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IDLE PORT

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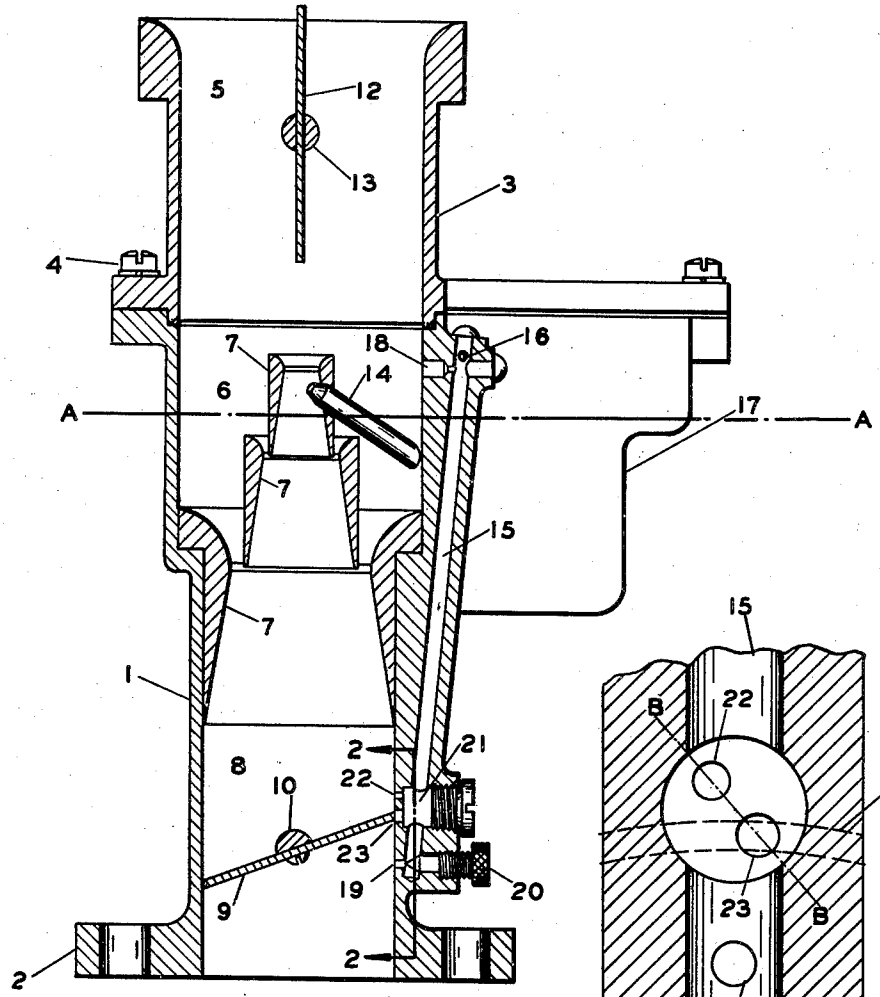


FIG. 1

FIG. 2

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IDLE PORT

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5 Claims. (Cl. 261—41)

This invention relates to carburetors and more particularly to improvements in the construction and formation of the idle or low speed fuel supply device of plain tube carburetors.

Prior to this invention it has been customary to form a slit in the wall of the carburetor at a point adjacent the throttle valve when it is in closed position so that the slit will have one portion exposed to the suction conditions in the mixing conduit anterior to the throttle when it is closed and in most cases at least a small portion of the slit will be posterior to the throttle. It is desirable for the slit to have substantial length so as to get a gradual variation of the application of suction to the slit as the throttle is opened and since the maximum permissible capacity of the slit is low it must be made very narrow. It will be understood that such idle discharge passages are fed with fuel and serve to supply the requirements of the engine during low speed operation.

That portion of the carburetor body in which the low speed discharge passageway and the outlet of the mixing conduit are formed is preferably made of cast iron, and no satisfactory method of forming long narrow slits suitable for idle discharge passages in these cast iron bodies has been found. The best previous method of forming these passages has involved a punching operation which is not satisfactory in cast iron because the line of shear or breakage cannot be held to exact shapes or sizes. The result is that there is a very substantial variation in the flow resisting effect of passages formed by this method and the richness of the idle mixture may vary as much as three miles per gallon at low speeds. The nature of the variation is frequently such that it cannot be corrected by an idle adjustment screw.

It is an object of this invention to provide a new and improved idle construction which can be made to exact specifications in quantity production without danger of such breakages in the metal and variations in the shape and size of the idle discharge passages as to cause undue richness or leanness of the carburetor at low speeds.

The invention will be better understood upon reference to the accompanying drawing in which Figure 1 is a schematic representation of a carburetor having my invention applied thereto.

Figure 2 is a detailed view taken along the lines 2—2 of Figure 1 with the idle adjusting screw removed and on an enlarged scale.

Referring to the drawing the reference numeral 1 indicates the main body member of a carburetor which has a flange 2 by means of which it may be attached to an internal combustion engine. The carburetor is provided with the usual instrumentalities such as an air horn 3 attached to the main body member by screws 4 and having an air inlet passageway 5; the main body member is formed with a passageway 6 which is in effect a continuation of the main air inlet. Venturis generally indicated by the reference numeral 7 lead to the mixing chamber 8 and the outlet of the carburetor which is controlled by throttle valve 9 rotatably mounted on the shaft 10. The air inlet is controlled by the choke valve 12 rotatably mounted on shaft 13, and fuel is supplied to the venturis by means of a main nozzle 14. This much of the structure is conventional and may be varied substantially without effecting the nature and operation of the improved idle construction which will now be described.

A downwardly conducting idle passageway 15 is formed in a wall of the carburetor; this passageway has an inlet 16 which is supplied with fuel such as gasoline from any suitable source such for instance as the constant level chamber 17 in which the fuel is maintained substantially at the level A—A by float mechanism which has no relation to this invention and which is not shown. The upper end of the passage 15 is vented to the air inlet passageway by means of the opening 18.

The lower end of the passageway 15 is provided with a discharge outlet 19 feeding into the outlet of the carburetor posterior to the throttle valve. This outlet is always subjected to the maximum suction of the engine whenever the throttle valve is in closed or substantially closed position. A regulating screw 20 is provided to adjust discharge thru the pasasgeway 19.

A comparatively large bore 21 is formed in the wall of the carburetor intersecting the passageway 15 substantially at the level of the edge of the throttle valve when it is in closed position. It will be understood that the idle discharge passageways are formed at that side of the throttle which moves toward the air inlet during the opening movement thereof, so that more of the discharge port will be exposed to suction as the throttle is opened. The bore 21 is formed with a flat bottom so that a convenient surface to drill into will be provided.

After forming the flat bottomed bore 21 a pair of small holes 22 and 23 are drilled from the bottom of the bore 21 into the mixing conduit. The center line B—B of these holes may be at an angle to the vertical, as indicated in Figure

2 so as to give the effect of a single continuous slit, without the necessity of drilling the holes too close together. The hole 22 is formed anterior to the edge of the throttle valve when it is in closed position and is adapted to be swept by the throttle as it moves toward open position.

The hole 23 is preferably formed at the edge of the throttle and in calibrating for a particular engine the exact position and size of this opening may be varied to a certain extent. It may be of slightly greater diameter than the thickness of the throttle valve and over-lap the edge of the throttle slightly on both sides as indicated in Figure 2 but it should be clearly understood that such details will be varied in calibration to fit different types of engines. It will be understood that after forming the openings 22 and 23 a suitable closure such as a plug 25 is provided for the outer end of the bore 21.

In drilling small holes in cast iron there is no danger of breakage of the metal and the openings are accurately and smoothly formed in production so that when large numbers of carburetors are made there is no substantial variation between the flow curves of carburetors made to the same specification.

I claim:

1. An idle discharge port for carburetors of the type having a butterfly throttle mounted on a transverse shaft in the mixing conduit, comprising a flat bottomed bore drilled into the wall of the mixing conduit, the outer end of said bore being closed, a fuel feeding passage leading into said bore, and two or more small openings leading from the bottom of said bore into the mixing conduit, the axis of said openings lying in a plane which is oblique to the axis of the mixing conduit.

2. An idle discharge port for carburetors of the type having a butterfly throttle mounted on a transverse shaft in the mixing conduit, comprising a flat bottomed bore drilled into the wall of the mixing conduit, the outer end of said bore being closed, a fuel feeding passage leading into said bore, and two or more small openings leading from the bottom of said bore into the mixing conduit, the plane of the center line of said small openings being at an angle to the axis of the mixing conduit, and the openings being formed close together so as to give an effect similar to that of a continuous slit.

3. An idle discharge port for carburetors of the type having a butterfly throttle mounted on a transverse shaft in the mixing conduit, comprising a bore drilled into the wall of the mixing conduit, the outer end of said bore being closed, a fuel feeding passage intersecting said bore, a pair of small openings leading from the bottom of said bore into the mixing conduit, said openings lying in a plane which is oblique with respect to the axis of the mixing conduit, said fuel feeding passageway extending beyond said bore, and having discharge outlets into the mixing conduit at a point posterior to the throttle, and a regulating screw for said discharge outlet.

4. The combination with a carburetor, of a carbureting passage, a main fuel feed discharging into the passage, a throttle mounted on a transverse shaft in the carbureting passage, an idle discharge port including a bore drilled into the wall of the mixing conduit and extending below said throttle when in its closed position, a plurality of openings leading from said bore into said mixing conduit, said openings being positioned in staggered relation, certain of said openings being formed at a position adjacent the throttle when in its closed position and being arranged in a plane which is oblique in respect to the axis of the mixing conduit, and a regulating screw for one of said openings.

5. The combination with a carburetor, of a carbureting passage, a main fuel feed discharging into the passage, a throttle mounted on a transverse shaft in the carbureting passage, an idle discharge port including a bore drilled into the wall of the mixing conduit and extending below said throttle when in its closed position, a plurality of openings leading from said bore into said mixing conduit, certain of said openings being closely grouped and in a plane which is oblique to the axis of the mixing conduit, one of the openings of said group being of such size and so positioned as to extend beyond the walls of said throttle when the latter is in closed position, and a regulating screw for an opening positioned below said group of openings.

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