J. J. COLLINS.

MANUALLY CONTROLLED AUXILIARY AIR INLET FOR CARBURETERS.

APPLICATION FILED DEC. 7, 1915.

1,223,670. Patented Apr. 24, 1917.

Fig. 1.

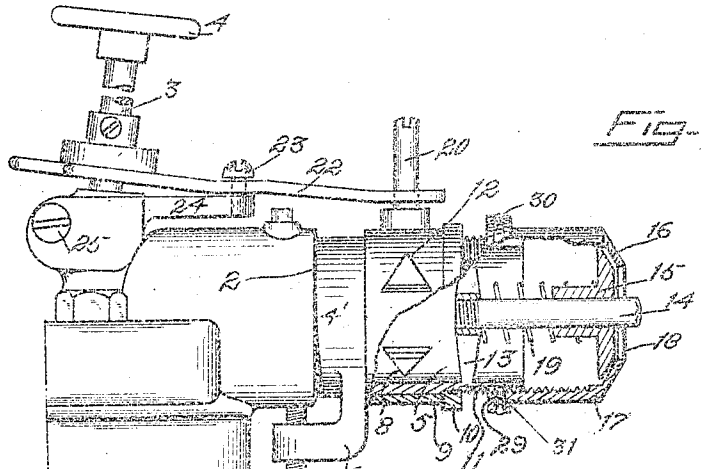


Fig. 2.

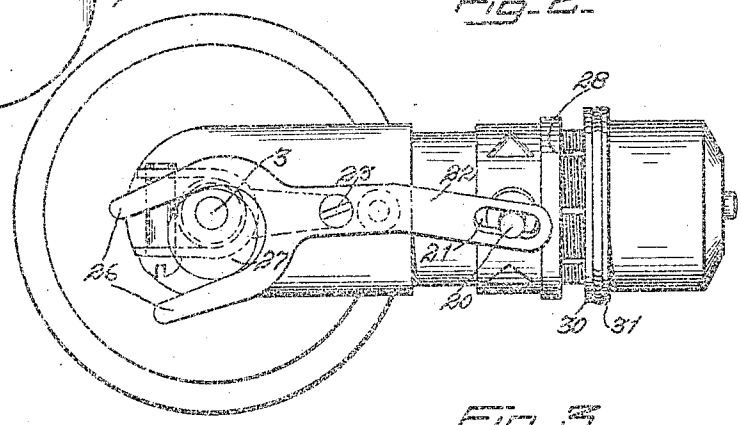
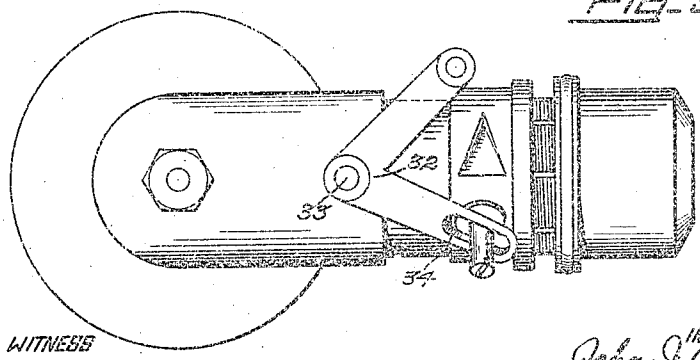


Fig. 3.



WITNESS

Wm. F. Drew

INVENTOR:

John J. Collins

by Cowan & Tolles

ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN J. COLLINS, OF OAKLAND, CALIFORNIA.

MANUALLY-CONTROLLED AUXILIARY AIR-INLET FOR CARBURETERS.

1,223,670. Specification of Letters Patent. Patented Apr. 24, 1917.

Application filed December 7, 1915. Serial No. 65,504.

To all whom it may concern:

Be it known that I, JOHN J. COLLINS, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Manually-Controlled Auxiliary Air-Inlets for Carbureters, of which the following is a specification.

The present invention relates to improvements in manually controlled auxiliary air inlet valves for carbureters, and to a type of valve which is operated in conjunction with the increase or decrease of the volume of fuel passing through the carbureter into the engine cylinders.

The invention is adapted for operating either in conjunction with the adjustment of the needle valve or independently thereof, and is preferably positioned to admit the necessary auxiliary air to the mixing chamber to intermix with the fuel and with the air admitted through the normal carbureter channels.

The invention has for its principal objects to enable the user to obtain a greater mileage per gallon of fuel used, to provide a structure which is capable of attachment to carbureters now universally in use, one which is simple in construction, may be manufactured at little cost, and is thoroughly efficient for the purposes designed.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more fully comprehend the invention, reference is directed to the accompanying drawings, wherein—

Figure 1 is a view in side elevation, partly in section, of a carbureter with an embodiment of my invention attached thereto, and in a position to be operated by the needle valve adjusting means.

Fig. 2 is a view in top plan, disclosing the cam operated lever connected to the sleeve valve and controlled by the needle valve adjustment.

Fig. 3 is a top plan view of a carbureter with an embodiment of my invention attached thereto and in position to be operated independently of the needle valve.

Referring more particularly to the drawings, wherein like characters of reference designate corresponding parts throughout the several views, 1 indicates a carbureter casing of any suitable construction, provided with the usual primary air inlet opening 2 and a rotatable needle valve adjusting rod 3, which extends to any suitable place and carries at its end an adjusting handle 4.

Fitted within the primary air inlet 2 of the carbureter is a suitable open ended tubular member 4′ formed with a channel 5, and the member carries an overhanging arm 6 which projects over the outer surface of the casing surrounding the opening 2, and the arm mounts a clamp screw 7 which is adapted to clamp the member 4′ in position. The member 4′ is formed in rear of the arm with a plurality of circumferentially arranged openings 8 which communicate with the interior thereof, and said openings are preferably triangular in form.

Rotatably mounted on the surface of the member 4′ is a sleeve valve 9, one edge of which contacts with the base of the arm 6 and is retained in contact therewith by a retaining ring 10 threaded over the threaded outer end 11 of the member 4′. The sleeve valve 9 is formed with suitable annularly disposed triangular shaped openings 12 which are adapted on the oscillation of the sleeve on the member 4′ to coöperate with the openings 8 and admit auxiliary air into the channel 5.

A spider 13 is formed in the member 4′ and from the same projects a guide stem 14, on which is slidably mounted a suitable suction controlled primary air inlet valve 15 which coöperates with the beveled seat 16 formed on a bonnet 17 threaded on to the threaded end 11 of the tubular member 4′. The bonnet 17 is formed centrally of its end with an opening 18 which said valve 15 controls and the valve is forced toward the seat 16 by a coiled spring 19.

By rotating the bonnet 17 on the threaded end of the member 4′, the valve 15 may be more firmly seated on the seat 16, owing to the compression of the spring 19, and the more firmly the valve is seated the greater the pressure that is required to unseat the same to admit the primary air into the carbureter.

The sleeve valve 9 carries an arm or stud 20 which extends through the slot 21 in the free end of an arm 22, pivoted as at 23 to a support 24, which is forked at one end and is clamped by the screw 25 around the packing nut surrounding the needle valve adjusting stem. The arm 22 is provided at its inner end with the bifurcations 26, between which operate the cam 27 carried by the needle valve adjusting stem.

It will be apparent when the needle valve adjusting stem is rotated to admit more fuel to the carbureter, that, through the arm 22, the sleeve valve 9 will be rotated on the member 4′ and the openings 12 of the valve will be gradually moved into register with the openings 8 of the member 4′. The operation of the cam 27 is such that the greater the opening of the needle valve to admit a greater volume of fuel into the engine the more the sleeve valve 9 is rotated to admit a greater amount of air to enter the carbureter through the auxiliary inlet openings to intermix with the increased fuel volume until the openings in the sleeve overlie the openings in the member 4′ when the auxiliary air inlet is fully opened.

To maintain the bonnet in its adjusted position, the threaded end of the member 4′ is longitudinally grooved, as at 28, and in said grooves is adapted to be seated the end 29 of a spring 30 which is received in a grooved seat 31 in the bonnet.

In Fig. 3 the sleeve valve is disclosed as being operated independently of the needle valve and in this view a crank arm 32 is mounted at the juncture point of its arms to the butterfly air valve stem 33, and one of said crank arms is slotted at its end, as at 34, to receive the stud 20, and to the end of the other arm is adapted for pivotal connection with an operating rod (not shown) for extending to any suitable point.

It will be apparent that by my improved construction I have provided a structure wherein a manually controlled auxiliary air inlet valve is positioned so as to admit the required excess air for perfect carbureting into the mixing chamber where it is properly intermixed with the fuel body and passes into the manifold thoroughly carbureted. By forming the air inlet openings triangular in shape, the same, on the movement of the sleeve valve, gradually admit the auxiliary air as the openings overlap.

Having thus described my invention what I claim is:—

1. An attachment for detachably securing over the uncontrolled air inlet of a carbureter whereby independent manual and automatic air controls are provided, the same comprising an open ended tubular member provided intermediate of its ends with a plurality of openings, a valve supporting stem carried by said tubular member, a bonnet provided with an opening and adjustably connected to the outer open end of said tubular member, a pressure actuated valve carried by said stem for controlling the opening in said bonnet, a manually controlled sleeve valve rotatably mounted in said tubular member for controlling the openings in the side wall thereof, spring tension means for seating said valve, the tension of said means being capable of variation by the adjustment of said bonnet, and means adjacent the inner open end of said tubular member for attaching the same to a carbureter.

2. An attachment for securing over the uncontrolled air inlet of a carbureter whereby independent manual and automatic air controls are provided, the same comprising an open ended tubular member, provided intermediate of its ends with a plurality of openings, a valve supporting stem carried by said tubular member, a bonnet provided with an opening and adjustably connected to the outer end of said tubular member and through which said stem extends, a pressure actuated valve slidable on said stem for controlling the opening of said bonnet, a sleeve valve rotatably mounted on said tubular member, for controlling the openings in the side wall thereof, and an adjustable spring tension means for seating said pressure actuated valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN J. COLLINS.

Witnesses:
N. A. ACKER,
D. B. RICHARDS.