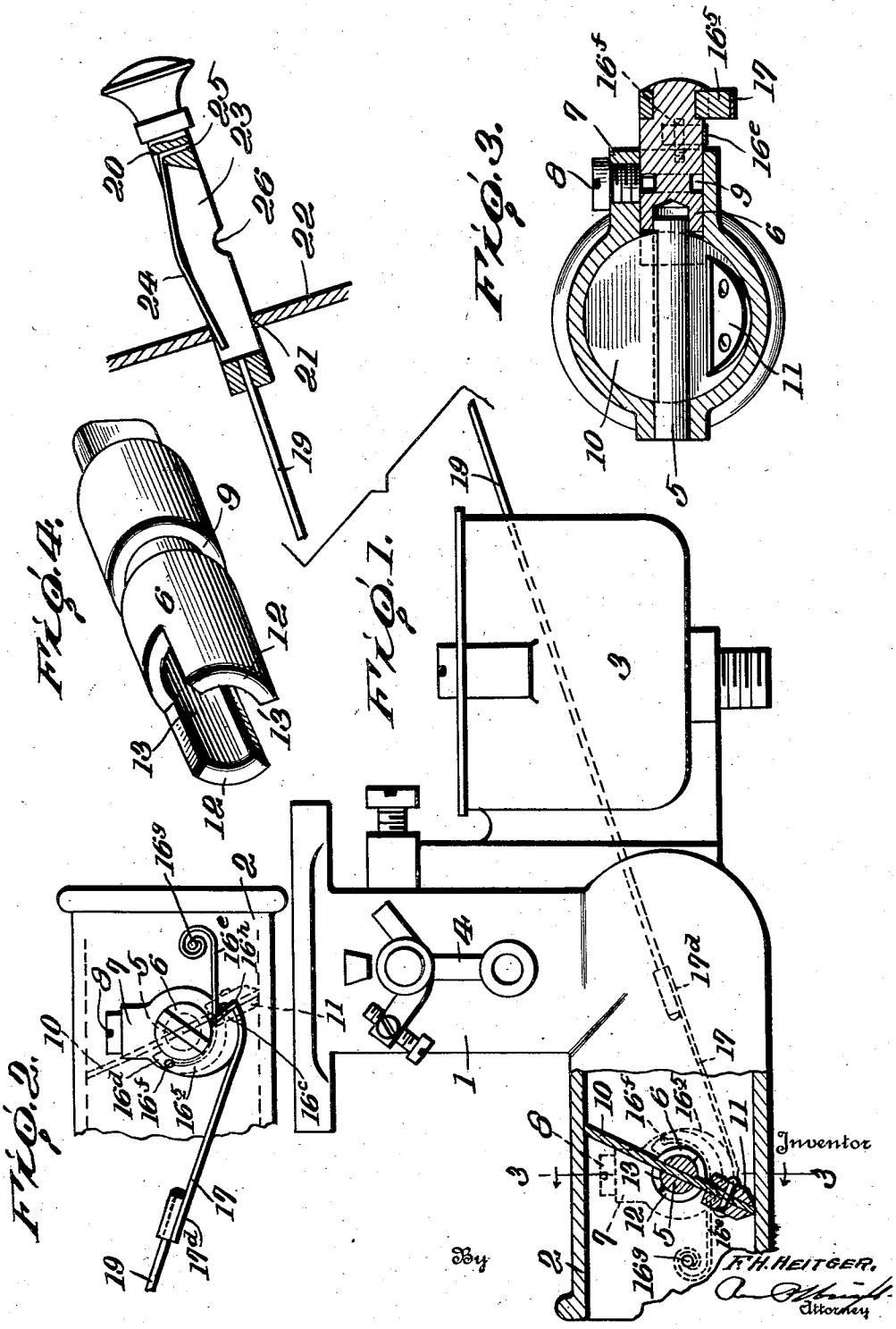
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CHOKE OPERATING MEANS FOR CARBURETORS

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CHOKE OPERATING MEANS FOR CARBURETORS

Original application filed February 20, 1928, Serial No. 255,821. Divided and this application filed April 17, 1929. Serial No. 355,956.

This invention relates to carburetors for use with explosive engines, and especially to the main air control or choke valve of such carburetors, and comprises a division of my application Serial No. 255,821, filed February 20, 1928.

Such valves are normally held in fully open position, and in starting the engine during cool or cold weather, the valve is moved by the control means on the dash board of a motor vehicle, to fully or partly closed position, whereby great suction is exerted on the fuel nozzle of the carburetor when the engine is started. While the engine is warming up, the operator frequently manipulates the control mechanism with a view of admitting the proper amount of air to the carburetor, and to avoid such manipulation, and permit automatic opening of the valve under certain conditions, depending on the suction exerted by the engine, I have devised certain improvements which are disclosed in my United States patent application, Serial No. 249,054. filed January 24, 1928.

In said improvements, the choke valve is associated with the control means by a loose connection including stops which limit the opening of the valve under suction, and the control means, has a latch for holding the control parts in an intermediate position.

The present invention is designed to permit the valve to move automatically by suction, from closed to fully opened position if desired or to allow a spring to open it fully independent of suction. To accomplish this, with loose connecting mechanism, as heretofore mentioned, necessitates a greater movement of the valve than that provided by the control means, and the present improvement causes the valve actuating means to move about twice as far as the control arm when the latter is manipulated.

The invention is fully disclosed in the following detail description, and is illustrated in the accompanying drawings.

In the drawings,

Figure 1 is a side view of a well known type of carburetor having my improved choke valve and choke valve mechanism attached thereto;

Figure 2 is a side view of the air inlet showing the motion multiplying means;

Figure 3 is a vertical sectional view taken on line 3—3 of Figure 1; and

Figure 4 is a perspective view of an operating member forming part of my invention.

In the drawings, 1 designates a carburetor having an air intake 2, a float chamber 3, and a throttle control arm 4.

A shaft 5 extends horizontally across the intake, and has one of its ends arranged in a boss at one side of the intake, and its other end extending into the socket of a second shaft 6. The axes of the shafts are displaced vertically relatively to the axis of the intake, and as shown in the drawings, the shaft 5 is arranged below the axis of the intake.

The short shaft 6 is journaled in a boss 7, integral with the intake, and a screw 8 working in a groove 9 is employed to prevent the shaft 6 from moving axially while permitting the same to rotate.

A choke valve 10 is mounted on the shaft 5 for oscillating movement, and is provided with a weight or weights 11 which normally tend to move the same into closed position when allowed by the manual means, as shown in Figure 1.

A loose connection is provided between the shaft 6 and the valve 10, and such loose connection may consist of jaws 12 which project inwardly from the shaft 6 to loosely engage opposite sides of the valve. The jaws are spaced by slots 13 which allow the jaws to be turned to a limited extent without imparting any movement to the valve, being spaced to allow movement of valve from closed to wide opening by suction, if needed. On the other hand, when the jaws are in an intermediate position, as will be explained later, the valve may readily turn a limited degree, without imparting any movement to the jaws 13.

In my application Serial Number 249,054, heretofore mentioned, a control arm or lever is fixed directly to the shaft 6, so that each time the arm is moved, the shaft 6 is moved a corresponding amount, but I have found it desirable to cause the shaft 6 to move to a greater extent than the arm, each time the arm is moved, as this permits slight move-

ments of the arm to cause greater movement of the shaft 6. To accomplish this purpose, suitable means must be employed, and I will now describe such means. Secured to the outer end of the shaft 6 is a curved member or cam 16^5, the peripheral surface of which is preferably a greater distance away from the axis of the shaft at the end 16*c* than it is at the end 16*d*, but the periphery may be the arc of a true circle.

A spring 16*e* has one of its ends connected to a curved member or the cam as shown at 16*f* and its other end is connected to a fixed pin 16*g* on the intake. The spring normally has the tendency to wind up and to incidentally move the valve 10 into fully opened position when allowed by the manual means. A flexibe strap-like element 17, which may be a round tough cord, has one of its ends connected to one end of member 16^5 as shown at 16*c* and the other end of the strap is provided with a socket or sleeve 17*d* to receive the lower end of a control rod 19. The upper end of this rod is enlarged as shown at 20 and it slides through an opening 21 in the dash board 22 of the vehicle to which my improved construction of carburetor is attached.

For the purpose of latching the control mechanism in intermediate position, I have provided the enlargement 20 with a vertical slot 23, in which a bowed wire spring 24 oscillates. This spring is connected at one end, as shown at 25, to the part 20, and its opposite end is free. The enlargement has a notch 26 to engage the wall of the hole, under the influence of the spring, when the control is in intermediate position. This construction enables the operator to "feel" when the control mechanism is in intermediate position, so that the parts may be properly positioned even in the dark.

When the handle is pulled outwardly, the valve will be in fully closed position and when the handle is moved to an intermediate position, the spring 16*e* will wind and cause the cam, as well as the jaws on the shaft 6, to move to an intermediate position with the result that the cord 17 will be pulled taut and the valve may now be automatically opened under suction influences from the engine. When the handle is fully depressed, the spring 16*e* will wind to a degree to cause the member 16^5 to wind the cord and to move to a position in which the jaws of the shaft 6 will hold the valve in its fully open position.

After the initial starting of the engine and while it is warming up, the operator may move the control mechanism into intermediate position by depressing the handle until it automatically latches in such position that the jaws 12 will be so located as to permit the valve 10 to automatically open under suction influence from the engine. Such movement will be limited by the jaws and the weight 11 will always tend to yieldingly resist such opening movement and to automatically close the valve as the suction decreases.

What I claim is:

1. In a carburetor, an air intake, a choke valve arranged in said intake, a spring for normally holding said valve in open position, actuating means for said valve including a loose connection to permit the valve to open under suction influence from the engine when the actuating means is in intermediate position, a manual control member, and motion multiplying means comprising a cam and a strap operatively connecting said manual control member to the actuating means.

2. In a carburetor, an air intake, a choke valve arranged in the intake, a spring for normally holding said valve in open position, an actuating member for said choke valve, a manual control member for the valve and motion multiplying means comprising a curved surface and a strap-like element connecting said members.

3. In a carburetor, an air intake, a valve in said intake so mounted as to be opened at times by suction, a shaft for the valve, a member connected to the shaft and having a curved surface, a flexible element having one of its ends connected to said member and adapted to wind on the curved surface of the latter, a spring for turning the member in a direction to cause the flexible element to wind on the member, and control means connected to the other end of said flexible element.

4. In a carburetor as claimed in claim 3, said member having a cam-shaped curved surface.

5. In a carburetor, an air intake, a valve in said intake so mounted as to be opened at times by suction, a shaft for the valve, a member connected to the shaft and having a curved surface, a flexible element having one of its ends connected to said member and adapted to wind on the curved surface of the latter, means for turning the member in a direction to cause the flexible element to wind on the member, and control means connected to the other end of said flexible element.

In testimony whereof I hereunto affix my signature.

FRANK H. HEITGER.