J. L. HAGUE & W. A. BRADLEY.

GAS SAVER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED SEPT. 16, 1916.

1,259,858. Patented Mar. 19, 1918.

Fig. 1.

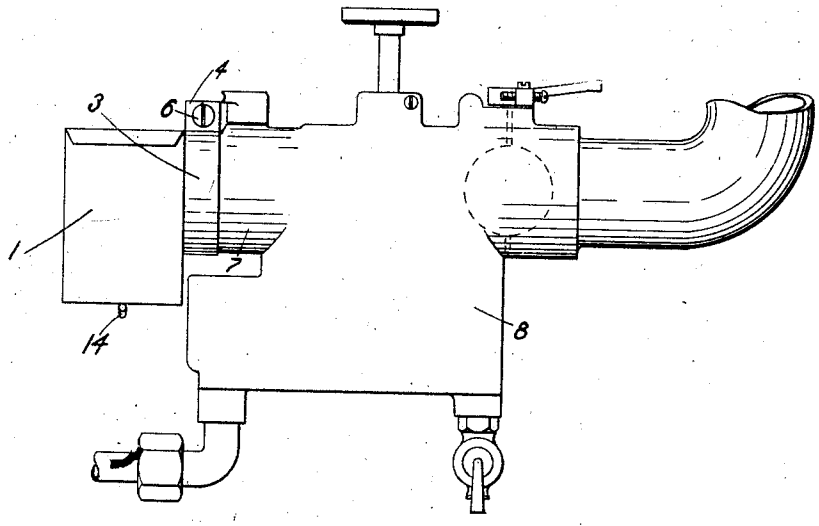


Fig. 2.

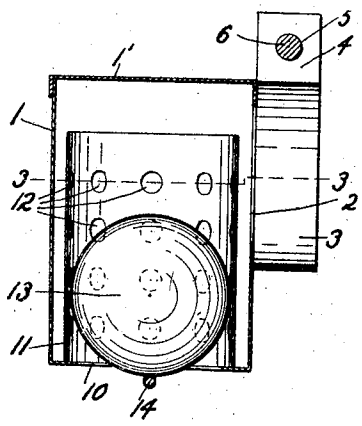
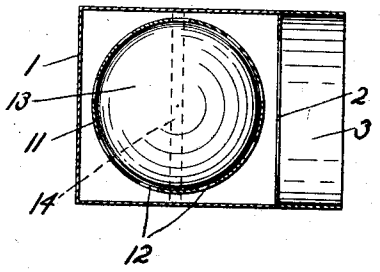


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN L. HAGUE, OF LOS ANGELES, AND WILLIAM A. BRADLEY, OF TROPICO, CALIFORNIA; SAID HAGUE ASSIGNOR TO SAID BRADLEY.

GAS-SAVER FOR INTERNAL-COMBUSTION ENGINES.

1,259,858. Specification of Letters Patent. **Patented Mar. 19, 1918.**

Application filed September 16, 1916. Serial No. 120,528.

To all whom it may concern:

Be it known that we, JOHN L. HAGUE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, and WILLIAM A. BRADLEY, a citizen of the United States, residing at Tropico, in the county of Los Angeles, State of California, have invented a new and useful Gas-Saver for Internal-Combustion Engines, of which the following is a specification.

This invention relates to means for automatically controlling the amount of air admitted to the carbureter of an internal combustion engine, and particularly of an automobile engine, in accordance with variations in load and speed of the engine.

The main object of the present invention is to provide improved means to so regulate the supply of air to the carbureter, as to reduce the amount of gasolene or fuel used.

A further object of the invention, is to enable the engine and the radiator therefor to run cooler by eliminating unnecessary combustion of fuel.

Another object of the invention is to enable the automobile to run more smoothly and at a more even rate of speed.

Another object of the invention is to enable the engine to be cranked or started more easily, and to eliminate almost entirely the vibration, which is usually incident to starting.

A further object of the invention is to enable the automobile to pick up speed or accelerate more readily, and to run on high at a slower rate of speed, thereby making the vehicle safer to run in congested districts.

The accompanying drawings illustrate an embodiment of our invention, and referring thereto:

Figure 1 is a side elevation of a carbureter provided with our gas saving attachment.

Fig. 2 is a vertical section of the gas saver.

Fig. 3 is a horizontal section on line 3—3 in Fig. 2.

Our device comprises a casing, box or chamber 1, of any suitable shape and material, formed, for example, of sheet metal or of a casting, and provided at one side with an opening 2, and with a flange 3 around said opening on outside of casing, said flange being for example, rigidly formed on or secured to the wall of the casing 1 at the lower part of the flange, and extending separately from such wall at its upper part, and provided with upwardly extending lugs or ears or perforated as at 5 to receive a fastening bolt 6, whereby the upper parts of said flange may be drawn together to clamp the flange on to the intake 7 of the carbureter indicated at 8 in Fig. 1. The casing 1 is provided in its bottom with an opening 10 and a cylindrical wall or tubular member 11 extending upwardly from the bottom of the casing around said opening to any suitable height within the casing, said wall being provided with perforations or lateral openings 12, arranged for example in a series of horizontal rows. A ball 13 is mounted within this tubular member 11, and is normally supported in position by a bar 14 extending across and below the opening 10, and secured at its ends to the bottom of casing 1.

The top 1′ of casing 1 is made as a plate, which is soldered or otherwise secured to the said casing to enable it to be put in place after insertion of ball 13.

The device described can be affixed to any carbureter, it being understood that the coupling flange 3 will be made to fit the intake of the carbureter, to which it is to be applied, and in attaching the device to any carbureter, it is only necessary to place this flange over the intake of the carbureter and secure it by the fastening means 6, the device then being ready for use. The operation is as follows:

Normally the ball 13 rests on its support 14 in such a manner as to leave the lowermost row of perforations 12 exposed for passage of air therethrough. When the engine is started by cranking or otherwise, the suction produced in the carbureter draws in the air through these perforations sufficient to produce the explosive mixture required for starting, the fact that a comparatively small amount of air is admitted under these conditions insuring a comparatively rich mixture, such as is desirable in starting, and also insuring minimum expenditure of power in compression, and thereby facilitating cranking of the engine. It is to be understood that under these conditions the ball 13 may rise to some extent, but when the engine is working at high speed or capacity, the ball

will be raised further by the increased suction through the device, and will then expose more of the rows of the openings 12 for admission of air. As the valve ball slides vertically, the force of gravity tending to close it is constant for all positions of the ball, and the force tending to open it must, in all positions of the ball, be just sufficient to balance this constant force, when the valve comes to steady position. The lifting action on the ball is proportional to the drop in pressure at the valve, between the outside and the inside of the carbureter, so that this drop in pressure will be approximately the same at all speeds, the valve simply opening more at higher speeds until the balance is restored, with the result that more air is admitted by reason of the larger opening, while the fuel supply remains approximately constant, due to the constant condition of suction in the carbureter, at different speeds. The amount of air admitted thus increases with the speed of the engine, thereby increasing the amount of explosive mixture formed in proportion to the requirements of the engine, and also diminishing the richness of the mixture at higher speeds in such manner as to economize in the amount of fuel used.

The ball 13 may be of any suitable material, and construction being, for example, a hollow metal ball of sufficient size to fit slidably in tubular member 11, and of sufficient weight to enable it to perform the regulating function above described.

What we claim is:

1. In combination with a carbureter for an internal combustion engine, an air inlet device connected to admit air to the inlet of the carbureter and comprising a vertical tubular member open at its lower end to the outer air and provided with lateral aperture means communicating with the interior of the carbureter, and a valve member slidable in said tubular member to close more or less of said lateral aperture means, so as to provide for substantially constant drop of pressure at the valve at different speeds and stop means for preventing complete closure of said lateral aperture means by said valve member.

2. A gas saving attachment for an internal combustion engine comprising a casing, having an opening in one side provided with a flange, and with clamping means for securing it to the intake of the carbureter, said casing having an opening in its bottom, a tubular member extending upwardly from the bottom of the casing around said opening and having perforations at different distances from its bottom, and a ball mounted to move vertically in said tubular member and adapted to control communication from said opening in the bottom of the casing through said perforations to the opening connected with the intake of the carbureter, and supporting means extending below said opening in the bottom of said casing and adapted to normally support said ball in position to expose only the lower-most of the perforations in said tubular member.

In testimony whereof we have hereunto set our hands, at Los Angeles, California, this 11th day of September 1916.

JOHN L. HAGUE.
WILLIAM A. BRADLEY.