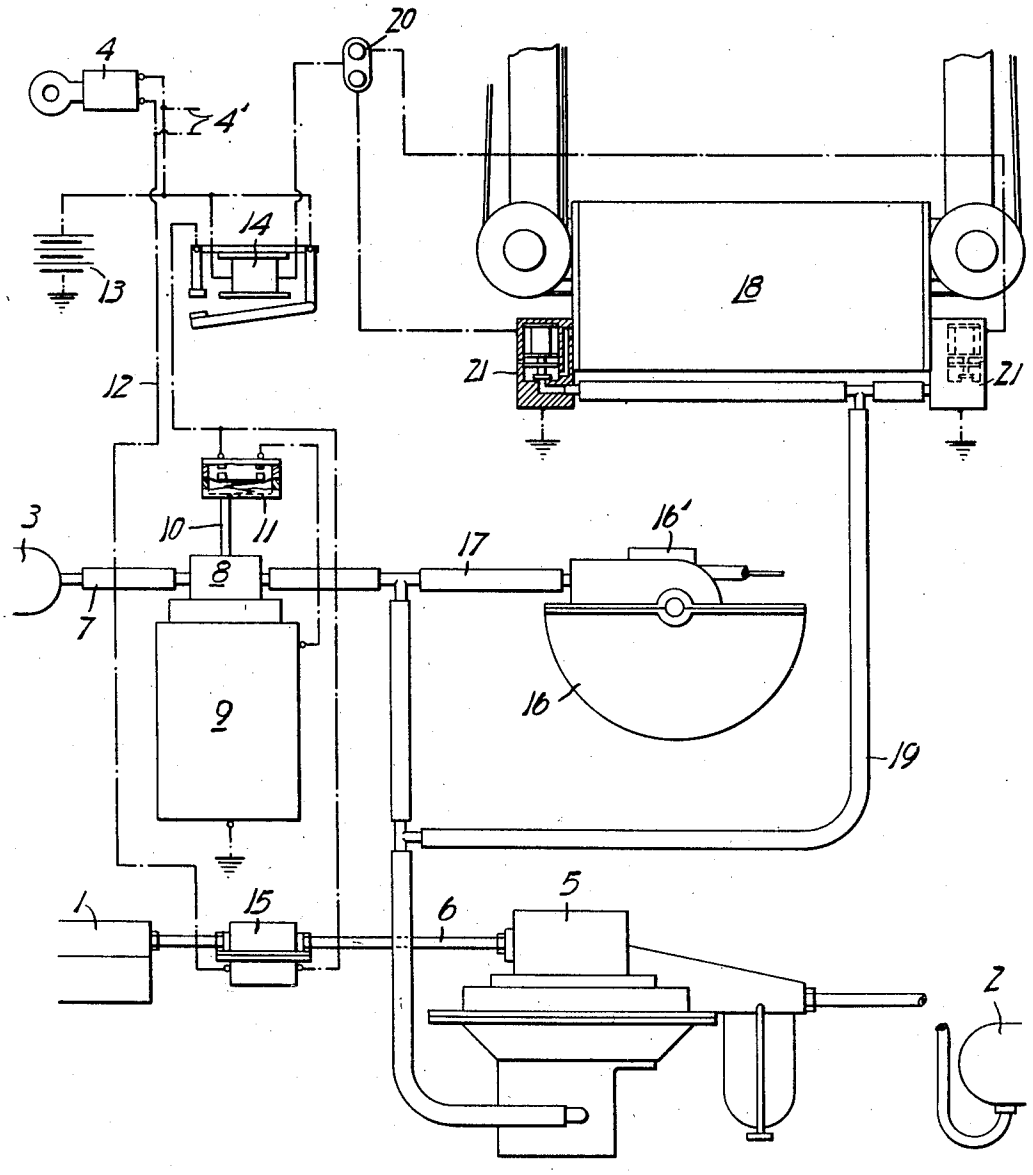
June 20, 1950 J. R. OISHEI 2,512,286

COMBINED FUEL FEEDING AND ACCESSORY SYSTEM

Filed Feb. 25, 1949



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Patented June 20, 1950 2,512,286

UNITED STATES PATENT OFFICE

2,512,286

COMBINED FUEL FEEDING AND ACCESSORY SYSTEM

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Application February 25, 1949, Serial No. 78,354

4 Claims. (Cl. 60—14)

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This invention relates to the fuel feeding art especially intended for supplying the internal combustion power plants of motor vehicles with ample fuel for efficient performance. More particularly it relates to a combined system in which accessory performance is also contemplated.

The primary object is to provide a simplified fuel system which will function in a subservient manner for energizing an accessory system economically and effectively.

Furthermore, the invention has for its purpose to enable the selective use of a pressure source in the fuel feeding system either in a supplemental capacity with respect to the primary source of negative pressure, or in a primary capacity as the sole source of pressure for accessory performance.

The foregoing and other objects will manifest themselves as this description progresses, reference being made therein to the accompanying drawing wherein is depicted a diagrammatic layout of the fuel system as combined with an accessory system.

Referring more particularly to the drawing, the numeral 1 designates the carburetor of the vehicle engine, 2 the fuel supply tank, 3 the intake manifold, 4 the switch for the ignition circuit 4', and 5 the suction operated fuel pump interposed in the fuel line 6 for pumping fuel from the tank to the carburetor. The pump is connected by a suction line 7 to the intake manifold, as its primary source of operating pressure, and interposed in this pressure line is a supplemental source in the form of a pump 8 adapted to be driven by an electric motor 9. The pump 8 may be of the rotary type, with the rotor mounted on the motor shaft or an extension thereof, and associated with this pump through a passage 10 is a suction responsive switch 11, as is shown more in detail in copending application Serial No. 733,274, filed March 8, 1947.

The electric circuit 12 for the electric motor includes the source of electric energy 13, the ignition switch 4, the normally closed suction responsive switch 11, a relay switch 14, and a normally closed switch 15 in the fuel line for closing in response to a predetermined pressure on the fuel. When the fuel pressure head is low, the fuel switch will close but should there be ample manifold suction the pump circuit will remain open while the fuel pump 5 functions to replenish the carburetor supply. Should the manifold pressure be either deficient or lacking, the suction switch 11 will close to condition the circuit ready for a demand by the fuel switch.

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Since the ignition switch closes an otherwise conditioned circuit the electric pump will cause a quick response of the fuel pump to insure an adequate supply of fuel for starting the engine by the time the starter button is depressed.

A windshield cleaner 16 having a control valve 16' may be joined by a branch 17 to the suction line 7 for actuation whenever clear vision ahead is desired for safe vehicle driving.

A second accessory, such as a window regulator 18, the use of which is frequently desired whether or not the vehicle engine is operating, is connected to the suction line by a second branch communication 19. However, it differs from the first accessory 16 in that the operation of the regulator becomes dependent solely upon the electric pump 8, 9 whenever the ignition switch is off and the engine is dead. To this end, the manipulation of the control 20 not only opens a selected one of the solenoid valves 21 of the window regulator but also energizes the electric pump by closing the relay switch 14. Therefore, even though the automobile has been parked the windows may be adjusted without restarting the engine. The electric pump then constitutes the primary source of suction for the regulator in contrast to the supplemental or secondary office relative to the fuel system and the windshield cleaner. When the engine is operating, however, the window regulator will respond either to ample manifold suction or to the pump as an alternate source.

The fuel supply is maintained constant. The fuel system is efficient. Its electric pump operates only for brief intervals of time and in between these intervals its usefulness is enhanced by reason of the accessory system association. The electric pump supplements or replaces the manifold suction, operating cooperatively therewith or in a sole capacity.

The foregoing description has been given in detail for clearness and not by way of limitation since the inventive principles disclosed are capable of assuming other physical embodiments without departing from the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. A motor vehicle having a power plant with a carburetor, a suction operated fuel pump connected for feeding fuel thereto, an intake manifold connected by a suction line to the pump as a primary source of operating pressure therefor, a power driven suction pump reponsive to an inadequate manifold pressure influence for serving as an alternate source of operating pressure,

an ignition circuit for the power plant including a switch and also a suction pump, a suction operated accessory connected to both sources of operating pressure for service thereby, a second suction operated accessory connected to both the suction pump and also the manifold, and electric circuit means independent of the ignition switch to actuate the suction pump alone as a primary source of operating pressure for the second accessory.

2. A motor vehicle having a power plant with a carburetor, a suction operated fuel pump connected for feeding fuel thereto, an intake manifold connected by a suction line to the pump as a primary source of operating pressure therefor, a power driven suction pump responsive to an inadequate manifold pressure influence for serving as an alternate source of operating pressure, an ignition circuit for the power plant including a switch and also the suction pump, a suction operated accessory connected to both sources of operating pressure for service thereby, and other electric circuit means including the suction pump independent of the ignition circuit for voluntarily energizing the suction pump during intervals when the power plant is inoperative.

3. A motor vehicle having a power plant with a carburetor, a suction operated fuel pump connected for feeding fuel thereto, an intake manifold connected by a suction line to the pump as a primary source of operating pressure therefor, an electrically driven suction pump interposed in the suction line and responsive to an inadequate

manifold pressure influence for serving as an alternate source of operating pressure, a suction operated accessory connected into the suction line between the suction pump and the fuel pump for being operated by either source, ignition switch controlled means responsive to the pressure on the fuel delivered by the fuel pump for closing the power driven pump circuit when conditioned by the manifold pressure influence, and means for controlling the operation of the accessory.

4. A motor vehicle having a power plant with a carburetor, a suction operated fuel pump connected for feeding fuel thereto, an intake manifold connected by a suction line to the pump as a primary source of operating pressure therefor, an electrically driven suction pump interposed in the suction line and responsive to an inadequate manifold pressure influence for serving as an alternate source of operating pressure, a suction operated accessory connected into the suction line between the suction pump and the fuel pump for being operated by either source, ignition switch controlled means responsive to the pressure on the fuel delivered by the fuel pump for closing the power driven pump circuit when conditioned by the manifold pressure influence, and a second electric circuit constituting a control circuit for the accessory and acting to energize the power driven pump independently of the ignition switch.

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No references cited.