air tube into which the fuel is let and which conveys the rich mixture, a second tube furnished with an additional automatic air supply valve, and a third tube fixed to the suction

tube of the motor, a hollow movable valve, the interior of which forms a mixing chamber and which has three openings corresponding respectively with the rich mixture inlet, the additional air inlet and the outlet for the final mixture, the rich mixture inlet of such valve being longer than that of the additional air supply inlet so that the area of the passage for the rich mixture is suitably proportioned to the area of the passage for the additional air supply and to that of the outlet for the final mixture, and so that the inlet for the additional air supply can be closed without risk of accidental opening while the inlet for the rich mixture is open.

The foregoing specification of our automatically and hand controlled carbureter signed by us this 21st day of December 1909.

PHILIPPE JULES GROUVELLE.  
EMILE HENRI ARQUEMBOURG.  
LÉON JEAN JORET.

Witnesses:

HANSON C. COXE,  
R. EHRIOT.

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

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