J. H. LEPPER.

INTERNAL COMBUSTION ENGINE.

APPLICATION FILED AUG. 9, 1916.

1,230,909. Patented June 26, 1917.

Fig. 1.

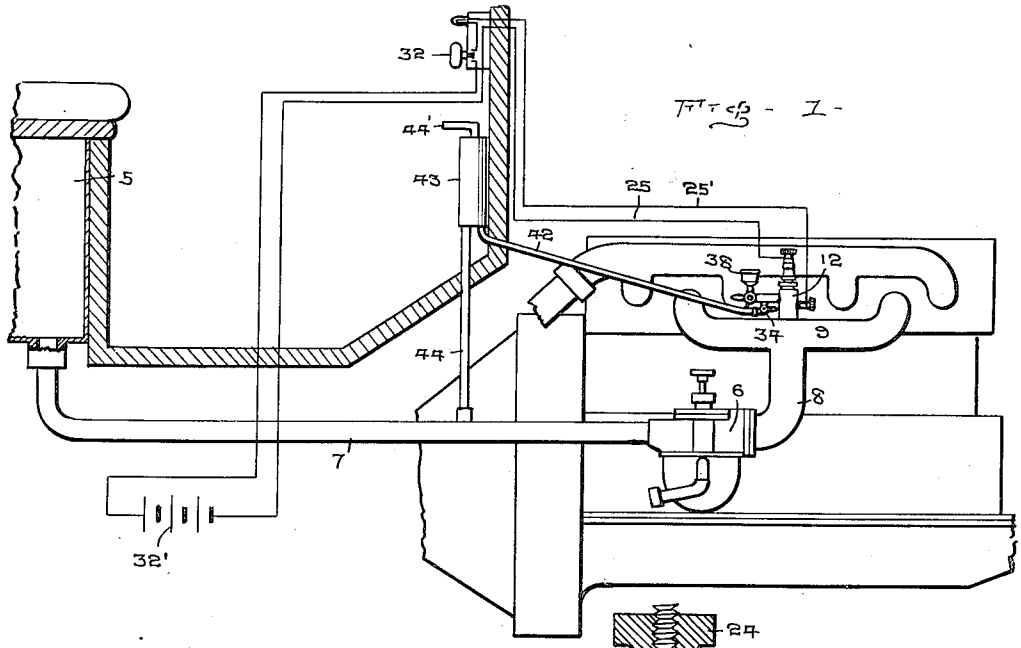
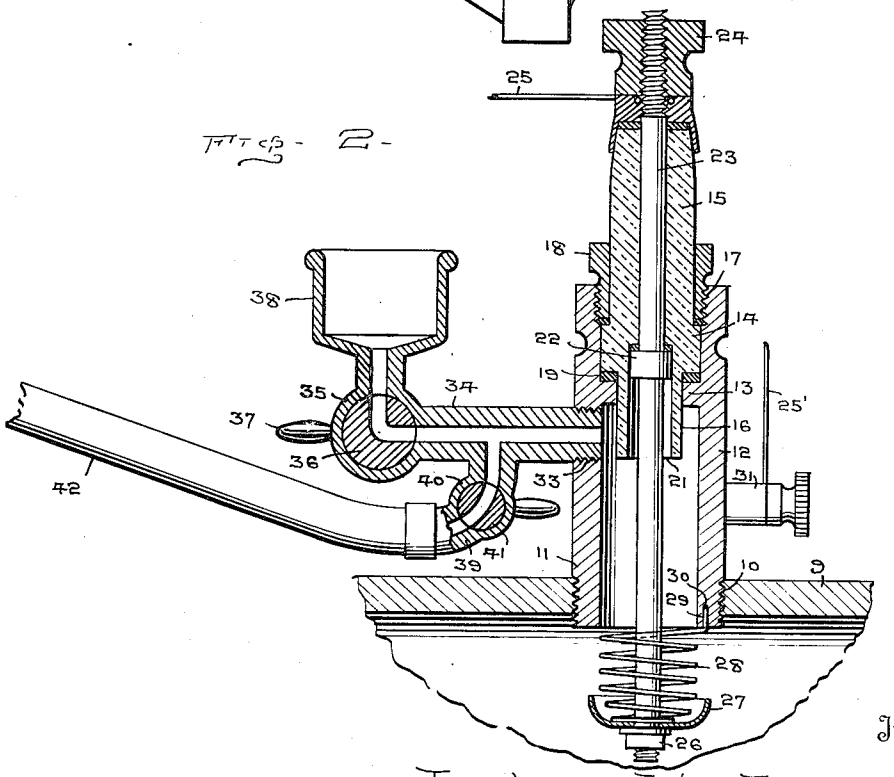


Fig. 2.



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JOHN HENRY LEPPER, OF MASON CITY, IOWA.

INTERNAL-COMBUSTION ENGINE.

1,230,909. Specification of Letters Patent. Patented June 26, 1917.

Application filed August 9, 1916. Serial No. 113,972.

To all whom it may concern:

Be it known that I, JOHN HENRY LEPPER, a citizen of the United States, residing at Mason City, in the county of Cerro Gordo and State of Iowa, have invented certain new and useful Improvements in Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in internal combustion engines, and more particularly to a priming device which is effectively brought into operation during cold weather, or when the engine parts are too cold to effect the starting of the engine in the usual way.

The principal object of the invention is to provide a vaporizing device of this character which will direct a preliminary or supplemental charge of liquid hydrocarbon to the intake of the manifold of the engine where the charge is heated to the point of vaporization, the vaporized charge being then directed to the respective cylinders of the engine for starting the same.

Another object of the invention is to provide a device of this character that may be readily applied to the usual manifold of the engine by merely forming a threaded bore therein.

A still further object of the invention is to provide a device of this character which, when in operation is disposed within the manifold with the result that the entire preliminary charge must pass the heating element, forming a part of the invention, which insures the efficient vaporization of the same.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth, and pointed out in the claim.

Referring now to the drawings,

Figure 1 is a side elevational view of an engine supplied with my invention, and

Fig. 2 is a sectional view of my invention, and a fragment of a manifold, disclosing the manner of securing my invention thereto.

In the drawings, the numeral 5 designates the usual hydrocarbon oil supply tank which has communication with a carbureter 6, through a supply pipe 7, the carbureter 6 also being in communication with the engine cylinders by means of the usual manifold 8, terminating in a horizontal branch pipe 9 connected with the respective engine cylinders. Directly above the manifold pipe 8, I have provided a suitable threaded opening 10 adapted to accommodate the threaded end 11 of the hollow tap plug 12, which is provided adjacent its upper end with an interior annular shoulder 13, which forms a seat for the shoulder 14 of the insulating member 15, having an extension 16 of such diameter that the same closely engages the outer face of the shoulder 13 for preventing movement of the insulating member with relation to its supporting plug 12.

The outer end of the plug 12 is internally threaded as at 17 to receive a threaded member 18, which, when screwed home, forces the shoulder 14 of the insulating member 15, of suitable material, into engagement with a ring 19 disposed between the annular shoulder 13 and the shoulder 14, and it will be seen that this construction absolutely prevents displacement of one element with relation to the other. The insulating member is provided with a longitudinal bore 20, one end thereof being larger than the other to provide a housing 21 for the enlarged member 22 formed intermediate of the length of a conducting element 23 which is threaded at its upper end to receive a binding nut 24 which binds a circuit wire 25 thereto. The opposite end of the conducting element 23 is also threaded to receive the nut 26 which securely holds a cup-shaped member 27 in position thereon, and it will be seen that the diameter of the cup-shaped member 27 is coincident with the diameter of the plug 12, thereby catching the fluid which passes through the plug 12 and prevents the same from falling away from the vaporizing coil 28 which is of high resistance material. This vaporizing coil 28 is coiled around the lower end of the conducting element 23, one end of said coil being suitably connected to the conducting element 23 in such a way as to produce a complete circuit with the top plug 12 by reason of the opposite end 29 thereof extending into an opening 30 of the plug. A terminal 31 is formed on the top plug 12, which conducts the electric force back through the wire 25′ and through a suitable switch 32 positioned in a convenient position for manipulation by the operator from where the electric force is directed to the batteries 32′.

Disposed substantially centrally of the plug 12, is a threaded opening 33 through which the pipe 34 makes communication with the interior of the plug 12. This pipe 34 has an enlarged portion 35 intermediate its length which forms a seat for the rotary valve 36 which is controlled by the handle 37, whereby the passage way or pipe between the cup 38 which is formed at the opposite end of pipe 34 and the interior of the top plug 12 is controlled. It might be further stated that the cup 38, together with its connections, are only used when the pump 43 is out of operation. Extending downwardly from the pipe 34 and in communication therewith, is a pipe 39 which also has an enlargement 40 to accommodate a valve member 41, which controls the flow of fluid through the pipe 42 to the interior of the plug 12 from the pump body 43 arranged in a position to be easily manipulated by the operator. The pump body 43 is also in communication with the supply pipe 7 through the pipe 44, whereby upon vertical movement of the pump element 44′, a charge of fuel is forced into the plug 12.

The operation of the device is as follows:

The circuit through the wires 25 and 25′ having been completed, by means of the switch member 32, the pump element 44′ is operated which results in a charge of l hydrocarbon being forced into the memb 12 from where it impinges on the vapor ing coil 28, which is now heated to a white heat, thereby vaporizing the charge which passes into the respective engine cylinders.

It is of course obvious that any fluid which is not vaporized in its passage by the vaporizing coil 28 is caught in the cup-like member 27 and is eventually vaporized.

I claim:—

In combination with the manifold of an internal combustion engine, a vaporizing device including a hollow plug positioned in the manifold, a conducting element positioned within the plug, one end thereof extending into the manifold, a cup shaped member supported by the conducting element, and a vaporizing element coiled around one end of the conducting element adjacent the cup shaped member, the cup shaped member being coincident with the diameter of the plug to receive fluid passing along the walls of the plug, means for directing fluid to the vaporizing element and cup shaped member, and means for heating the vaporizing element.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN HENRY LEPPER.

Witnesses:

JORGEN FLUGSTAD,

MAMIE LEPPER.