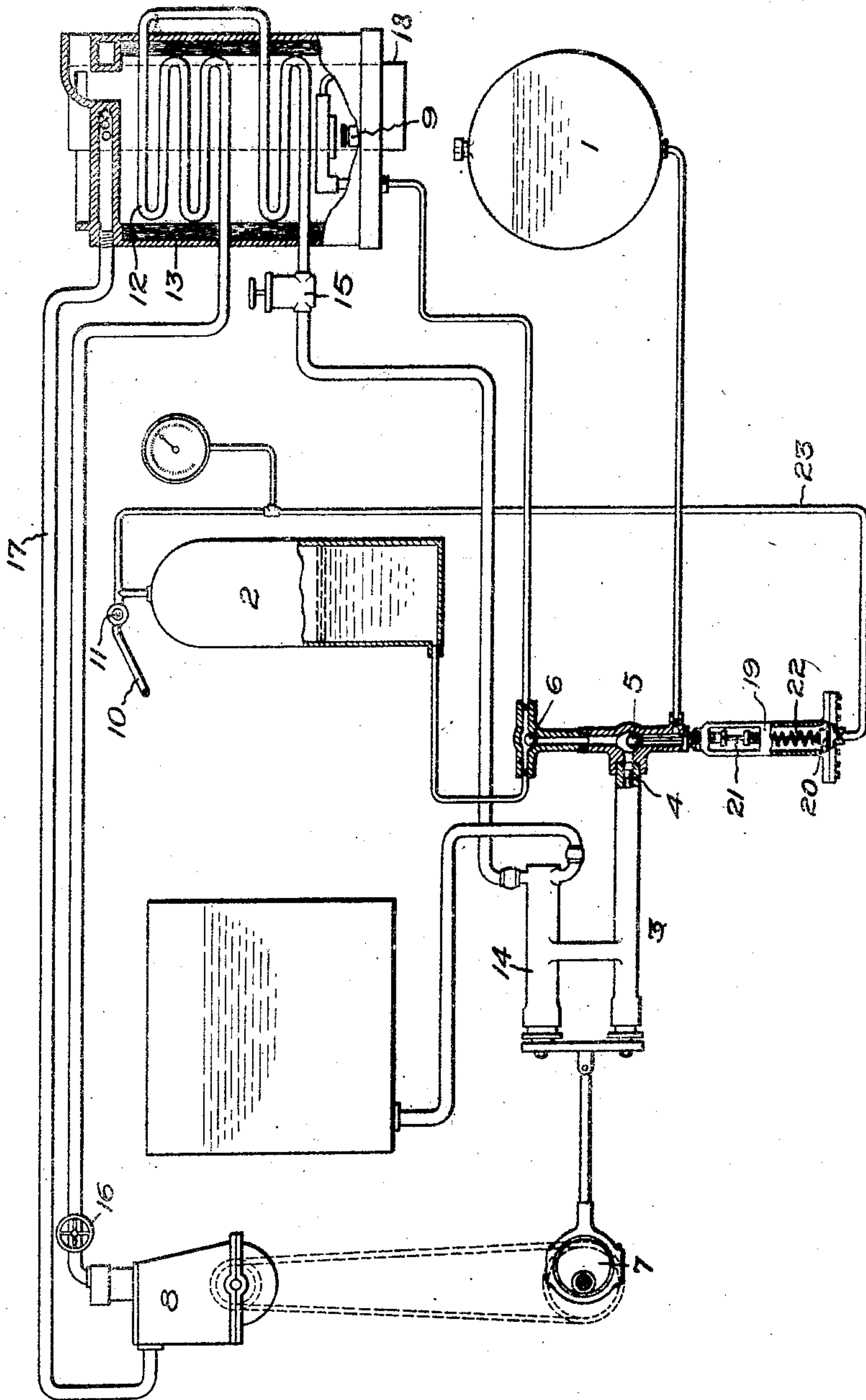


M. M. WOOD.  
FUEL SUPPLY SYSTEM.  
APPLICATION FILED AUG. 19, 1907.

924,869.

Patented June 15, 1909



Witnesses;  
Marcus Byng.  
J. Ellis Elm.

Inventor,  
Montraville M. Wood.  
By *Albert H. Davis*  
Att'y



# UNITED STATES PATENT OFFICE.

MONTRAVILLE M. WOOD, OF BERWYN, ILLINOIS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## FUEL-SUPPLY SYSTEM.

No. 924,869.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed August 19, 1907. Serial No. 389,324.

*To all whom it may concern:*

Be it known that I, MONTRAVILLE M. WOOD, a citizen of the United States, residing at Berwyn, county of Cook, State of Illinois, have invented certain new and useful Improvements in Fuel-Supply Systems, of which the following is a specification.

The present invention relates to systems of fuel supply, and has for its object to improve their construction and operation.

In the accompanying drawing, I have shown in a more or less diagrammatic manner my invention as applied to an automobile.

1 indicates the main fuel tank, which may be located at any suitable point on the vehicle, and is subjected to atmospheric pressure only.

2 indicates the auxiliary fuel tank containing fuel and air under pressure considerably greater than that of the tank 1. In some cases the air pressure in the tank is as high as eighty pounds or it may be much lower depending upon the requirements. This pressure will depend upon what kind of a device receives fuel from the system. For the purpose of illustration the high-pressure tank has been made on a fairly large scale as compared to the low-pressure tank. In practice the low-pressure tank is very much larger than the high-pressure tank. The object of this is to have as small an amount of fuel under high pressure as is consistent with the successful operation of the apparatus.

3 indicates a pump having the usual plunger 4 and a suction valve 5 and discharge valve 6. The pump is driven by an eccentric 7 or other means from the engine 8 or other source of power. The discharge side of the pump in the present embodiment of the invention is connected to a burner nozzle 9 and to the bottom of the high-pressure fuel tank. By reason of this arrangement the pressure in the tank 2 is always the same as that on the burner and either the pump or the tank can feed it. In order to subject the tank 2 to air pressure a pipe 10 is provided containing a shut-off valve 11. The pipe 10 can be supplied with pressure from a hand pump or from a power pump or other source as desired. Between the body of air in the tank and the body of fuel is or may be a layer of thick heavy oil or other separator to prevent the air and fuel from mixing.

The burner is employed to heat a coil-boiler 12 contained in a suitable casing 13 having proper flues for carrying off the products of combustion. Water is supplied to the boiler from the water tank by the pump 14 driven by the eccentric 7, and in amounts proportioned to the steam consumption. 15 is an automatic relief valve set to discharge any excess of water. Steam from the boiler is admitted to the engine by the throttle valve 16, and the exhaust therefrom passes by way of the pipe 17 into the head of the boiler casing from which it escapes to the downwardly-extending flue 18, and assists in creating a forced draft on the burner.

The fuel pump is regulated by the following means: Secured to the lower end of the pump is a casing 19 containing a diaphragm 20 at the lower end. This diaphragm acts under certain conditions on a stem 21 in a manner to raise the ball suction valve 5 from its seat thus relieving the pump of its load and checking the delivery of fuel to the burner. A compression spring normally presses the stem and diaphragm down to permit the suction valve to seat. Extending from the upper end of the tank 2 to the under side of the diaphragm is a pipe 23 that conveys air at the pressure of the tank. When this pressure is great enough to overcome the spring 22, the diaphragm raises the suction valve from its seat and the fuel pump plunger moves idly to and fro, the only load on the driving means being that due to the friction, which is negligible. By connecting the pipe 23 to the upper end of the tank 2 I make use of the air, as distinguished from the fuel, for operating the diaphragm regulator, and in so doing obviate the dangers incident to leakage and fire in case gasoline is the fuel employed.

The particular invention has been constructed and used in connection with gasoline fuel on an automobile, but any other fuel can be used if desired. Instead of using the system for pumping fuel to a burner, I may use it to pump fuel to a carbureter or to large furnaces or other apparatus requiring liquid fuel.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the appa-



ratus is only illustrative and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

5 1. In a system of fuel supply, the combination of a low-pressure fuel tank, a high-pressure fuel tank, a pump having suction and discharge members and receiving fuel from the low-pressure tank and delivering  
10 it to the high-pressure tank, a regulator for the pump which controls the action of one of said members and is responsive to pressure changes in the high-pressure tank, and a fuel-consuming device supplied by the pump  
15 and high-pressure tank.

2. In a system of fuel supply, the combination of a low-pressure fuel tank, a tank containing fuel and air under high pressure, a fuel-consuming device connected to the  
20 high-pressure tank, a pump receiving fuel from the low-pressure tank and delivering it to the high-pressure tank, suction and discharge valves for the pump, and a regulator sensitive to changes in pressure on the high-  
25 pressure side of the pump for rendering the suction valve inoperative.

3. In a system of fuel supply, the combination of a low-pressure fuel tank, a tank containing fuel and air under high pressure,

a fuel-consuming device connected to the 30 high-pressure tank, a pump receiving fuel from the low-pressure tank and delivering it to the high-pressure tank and the device, suction and discharge valves for the pump, and a regulator sensitive to changes in pres- 35 sure on the high-pressure side of the pump for rendering the suction valve inoperative.

4. In a system of fuel supply, the combination of a low-pressure fuel tank, a tank containing fuel and air under high pressure, a 40 means for supplying air under pressure to the high-pressure tank and above the fuel body therein, a fuel-consuming device connected to the high-pressure tank, a pump which receives fuel from the low-pressure tank and 45 after increasing its pressure supplies it to the fuel-consuming device and the high-pressure tank, a regulator for relieving the pump of its load under certain conditions, which is acted upon by the air from the high-pressure tank 50 and a conduit leading from the air space of the high-pressure tank to said regulator.

In witness whereof, I have hereunto set my hand this fifteenth day of August, 1907.

MONTRAVILLE M. WOOD.

Witnesses:

JOS. H. THRO,

M. H. NICKELSON.