April 5, 1932. M. E. CHANDLER ET AL 1,852,918

CARBURETOR

Filed Nov. 24, 1930

Fig. 1

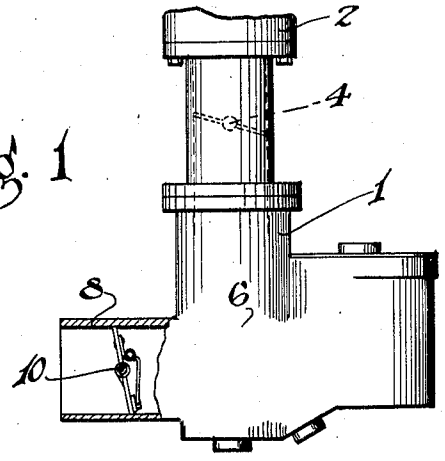


Fig. 2

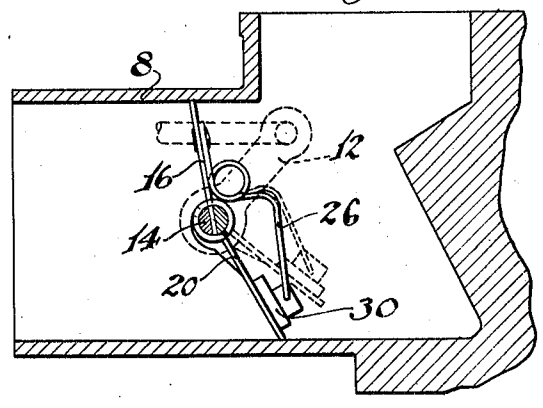
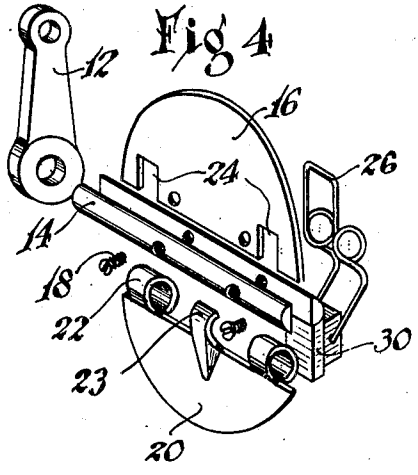


Fig 4



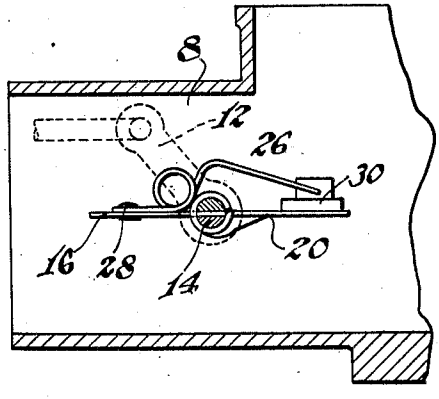


Fig. 3

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UNITED STATES PATENT OFFICE

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CARBURETOR

Application filed November 24, 1930. Serial No. 497,664.

This invention relates to choke valves for carburetors and has for one of its objects the elimination of over-enrichment of the mixture after the engine to which the carburetor is attached has started to operate and is illustrated as embodied in a carburetor of the conventional type.

One feature of the invention resides in the novel segmental valve construction in which one valve portion is resiliently hinged on the operating shaft in a manner to be opened by the pressure of the air drawn through the carburetor by the engine.

An important characteristic of the invention relates to the arrangement of a spring for closing the valve which coacts between the segmental portions and permits manual operation of the valve without changing the spring tension. A stop is also provided on one of the valve portions which abuts the other valve portion and locates the hinged valve parallel to the air stream in the open position of the manually operated valve.

Other objects and novel features of construction and operation will appear from the following description in connection with which we have illustrated one embodiment of the invention in the accompanying drawings, in which:

Figure 1 is a side elevation partly in section showing the choke valve installed in a carburetor;

Figure 2 is a sectional view to a somewhat larger scale showing the manually controlled valve in the closed position and the hinged portion in two of its operative positions;

Figure 3 is similar to Figure 2 except that the manually operated valve is shown in its open position; and

Figure 4 is a perspective view of the choke valve showing the various parts arranged in approximately the same position as they assume in their assembled relation.

Referring to the drawings, 1 is a carburetor of the usual construction connected to an engine manifold 2 and having a manually operated throttle valve 4 which is located between the mixture chamber 6 of the carburetor and the manifold 2. The air intake of the carburetor 1 is through the air horn 8 within which is located a choke valve generally designated as 10 in Figure 1.

The choke valve is ordinarily used only during the starting operation of the engine and for a short time thereafter until the engine has become sufficiently heated to operate on the normal mixture delivered by the carburetor. In the ordinary procedure for starting of a cold engine, the choke valve is completely closed by the operator and remains closed until the engine starts to fire, at which time the choke valve is slightly opened and adjusted to a position which, in the opinion of the operator, gives the most satisfactory performance. It frequently happens that the operator is unable to determine the best position of the valve, or is unable to open it fast enough to adjust it to the speed of the engine which results in the delivery of an excessive amount of fuel and causes the engine to "stall".

The present invention overcomes this tendency to over-enrichment by providing a choke valve formed in two parts, one of which is hinged and which may be opened by the sudden inrush of air that is produced by the starting of the engine. In other words, the present choke valve is, to a certain extent, automatic and will be opened or closed substantially in proportion to the needs of the engine.

The choke is operated by a lever 12 which is secured to a shaft 14 having bearings in opposite sides of the air horn 8. In the illustrated embodiment, the shaft 14 is split lengthwise and the manually operated portion 16 is clamped between the halves by screws 18. The hinged portion 20 is journalled upon the shaft by bearing portions 22 which extend within the cut-out portions 24 of valve 16 and prevent the hinged valve from moving axially of the shaft. A stop 23 is provided which limits the movement of valve 20 toward its closed position and preferably is so arranged as to prevent movement beyond the plane of the valve 16. A spring member 26 is secured to one of the valve portions by any desired means such as rivet 28 and has its opposite end connected to a block 30 preferably faced with leather or similar

material which is in slidable contact with valve 20. In the normal operation of the choke valve, lever 12 is moved by any suitable means, not shown, to cause the choke valve to close the air horn 8 and assume the position shown in full lines in Figure 2.

It will be noted that in Figure 2 valve portion 20 contacts with the wall of the air horn 8 prior to the closing of valve 16 so that in the closed position valve 20 is slightly inclined to the plane of the manually operated valve. As soon as the engine starts to operate, it will immediately cause air to be drawn in through the air horn 8 and the hinged portion 20 will assume the position shown in dotted lines in Figure 2. The extent of opening will be dependent upon the quantity of air drawn in by the engine and, therefore the opening will automatically assume a size substantially proportional to the needs of the engine.

After the engine has become sufficiently heated to operate under a normal mixture, the valve will be manually moved to the position shown in Figure 3, wherein the spring 26 has forced the valve 20 to a position in which the stop 22 is in contact with the portion 16 and both of the segmental valves lie in a plane parallel to the normal flow of air through the air horn.

It will be apparent from the above description of the illustrative embodiment that we have illustrated and described a choke valve which is semi-automatic in its operation and which, to a certain extent, will counteract the tendency of the operator to retain the choke valve in an incorrect position.

While we have illustrated and described in considerable detail one illustrative embodiment of the invention, it is to be understood that we do not regard the invention as limited to the form shown and described or otherwise except by the terms of the following claims.

Having thus described the various features of the invention, what we claim as new and desire to secure by Letters Patent is:

1. A choke valve having a shaft, a pair of flat valve portions, one of said portions being secured to the shaft and the other journalled thereon, resilient means urging the journalled portion toward the plane of the secured portion, a stop preventing the journalled portion from moving beyond the plane of the other portion, and means for rotating the shaft.

2. A valve for a carburetor air passage, comprising a shaft, a semicircular valve portion fixed to the shaft, a semicircular valve portion journaled on the shaft, and yielding means tending to maintain the valve portions in a common plane.

3. A valve for a carburetor air passage comprising a shaft, a valve portion fixed to the shaft, a second valve portion journaled on the shaft, and resilient means fixed to the first mentioned portion and frictionally engaging the journaled portion to urge the valve portions into a common plane.

4. A valve for an air passage, comprising a shaft, a valve portion fixed to the shaft, a second valve portion rotatably related to the shaft, a frictional member engaging the second portion, and yielding means connecting the frictional member to the first mentioned portion.

5. A valve for a fluid conduit, comprising a shaft adapted to be journaled in the walls of the conduit for manual operation, a valve portion fixed to the shaft, a second valve portion rotatably related to the shaft, a member having a frictional surface slidably engaging the second portion, and a spring connecting the frictional member to the first mentioned portion to urge the two portions into alinement.

6. A valve for fluid conduit, comprising a manually operable shaft, a valve portion fixed to the shaft, a second valve portion rotatably related to the shaft, and yielding means tending to maintain the valve portions in a common plane against the influence of fluid pressure, the second portion being so shaped with relation to the conduit that when the first mentined portion is moved to closed position the second portion is moved out of alinement with the first mentioned portion by its engagement with the walls of the conduit.

7. A valve for a fluid conduit, comprising a manually operable shaft, a valve portion fixed to the shaft and shaped to assume a closed position approximately normal to the axis of the shaft, and a second valve portion hingedly and yieldingly related to the first mentioned portion and shaped to assume a closed position out of alinement with the closed position of the first mentioned portion.

8. A valve for an air conduit comprising a shaft, a valve portion fixed to the shaft, a second valve portion movably related to the shaft and adapted to be brought into engagement with the interior of the conduit by rotation of the valve as a whole, the first mentioned valve portion being capable of further rotation after such engagement, and yielding means tending to maintain the portions in alinement and put under tension by such further rotation.

In testimony whereof, we have hereunto signed our names.

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DON COLE.