

AUXILIARY AIR DEVICE FOR CARBURETERS.

APPLICATION FILED JAN. 5, 1911.

1,029,898.

Patented June 18, 1912.

Fig. 2.

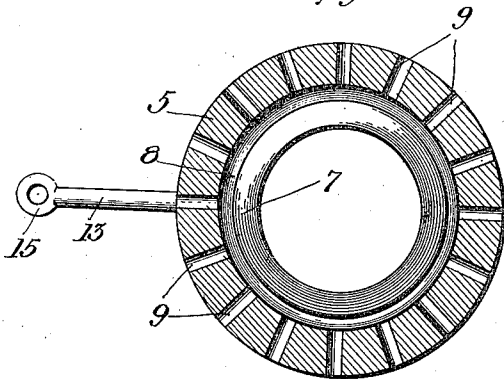


Fig. 1.

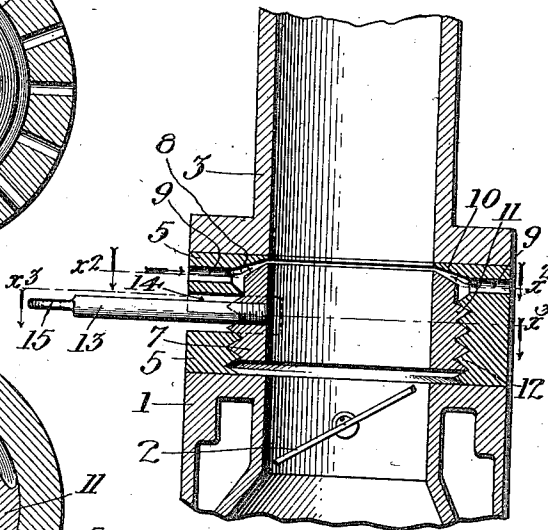


Fig. 3.

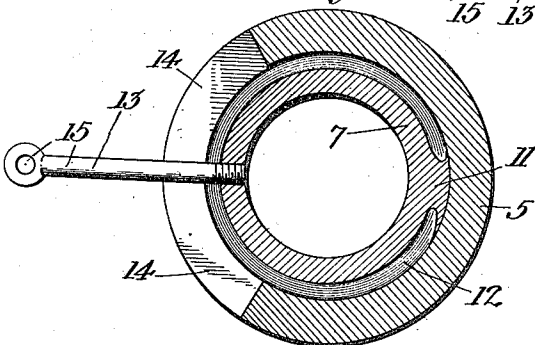


Fig. 4.

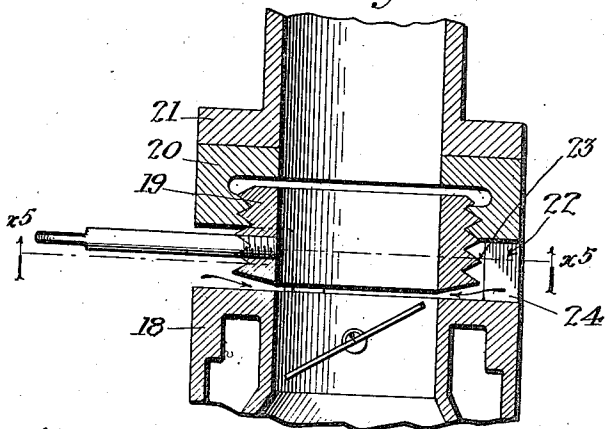
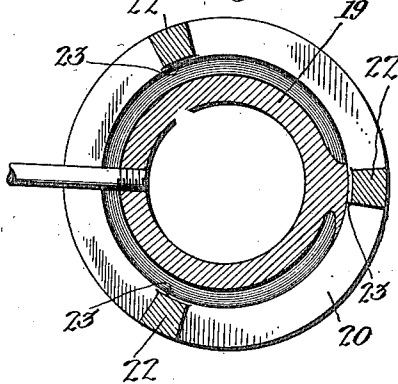


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

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AUXILIARY AIR DEVICE FOR CARBURETERS.

1,029,898.

Specification of Letters Patent. Patented June 18, 1912.

Application filed January 5, 1911. Serial No. 600,944.

To all whom it may concern:

Be it known that I, ALFRED C. STEWART, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Auxiliary Air Device for Carbureters, of which the following is a specification.

This invention relates to means for supplying auxiliary air to the mixture as it passes from a carbureter to an internal combustion engine, and the main object of the present invention is to provide for supply of the auxiliary air in such manner as to prevent the deposition of oil from the mixture on the walls of the manifold or induction pipe of the engine.

A further object of the invention is to provide for supply of auxiliary air in such manner that it will be uniformly mixed with the carbureted air from the carbureter.

Other objects of the invention will appear hereinafter.

The accompanying drawings illustrate the invention and referring thereto:—Figure 1 is a vertical section of one form of the invention. Fig. 2 is a horizontal section on line x^2-x^2 Fig. 1. Fig. 3 is a horizontal section on line x^3-x^3 Fig. 1. Fig. 4 is a vertical section showing a different form of the device. Fig. 5 is a section on line x^5-x^5 Fig. 4.

1 designates the outlet portion of a carbureter which may be of any suitable or usual construction and may be provided with a throttle valve 2 this member 1 constituting the inlet member or portion of the auxiliary air device.

3 designates the induction pipe or manifold leading to the engine and constituting the outlet member or portion of the auxiliary air device. The auxiliary air device further comprises an intermediate member interposed between the outlet portion of the carbureter and the induction pipe said intermediate member consisting of an outer annular member or chamber 5 which may be formed on one of the members 1 and 3 or attached to said members in any suitable manner, said annular member 5 being adapted to receive a ring 7 whose interior diameter may be substantially equal to that of the outlet 1 and the induction pipe 3. The member 5 is of sufficient diameter to form between the ring 7 and the wall of said member an annular chamber or space 8 extending completely

around the ring, said member 5 being perforated as at 9, said perforations extending from said annular chamber to the outer air for admission of auxiliary air to said annular chamber. The ring 7 is supported in the annular member 5 in such manner as to provide for adjustment of the upper end of the ring toward or from a seat or end wall 10 at the upper end of the chamber 8 in the member 5, and for this purpose the said ring may be screw threaded as at 11 to engage in corresponding screw threads 12 in the member 5, and an operating arm 13 may be provided on said ring extending through a slot 14 in the member 5 and provided with means 15 at its outer end for engagement with any suitable controlling rod or means to vary the amount of auxiliary air admitted. The opposing portions of the ring 7 and annular member 5, constituted by the top of the ring and the seat or wall at the upper end of the chamber 8, are preferably conical and inwardly convergent so that the air passing therebetween from the annular chamber 8 to the interior of the device is subject to acceleration by reason of the contraction of area and is delivered into said interior space at maximum velocity. The openings in the inlet member 1, intermediate member 5, the ring 7 in said intermediate member, and the outlet member 3 are in line so as to present a substantially continuous passage for the current of fluid from the inlet member and the internal diameter is substantially the same in said inlet member, valve ring and outlet member, so as to minimize the resistance to the passage of fluid therethrough.

The operation is as follows: When the device is connected to the carbureter and engine and the engine is in operation, the suction from the engine tends to produce a condition of partial vacuum in the interior of the device so that air is drawn through the perforations 9 into the annular chamber 8 and passes thence through the annular inlet between the members 7 and 5 into the interior of the induction pipe 3. This inwardly passing or convergent annular sheet of auxiliary air tends to hold the mixture passing through the device from contact with the walls of the induction pipe, thereby preventing or reducing to a minimum the deposition of the oil or the heavier constituents thereof on the walls of the induction pipe. This delivery of the auxiliary air

in a uniform annular sheet at all sides of the mixture has also the effect of insuring uniform mixture of the auxiliary air with the original mixture. The amount of auxiliary air admitted is controlled by operation of the arm 13.

In the form of the invention shown in Figs. 4 and 5, the annular auxiliary inlet is formed between the top or outlet end of the carbureter body 18 and a ring 19 which screws in an internally screw threaded annular member 20 on the induction pipe 21. Said member 20 is provided with downward extensions 22 connected to the outlet end of the carbureter, but leaving a space 23 extending continuously around the ring 19 so that the air entering through the inlets or spaces 24 between said extensions may, in passing through the annular space 23, be equalized before it passes to the annular inlet, so that it enters uniformly at all parts of said inlet. The opposing surfaces at the end of the carbureter and of the regulating ring 19 adjacent to said inlet are convergent toward the inlet, so that the air is delivered at high velocity in an annular sheet at the outlet of the carbureter.

What I claim is:—

1. An auxiliary air valve for carbureters consisting of an inlet member having an inlet opening, an outlet member having an outlet opening, and an intermediate member between said inlet and outlet members, and comprising an outer annular member, a ring supported therein, said annular member being provided with a continuous annular chamber extending around said ring and with perforations establishing communication from the outer air to said an-

nular chamber, said outer annular member and ring being provided with opposing portions forming an annular air inlet, and said outer annular member and ring being provided with interengaging screw threaded portions.

2. An auxiliary air valve for carbureters consisting of an inlet member having an inlet opening, an outlet member having an outlet opening, and an intermediate member between said inlet and outlet members, and comprising an outer annular member, a ring supported therein, said annular member being provided with a continuous annular chamber extending around said ring and with perforations establishing communication from the outer air to said annular chamber, said outer annular member and ring being provided with opposing portions forming an annular air inlet, said opposing portions being inwardly convergent and said outer annular member and ring being provided with interengaging screw threaded portions and the internal diameter of said ring being the same as the internal diameter of the said inlet member, and handle means on said ring extending through the outer annular member, said outer annular member having an opening for receiving and enabling adjustment of said handle means.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 23rd day of December, 1910.

ALFRED C. STEWART.

In presence of—

ARTHUR P. KNIGHT,
FRANK L. A. GRAHAM.