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HOT SPOT MANIFOLD

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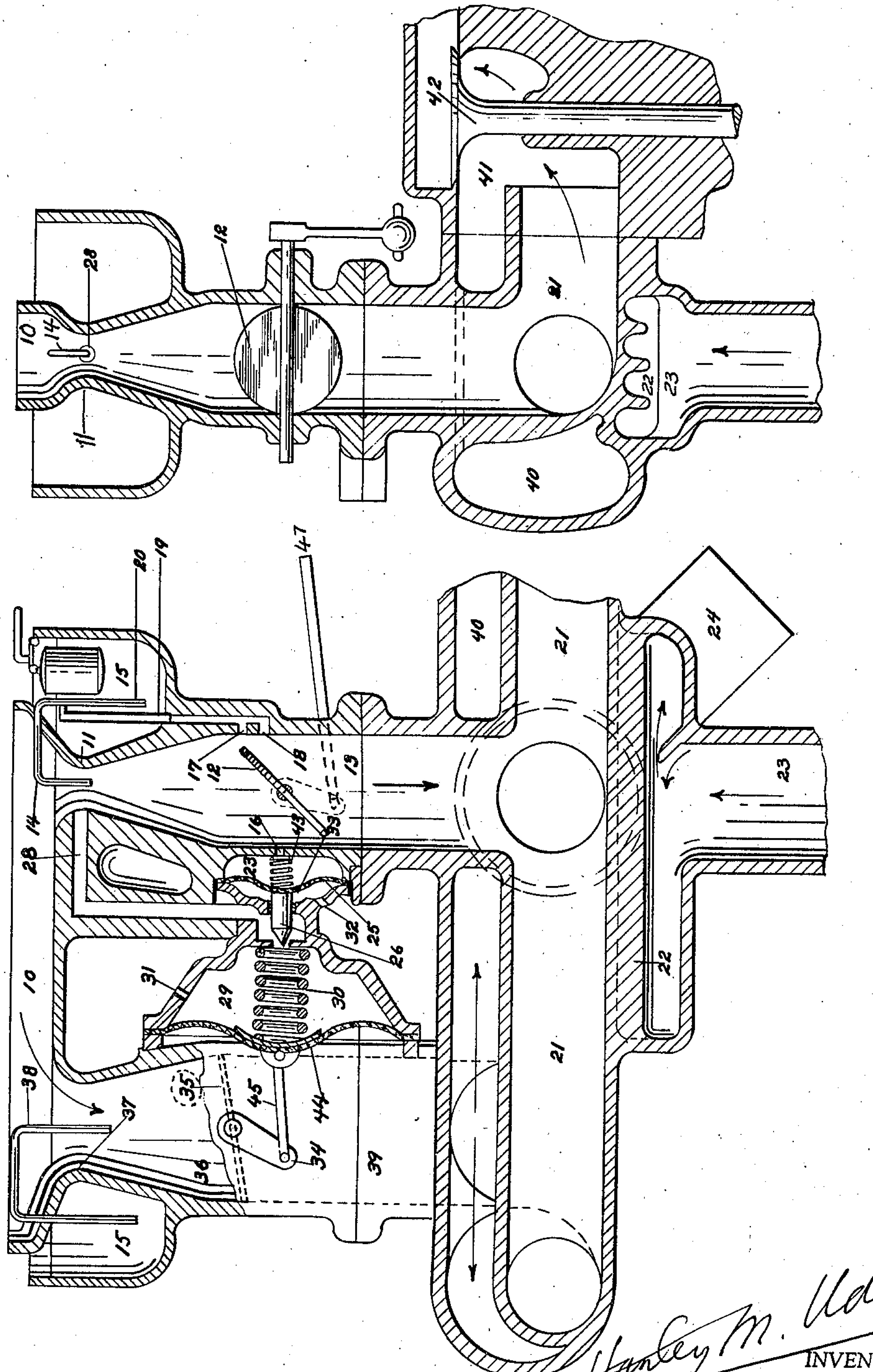

Fig. 2

Fig. 1

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HOT-SPOT MANIFOLD

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2 Claims. (Cl. 123—127)

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The object of this invention is to improve the distribution of fuel in the air streams of an inlet manifold leading from an ordinary downdraft carburetor. At present, if the manifold is made big enough for maximum power, it is too big for normal driving. If small enough for good distribution, it is too small for maximum power at top speed.

The figures show the preferred construction.

Figure 1 shows a cross-sectional elevation.

Figure 2 shows a cross-sectional elevation taken on the plane at 90° to the plane of Figure 1.

In the figures, 10 is the air entrance, 11 is the low-speed venturi, 12 is the throttle, 13 is the mixture outlet, 14 is the nozzle discharging into venturi 11 and drawing fuel from the float chamber 15, 16 is an opening on the atmospheric side of the throttle 12, 17 and 18 are corresponding openings on the opposite side of the mixture outlet 13, 17 and 18 being adjacent to the upstream lip of the throttle 12. 17 and 18 are connected with the low speed tube 19, which obtains its fuel from the main fuel supply 20, 21 is a small, high speed, exhaust-heated manifold having a hot spot 22, which obtains its supply of exhaust heat from an exhaust passage 23, which exhaust escapes through the passage 24.

25 is a diaphragm responsive to the pressure drop across the venturi 11, 26 is a valve moved by the diaphragm 25. 43 is a compression spring keeping the valve 26 on its seat when the engine is running normally. 28 is a passage which connects the throat of the venturi 11 with a chamber 29, when the valve 26 is opened by being drawn to the right by the suction at the port 16. 30 is a compression spring in the chamber 29, 31 is a small atmospheric air vent leading into the chamber 29 and 32 is a corresponding air vent admitting air pressure to the chamber 33, located to the left of the diaphragm 25. 34 is a throttle lever connected to throttle 35, which controls a passage 36, which draws air through a venturi 37, into which there discharges a nozzle 38, which also draws its fuel from the float chamber 15 and also draws its air from the air entrance 10. The throttle 35 controls the flow to the mixture outlet 39, which is connected to the cold manifold 40, which is an outer manifold surrounding the inner manifold 21. Both manifolds deliver into the inlet ports, one of which is shown at 41, leading to the inlet valve 42. A diaphragm 44 is connected through a link 45 with the lever 34 and controls the throttle 35.

Operation

In the normal (1 to 1 gear) operation of the

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engine, the car is driven up to 35 or 40 miles an hour by the throttle 12, and only then does the throttle 35 become operative. When the engine has been accelerated with the throttle 12 wide open, the drop due to the venturi 11 becomes appreciable and the spring 43 is compressed and valve 26 moves to the right and a rich mixture is discharged because the nozzle 14 discharges more fuel than the amount of air drawn in justifies, as the air is an elastic medium and gasoline is not. A rich mixture is thus available for acceleration, which is desirable.

Meanwhile, the venturi 11 does not reestablish inlet pressure at the port 16. The valve 26 thus moves over to the right and Venturi vacuum is established in the chamber 29 from the port 28. Throttle 35 is thereupon opened and continues to open until such time as atmospheric or substantially atmospheric pressure is restored to the port 16. The compression spring 43 determines the closing of the valve 26. In other words, if the spring 43 is adjusted so that the valve 26 operates at ½ inch Hg and the suction available in the passage 28 is considerably greater than ½ inch Hg, say 1½ inch Hg, then the throttle 35 is opened until the suction at the port 16 is restored to ½ inch Hg. The nozzle 14 is thus operating under a constant condition, and the nozzle 38 supplies the fuel for the fluctuating load above the load necessary for minimum driving conditions, which is 35 miles an hour.

What I claim is:

1. An internal combustion engine having an exhaust-heated manifold and an unheated manifold associated together in parallel, a carburetor having a Venturi air passage connected to the heated manifold, a second carburetor connected to the unheated manifold, a manually-operated throttle valve in the first-mentioned carburetor, a servomotor valve responsive to the pressure drop between the inlet to and the exit from the venturi in the first-mentioned carburetor, Venturi throat suction operated means controlled by said valve for opening the throttle to the second-mentioned carburetor, said Venturi suction being derived from the venturi in the first-mentioned carburetor and the pressure drop being derived from imperfect pressure recovery in said venturi.

2. An internal combustion engine having an exhaust-heated manifold and an unheated manifold associated together in parallel, a carburetor having a Venturi air passage connected to the heated manifold, a second carburetor connected to the unheated manifold, a manually-operated throttle valve in the first-mentioned carburetor,

a servomotor valve responsive to the pressure drop between the inlet to and exit from the venturi in the first-mentioned carburetor, pressure operated means controlled by said valve for opening the throttle to the second-mentioned carburetor, said pressure being derived from the operation of the engine and the pressure drop being derived from imperfect pressure recovery in said venturi.

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