A. F. SCHMIDT.

MECHANISM FOR CONTROLLING THE ADMISSION OF AIR AND GASOLENE TO EXPLOSIVE ENGINES.

APPLICATION FILED SEPT. 11, 1916.

1,375,610.

Patented Apr. 19, 1921

FIG. 1.

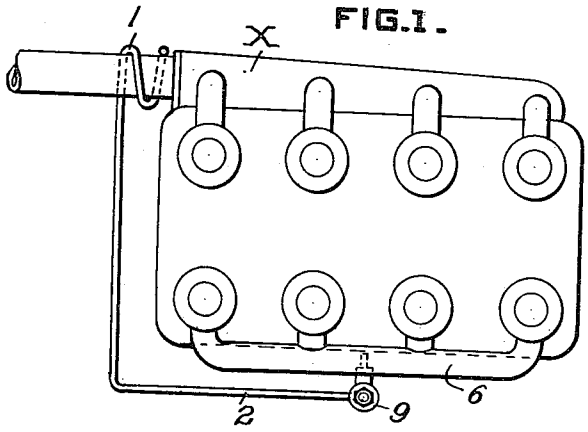


FIG. 2.

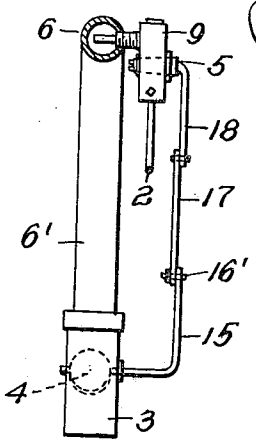


FIG. 3.

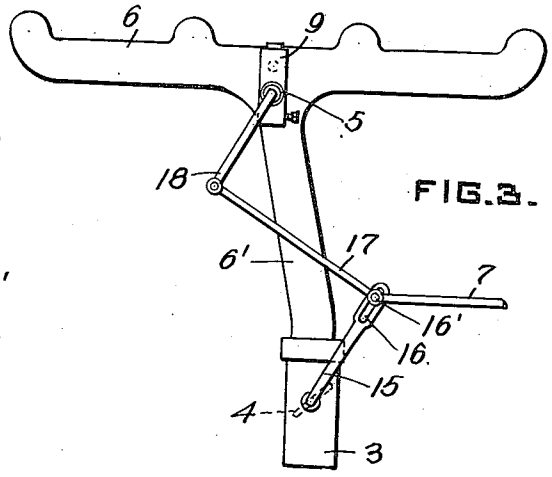


FIG. 4.

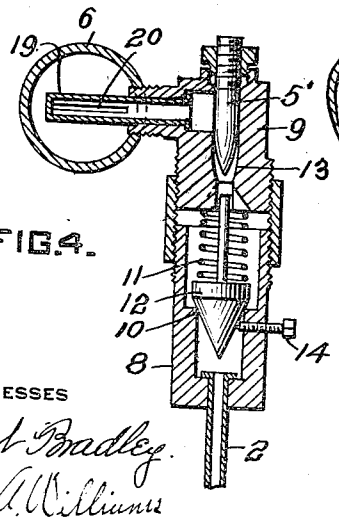
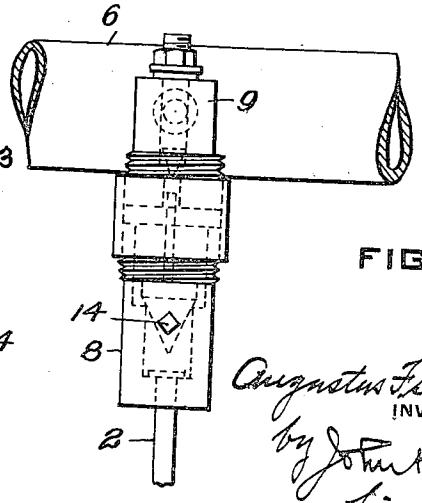


FIG. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

AUGUSTUS F. SCHMIDT, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO JOHN H. RONEY, TRUSTEE, OF PITTSBURGH, PENNSYLVANIA.

MECHANISM FOR CONTROLLING THE ADMISSION OF AIR AND GASOLENE TO EXPLOSIVE-ENGINES.

1,375,610. Specification of Letters Patent. Patented Apr. 19, 1921.

Original application filed May 26, 1913, Serial No. 769,794. Divided and this application filed September 11, 1916. Serial No. 119,406.

To all whom it may concern:

Be it known that I, AUGUSTUS F. SCHMIDT, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Mechanism for Controlling the Admission of Air and Gasolene to Explosive-Engines, of which improvement the following is a specification.

My invention relates to improvements in devices for regulating and controlling the admission of explosive mixture to explosive engines, being a division of application No. 769,794, filed May 26th, 1913. The purpose is to economize the use of gasolene and increase the efficiency of the engine, and to accomplish these purposes, my invention consists in the novel construction and arrangement of parts hereinafter more specifically described, reference being had to the accompanying figures, in which:

Figure 1 is a plan view of the engine, showing my device applied thereto;

Fig. 2 is an end view of the carbureter and manifold of the engine with the valves and levers of my device applied thereto;

Fig. 3 is a side view of the same;

Fig. 4 is a central section of a modified form of the air-regulating valve on an enlarged scale, compared to Figs. 2 and 3;

Fig. 5 is a side view of the same.

Referring to the drawings, 1 is a pipe opening to the atmosphere, a part of which is in close proximity to the exhaust manifold X, being preferably wound around said manifold. Air is fed through said pipe and through pipe 2 to the manifold 6, and is admitted thereto by means of the mechanism shown in Figs. 4 and 5. In the drawings, the carbureter is represented by the reference numeral 3 and is connected with the manifold by means of the conduit 6′. 4 is the throttle and in the upper part, 9, of the casing is fitted a cock, 5, Figs. 2 and 3, controlling the supplemental air supply. A modified form, 5′, is shown in Figs. 4 and 5. In either case it is adapted to be operated simultaneously with said throttle valve 4 by means of the rod 7, for the purpose of controlling the admission of a regulated amount of air, preferably hot air, with the mixture for the purpose of more thoroughly eliminating from said mixture moisture that may result from condensation. I have discovered that the admission of this regulated amount of hot air economizes the use of gasolene and greatly increases the efficiency of the engine. The lower end 8 of the casing, connected to pipe 2, having a port 10 controlled by the spring pressed valve 12, and the upper part 9 having a port 13 controlled by the valve 5, which is operated by the rod 7 simultaneously with the throttle valve 4, or, as shown in Figs. 2 and 3, by the cock 5. The lower end 8 of said case on one side is provided with an adjusting screw 14 for the purpose of regulating the degree of closure of said valve 12. The throttle valve 4 and the valve 5 and cock 5′ and valve 12 may be opened even to the fullest extent for the purpose of increasing the speed of the motor, but when the car is ascending steep grades and power rather than speed is required, the speed of the motor decreases and the suction through pipe 2 correspondingly decreases, permitting the valve 12 to close or partially close the port 10 and thus shut off or limit the amount of air to dilute the mixture and feeding into the cylinders a richer mixture which is required to generate the power to make the grade. When, however, the vehicle is traveling on a level plane, the valve 12 automatically opens corresponding with the speed of the engine. It should also be noted that the crank 15 which connects the valves 4 to rod 7 is provided with a slot 16 and that link 17 connected thereto to operate valve 5 is provided with an adjusting pin 16′, whereby the stroke of said link 17 may be adjusted to the desired degree of opening of the valve 5.

In the manifold 6, I show a nozzle 19 which is connected to the end of case 9 and projects into pipe 6, said nozzle is provided with a slot 20 for the purpose of better mixing the air introduced therethrough with the mixture from the carbureter. In Fig. 6 I have shown the suction valve 10 directly connected with the manifold, the valve 5 being omitted.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. In a mechanism for controlling the admission of air and gasolene mixture to the

cylinders of an explosive engine, the combination of a throttle valve and valve mechanism interposed between the throttle valve of the carbureter and the inlet to the cylinders, adapted to be operated simultaneously with the throttle valve, to be opened by vacuum and closed by a spring when said vacuum decreases, for the purpose of admitting a regulated amount of air with the gasolene mixture and of shutting off air, dependent upon the varying speeds of the motor.

2. In a mechanism to regulate the admission of explosive mixture to the cylinders of an explosive engine, the combination of a throttle valve, an air conduit between the throttle valve and the engine, a valve casing in said conduit having double valves controlling the discharge of air from said conduit, one of which valves is adapted to be opened simultaneously with the throttle valve and the other adapted to be opened by the pressure of air from said conduit dependent upon the vacuum produced by the motor, and to be moved toward its seat by spring pressure upon the decrease of said vacuum, and means to simultaneously operate said throttle valve and said first named valve, whereby air and gasolene mixture is fed to the cylinders of the engine in regulated amount when the motor is running at high speed, and gasolene mixture alone to the cylinders at low speed and on steep grades.

3. In a mechanism for admitting fuel mixture to an explosive engine, the combination of a throttle valve controlling the supply of mixture to the cylinder of the engine, and a suction valve adapted to automatically regulate a supplemental supply of hot air to the mixture.

4. In an attachment for an internal combustion engine having a carbureter for forming explosive mixture, a passage for conducting the explosive mixture from the carbureter to the combustion chamber of the engine and a throttle valve in said passage for regulating the supply of explosive mixture, the combination of an inlet for admitting additional air to said passage, an air valve for regulating the additional air, means for operating said air valve simultaneously with the throttle valve, and means for reducing the supply of additional air independently of the operation of the throttle valve.

5. In an internal combustion engine, the combination of a carbureter for forming explosive mixture for the engine, a manifold for conducting the explosive mixture from the carbureter to the engine, a throttle valve between the carbureter and the manifold for regulating the supply of explosive mixture, an inlet for admitting additional air to said manifold, manually operated means for regulating the supply of additional air simultaneously with the throttle valve, and means for regulating the supply of additional air independently of the operation of the throttle valve.

6. In an attachment for an internal combustion engine having a carbureter for forming explosive mixture for the engine, a manifold for conducting the explosive mixture from the carbureter to the inlet of the engine and a throttle valve in the manifold for regulating the supply of explosive mixture, the combination of a connection for admitting additional air to said manifold, a means for regulating the additional air supply, lever mechanism operatively connecting said means with the throttle valve, and a second means for regulating the additional air supply independently of the lever mechanism.

7. In an attachment for an internal combustion engine having a carbureter for forming explosive mixture, a passage leading from the carbureter to the explosion chamber and a throttle valve in said passage for regulating the supply of explosive mixture, the combination of a connection for admitting a supplemental supply of air to said passage, a means for heating the supplemental supply of air, an air valve for regulating the supplemental supply of air, and manually operated means for operating said air valve simultaneously with the throttle valve.

8. In an attachment for an internal combustion engine having a carbureter for forming explosive mixture for the engine and a passage for conducting the explosive mixture from the carbureter to the inlet of the engine, the combination of a connection for admitting additional air to said passage, a tube for conducting the additional air to said connection, means for heating the additional air, and a plurality of means for controlling the additional air supply, one of which means is automatic and the other of which means is manual.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

AUGUSTUS F. SCHMIDT.

In the presence of—
CLARENCE A. WILLIAMS,
JOHN H. RONEG.