

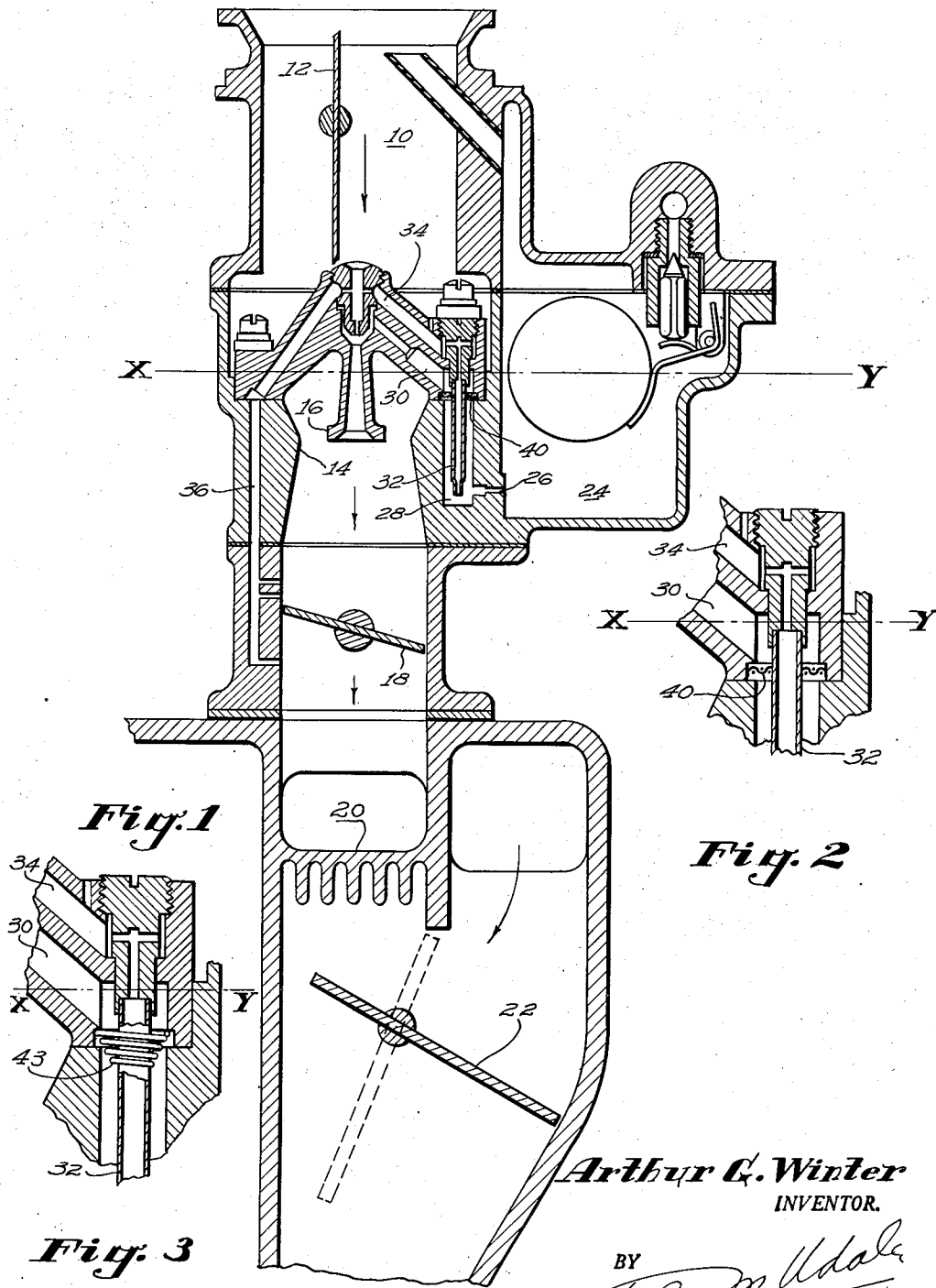
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ANTIPERCOLATING DEVICE

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ANTIPERCOLATING DEVICE

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1 Claim. (Cl. 261—1)

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The object of this invention is to prevent heat of the engine, after the engine is shut down, rising into the float chamber, boiling the gasoline and preventing the restarting of the engine.

Fig. 1 shows the application of my invention to a standard automobile carburetor.

Fig. 2 shows, to an enlarged scale, the detail of the novel feature of my invention.

Fig. 3 shows, to an enlarged scale, an alternative construction.

10 is the air entrance, 12 is the choke valve therein, 14 is the venturi, 16 is the fuel nozzle discharging into the throat of the venturi 14, 18 is the throttle valve in the mixture outlet, 20 is the hot spot in the inlet manifold, 22 is a valve controlling the flow of exhaust gas over the hot spot, 24 is the float chamber, 26 is the main fuel metering nozzle, 28 is the fuel well into which the nozzle 26 discharges. 30 is the inclined passage leading to the nozzle 16. 32 is the low speed tube which dips down into the well 28 and delivers low speed fuel to the inclined passage 34, which leads to the low speed passage 36, which discharges into the mixture passage adjacent to the upstream tip of the throttle 18 in a very well known manner. 40 is a small screen, the subject of this invention, located at the exit from the fuel well 28 at the entrance to the inclined main fuel passage 30. This screen is made of wire mesh preferably 60 per inch .007 diameter of wire. ($\frac{1}{3}$ of the area is free.) The diameter of the main fuel metering nozzle 26 is $\frac{5}{16}$ inch.

The effective diameter of the wire screen disc is $\frac{1}{4}$ inch. The diameter of the tube 32 is $\frac{3}{32}$ inch. The area of the screen is .049 minus .007 or .042 square inch and as each square of the mesh has an area of .000278 it has an effective area of .000092. Hence, $\frac{1}{3}$ of .042 is effective or .014 square inch which is large enough to let the fuel through and small enough to break up the large bubbles into small ones that are comparatively harmless.

This combination works with a diameter of the mixture outlet equal to $1\frac{1}{4}$ inches. (This carburetor develops over 40 horsepower at 4000 R. P. M.)

The fuel level is indicated by the line X—Y in Figures 1 and 2.

Fig. 3 shows a closely wound conical coil spring 43 replacing the screen 40 of Figs. 1 and 2.

Operation

As far as it is possible to analyze what occurs the heat that flows up into the casting containing the well 28 produces bubbles of vapor and air. These bubbles of vapor and air attempt to rise through the screen and are broken up into

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tiny bubbles of less than .000092 square inch in cross-sectional area. These small bubbles do no harm and do not start any syphon action in the nozzle 16. A slight improvement in fuel consumption, which has been reported, may be due to the braking action of the screen on the pulsating suction of the inlet manifold which creates a pulsating flow from the float chamber to the fuel nozzle 16 through the fuel nozzle 26.

The extremely small size (.000092) of the bubbles of fuel, air and vapor that are formed on the downstream side of the screen 40 and the relatively large area of the screen (.042) are believed to be responsible for the unexpectedly good results obtained.

The action of percolation has been described frequently in the technical press. Briefly, this action is like that of a kettle just on the point of boiling when water and steam are periodically discharged in small quantities. In a carburetor these corresponding small quantities of fuel are caught in the inlet manifold and render the restarting of the engine very difficult in hot weather.

It may be that the temperature of the screen is cooler than that of the lower portion of the casting containing the well 28. This may account partly for the successful operation of the device.

What I claim is:

A carburetor having an air entrance, a venturi therein, a mixture outlet, a constant level fuel supply chamber, a main fuel metering orifice, a fuel well connected to said supply chamber through said orifice, an anti-percolation screen located in the upper part of said well having a mesh substantially between 40 to 70 to the inch and having a wire diameter such as will leave approximately $\frac{1}{3}$ the area of the screen open, said screen having a total area equal to at least 3 per cent of the area of the mixture outlet, a fuel passage leading from said screen and discharging into the throat of said venturi.

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