

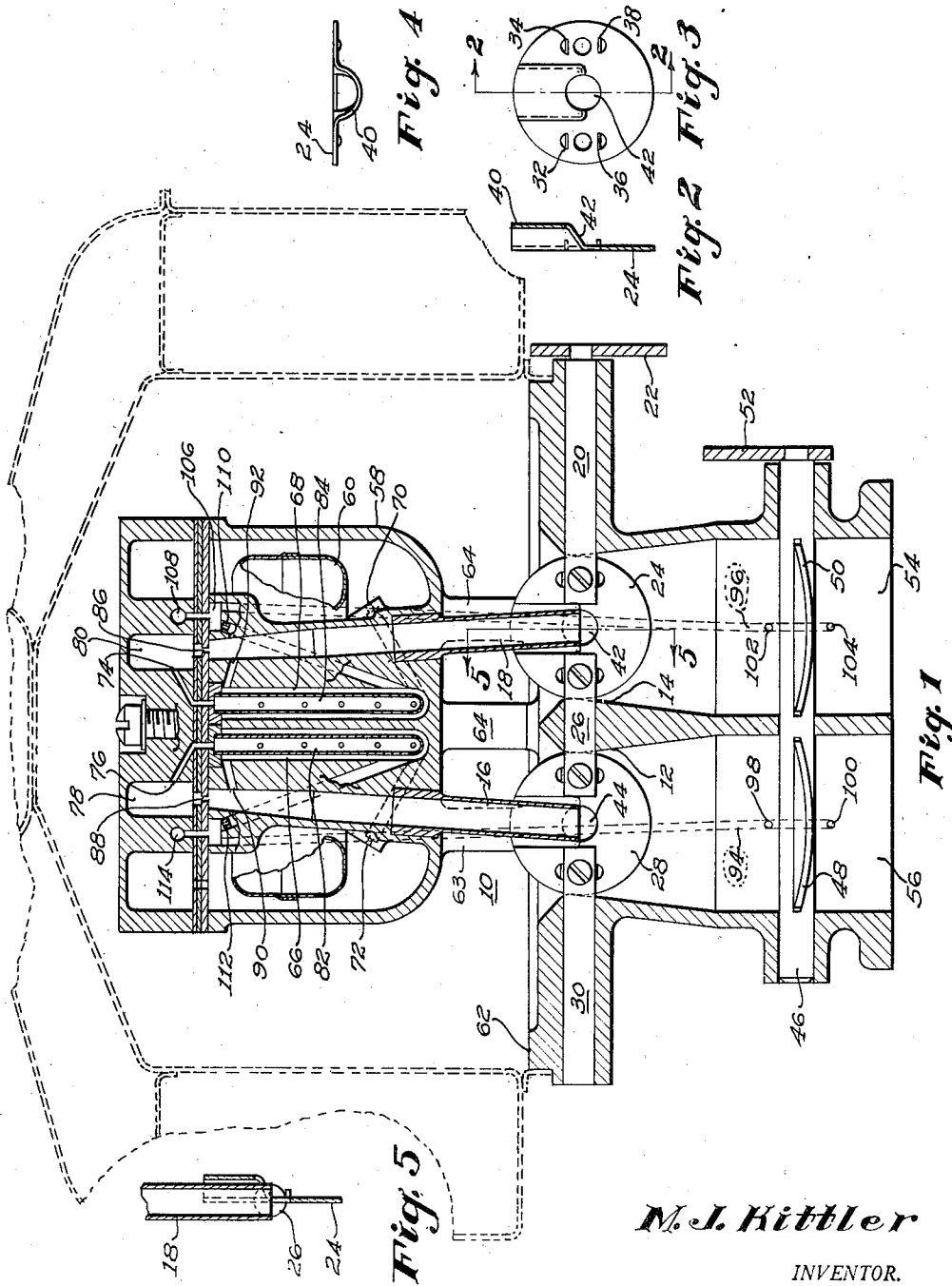
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CONCENTRIC CARBURETOR

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CONCENTRIC CARBURETOR

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2 Claims. (Cl. 261—23)

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The object of this invention is to improve the atomization and distribution during normal running and during starting when the choke valve is partially or entirely closed to insure an adequate supply of fuel.

I have found that when the butterfly choke valve is located in the Venturi throat that the rich mixture nozzle should be located in the middle of the choke valve and should discharge downstream. If I also locate the choke valve in the center of the air stream then there is an interference. By stamping a semi-circular trough in the upstream half of the choke valve and providing a central circular opening in the choke valve to line up with the rich mixture nozzle I improve the ability of the choke valve to give the rich mixture needed for a quick start in cold weather but I also improve the atomization and distribution of the fuel when the choke valve is under open conditions.

This case is a continuation in part of my co-pending application Serial No. 102,687, filed July 1, 1949.

Fig. 1 shows in cross-sectional elevation the preferred form of my invention with the air cleaner (silencer) removed. The location of the air cleaner (silencer) is shown in broken lines enclosing the float chamber.

Fig. 2 shows a cross-sectional elevation on plane 2—2 of Fig. 3.

Fig. 3 shows in elevation the butterfly choke valve.

Fig. 4 shows the view looking down on Fig. 3.

Fig. 5 shows a cross-sectional elevation on plane 5—5 of Fig. 1.

In the figures 10 is the air entrance. 12 is the left hand venturi. 14 is the right hand venturi. A concentrically mounted choke shaft 20, controlled by the choke lever 22, engages with the right hand choke valve 24, which choke valve in its turn engages the intermediate choke shaft 26. Shaft 26 engages the left hand choke valve 28. The choke valve 28 engages the left hand choke shaft 30. The choke valve 24 is provided with ears 32, 34, 36 and 38 which serve to guide the left hand end of choke shaft 20 and the right hand end of intermediate shaft 26. The choke valve 24 is provided with a semi-circular depression 40. This semi-circular depression 40 embraces the nozzle 18. A circular opening 42, in the choke valve 24, provides a free path for the rich mixture to be drawn into the engine when the choke valve 24 is closed. A similar opening 44 is provided in the left hand choke valve 28.

The throttle shaft 46 carries butterfly throttles

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48 and 50 and is controlled by the throttle lever 52. These two throttles control the mixture outlets 54 and 56. A float chamber 58 containing float 60 maintains a constant level in a well known manner. The float chamber 58 is supported on the flange 62 by a number of legs 63, 64, and 65 shown in Fig. 1. This flange 62 supports the usual air cleaner and air silencer as shown by broken lines.

Fuel for the rich mixture nozzles 16 and 18 is derived by air vented wells 66 and 68. These wells receive fuel through restrictions 70 and 72 and receive air through the air vents 74 and 76. The air passages 78 and 80 are open to the air entrance 10. The air entering the passages 74 and 76 reaches the wells 66 and 68 through the perforated tubes 82 and 84. The air that flows through the rich mixture nozzles 16 and 18 enters through restrictions 86 and 88. The fuel leaves the air vented wells 66 and 68 through the inclined passages 90 and 92 and is atomized through the air flowing through the restrictions 86 and 88.

The low speed fuel passages 94 and 96 discharge through the openings 98, 100, 102 and 104. The outlets 100 and 104 at all times are in the mixture outlets 54 and 56. The outlets 98 and 102 are placed in communication with the mixture outlets 54 and 56 whenever the throttles 48 and 50 are moved away from the idling and into the low speed positions. The low speed passage 96 communicates with the chamber 106 which receives air from a passage 108, connected to the air entrance 10, and receives fuel from a fuel orifice 110. Fuel orifice 110 is connected to the bottom of the air vented well 68. The bottom of the air vented well 66 is connected to the low speed fuel restriction 112. The atomizing air for the low speed passage 94 is derived from the air passage 114.

Operation

When the choke valves 24 and 28 are rotated clockwise (Fig. 5) the openings 42 and 44 are placed in line with the openings in the center of the rich mixture tubes 16 and 18. As the choke valve moves to the wide open position as shown in the drawing the degree of engine suction applied to the rich mixture tubes 16 and 18 gradually diminishes so that the normal mixture is gradually restored as the choke valves 24 and 28 are moved into the wide open position, in which they are shown.

What I claim is:

1. In a carburetor a casing containing a Ven-

turi air entrance, a combined nozzle and choke valve structure comprising a tube discharging a rich mixture downstream into the throat of said venturi, said tube being located substantially in axial alignment with the venturi and terminating in the throat thereof, a choke shaft diametrically located and projecting into the air Venturi throat, a butterfly choke valve mounted on the shaft, a semi-circular depression stamped in the upstream half of said valve so that it embraces half of the peripheral surface of part of said tube when the choke valve is open, a central opening in said choke valve located so as to be in substantial alignment with the open end of said tube when the choke valve is closed.

2. In a carburetor a casing containing two Venturi air entrances in parallel, two tubes, each discharging a rich mixture downstream into the throat of the venturi associated therewith, said tubes being located substantially in central axial alignment with the two venturis and terminating in the throats thereof, a first choke shaft diametrically located so as to project into the first Venturi throat, a first butterfly choke valve mounted on the end of the choke shaft, second choke shaft in axial alignment with the first choke shaft projecting into both venturis and engaging said first choke valve, a second butterfly

choke valve located in the throat of said second venturi and engaged by said second choke shaft, a third choke shaft engaged by said second choke valve and in axial alignment with the first and second choke shafts whereby the first and second choke valves are operated by the first choke shaft, an opening in the center of each choke valve, a depression formed in the upstream half of each choke valve so as to embrace half of the peripheral surface of each of the two rich mixture tubes when the choke valves are open and to place the openings in the two choke valves in alignment with the two rich mixture tubes when the choke valves are closed.

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