

1,286,512.

Patented Dec. 3, 1918.

Fig. 1

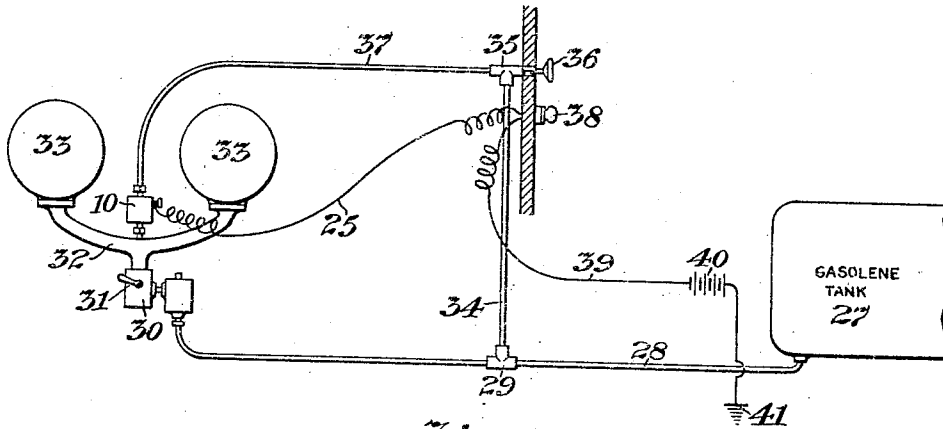
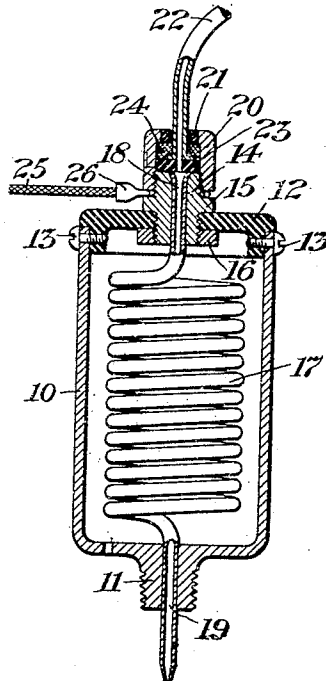


Fig. 2



WITNESS:

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INVENTOR

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HIS ATTORNEYS

UNITED STATES PATENT OFFICE.

WILBERT T. BINTLIFF, OF PLAINFIELD, NEW JERSEY, ASSIGNOR OF ONE-HALF TO
ALLEN B. LAING, OF PLAINFIELD, NEW JERSEY.

GAS-ENGINE PRIMER.

1,286,512.

Specification of Letters Patent.

Patented Dec. 3, 1918.

Original application filed June 4, 1915, Serial No. 32,050. Divided and this application filed November 14, 1916. Serial No. 131,185.

To all whom it may concern:

Be it known that I, WILBERT T. BINTLIFF, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented an Improvement in Gas-Engine Primers, of which the following is a specification.

In order to obtain an efficient explosive mixture for use in gas engines it is necessary to combine the gas or vaporized hydrocarbon with air in predetermined quantities and as it is generally known cold gas and cold air will not mingle properly to form an efficient explosive mixture. It is for this reason that difficulty is often experienced in starting gas engines.

I am aware that heretofore various devices have been provided for the preliminary heating of either the gas or the air or both the gas and the air. This invention, however, relates to an apparatus for heating a liquid hydrocarbon fuel to a point of vaporization if necessary so that the same is properly heated when introduced into the mixing chamber to be combined with the predetermined quantity of air before supplying same to the engine cylinder and starting the engine and is so constructed that it may be employed at all times in the continuous running of a gas engine to properly vaporize kerosene or other relatively low grade hydrocarbon when it is not possible to employ gasoline. The primer made in accordance with this invention is heated electrically and may be attached directly to the engine manifold or associated with the carbureter in such a manner that the vaporized liquid at the necessary temperature passes therefrom to the chamber wherein it is mixed in the air before entering into the cylinder.

The invention to which the present application relates and is intended to cover is for a form of gas engine primer shown and described in my co-pending application, Serial No. 32,050, filed June 4, 1915, but which is not claimed in said application. This form of the invention comprises a casing, a helical coil with close convolutions within the casing, and which is heated directly by the passage of an electric current therethrough to heat or vaporize the liquid hydrocarbon in its passage through the coil to the manifold of the engine. It is to be understood,

however, that while I have herein shown and described my invention as particularly applicable for use as a gas engine primer it may be used as a heater for a liquid of any nature and for any purpose.

In the drawing, Figure 1, is a diagrammatic plan and partial cross section of a gas engine apparatus as applied to a motor vehicle in which the primer forming the present invention is included, and

Fig. 2, is a central longitudinal cross section of the primer.

Referring to the drawing and particularly to Fig. 2, the gas engine primer or liquid heater or vaporizer made in accordance with this invention preferably comprises a casing 10 which may be cylindrical or of any other desired configuration and constructed of metal or other suitable material. At one end the casing is closed and provided with a screw threaded boss 11, while at the opposite end the casing is open and fitted with an insulating cover 12 which may be secured in position therein by screws 13 passing through the casing and into a flange of the cover or otherwise.

Passing centrally through an aperture provided therefor in the cover 12 I employ a metallic sleeve 14. This is provided with a flange 15 adapted to rest against the outer surface of the cover and the sleeve is maintained in position relatively to the cover by a nut 16 turned down on that portion of the sleeve which projects interiorly through the cover. Within the receptacle thus formed I employ a helical coil 17 made of suitable material to be heated electrically and the convolutions of which are made to lie close to one another. One end 18 of the coil is connected electrically in the sleeve 14 through which it passes centrally while the opposite end 19 of the coil passes through and is electrically connected in the boss 11 of the casing 10. Also as illustrated in this figure this end of the coil may be made to extend appreciably beyond the boss 11 so as to bring the orifice to the proper position for admitting the vaporized hydrocarbon to a mixing chamber or a manifold of a gas engine.

The outer end of the sleeve 14 is screw threaded and fitted with a cap 20 adapted to be turned down to position. The top of the cap is fitted with an insulating ring 21

through which a supply pipe 22 passes and is connected at its extremity to a bushing 23 adapted to fit within the base of the cap 20. Between the base of this bushing and the adjacent end of the sleeve 14 is a washer 24 of insulating material in order to form a tight joint between these parts when the cap is turned to position and thus prevent the escape of the liquid fuel. 25 designates a lead wire provided with a terminal 26 adapted to be electrically connected to the coil by being secured in place between the flange 15 of the sleeve 14 and the adjacent end of the cap 20 when the latter is turned to place.

By reference to Fig. 1 the application of the hereinbefore described primer will be evident. In this view 27 represents a supply tank which is connected by a pipe 28 in which there is a T connection 29 to a carbureter 30. The valve or cock of the carbureter is indicated at 31 and the carbureter is connected in the usual manner to the engine manifold 32. The engine cylinders are indicated at 33. A pipe 34 extends from the branch of the T connection 29 to a T valve 35 controlled by a valve stem and handle 36 placed in the dash board of the vehicle or elsewhere. The pipe 37 leads from the T valve 35 to the casing 10. The primer as it will be understood may be operated from any suitable force of electricity and in Fig. 1 the lead wire 25 is shown as connecting the coil to one terminal of a switch 38, the opposite terminal of which is connected to one side of a battery 40, the other side of which is grounded on the frame of the machine as indicated at 41.

In the use of this apparatus as will be apparent the primer may be employed not only to vaporize the hydrocarbon in starting the engine but also may be advantageously used in the employment of kerosene or other low grade hydrocarbons for fuel while continuously operating the motor or the supply of the primer may be shut off at the T valve 35 and the usual carbureter 30 employed in the ordinary operation of the motor after it has been properly started. Also as hereinbefore indicated

while this invention is shown and described as a primer for gas engines it may be used advantageously in heating a liquid for any purpose.

I claim as my invention:

1. An electrical primer comprising a cylindrical casing closed at one end and open at the other end, a cover secured to the open end of the casing, a terminal secured in the cover, a coiled pipe with spaced convolutions placed vertically in the casing with an appreciable space between the convolutions of the coil and the sides of the casing, with one end of the coil connected to said terminal and the other end of the coil connected in the casing, a supply pipe, and means for connecting the supply pipe in alinement with and insulated from the end of the coil which is secured in the said terminal.

2. An electric primer comprising a cylindrical casing closed at the lower end and open at the upper end, an insulating cover secured to the upper open end of the casing, a sleeve terminal connected centrally in the said cover, a coiled pipe with spaced convolutions placed vertically in the said casing with an appreciable space between the lower end of the coil and the bottom of the casing, and the upper end of the coil and the said cover, and also between the convolutions of the coil and the sides of the casing, the lower end of the coil being electrically connected in the bottom of the casing, and the upper end of the coil electrically connected in the said sleeve terminal, a cap turned down on the sleeve terminal, a bushing fitting within the said cap, an insulating ring in the said cap, a pipe extending through the insulating ring and secured in the said bushing, and a washer also within said cap and between the bushing and the end of the said sleeve terminal for maintaining a tight insulated joint between the adjacent ends of the coil and the supply pipe when the said cap is turned to position on the sleeve terminal.

Signed by me this 8th day of November, 1916.

WILBERT T. BINTLIFF.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."