Dec. 8, 1953 M. J. KITTLER 2,661,937

CONCENTRIC CARBURETOR

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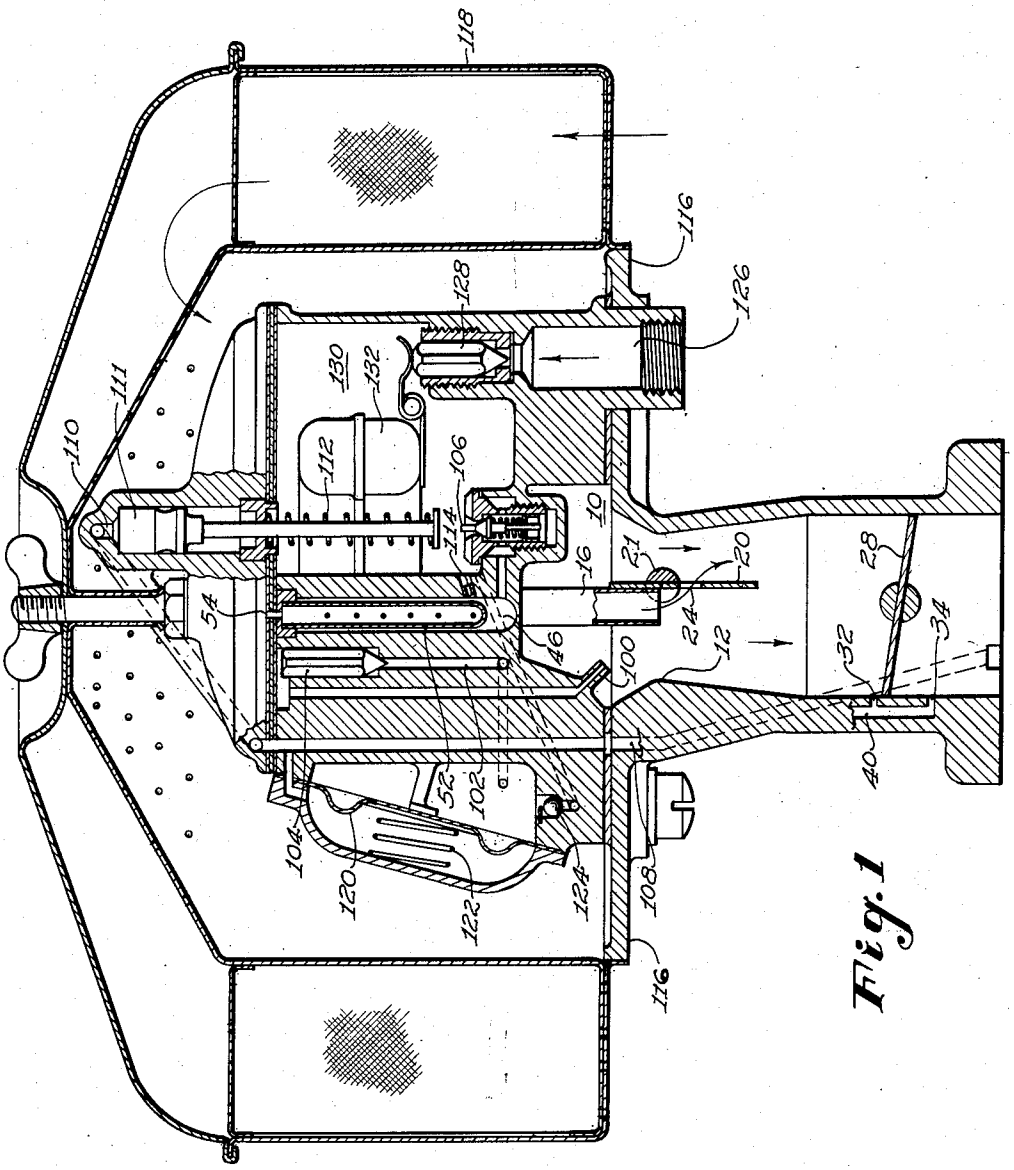


Fig. 1

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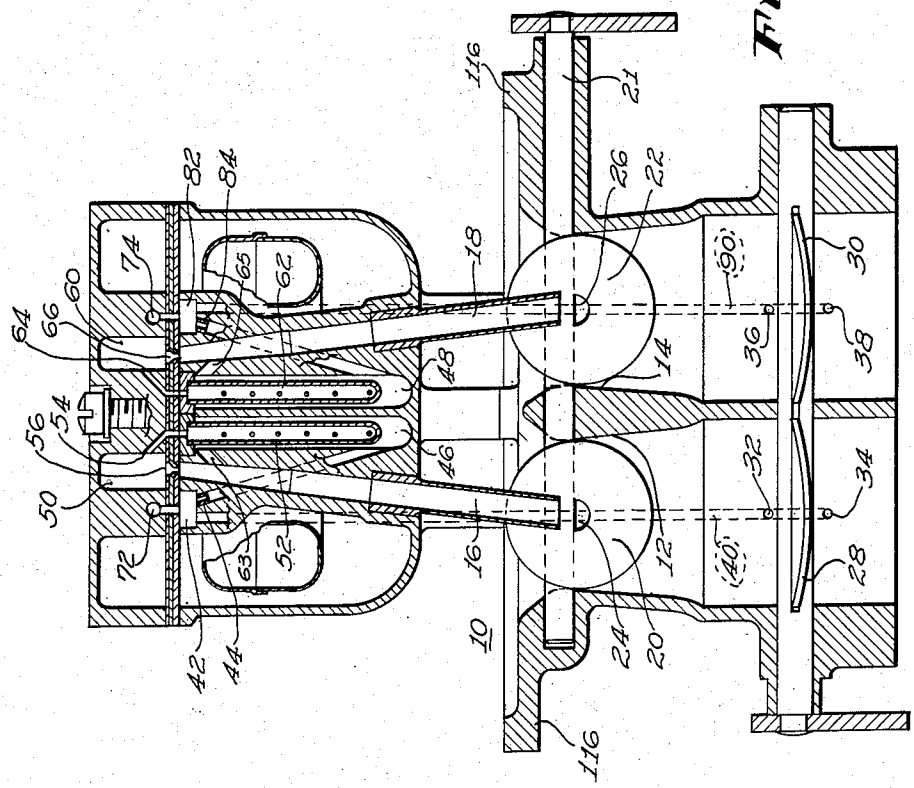
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Fig. 2



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Patented Dec. 8, 1953 2,661,937

UNITED STATES PATENT OFFICE

2,661,937

CONCENTRIC CARBURETOR

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Application July 1, 1949, Serial No. 102,687

2 Claims. (Cl. 261—38)

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The object of this invention is to reduce the manufacturing cost of concentric carburetors and their air cleaners. At present these carburetors are made with three castings:

(1) An air entrance casting which carries the choke valve and choke operating mechanism and to which the air cleaner is connected.

(2) A float chamber located entirely inside No. 1 casting.

(3) A venturi and mixture outlet casting in which is located the throttle valve and throttle operating mechanism.

By eliminating the No. 1 casting the cost of the carburetor is materially reduced. The usual air cleaner and air silencer can be used as a cover to enclose completely the No. 2 casting so as to take the place of the No. 1 casting.

Fig. 1 shows in cross-sectional elevation the preferred form of my invention with an air cleaner (silencer) shown in place.

Fig. 2 shows in cross-sectional elevation on a plane at right angles to that of Fig. 1 a view of the carburetor with the air cleaner (silencer) removed.

In the figures, 10 is the air entrance. 12 is one of the venturis, 14 is the other. 16 is one of the rich mixture outlets, 18 is the other. An eccentrically mounted choke shaft 21 is provided with two choke valves. 20 is one of these choke valves, 22 is the other. 24 is a ½ circle D opening in the center of the choke valve 20 which, when turned clockwise 90° engages with the end of the tube 16. 26 is the corresponding D opening in the choke valve 22. 28 is the throttle valve below the choke valve 20. 30 is the other throttle valve.

32 and 34 are low speed fuel outlets which discharge downstream of the throttle 28 when the throttle is opened. 36 and 38 are the two other corresponding low speed fuel outlets.

40 is the low speed fuel passage communicating with the chamber 42. 44 is a restricted passage connected to the bottom fuel well 46 (Fig. 2). 48 is a similar well for the right hand air passages.

50 is an air passage communicating with the atmosphere and to the inside of the perforated tube 52 through the restricted passage 54. 63 is an inclined passage from the well 46 to the rich mixture tube 16. The air passage 50 communicates with the mixture tube 16 through the restricted opening 56.

60 is the air passage to the right, corresponding to the air passage 50, to the left.

62 is a perforated tube corresponding to perforated tube 52 and communicating with the rich mixture tube 18 through the inclined passage 65 which enters the upper part of well 48.

64 is a restricted air passage corresponding to restricted passage 54.

66 is a restricted air entrance to the rich mixture tube 18 from the air passage 60.

72 is a restricted air entrance to chamber 42 communicating with the air entrance. 74 is a similar restricted air entrance into the chamber 82.

84 is a restricted fuel outlet from well 48 discharging into the chamber 82.

A low speed fuel passage 90 connects the chamber 82 with the low speed fuel outlets 36 and 38 controlled by the throttle valve 30.

A vacuum operated enrichening valve 106 is opened when the pressure downstream of the throttle 28 rises subsequent to the opening of the throttle 28 during acceleration. A passage 108 transmits the suction downstream of the throttle 28 to the chamber 110 above the piston 111. Piston 111 descends and opens valve 106 when suction in passage 108 fails to compress spring 112, that is when the throttle 28 opens.

114 is the normal (lean) fuel nozzle which admits the fuel required, for steady running, into the well 46.

A flange 116 supports an air cleaner 118.

An accelerating pump diaphragm 120 operates by the vacuum in the passage 108 when the vacuum is reduced and discharges fuel under the influence of the compression spring 122.

A check valve 124 controls the admission of fuel to the pump.

A fuel entrance 126, in the flange 116, leads fuel from the fuel supply pump, not shown, past the check valve 128, to the float chamber 130 in which the float 132, mounted on the pivot 131, maintains the fuel level.

Operation

The operation of this carburetor differs from the operation of carburetors in general use by the action of the perforated choke valves 20 and 22 engaging with the rich mixture tubes 16 and 18.

The two D-shaped openings 24 and 26 line up with the ends of the two rich mixture tubes 16 and 18 when the choke shaft 21 is rotated 90°. The fuel for starting is drawn through these two D-shaped openings.

When the choke valves are wide open (as shown) they act as part of the nozzle system. The suction, downstream of the ½ shaft 21,

creates an eddy which draws fuel from the left to the right (Fig. 1) through opening 24.

The air cleaner being large is difficult to locate under the hood of any ordinary car. The compact arrangement secured with this construction not only saves money but space. If the choke valve were placed in the air entrance to the air cleaner it would collapse under the engine suction to which it would be subjected.

What I claim is:

1. In a combined air cleaner and carburetor construction, an upright conduit defining a fuel mixture passageway with a Venturi restriction therein, a laterally extending flange at the upper extremity of said conduit, a dome-shaped air cleaner and silencer having a depending skirt portion engaging the periphery of said flange, a carburetor float chamber structure supported by said flange entirely above said conduit and within said dome-shaped air cleaner, a choke valve in said passageway at said Venturi restriction, a throttle valve in said passageway below said choke valve, and shafts for said valves extending laterally of said conduit below said flange and air cleaner and through said passageway.

2. A device as defined in claim 1, including

a fuel nozzle projecting downwardly from said float chamber structure into said passageway and terminating at the shaft of said choke valve at one side thereof, said choke valve having a relatively large opening therethrough, said opening registering with the discharge end of said nozzle so as to provide an outlet below the centerline of the choke shaft in all positions of the choke valve.

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