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J. H. JOHNSTON.

CARBURETER FOR EXPLOSIVE ENGINES.

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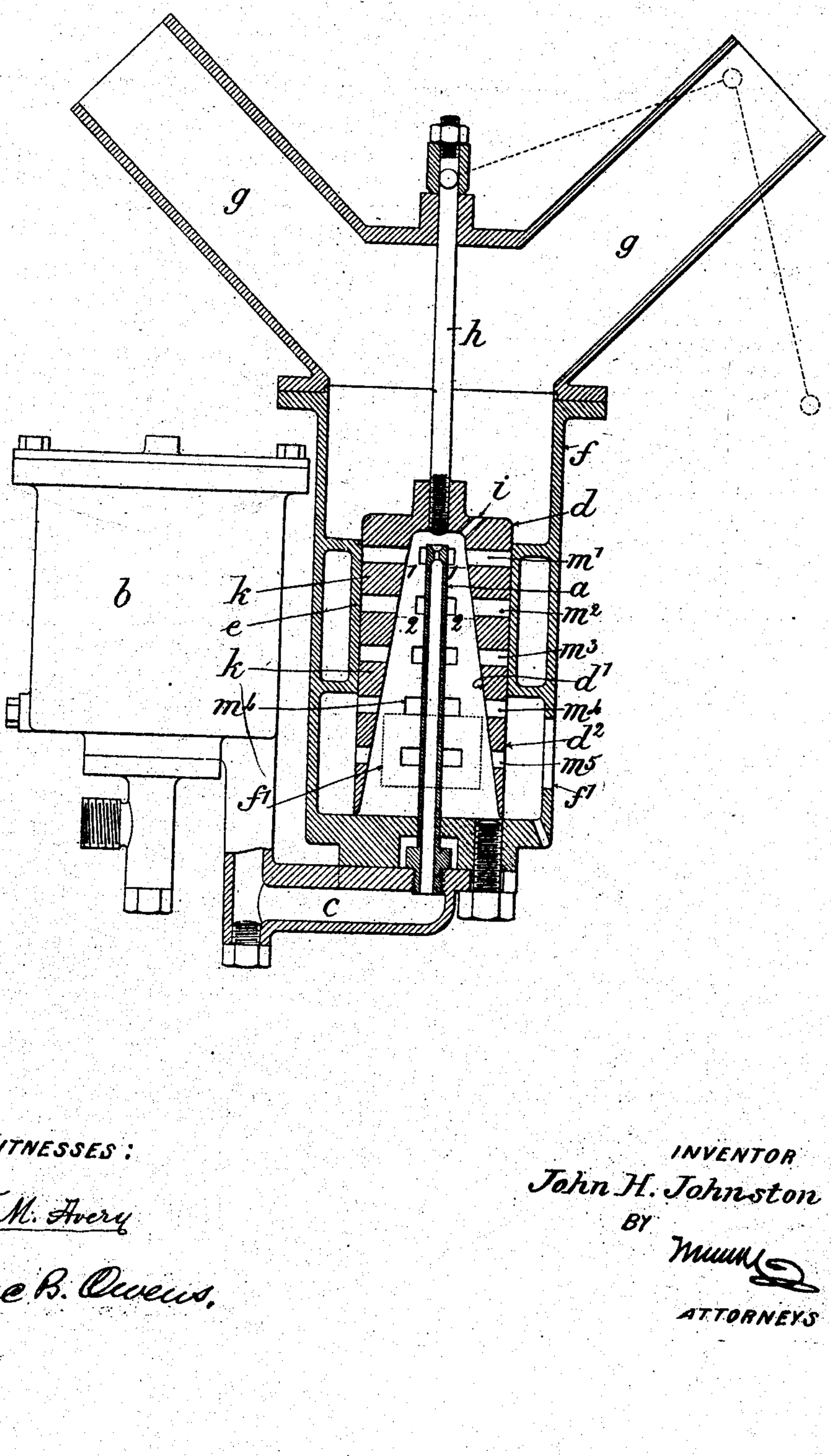

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JOHN HOWARD JOHNSTON, OF PARIS, FRANCE.

CARBURETER FOR EXPLOSIVE-ENGINES.

No. 815,712. Specification of Letters Patent. Patented March 20, 1906.

Application filed June 24, 1905. Serial No. 266,783.

To all whom it may concern:

Be it known that I, JOHN HOWARD JOHNSTON, engineer, a citizen of the United States of America, residing at 145 Rue de la Pompe, Paris, in the Republic of France, have invented certain new and useful Improvements in Carbureters for Explosive-Engines, of which the following is a specification.

This invention relates to a carbureter for explosive-engines so equipped as to allow of obtaining an explosive mixture the richness of which will always remain the same whatever may be the speed of the engine.

In principle this carbureter comprises a regulating hollow piston which surrounds a spray-pipe and the inner wall of which is convergent, so that the section of the annular passage produced around the orifice of the spray-pipe varies according to the position of the piston. On the other hand, the wall of the latter is provided with apertures for the passage of the air and is surrounded for a part of its length by a ring, so that the air coming in at one end of the wall of the piston is caused to move out at the other end after having passed around the spray pipe or nozzle. According to the position given to the regulating or adjusting piston, the air finds through the apertures of the latter, and through the annular space formed around the orifice of the spray pipe, passages of less or greater section, so that the speed at which it passes around the orifice of the spray-pipe can be regulated at will and at a predetermined amount, which remains always the same at whatever speed the engine is running. As the richness of the explosive mixture depends, essentially, on the speed at which the air passes around the orifice of the spray-pipe, the result is that the composition of the mixture can thus be rendered constant, the efficiency of the engine being greater on that account.

Reference is to be had to the accompanying drawing, which shows in section one embodiment of this invention, and in which—

a designates a spray-pipe to which oil is fed from a lateral reservoir *b* (in which the level of the oil remains always the same) through a lower pipe *c*. Around the said spray-pipe is arranged a hollow piston *d*, the inner wall *d'* of which is of conical shape and provided with several crowns of apertures m' m^1 m^3 m^4 m^5, opening through the outer wall d^2, which is of cylindrical shape. The said piston is guided by a cylindrical ring *e*, which extends a part of the length of the same and forms a portion of wider casing *f*. One end of the latter is secured around the base of the spray-pipe and has lateral apertures or openings *f'* for the entrance of the air from without, while the other end of the casing is connected with the suction valve or valves of an engine by one or more pipes *g*.

The piston *d* is provided with a rod *h* passing through the casing *f* and which is capable of being moved by any suitable mechanism operated by hand. This mechanism must comprise stop-notches, a graduation, or the like to allow of the driver of the engine bringing the piston *d* at once into any predetermined position.

In the position shown in the drawing, and which corresponds to that in which the engine is running idly, the piston is in close proximity to the spray-pipe, and the air coming in through the apertures *f'*, m^4, and m^5 can only move out through the small outlet *i* in the base of the piston.

When the engine is running at a determined speed—say at two hundred revolutions—the piston is so moved as to bring the apertures m' above the ring *e*. The air then enters the piston through the lower orifice of the same and through the apertures m^5, passes round the spray-pipe, and then out through the apertures m'. The diameter of the passage around the orifice of the spray-pipe is indicated at 1 1. When the engine is running at four hundred revolutions, for instance, the piston is so moved as to bring the apertures m^2 above the ring *e*. The air coming into the piston through the lower orifice of the same circulates around the spray-pipe and passes out through the apertures m' and m^2. 2 2 show the diameter of the corresponding passage formed around the spray-pipe. It will be understood that as the speed of the engine has doubled with respect to that of the previous case the quantity of air sucked in has also doubled, and as, on the other hand, the section of the passage around the orifice of the spray-pipe has become double what it was also the speed of the air in that section is the same as it was before. Likewise if the speed of the engine is increased up to six hundred, eight hundred, one thousand revolutions, the piston will be so moved as to uncover successively the apertures m^3 m^4 m^5 in such a manner as to maintain the speed of the air always the same when passing around the orifice of the spray-pipe.

It will of course be understood that the numbers given above are not absolute in any way.

The number and the dimensions of the apertures m' to m^5 may be varied according to requirements, as well as the thickness of the solid zones k, which separate the crowns of apertures. These solid zones serve to cause all the air sucked in to rise up as far as the orifice of the spray-pipe before moving into the thickness of the wall of the piston and before moving away from the said walls. Furthermore, they break up the gaseous veins and insure an intimate mixture of the air and the explosive vapors. Their thickness may be very small. On the other hand, the apertures m' to m^5 are shown as being straight through the wall of the piston; but they may pass through the said wall in any inclined direction.

Instead of being exactly conical the inner wall of the piston may be of some other convergent shape so long as it retains the general principle of construction set forth.

I claim—

1. In a carbureter, the combination of a spray-pipe, of a hollow piston around the spray-pipe, having an inner wall conical in shape and lateral apertures, of a ring surrounding a portion of the length of the piston, and of means for adjusting or regulating the position of the piston with respect to the spray-pipe and the said ring.

2. In a carbureter, the combination of a spray-pipe, of a hollow piston around the spray-pipe, having an inner wall of conical shape and lateral apertures, the said apertures being arranged in several crowns separated by solid portions; of a ring surrounding a portion of the length of the piston; and of means for regulating or setting the position of the piston with respect to the spray-pipe and to the said ring.

3. A carbureter having an outer casing, a liquid-fuel nozzle discharging thereinto, and a regulating member adjustable in the casing and inclosing the nozzle, said member having a conical interior form and openings through its sides, the adjustment of the regulating member serving to cover or uncover one or more of said openings, whereby to regulate the movement of the carbureted air through the carbureter.

4. A carbureter having an outer casing with inlet and outlet openings respectively adjacent to its end portions, a liquid-fuel nozzle projecting into the casing, said casing having an enlarged interior above the fuel-nozzle adjacent to the discharge-opening, and a regulating member movable in the casing and surrounding the nozzle, said regulating member having openings therein at different points along its length, whereby the position of the member in the outer casing determines the amount of air permitted to flow through the carbureter.

5. A carbureter having an outer casing with inlet and outlet openings respectively adjacent to its end portions, a liquid-fuel nozzle projecting into the casing, said casing having an enlarged interior above the fuel-nozzle adjacent to the discharge-opening, and a regulating member movable in the casing and surrounding the nozzle, said regulating member having openings therein at different points along its length, whereby the position of the member in the outer casing determines the amount of air permitted to flow through the carbureter, and the regulating member having tapered or converging interior walls, for the purpose specified.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOHN HOWARD JOHNSTON.

Witnesses:

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