Dec. 28, 1926. 1,612,352

J. W. BOEHNER

CARBURETOR AND THE LIKE

Filed Sept. 23, 1925

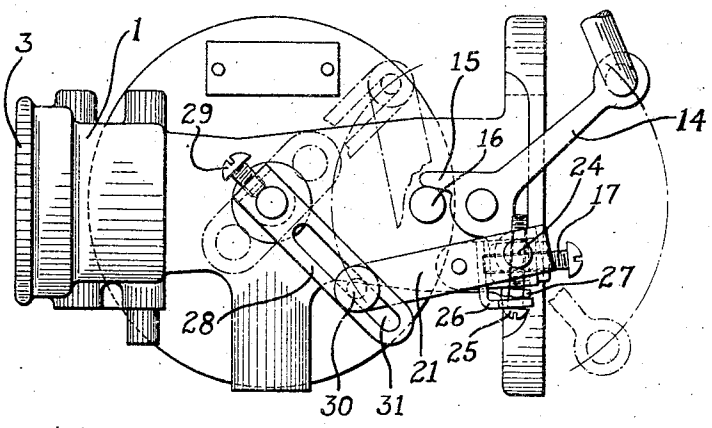


Fig. 1

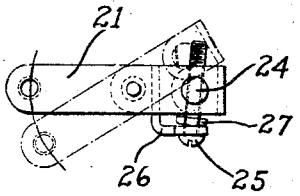


Fig. 3

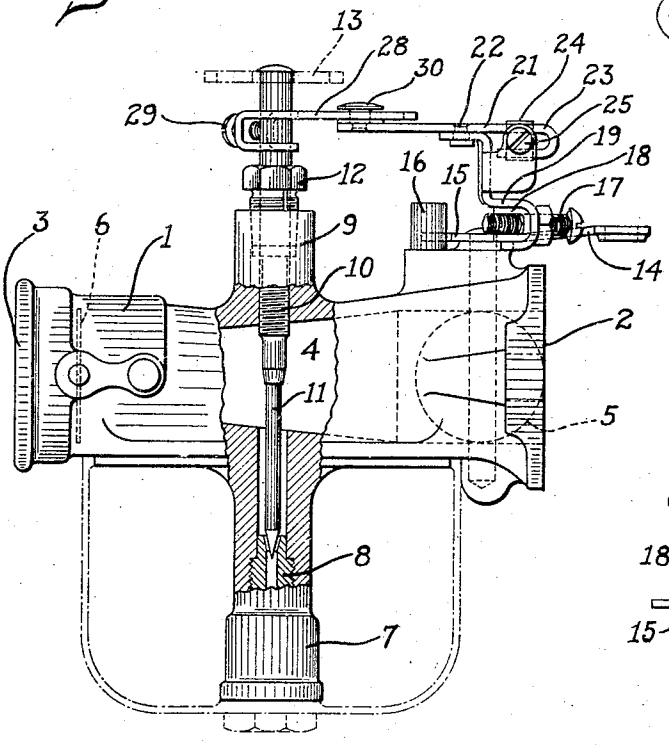


Fig. 2

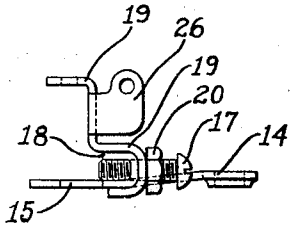


Fig. 4

INVENTOR.

John W. Boehner

BY

D. L. Whistler

ATTORNEY.

Patented Dec. 28, 1926. 1,612,352

UNITED STATES PATENT OFFICE.

JOHN W. BOEHNER, OF CINCINNATI, OHIO.

CARBURETOR AND THE LIKE.

Application filed September 23, 1925. Serial No. 58,160.

This invention relates to carburetors, having particular reference to improved throttle controlling means for the needle valve of carburetors.

The main object attained in my invention is a carburetor which is effective to produce a relatively higher state of carburetion of the fuel gas with a relatively smaller percentage of fuel to that of air in the mixture.

It is common knowledge that with motor vehicles in which gasoline is used for generating the motive power that a large portion of the fuel is wasted, varying in extent in more or less fixed relation to the degree of imperfect or ineffective volatilization of the fuel.

This constant waste of fuel is not only an added burden to the cost of operating the vehicles at normal cost of the gasoline, it is a condition of waste which in its enormous daily aggregate tends to greatly increase the price of gasoline and tends further to hasten the time when the supply will be unequal to the demand and the price prohibitive to the average user.

This condition of low effectiveness of carburetion also gives rise to abnormal conditions of operation of the motor—excessive formation of carbon and with it the common "knocking" of the motor, and a general sluggishness of operation or lack of responsive action which is essential to normally satisfactory performance of the vehicle.

While the principle of my invention is not limited to any particular make of carburetor or to carburetors used on any particular make of automobiles, the form of carburetor in which it is herein shown and described is more especially adaptable for Ford automobiles, the improvements making possible a more effective control of the relative supply of gasoline and air to the carburetor, in starting the motor, in attaining speed and in the sustained operation of the motor at any speed of travel.

These functional objects are attained by mechanical means which are readily adaptable to the common forms of carburetors used on Ford automobiles, which are inexpensive of production and application and which are dependable for indefinite periods of operation without servicing attention.

As illustrated in the accompanying drawings:

Fig. 1 is a plan view of the improved carburetor;

Fig. 2 is a side elevation of the same partially in section;

Figs. 3 and 4 are details of the mechanism.

As here shown the features which are common to carburetors of this character consist of a cast housing 1, disposed in a horizontal plane and adapted to be connected at the end 2 to the intake manifold of the motor, the opposite end 3 being the air intake end, the carburetor or mixing chamber 4 being enlarged diametrically toward end 2.

The usual butterfly throttle valve, indicated in dotted outline at 5, is employed at the manifold end of the carburetor, a similar valve 6 being employed at the opposite end to regulate the supply of air to the mixing chamber. The fuel line is connected to a float chamber indicated in dotted outline in Fig. 2, the depending valve housing 7 into which the valve seat 8 is threaded, projecting into the chamber. Extended upwardly from the main housing 1, opposite housing 7, is a valve stem supporting housing 9 which is internally threaded as at 10 to receive the intermediate threaded portion of the valve stem or needle 11, the upper end of the housing being threaded to receive a split tapered sleeve nut 12 adapted to be adjusted in the housing to the desired extent to form a suitable frictional bearing for the needle. The upper end of the needle normally has an oppositely extended connecting arm 13 secured thereto, the arm being eliminated in the present construction, and the throttle butterfly valve 5 the usual connection 14 having a stop projection 15 adapted to coact with the lug 16 secured in the main housing to limit the movement of the throttle valve in one direction. A set screw 17 threaded into an upturned portion 18 of part 14 acting against lug 16 as an adjustable stop for the throttle valve in the opposite direction.

The foregoing detail parts are all comprised in the common type of carburetor here shown and are all the parts operatively associated with the parts comprised in the invention which consist in a bracket 19 shaped at its lower end to fit the portion 18 of connection 14 and to be secured thereto by the stop screw 17, a lock nut 20 acting to hold the parts firmly together and screw 17 in adjusted relation relative to lug 16.

A lever 21 is pivoted to bracket 19 as indicated at 22, one end of the lever being formed as at 23 to support a rotatable stud

24 into which is threaded an adjusting screw 25, the screw being supported in free rotative relation at its opposite end in an angular portion 26 of bracket 19, a lock nut 27 acting to hold the screw in its adjusted relation to stud 24, thus to determine the angle of lever 21 relative to the throttle valve 14.

Lever 21 is connected to a lever 28 secured to the needle valve stem 11 by a set screw as at 29, by means of a stud 30 fixed in the end of the lever 21 and a slot 31 in the free end on the lever 28 to adapt the lever to coact one with the other on both sides of their common center line thus to effect the regulative relation between the throttle and needle valves defined in the statement of functions attained in the practice of the invention and more particularly as follows:

The construction as described connects the needle valve stem with the throttle valve in a manner which synchronizes the action of the two valves and is therefore effective to regulate the relative portions of gasoline and air combined in the carburetor.

When the throttle valve lever 14 is in the full line position indicated in Fig. 1, the valve will be full open and the needle valve 11 will be at its lowest point of adjustment relative to valve seat 8, which will result in a lean mixture in the carburetor at this point of adjustment composed of the minimum portion of gasoline and the maximum portion of air. This is the adjustment effected by the throttle valve controls, from the steering wheel or foot accelerator, for speed operation of the vehicle. When the lever is in the opposite extreme position indicated by the dotted outline of the lever, the throttle valve will be full closed and the needle valve will be at its highest point of adjustment relative valve seat 8, which will result in a rich mixture, composed of the maximum portion of gasoline and the minimum portion of air. This is the condition of adjustment of the valves for starting the motor, variable compensating adjustments of the valves being made by manipulation of the throttle valve controls at intermediate points between the two extreme positions of the valves as described.

It will be understood that as the throttle valve is moved, from the full closed position in any degree toward the full open position and vice versa, the needle valve will be accordingly and compensatingly moved toward the lowest or highest point of adjustment according to the adjustment of the throttle valve. Thus the relative portions of gasoline and air will be maintained at all times according to a service adjustment of the carburetor conditioned upon a test of the motor.

When it is understood that in standard equipment of Ford automobiles the needle valve, upon being adjusted to a condition of the motor, remains fixed without reference to the adjustments of the throttle incident to driving, the valve of an effective invention of the character herein described, and its influence on fuel economy and improved operating conditions of the motor will be apparent.

Having described my invention, I claim:

1. A carburetor including in combination an adjustable needle valve stem and a throttle valve operable on an axis parallel with the needle valve stem, a bell crank lever fixed to the throttle valve stem, an arm secured to the needle valve stem, a bracket secured to the bell crank lever, an arm pivoted medially on said bracket, having a stud rotatably supported at one end, an adjusting screw supported in said bracket and threaded into said stud, the arm being connected at its free end with the needle valve arm to adapt the needle valve and the throttle valve to be adjusted simultaneously compensatingly one relative to the other.

2. A carburetor including in combination an adjustable needle valve stem and a throttle valve operable on an axis parallel with the needle valve stem, a bell crank lever fixed to the throttle valve stem having opposite stops acting to limit the movement of the valve, an arm secured to the needle valve stem, a bracket extended upwardly from the bell crank, having its lower portion shaped to be secured to one of said stops, a pivotally adjustable arm supported on the upper portion of said bracket and connected compensatingly radially with the needle valve arm whereby to adjust said valves simultaneously one relative to the other.

In testimony whereof, I affix my signature.

JOHN W. BOEHNER.