

H. HYDE & J. GAGE.
HYDROCARBON ENGINE.
APPLICATION FILED MAY 8, 1911.

1,022,027.

Patented Apr. 2, 1912.

2 SHEETS—SHEET 1.

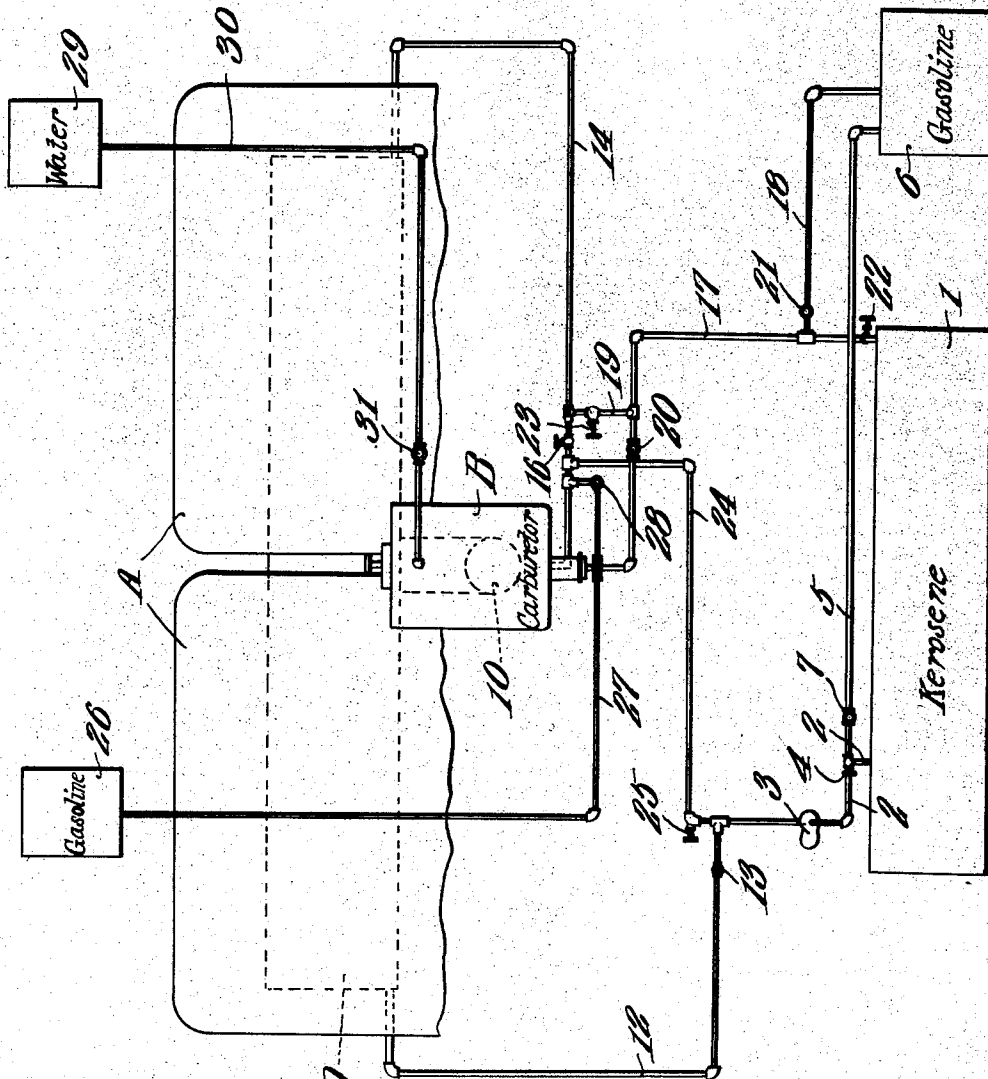


Fig. 1.

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Witnesses

J. H. Wilson

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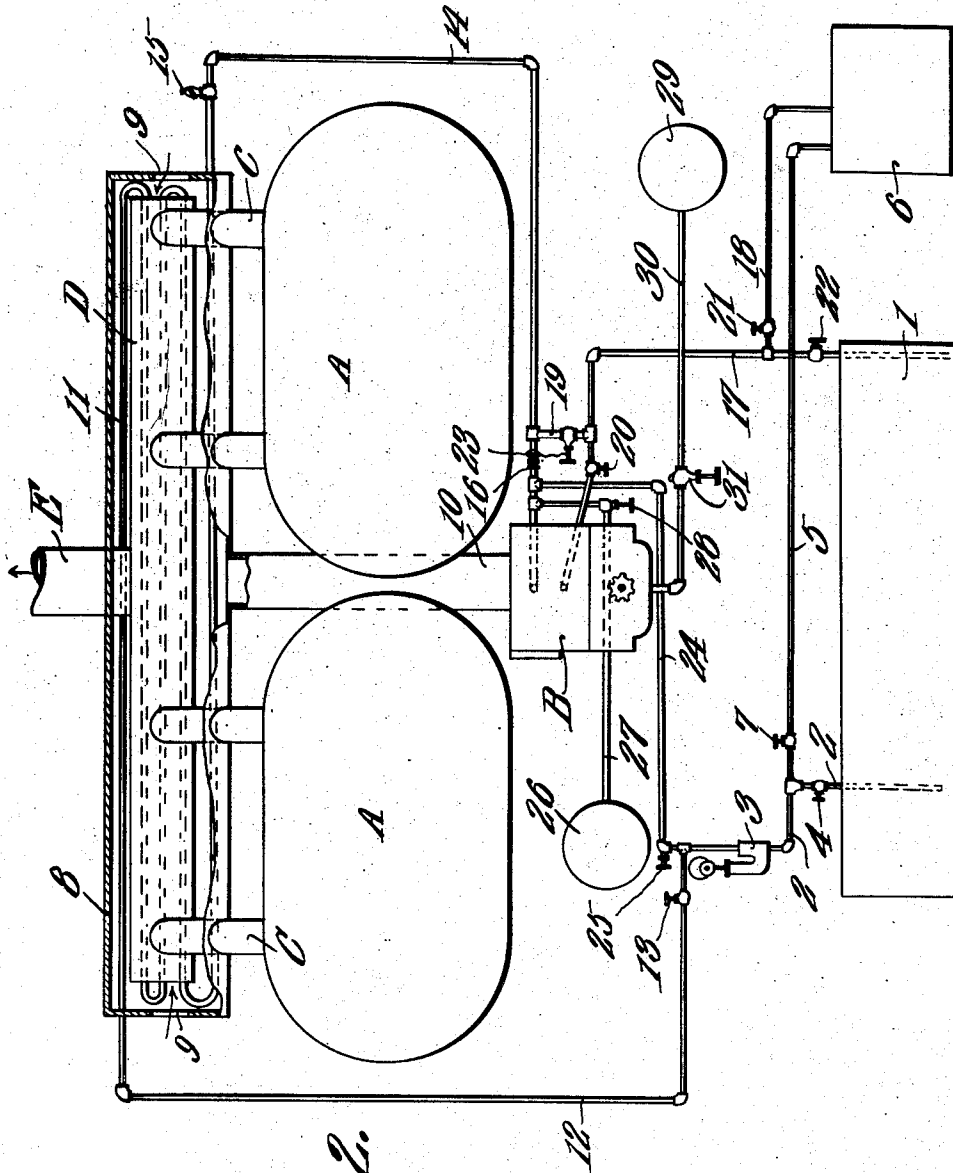


Fig. 2.

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UNITED STATES PATENT OFFICE.

HIRAM HYDE AND JACK GAGE, OF GENESEO, KANSAS.

HYDROCARBON-ENGINE.

1,022,027.

Specification of Letters Patent.

Patented Apr. 2, 1912.

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To all whom it may concern:

Be it known that we, HIRAM HYDE and JACK GAGE, citizens of the United States, residing at Geneseo, in the county of Rice, State of Kansas, have invented a new and useful Hydrocarbon-Engine, of which the following is a specification.

This invention relates to hydrocarbon engines and more particularly to means for feeding fuel thereto, said fuel feeding means being in the form of an attachment which can be readily applied to ordinary types of hydrocarbon engines and which, when thus applied, permits the use of kerosene or other fuel requiring the application of heat for the purpose of vaporizing it.

A further object is to provide fuel feeding means in which both the hydrocarbon fuel and the air to be mixed therewith are thoroughly heated without the necessity of utilizing a burner for that purpose.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings—Figure 1 is an elevation of a portion of the hydrocarbon engine and its fuel mixer or carbureter, the tanks and the pipe connections being shown diagrammatically. Fig. 2 is a plan view of the parts shown in Fig. 1, the heating mechanism being shown in section.

Referring to the figures by characters of reference A designates the upper portion of a hydrocarbon engine and the fuel mixer or carbureter has been indicated at B. The engine and the carbureter can be of any preferred types and the exhaust pipes C of the engine open, as ordinarily, into a cylindrical exhaust chamber D from which extends an outlet or exhaust pipe E.

The fuel tank of the mechanism constituting the present invention has been indicated at 1 and this fuel tank is connected by a pipe 2 to a pump 3 which may be operated by any suitable mechanism. A valve 4 is arranged in the pipe 2 between the pump

and the tank 1 and a branch pipe 5 extends from the pipe 2 to an emergency gasolene tank 6 designed to be used only when the engine is to be run for any length of time on gasolene, there being a valve 7 within this branch pipe 5.

A jacket 8 extends around and is spaced from the exhaust chamber D and has one or more air inlets 9. A pipe 10 leads from this jacket to the carbureter B. A pipe 11 is coiled within the jacket 8 and close to the exhaust chamber D and one end of its coil is connected by a pipe 12, to the pump 3, there being a valve 13 within the pipe. The other end of the coil is connected by a pipe 14 to the carbureter B and has a valved drain 15 at its lowest point while a valve 16 is located in said pipe 14 for the purpose of controlling the passage of fuel therethrough.

A pipe 17 connects the tank 1 with the carbureter and a branch pipe 18 connects the pipe 17 with the emergency tank 6 while another branch pipe 19 connects the two pipes 17 and 14, there being a valve 20 in the pipe 17 between the carbureter and the pipe 19, a valve 21 within the pipe 18, a valve 22 within the pipe 17 between the tank 1 and the branch pipe 18, and a valve 23 in the branch pipe 19. The pipe 12 is connected by a pipe 24 to the pipe 14 at a point between the carbureter and the branch pipe 19 and a valve 25 is arranged in this pipe 24, as shown. A gasolene tank 26 is located at a suitable point above the engine and a pipe 27 extends therefrom and is connected to pipe 14 at a point between the carbureter and the pipe 24, there being a valve 28 within said pipe 27 for controlling the passage of fuel therethrough. A water tank 29 is arranged above the engine A and is connected, by a pipe 30, to the upper portion of the carbureter and has a valve 31 whereby the flow of water through the pipe is controlled.

In using the mechanism described, the supply of water and kerosene is cut off from the carbureter by closing valves 31, 16 and 20. Gasolene is then admitted to the carbureter from the starting tank 26 by opening the valve 28. While the engine is being operated for a short time with gasolene as a fuel, the valves 4, 13, 22 and 23 are opened, kerosene or other fuel in tank 1, and which must be heated before it can be properly used, will thus be forced by pump 3 through pipe 12 and coil 11 and out through the pipe 14 and branch pipe 19 to pipe 17 and thence

back to tank 1. As it passes through the coil it will be heated by the gases being exhausted into the chamber D. The fuel is thus continuously circulated by the pump through the tank 1 and through the coil until said fuel is properly heated and is in condition for use. After the engine has been operated for a short time with gasolene as a fuel and until the kerosene has been properly heated the valves 16 and 20 are opened and valves 23 and 28 are closed. From the coil 11, the fuel passes, in its vaporized state, through pipe 14 to the carbureter where it is mixed with hot air admitted to said carbureter from the jacket 8 by way of pipe 10. Water is allowed to drip into the carbureter from the pipe 30. Should it be desired to use nothing but gasolene as fuel, the coil and pipes are drained at 15 and all of the valves are closed except valves 7, 25, 20 and 21. Surplus gasolene is thus free to flow through the pipe 18 back into the tank 6.

It will be apparent that by equipping a hydrocarbon engine with feeding apparatus such as described, different kinds of fuel may be employed simply by adjusting the various valves so as to cause the fuel to flow in the proper direction to the carbureter, the lighter fuels being admitted directly thereto from the tank while the heavier fuels requiring the application of heat, are directed into the coil 11.

What is claimed is:

1. The combination with a hydrocarbon engine having an exhaust chamber and a carbureter, of means for directing rich fuel into the carbureter to drive the engine, a jacket inclosing said exhaust chamber and having an air space therein provided with an outlet, means for conducting heated air from said space to the carbureter, a coil within said space, a fuel tank, a pump for

circulating fuel through the tank and coil, to heat the fuel, and separate means for cutting off the supply of rich fuel from the carbureter and directing heated fuel from the coil to the carbureter.

2. The combination with a hydrocarbon engine having an exhaust chamber, and a carbureter, of a jacket surrounding the exhaust chamber, means for conducting air therefrom to the carbureter, a coil within the jacket, the contents of the jacket and of the coil being adapted to be heated by the gases discharged into the exhaust chamber, a fuel supply, a pipe connection between said supply and the coil, a pipe connection between the coil and the carbureter; means for controlling the passage of fuel through said connections, a starting tank, a valved connection between said starting tank and the carbureter, valved means for directing water into the carbureter, and an emergency tank communicating with the fuel conducting connections.

3. Fuel feeding apparatus for hydrocarbon engines, including a tank for fuel to be heated, a jacket for inclosing the exhaust chamber of the engine, said jacket having an air inlet, a coil within the jacket, a second fuel tank, a pump for setting up a circulation of fuel from the first mentioned tank through the coil and back to said tank to vaporize the fuel, valved means for directing the vaporized fuel into a carbureter, means for directing heated air from the jacket and into the carbureter.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

HIRAM HYDE.
JACK GAGE.

Witnesses:

C. W. SHENKEL,
G. E. BIESH.