

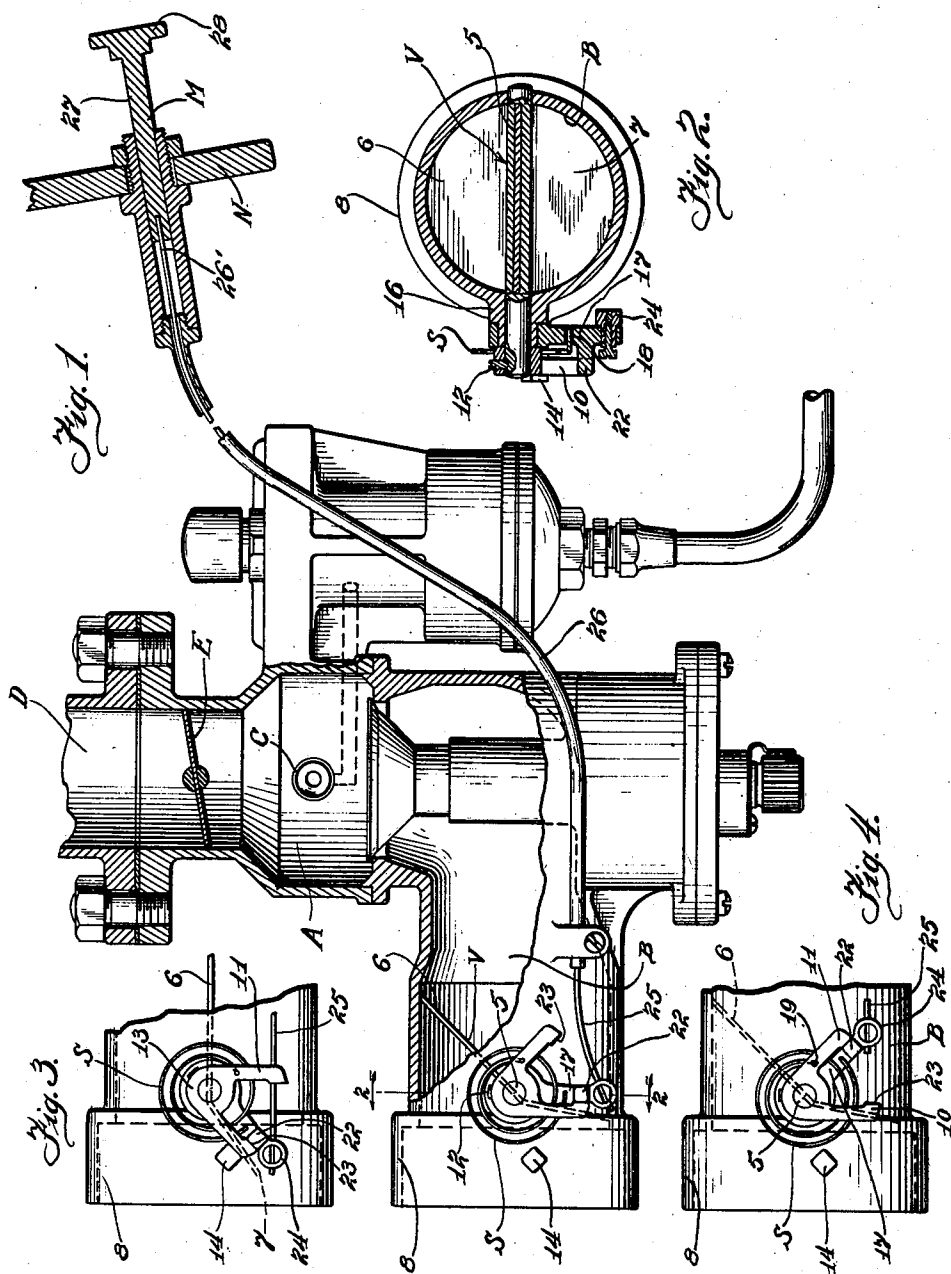
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CHOKE AND DASH ADJUSTMENT FOR CARBURETORS

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CHOKE AND DASH ADJUSTMENT FOR
CARBURETORS

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My invention relates to improvements in choke and dash adjustments for carburetors. It will be explained as embodied in the ordinary type of carburetor for the internal combustion engine of a motor vehicle having an instrument board upon which the manually operated dash control is mounted. The invention contemplates the use of an automatically operable air inlet or throttle valve of the butterfly type having one lobe larger than the other and which opens against a spring by atmospheric pressure due to the resultant differential of air pressure on the two lobes. In the present type of automatic air valve having a large and a small lobe, the axis of the valve is either to one side of the diametrical center of the bore of the air inlet thus necessitating the building up of flats on the side walls of the bore adjacent the valve axis or in an imperfect and leaky fit between valve and bore, or the axis of the valve coincides with the diametrical center of the bore and one outer wall of the bore is built out toward the axis to compensate for the decreased lobe area. This latter construction greatly reduces the capacity of the air inlet while the former construction involves mechanical difficulties resulting in high manufacturing cost or a valve which performs unsatisfactorily because of leakage.

One of the objects of the invention is to provide an improved combined choke and dash adjustment for carburetors.

Another object is to provide a choke and dash adjustment including an automatically operable air inlet valve of the character described which may be fitted within the air inlet bore of the ordinary type of carburetor without altering the walls of the bore with which the valve engages.

A further object is to provide an improved choke and dash adjustment including an automatically operable air inlet valve of the character described wherein a complete seal between the valve and inlet bore is effected.

Another object is to provide in an improved choke and dash adjustment for carburetors, an automatically operable air inlet valve of the butterfly type having one lobe of greater area than the other which is so fashioned as to completely close the cylindrical bore of the carburetor air inlet when rotated upon an axis coinciding with the diametrical center of the bore.

Another object is to provide a choke and dash adjustment for carburetors which may be controlled so as to perform any one of its three principal functions by the movement of a con-

trol member mounted upon the instrument board of the vehicle.

Another object is to provide an improved choke and dash adjustment for carburetors which when desired performs the function of an auxiliary air valve to enrich the mixture in the carburetor by restricting the air inlet of the carburetor to a degree determinable by induction passage vacuum.

A further object is to provide an improved choke and dash adjustment in which the valve may be closed to perform the function of the ordinary choke by completely or nearly closing the air intake to the carburetor.

A further object is to provide a combined choke and dash adjustment for carburetors which may be set so as to become entirely ineffective as either an auxiliary air valve or a choke at which time air may be drawn into the carburetor through the air inlet without restriction of any sort.

A further object is to provide an improved choke and dash adjustment for carburetors which is adaptable to all types of carburetors in which air is drawn thereinto through a principal air inlet.

A further object is to provide an improved choke and dash adjustment for carburetors which has relatively few parts, which is simple in construction and which may be manufactured economically.

Other objects and advantages will hereinafter appear.

An embodiment of the invention is illustrated in the accompanying drawing wherein:

Figure 1 is a side elevation partially in section of a carburetor embodying the choke and dash adjustment and in which a sectional view of the dash control member is shown;

Figure 2 is a view partly in section along the line 2—2 of Figure 1;

Figure 3 is a side elevation of a part of the mechanism illustrated in Figure 1 as set for normal running position;

Figure 4 is a view similar to Figure 3 showing the adjustment set for choking position.

I have illustrated the invention as applied to a carburetor for the internal combustion engine of an automobile in which A represents the induction passage, B the principal air inlet, C the fuel nozzle, D the engine manifold and E the throttle valve for controlling the passage of fuel to the intake manifold D, of the engine.

The choke and dash adjustment in general consists of a butterfly air inlet valve V of special

construction mounted within the air inlet B, a spring S tending to close the valve and a manually operated dash control M mounted upon the instrument board N of the vehicle.

5 The valve V is carried by a shaft 5 extending diametrically across the bore of the air inlet B. The valve consists of two lobes 6 and 7. The lobe 6 when the valve is closed, extends at an angle of 45° toward the carburetor body from a plane through the axis of shaft 5 disposed transverse to the air inlet B. The lobe 7 extends slightly away from the aforesaid plane on the opposite side. Thus the lobe 6 has a relatively greater surface than the lobe 7 and when unrestrained, suction in the induction passage A will cause the valve to open upon the greater application of atmospheric pressure upon lobe 6.

With reference to Figure 1 it will be noted that lobe 6 of the valve V when closed extends toward the direction of the movement of the valve to its open position while lobe 7 lies in a plane substantially transverse to the bore of the air inlet B. This peculiar arrangement of the lobes 6 and 7 affords greater surface area in lobe 6 and permits free movement of that lobe to a position parallel with the axis of the bore (Fig. 3) upon its pivotal axis or shaft 5.

In order to assure maximum passage of air through the air inlet B when the valve is open as shown in Figure 3, the air inlet B is provided with a diametrically enlarged portion 8 immediately beyond the shaft 5 of the valve so that the lobe 7 extends into the enlarged portion 8 of the air inlet when the valve is open.

The shaft 5 has at its outer end a pair of stop arms 10 and 11 secured to the shaft by a screw 12 extending through the threaded bore of a body 13 common to the arms. Thus the arms may be adjusted with respect to the shaft 5. A stop member 14 extending outwardly from the enlarged portion 8 of the air inlet serves to limit movement of the valve V in a clockwise direction (see Figure 3) so that movement in that direction will bring the valve to a stop in full open position as required during normal operation of the engine for which the carburetor is used.

The shaft 5 has rotatably mounted thereon between the body 13 and the adjacent shaft bearing 16, an arm 17 extending radially beyond the ends of the stop arms 10 and 11. The spring S is secured at one end 18 to the arm 17 and at its opposite end to the stop arm 11 as shown at 19. Thus the spring yieldingly urges the valve V to its closed position as shown in Figure 1.

The arm 17 has a laterally extending abutment 22 against which the inner faces 23 of the stop arms 10 and 11 may move to limit rotational movement of the valve depending upon the position of arm 17.

The outer end of the arm 17 has a connecting member 24 to which one end of a flexible wire 25 is secured.

The wire 25 is conducted upwardly through a flexible tube 26 to the instrument board N of the motor vehicle and the upper end 26' of the wire 25 is secured to a reciprocable frictionally mounted plunger 27 forming a part of the manual control member M. This plunger 27 has a hand grip 28 at its outer end by means of which the plunger may be moved to cause proportional movement of the arm 17.

In operation, when starting an engine having a carburetor equipped with my improved choke and dash adjustment, the plunger 27 is drawn outwardly beyond the position shown in Fig-

ure 1, thus causing the arm 17 to assume the position shown in Figure 4, the abutment 22 engaging with the face 23 of the stop arm 11 to positively maintain valve V in the position shown therein so that the valve closes the air inlet B. At this time lobes 6 and 7 of the valve V will contact with the bore of inlet B throughout their entire peripheral edges. In this position the carburetor air inlet is choked so that the raw fuel is drawn into the manifold D as is necessary for starting the engine when cold.

After the engine is started the plunger 27 is moved to the position shown in Figure 1 at which time the arm 17 permits rotation of the shaft 5 in a clockwise direction. This is possible because that point of greatest width of lobe 6 is at the shaft 5 of the valve. By virtue of the differential pressures on lobes 6 and 7, the valve V functions as an auxiliary air valve, the quantity of air passing therethrough being dependent upon the induction passage vacuum and the tension of spring S.

If it is desired to limit the degree to which the spring S may affect the closing of valve V, the plunger 27 may be moved inwardly slightly greater than that shown in Figure 1 at which time the abutment 22 on the arm 17 serves as a positive stop against complete closure of the valve V by spring S at such times as the induction passage vacuum may drop sufficiently to permit the spring to so function.

During normal conditions the plunger 27 is moved inwardly from the position shown in Figure 1 so as to cause abutment 22 of the arm 17 to force stop arm 10 against the stop 14 thus positively locking the valve in wide-open position as shown in Figure 3.

I claim:

1. An air regulating valve of the character described pivotally mounted diametrically of the axis of the intake passage of a carburetor by a shaft, lobes for said valve, one of which is of greater area than the other and extending at an oblique angle relative the air passage to conform to the internal diameter of said passage when closed, a member fixed to the shaft having diverging arms, and a stop for engagement by one of said arms to limit the movement of the valve to open position, an arm pivotally supported on said shaft and adapted to engage the diverging arms for limiting the movement of the valve in its open or closed position, and manually controlled means for moving said arm, a spring about said shaft having one end connected to said pivoted arm and the other end connected to one of said diverging arms, said manual means adjusting said pivoted arm to govern the degree of movement of said valve toward open position under the influence of suction in said passage or toward closed position under the influence of said spring.

2. An air regulating valve of the class described, mounted in the air intake passage of a carburetor, a shaft, lobes mounted in obtuse relation on said shaft, one lobe having a substantially greater area than the other, stops mounted on said shaft, means manually operable cooperating with said stops, to control said valve and to hold it in unyielding position at points when said valve is completely opened or closed, resilient means cooperating with said manually operable means and said shaft, to urge said valve normally to closed position and yielding to a differential of pressure on the two lobes.

3. An air regulating valve of the character

described mounted in the air intake passage of a carburetor, comprising a shaft diametrically mounted in said passage, lobes mounted on said shaft, one of the lobes having a substantially greater area than the other, said lobes being in an angular relation of about 150° with each other, integral arms mounted on said shaft exterior of said passage, means cooperating with said arms adapted to be manually operated to actuate said valve to open and closed positions, resilient means operating between said arms and manually operable means, to urge said valve normally to closed position, and yieldable to pneumatic force on said valve lobes.

4. An air regulating valve of the class described mounted in the air intake passage of a carburetor, a shaft, lobes mounted in obtuse relation on said shaft, one lobe having a substantially greater area than the other, stops mounted on said shaft, means, manually operable, cooperating with said stops to control said valve and to unyieldingly hold it in completely opened or closed position, means urging said valve normally to closed position and yielding to a differential of pressure on the two lobes.

5. In a carburetor for an internal combustion engine, an intake passage therefor, a butterfly choke valve rotatably mounted in the passage and constructed and arranged to tend to open upon increased suction in the passage posteriorly of the valve, an operating arm on the valve, a movable stop member having a plurality of adjusted positions, the arm and stop member being constructed and arranged with a lost motion connection therebetween whereby the stop member may set the arm in fully closed and in full opened positions of the valve, and a resilient spring interposed between the arm and stop member urging the valve to its closed position.

6. In a carburetor for an internal combustion engine, an intake passage therefor, a shaft

journalled transversely therein, a butterfly valve on the shaft having lobes of unequal area whereby the valve tends to open upon increased suction in the passage posteriorly of the valve, a double arm on the shaft externally of the passage, a stop lever journalled on the arm, a manual control for holding the arm in a plurality of adjusted angular positions, the arms of the double arm cooperating with the stop arm to form a lost motion connection therebetween, and a resilient spring interposed between the double arm and the stop arm and arranged to urge the valve toward its closed position, the stop arm in one position holding the valve fully closed and in another position holding it fully opened and in intermediate positions positioning the valve through the resilience of the spring.

7. In a carburetor for an internal combustion engine, an intake passage therefor, a butterfly choke valve rotatably mounted in the passage and having lobes of unequal area constructed and arranged to tend to open the valve upon increased suction in the passage posteriorly of the valve, an operating arm on the valve, a movable manually controlled stop member having a plurality of adjusted positions, the arm and stop member being constructed and arranged with a lost motion connection therebetween, a resilient spring interposed between the arm and stop member urging the valve to closed position, the stop member, when in one position, engaging the arm to hold the valve fully closed, and in another position engaging the arm to hold the valve fully open, and in intermediate positions tending to position the valve through the resilient spring whereby the valve in at least a portion of the range of its path, and including closed position, may be moved relative to the stop member by changes in the suction in the passage.

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