

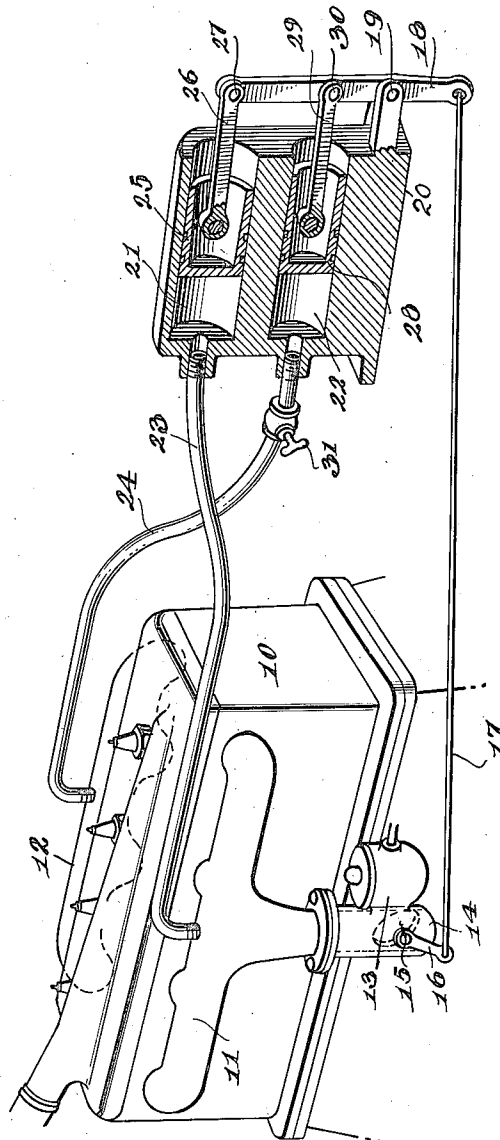
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AUTOMATIC CARBURETOR CONTROL

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AUTOMATIC CARBURETOR CONTROL.

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To all whom it may concern:

Be it known that I, WALTER J. SPIRO, citizen of the United States, residing at White Plains, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Automatic Carburetor Controls, of which the following is a specification.

This invention relates to an automatic carburetor control, and particularly to the actuation of the choke valve or device located at the air inlet for the carburetor and intake manifold.

The invention has for an object to provide a novel and improved construction in which the intake and exhaust manifolds are connected through actuating mechanism so that the suction and pressure created respectively therein while the engine is in motion are utilized to control an air choke device to automatically maintain a proper proportion of air to the gas fed under different running conditions of the engine.

A further object of the invention is to provide a novel apparatus embodying the invention comprising an actuating element having cylinders or chambers connected respectively with the intake and exhaust manifolds and also with an air controlling device located to cooperate with the carburetor.

Another object of the invention is to present means by which an air choke valve may be closed by the suction created in the intake manifold and opened by the pressure in the exhaust manifold, together with means for balancing these pressures and securing automatic control of the carburetor choke under all conditions.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

The drawing illustrates in perspective and section one form of apparatus adapted to accomplish the objects of this invention.

The numeral 10 therein designates an explosive gas engine of any desired character having the usual intake manifold 11 and exhaust manifold 12. The intake manifold is provided with any preferred form of carburetor 13 having its air intake 14 controlled by a choke device or valve 15 for regulating the air supplied for the explosive mixture. This valve has an operating lever 16 from which a connecting rod 17 extends to an actuating lever 18 pivotally mounted at 19

upon any desired fixed part, such as the cylinder casing 20.

This casing is formed with a suction cylinder or chamber 21 and a pressure cylinder 22, the former communicating by a pipe line 23 with the intake manifold 11, and the latter having a similar line 24 communicating with the exhaust manifold 12. Within the cylinder 21 a piston 25 is located and the connecting rod 26 therefrom is pivoted at 27 to the end of the actuating lever 18. A like piston 28 is disposed in the pressure chamber 22 and the rod 29 therefrom is pivoted to the actuating lever at 30 intermediate the lever pivot and the suction cylinder connection. The pipe line 24 from the exhaust manifold may be provided with an adjustable needle valve 31 by which the balance between the pressure and vacuum may be adjusted. If desired the pressure cylinder may be of less size or area than the suction cylinder. It will be obvious that other forms of pressure devices may be substituted for the cylinders and pistons herein described.

In the operation of this invention the carburetor air choke valve is automatically controlled by the difference between the suction maintained in the intake manifold which is constant at a given speed and the pressure within the exhaust manifold which is determined by the power of the explosions regulated by the perfection of the mixture of the gas and air at any given speed. Under ordinary conditions commercial gasolines will not satisfactorily vaporize at low temperatures and it is necessary to provide means, such as an air choke valve, for feeding an over-rich mixture to the engine in starting. When the effective area of the air intake is reduced by partial closing of the choke valve and the engine started the suction induces the aspiration of a greater proportion of gasoline than when the choke is open, and this choke valve must be manipulated from time to time as the engine heats. Inexperienced operation of the choke valve caused a material waste of fuel and excessive carbon deposits in the engine through overfeeding due to failure to properly adjust and close the choke valve. With this invention as soon as the engine is turned over the intake suction automatically operates the choke valve to its closed or starting position. As the engine continues operation a pressure is developed in the exhaust

manifold which opposes the pull of the vacuum and actuates the choke valve to a greater or less degree dependent upon such pressure, thus maintaining a fixed relation
5 between the constant suction and the variable pressure. When installing the invention the needle valve in the pressure line facilitates adjustment of this balance between the suction and pressure so that the choke
10 valve will be actuated in accordance with the relation existing at any given time. Thus if the mixture is too rich the power will be reduced and the choke valve actuated until the power and pressure created thereby be-
15 come a maximum. The invention provides for the automatic control of the choke valve at starting and thereafter adjusting it to obtain maximum power and minimum carbon deposit.

20 While the specific construction of one form of apparatus for effecting the objects of this invention has been shown and described, the invention is not confined thereto, as changes and alteration may be made without departing
25 from the spirit of the invention as defined by the following claims.

What I claim is:—

1. In a carburetor control, an engine provided with intake and exhaust manifolds, a
30 fuel feed controlling device communicating with the intake manifold, and suction and pressure operated mechanism communicating with the intake and exhaust manifolds and connected to actuate said device.

35 2. In a carburetor control, an engine provided with intake and exhaust manifolds, a fuel feed controlling device communicating with the intake manifold, and actuating mechanism for said device communicating
40 with the intake and exhaust manifolds and adapted to be operated by the opposed pressures therein.

45 3. In a carburetor control, an engine provided with intake and exhaust manifolds, a fuel feed controlling device communicating with the intake manifold, actuating mechanism for said device communicating with the intake and exhaust manifolds and adapted
50 to be operated by the opposed pressures therein, and means for balancing said pressures.

4. In a carburetor control, an engine provided with intake and exhaust manifolds, a
55 carburetor having an air feed controlling device communicating with the intake manifold, a fluid pressure element communicating with the intake manifold, a fluid pressure element communicating with the exhaust manifold, and an actuating mechanism
60 connected to said elements and to said controlling device.

5. In a carburetor control, an engine provided with intake and exhaust manifolds, a carburetor having an air feed controlling

device communicating with the intake mani- 65 fold, a fluid pressure operated member communicating with the intake manifold, a fluid pressure operated member communicating with the exhaust manifold, an actuating
70 mechanism connected to said members and to said controlling device, and an adjustable valve member disposed in the communication with the exhaust manifold.

6. In a carburetor control, an engine provided with intake and exhaust manifolds, a
75 carburetor having an air feed controlling device communicating with the intake manifold, a cylinder and piston having a communicating pipe line with the intake manifold, a cylinder and piston having a com-
80 municating pipe line with the exhaust manifold, an actuating lever connected to both of said pistons, and a connection from said lever to the controlling device.

7. In a carburetor control, an engine provided with intake and exhaust manifolds, a
85 carburetor having an air feed controlling device communicating with the intake manifold, a cylinder and piston having a communicating pipe line to the intake manifold, a
90 piston and cylinder having a communicating pipe line to the exhaust manifold, an actuating lever connected to both of said pistons at one side of its pivot, and a connection between said lever and feed control-
95 ling device.

8. In a carburetor control, an engine provided with intake and exhaust manifolds, a carburetor having an air choke valve provided
100 with an operating arm, pistons and cylinders having pipe lines communicating respectively with the intake and exhaust manifolds, an actuating member connected to the rods from said pistons, and connecting
105 means extending from said member to said arm.

9. In a carburetor control, an engine provided with intake and exhaust manifolds, a carburetor having an air choke valve provided
110 with an operating arm, pistons and cylinders having pipe lines communicating respectively with the intake and exhaust manifolds, a pressure adjusting valve disposed in the line to the exhaust manifold, an actuating member connected to said pistons,
115 and connecting means extending from said member to said arm.

10. In a carburetor control, an engine provided with intake and exhaust manifolds, a carburetor provided with an air choke de-
120 vice and communicating with the intake manifold, and means for actuating said device controlled by the suction established in the intake manifold as opposed to the pressure established in the exhaust manifold
125 when the engine is in operation.

In testimony whereof I affix my signature.
WALTER J. SPIRO.