

N^o 3232



A.D. 1901

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PROVISIONAL SPECIFICATION.

“Improvements in or relating to Regulating Devices for Explosion Engines”.

I, WILHELM MAYBACH, Engineer, of Cannstatt, in the Kingdom of Württemberg, in the German Empire, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in or relating to regulating devices for explosion engines and has particular reference to those explosion engines in which liquid fuel is sucked into the cylinder of the engine by the outstroke of the piston. In these engines liquid from a supply chamber is maintained at a convenient level within a feed nozzle situated in close proximity to the inlet valve of the engine cylinder and usually communicating with a passage one end of which is in open communication with the atmosphere so that air is drawn in and liquid drawn from the nozzle to the cylinder of the engine simultaneously.

The regulating device constructed according to this invention is applied to this construction of apparatus by closing in the reservoir from which the nozzle is fed (this reservoir being for instance the reservoir which contains the well-known float feed) and connecting the upper part of the interior of the reservoir with the passage with which the feed nozzle communicates. The connection between these two parts comprises a conduit provided with a valve operatively connected with any convenient governing device upon the engine.

It will be seen from the above that when the valve in this conduit is closed the combustible charge is drawn into the cylinder of the engine in the usual manner but when this valve is opened by the governing device suction takes place upon both sides of the liquid in the reservoir simultaneously so that none is drawn into the cylinder, air only being sucked in through the passage with which the feed nozzle communicates.

It is obvious that to make this device effective the reservoir containing the liquid must be in communication with the atmosphere when liquid is to be drawn into the cylinder of the engine but must be shut off from communication with the atmosphere when the regulating device is desired to act. For this purpose a slot may be formed in the stem of the valve of the regulating device of sufficient length to communicate with the atmosphere and the interior of the reservoir when the valve is closed but which on raising the valve is shut off from its communication with the reservoir so that no air can enter the latter.

It will be understood that although this device for cutting off the air supply from the reservoir is described other devices may be employed if desired.

Dated this 14th day of February 1901.

BOULT, WADE & KILBURN
Agents for the Applicant.

[Price 8d.]



Improvements in or relating to Regulating Devices for Explosion Engines.

COMPLETE SPECIFICATION.

“Improvements in or relating to Regulating Devices for Explosion Engines”.

I, WILHELM MAYBACH, Engineer. of Cannstatt, in the Kingdom of Württemberg, in the German Empire, 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:—

This invention relates to improvements in or relating to regulating devices for explosion engines and has particular reference to those explosion engines in which liquid fuel is sucked into the cylinder of the engine by the outstroke of the piston. In these engines liquid from a supply chamber is maintained at a convenient level within a feed nozzle situated in close proximity to the inlet valve of the engine cylinder and usually communicating with a passage one end of which is in open communication with the atmosphere so that air is drawn in and liquid drawn from the nozzle to the cylinder of the engine simultaneously.

The regulating device constructed according to this invention is applied to this construction of apparatus by closing in the reservoir from which the nozzle is fed (this reservoir being for instance the reservoir which contains the well-known float feed) and connecting the upper part of the interior of the reservoir with the passage with which the feed nozzle communicates. The connection between these two parts comprises a conduit provided with a valve operatively connected with any convenient governing device upon the engine.

It will be seen from the above that when the valve in this conduit is closed the combustible charge is drawn into the cylinder of the engine in the usual manner but when this valve is opened by the governing device suction takes place upon both sides of the liquid in the reservoir simultaneously so that none is drawn into the cylinder, air only being sucked in through the passage with which the feed nozzle communicates.

It is obvious that to make this device effective the reservoir containing the liquid must be in communication with the atmosphere when liquid is to be drawn into the cylinder of the engine but must be shut off from communication with the atmosphere when the regulating device is desired to act. For this purpose a slot may be formed in the stem of the valve of the regulating device of sufficient length to communicate with the atmosphere and the interior of the reservoir when the valve is closed but which on raising the valve is shut off from its communication with the reservoir so that no air can enter the latter.

It will be understood that although this device for cutting off the air supply from the reservoir is described other devices may be employed if desired.

In the accompanying drawing which illustrates one method of carrying out this invention a pipe *a* communicates with any convenient reservoir from which carburetted liquid is fed to a float feed chamber *b*. Within the chamber is a float *c* operating in a well-known manner with a valve seating *d* to control the flow of liquid into the chamber, and communicating with the chamber by a pipe or passage *e* is a nozzle *g* the end of which is in free communication with a suction pipe *f*. The suction pipe *f* communicates at one end with the cylinder of the engine where it is controlled by a valve *h* and at the other end is in free communication with the external atmosphere.

The apparatus so far described is all of known construction but for the purpose of this invention the chamber *b* which usually is in free communication with the atmosphere in this case is entirely enclosed,

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Communicating with the chamber *b* above the level of the liquid contained therein is a pipe *i*, the other end of which communicates with the suction pipe *f* at a point conveniently opposite the nozzle *g* of the carburetter. Within the pipe *i* is a valve *k* by means of which the interior of the chamber *b* may be thrown into free communication with the suction pipe *f* or entirely or partially shut off from the same. The valve *k* is provided with a spindle *l* which may be operated by hand if desired though preferably connected by any convenient mechanism to some governing device so that it is automatically operated by the engine whenever the speed of the latter exceeds a given limit.

10 The operation of this device is as follows:—

As the piston of the engine retires the valve *k* is opened and air is sucked into the cylinder through the suction pipe *f*. The rush of air through the pipe *f* draws liquid from the nozzle *g* in the well-known manner, which, with the air, forms a combustible mixture afterwards ignited within the cylinder of the engine. Should however the valve *k* be opened whilst air is being drawn in through the pipe *f* suction will be produced on both sides of the liquid within the chamber, and should the valve be opened sufficiently to cause the suction on both sides of the liquid to balance no liquid will be drawn from the nozzle *g*. By this means the amount of liquid drawn into the cylinder of the engine with the air is varied according to the position of the valve *k* operated by the governor so that the speed when exceeding the desired limit is rapidly reduced by the formation of a weaker mixture or by drawing into the cylinder air only, which of course results in the engine missing fire until the speed is sufficiently reduced to close or nearly close the valve *k*.

25 Although the chamber *b* has been described as a closed chamber it is desirable that it should be provided with some means by which air may be admitted in order that the liquid may be freely drawn from the nozzle *g*, but at the same time for the proper working of the regulating device the chamber is preferably completely closed when the valve *k* is open. For this purpose a slot *m* is provided in the valve stem *l* which when the valve is closed communicates with the external atmosphere and that part of the pipe *i* in connection with the chamber, but as soon as the valve is opened the slot or recess *m* being carried up with the valve stem is cut off from communication with the pipe *i* so that the chamber has no communication with the external atmosphere except by way of the suction pipe *f*.

30 This slot *m* in addition to admitting air to the chamber *b* as liquid is drawn from it, prevents any suction on the surface of the liquid within the chamber should the valve *k* be imperfectly fitted upon its seating: in this case air only is drawn through the pipe *i* by the rush of air through the suction pipe *f*.

40 Other devices may be employed for admitting air to the chamber *b*, for instance a separate valve may be provided and coupled with the regulator mechanism so as to close when the valve *k* is opened, and *vice versa*, or in some cases it may be possible to provide the chamber *b* with a small orifice permanently open to the atmosphere by which sufficient air may be fed to the chamber for the purpose of allowing the proper flow of the liquid from the same, whilst too small to prevent the pipe *i* from performing its function. Or again if the liquid within the chamber is sufficiently volatile an air inlet may be dispensed with.

50 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. In a regulating device for an explosion engine the combination with a suction pipe such as *f* with which the nozzle of a carburetter chamber such as *b* communicates of means for throwing the suction pipe into communication with the chamber *b* at a point above the level of the liquid contained therein, substantially as and for the purpose described.

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2. In a regulating device for an explosion engine the combination with the suction pipe *f* of a motor having a spray nozzle such as *g* communicating with it and with a liquid containing chamber such as *b* of a pipe such as *i* communicating with the chamber *b* at a point above the level of the liquid contained therein and with the suction pipe of the motor, a valve such as *k* in the pipe *i* operated automatically or otherwise and a slot such as *m* in the stem of the valve *k* constituting a second valve substantially as and for the purpose described. 5

3. In a regulating device for an explosion engine the combination with a valve-controlled passage such as *i* forming a communication between the suction pipe of the cylinder and a closed carburettor chamber at a point above the level of the liquid contained therein, of an air inlet to the chamber controlled simultaneously with the valve in the passage *i* substantially as and for the purpose described. 10

4. The complete regulating device for an explosion engine substantially as described and illustrated in the accompanying drawing. 15

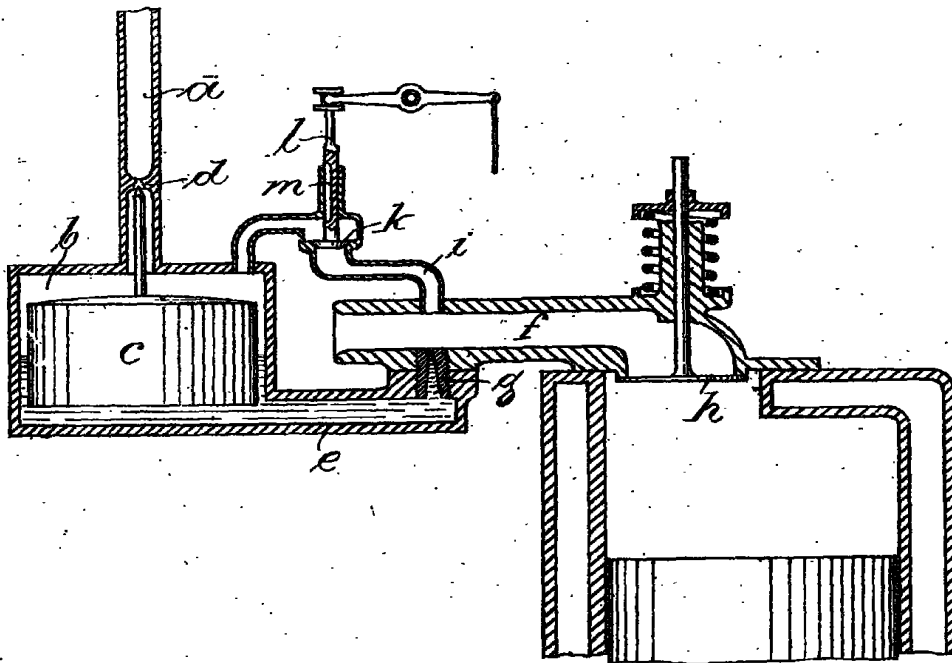
Dated this 14th day of Novr. 1901.

BOULT, WADE & KILBURN
Agents for the Applicant.

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MAYBACH'S COMPLETE SPECIFICATION.

(1 SHEET)



[This Drawing is a reproduction of the Original on a reduced scale]

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