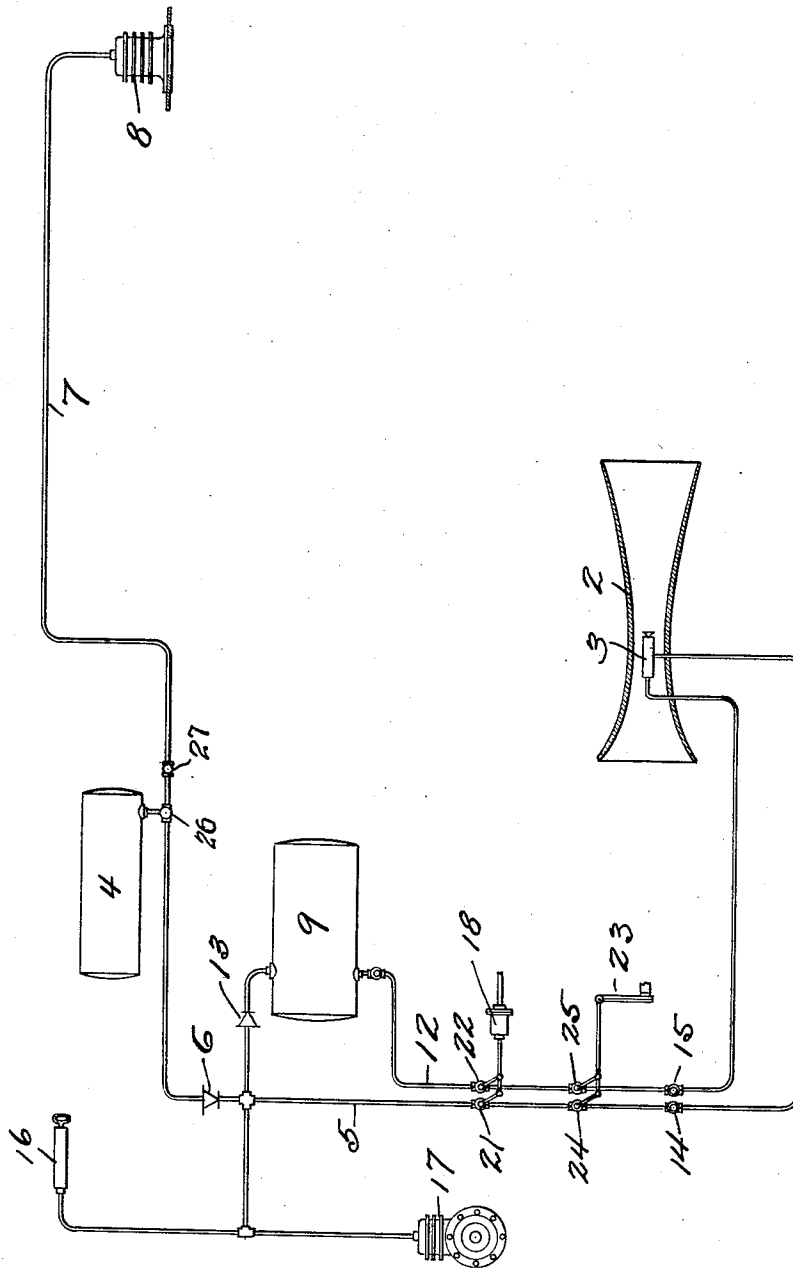


Patented Sept. 24, 1918.



WITNESS

J. B. Gardner

INVENTOR.

W. A. DOBLE, JR.

BY *White & Frost*

HIS ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM A. DOBLE, JR., OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO DOBLE LABORATORIES, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

FUEL-CONTROL SYSTEM.

1,279,674.

Specification of Letters Patent. Patented Sept. 24, 1918.

Application filed April 3, 1917. Serial No. 159,449.

To all whom it may concern:

Be it known that I, WILLIAM A. DOBLE, Jr., a citizen of the United States, and a resident of the city and county of San Francisco and State of California, have invented a certain new and useful Fuel-Control System, of which the following is a specification.

The invention relates to an apparatus for feeding liquid fuel and air to a burner.

An object of the invention is to provide a fuel control system which eliminates the necessity of a fuel pump and an air blower.

Another object of the invention is to provide a fuel control system which is particularly adaptable for use with steam generators of steam-propelled automobiles.

The invention possesses other advantageous features, some of which, with the foregoing, will be set forth at length in the following description, wherein I shall outline in full, that form of the invention which I have selected for illustration in the drawing accompanying and forming part of the present specification. In said drawing I have shown only one specific form of my invention, but it is to be understood that the invention as expressed in the claims may be embodied in a plurality of forms.

The drawing is a diagrammatic representation of one embodiment of the system of my invention.

The heat or the velocity of the gas produced by the combustion of the fuel in the burner may be used for any desired purpose and the burner may be of any desired construction, although I prefer to use a burner constructed along the lines indicated in the drawing. This burner comprises a tube 2, preferably a Venturi tube, in which is arranged an atomizing nozzle 3, to which fuel and air are fed under pressure. The nozzle is spaced from the tube so that the kinetic energy of the flame will induce sufficient air into the flame to complete combustion.

The air for atomizing the fuel is conveyed from the high pressure storage tank 4 through the pipe 5 to the nozzle. The air in the storage tank is under high pressure, for instance 200 pounds, and the pipe 5 is provided with a reducing valve 6, which reduces the pressure of the air fed to the nozzle to a low pressure, for instance 5 pounds. Air under high pressure is supplied to the storage tank through the pipe 7 from the

pump 8, which, on a steam-propelled automobile, is connected to the steam engine. The connection between the pipe 7 and the tank 4 includes a shut-off valve 26 and a check valve 27 is arranged in pipe 7 adjacent the tank. Connected to the pipe 5 on the low pressure side of the reducing valve is a sealed fuel tank 9 which is connected at the bottom with the nozzle by the pipe 12. The fuel and air are, therefore, introduced into the nozzle at low pressure. A reducing valve 13 may be introduced between the fuel tank and pipe 5 when desired to maintain the pressure on the fuel less than that of the low pressure air. The pipes 5 and 12 are provided with hand-operated valves 14—15 for the usual purpose. For the purpose of starting, I provide a hand-pump 16, connected to the pipe 5 at its low pressure side, whereby air and fuel under pressure are fed to the nozzle. This is only necessary, however, when there is no air in the high pressure tank. The hand-pump is provided with the customary check valve. When desirable, a small motor-driven low pressure air pump 17 provided with the usual check, may be employed for starting purposes, in which case the hand-pump may be dispensed with.

Means are provided for varying the amount of fuel and air fed to the burner on account of variations in conditions within the apparatus with which the burner is associated. A pressure operated device 18 connected to the apparatus, operates to vary the opening of valves 21—22 in pipes 5 and 12 in accordance with variations in pressure in the apparatus. This is employed, of course, only in connection with apparatus wherein a pressure is produced. A thermostatic device 23, similarly operates on valves 24 and 25 due to temperature changes within the apparatus. Valves 21 and 22 and 24 and 25 are preferably so arranged that the air valves lag behind the fuel valves in closing and are in advance of them in opening, so that the fuel is shut off before the air and turned on after the air. This is readily accomplished in the initial setting of the valves.

I claim:

1. The combination with a fuel spray nozzle, of a reservoir of air under high pressure, a conduit connecting the reservoir and nozzle, a reducing valve in said conduit, a sealed tank containing fuel under low pres-

sure, a conduit connecting the tank and the nozzle and a low pressure air pump connected to the air conduit on the low pressure side of the reducing valve.

5 2. The combination with a fuel spray nozzle, of a reservoir of air under high pressure, a conduit connecting the reservoir and nozzle, a reducing valve in said conduit, a sealed fuel tank connected to the nozzle
10 and to said conduit on the low pressure side of the reducing valve and a low pressure air pump connected to said conduit on the low pressure side of the reducing valve.

15 3. The combination with a fuel spray nozzle, of a reservoir of air under high pressure,

a conduit connecting the reservoir with the nozzle for supplying air thereto to atomize the fuel, a reducing valve in said conduit, a sealed liquid fuel tank, a conduit for introducing low pressure air into the fuel tank, a
20 conduit connecting the fuel tank with the nozzle, and means for simultaneously varying the flow of air and fuel through said conduits.

In testimony whereof I have hereunto set
my hand at San Francisco, California, this
25 28th day of March, 1917.

WILLIAM A. DOBLE, JR.

In presence of—

H. G. Prostr.