A. C. FONTAINE.

AIR CONTROLLING DEVICE FOR CARBURETERS.

APPLICATION FILED DEC. 10, 1917.

1,313,478. Patented Aug. 19, 1919.

Fig. 1.

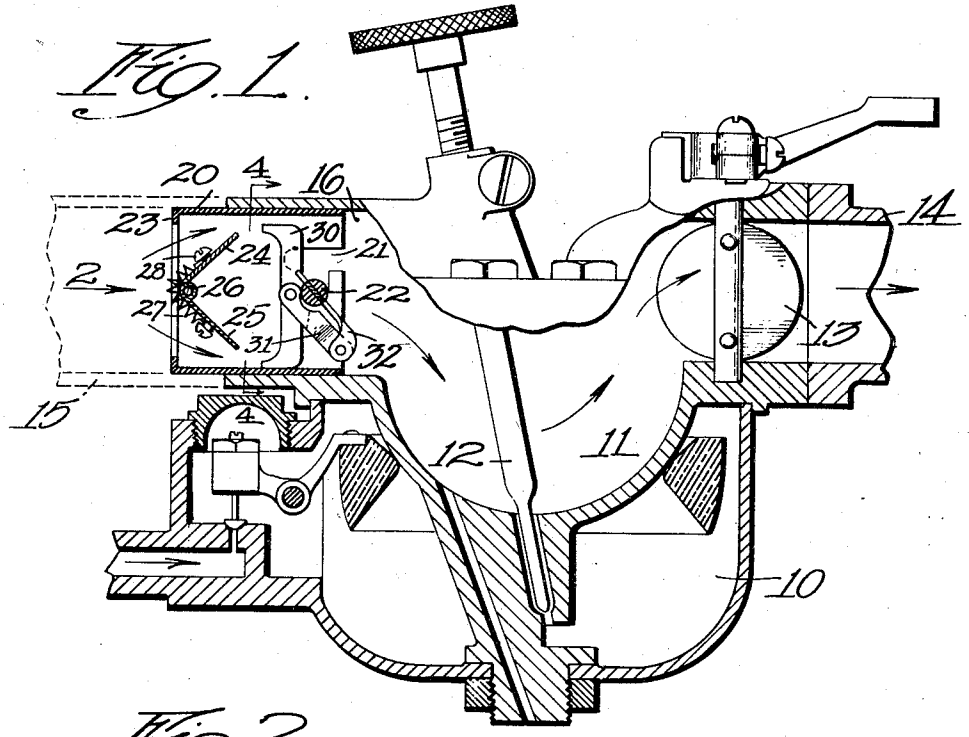


Fig. 2.

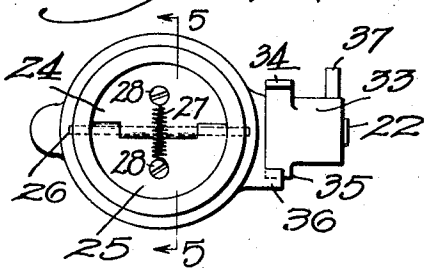
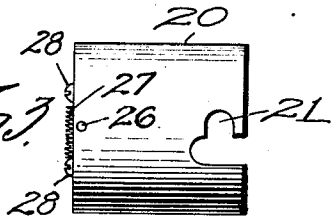


Fig. 3.



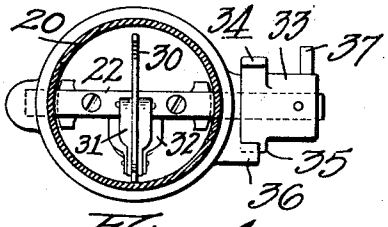
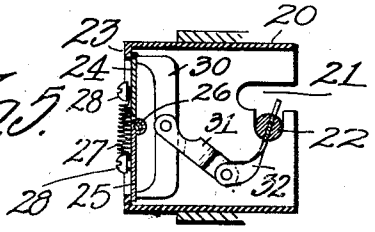


Fig. 4.

Fig. 5.



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AIR-CONTROLLING DEVICE FOR CARBURETERS.

1,313,478. Specification of Letters Patent. Patented Aug. 19, 1919.

Application filed December 10, 1917. Serial No. 206,415.

To all whom it may concern:

Be it known that I, ALBERT C. FONTAINE, a citizen of the United States, residing at Millbury, in the county of Worcester and State of Massachusetts, have invented a new and useful Air-Controlling Device for Carbureters, of which the following is a specification.

This invention relates to a device for automatically controlling the supply of air entering the carbureter of a gasolene engine. It has been found desirable to provide automatic air controlling mechanism so designed that the supply of air will be accurately proportioned to the rate at which fuel is fed to the engine. By the provision of such mechanism the proportions of the fuel mixture may be more uniformly maintained.

Automatic air valves for this purpose have been heretofore devised, and it is one object of my invention to improve the construction of such air valves, thereby securing increased efficiency in operation.

Another object of my invention is to provide means by which the opening of the valve may be manually controlled so that the valve may be held closed or may be permitted to open to any desired extent. The valve thus operates as a choker valve and permits the enriching of the mixture when starting the engine.

With these and other objects in view, my invention relates to certain arrangements and combinations of parts hereinafter described and more particularly pointed out in the appended claims.

A preferred form of my invention is shown in the drawings, in which—

Figure 1 is a vertical sectional view of a common form of carbureter with my improved controlling device embodied therein;

Fig. 2 is a front elevation of my improved valve, looking in the direction of the arrow 2 in Fig. 1;

Fig. 3 is a side view of the valve supporting sleeve;

Fig. 4 is a sectional elevation taken along the line 4—4 in Fig. 1, and

Fig. 5 is a longitudinal sectional elevation taken along the line 5—5 in Fig. 2.

I have shown my air controlling device embodied in a carbureter of common form comprising a float chamber 10, a mixing chamber 11, a needle valve 12, and a throttle valve 13. The carbureter is connected by a pipe 14 to the intake manifold of a gas or gasolene engine, and may also be connected by a pipe 15 shown in broken lines in Fig. 1 to a heating device or hot-air stove mounted on the exhaust manifold. Whether heated or not, the air enters the mixing chamber 11 through an intake passage 16.

My improved air controlling device is mounted in the intake passage 16, and in the form shown in the drawings comprises a sleeve 20 snugly fitting within the passage 16 and provided with notches 21 adapted to coöperate with a shaft 22 extending through the passage 16, the notches and shaft forming a detachable bayonet lock for the air controlling device.

At its outer end the sleeve 20 is provided with an inwardly projecting flange 23 forming a stop for a pair of valve members 24 and 25 hinged to swing freely on a rod 26 extending transversely through the sleeve 20 and having its ends secured therein. A coil spring 27 is secured at its opposite end by screws 28 to the valve members 24 and 25 respectively. The spring is mounted upon the outside of the valve members in such a way that it yieldingly resists inward movement of both of said members under the influence of the engine suction. The movement of said members is thus proportioned to the suction exerted thereon. As the suction of the engine increases the members move farther inward, thus increasing the effective air opening and permitting an increased amount of air to enter the mixing chamber 11. As soon as the engine comes to rest the valve members return to the closed position shown in Fig. 2. By the provision of double valve members the air opening is more easily and accurately proportioned to the engine suction than is practicable with a single swinging valve member.

When a gasolene engine is started, particularly if the engine is cold, it is necessary to use a fuel mixture which is much richer in gasolene vapor. One common method of securing this result is by reducing the air supply by using a throttle valve or other choking device in the air intake passage. I have herein provided means enabling me to use my automatic air controlling valve also as a choker valve, said means consisting of an engaging member 30 (Figs. 1 and 5) movable longitudinally of the sleeve 20 and connected by a link 31 to an

arm 32 fixed to the cross shaft 22 above mentioned. A collar 33 is secured to the outer end of the shaft 22, said collar being provided with lugs 34 and 35 coöperating with a projection 36 on the carbureter to limit movement of the shaft in both directions. An arm 37 on the collar 33 may be connected for manual control from any convenient point.

In the normal operation of the mechanism the member 30 is withdrawn to the position shown in Fig. 1, allowing the valve members 24 and 25 to swing freely in proportion to the suction of the engine. When a rich mixture is desired, as for starting the engine, the member 30 is advanced to the position shown in Fig. 5 in which position the valve members 24 and 25 are held tightly closed. If a limited amount of air only is to be admitted through the passage 16 the member 30 may be moved to any desired intermediate position and the valve members 24 and 25 will thus be permitted to open the passage to the extent desired.

It will thus appear that I have provided an exceedingly simple air controlling device for a carbureter, and furthermore that said device is operable not only as an air controlling device under normal conditions, but also as a choker valve under abnormal conditions such as occur in the starting of an engine. While I have shown my invention embodied in a common form of carbureter, it will be understood that it is applicable to any form of carbureter in which automatic air control is desired.

Having thus described by invention, it will be evident that changes and modifications can be made therein by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims, and I do not wish to be otherwise limited to the details herein disclosed, but what I claim is—

1. An air intake device for a carbureter, having in combination, an automatic air valve comprising a sleeve having an internal annular flange, two semi-circular hinged valve members mounted on a rod extending transversely across said intake and normally seated in a single plane against said flange, and a single tension spring having its opposite ends secured to said two hinged members and effective to yieldingly resist opening movement of both members.

2. An automatic air intake device for a carbureter, having in combination, separate swinging valve members, yielding means to close said valve members, and means operable manually to prevent opening movement of said valve members, said means including a movable element adapted to engage both of said swinging valve members, and means to manually advance said element to a selected operative position.

3. An air intake device for a carbureter, having in combination, a cylindrical member having a bearing surface substantially normal to the axis thereof, two semi-circular hinged valve elements mounted to swing about a common axis transverse to the cylindrical axis of said member, said elements being normally seated against said bearing surface, means to yieldingly resist opening movement of said valve elements, and manually operable means to positively prevent such opening movement of said valve elements.

In testimony whereof I have hereunto affixed my signature.

ALBERT C. FONTAINE.