L. L. FORDE.

ELECTRICAL VAPORIZER ATTACHMENT FOR GAS ENGINES.

APPLICATION FILED JAN. 6, 1914.

1,100,293. Patented June 16, 1914.

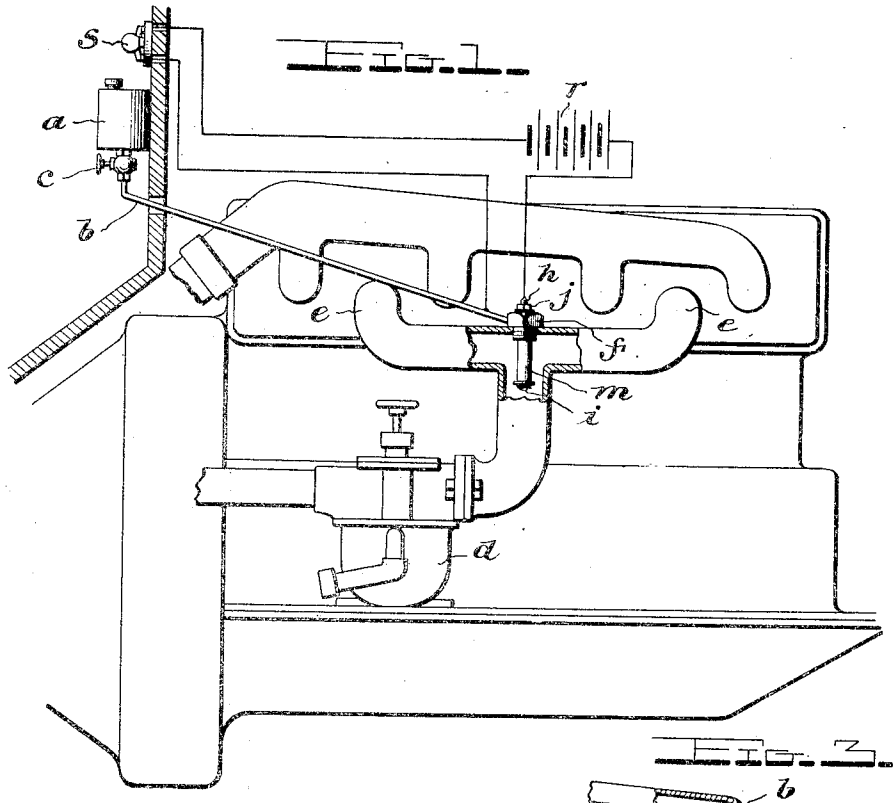


FIG. 2.



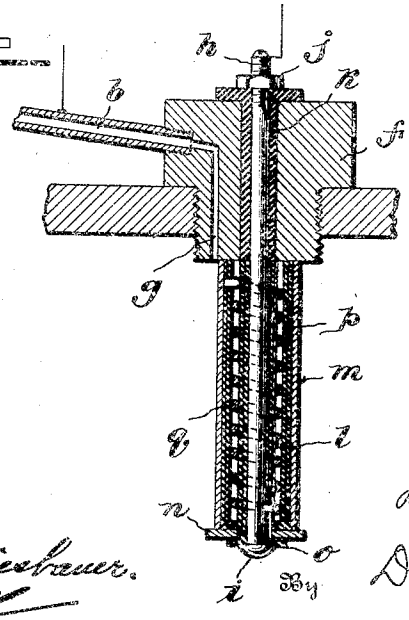
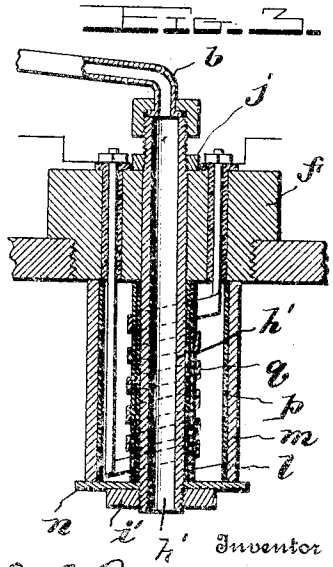


FIG. 3.



Witnesses

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ELECTRICAL VAPORIZER ATTACHMENT FOR GAS-ENGINES.

1,100,293. Specification of Letters Patent. Patented June 16, 1914.

Application filed January 6, 1914. Serial No. 810,591.

To all whom it may concern:

Be it known that I, LESTER L. FORDE, a citizen of the United States, and a resident of Laurinburg, county of Scotland, State of North Carolina, have invented certain new and useful Improvements in Electric Vaporizer Attachments for Gas-Engines, of which the following is a full and clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a motor vehicle gasolene engine showing my invention applied thereto; Fig. 2 is a longitudinal section taken through the vaporizing coil; and Fig. 3 is a similar view of a modification.

My invention has relation to that class of internal combustion engines in which gasolene or other liquid hydrocarbon is mixed with air to form the charge which is exploded in the several combustion chambers of the engine, and my improvements are designed to provide a simple means for supplying a preliminary or supplemental supply of the liquid hydrocarbon to the intake of the engine and vaporizing the same for the purpose of starting the engine, when the parts of the engine are too cold to effect a starting of the engine in the usual way, as more fully hereinafter set forth.

Referring to the drawing by reference-characters, *a* designates a small tank for gasolene or other hydrocarbon, this tank being adapted to be located at any point above the point of vaporization so that the hydrocarbon will run by gravity to the vaporizer. A small pipe *b*, controlled by a cock *c*, connects this tank with the vaporizing coil which is located at any suitable point in the intake conduit or manifold, between the usual carbureter *d* and the intake end *a'* of the manifold.

The vaporizing device consists of a plug *f* screwed into an opening in the wall of the manifold and having connection with the supply pipe *b*. From the end of the supply pipe *b* extends a duct *g* which terminates at the inner face of the plug. Centrally through the plug extends a rod *h* whose inner end is provided with a head *i* and whose outer end is provided with a nut *j*. A tube *k* of non-conducting material insulates this rod from the metal plug, and between the head *i* and the base of the plug is located another cylinder *l* of insulating material. The bolt *h* serves to clamp against the base of the plug a metallic tube *m*, a metal disk or washer *n* being provided to abut against the lower or inner end of tube *m*, this disk *n* being insulated from the bolt by insulating washer *o*. Within the tube *m* is located another cylinder *p* of insulating material, and between the two cylinders *l* and *m* is coiled a conducting wire *q* whose lower end is electrically connected to the lower end of rod *h* and whose upper end is electrically connected to the cylinder *m*.

The insulating parts *k*, *l*, *m* and *o* are desirably made of mica or other heat-resisting insulating material. The upper end of the metal tube *m* has electrical connection to the plug *f* so that when the wires from the battery *r* are connected respectively to the rod *h* and metal pipe *b* or other part of the engine or frame having metallic connection to plug *f*, an electric circuit is established through coil *q* and sufficient heat is thereby generated in the coil to heat the metal tube *m* to a degree sufficient to vaporize gasolene. It will therefore be seen that to vaporize gasolene in the intake, it is simply necessary to first close the battery circuit for a sufficient length of time to bring the tube *m* to the necessary degree of temperature and then open cock *c* to permit the gasolene to gravitate through the plug *f* and spread upon the exterior of the hot cylinder *m*. A suitable switch *s* is provided for closing the latter circuit.

It will be observed that my device is exceedingly simple in construction and is adapted to be applied to any engine by simply tapping threaded holes in the intake at the desired point between the main carbureter and the intake ports of the engine. The device is inexpensive in construction and may be readily taken apart for cleaning and repair. The arrangement whereby the gasolene is supplied to the hot tube *m* and spread thereupon insures not only an ample supply of vaporized gasolene, but also a quick vaporization of the gasolene. It will be seen also that this device may be used not only for vaporizing a preliminary supply of fuel, but also is capable of assisting the main carbureter in vaporizing fuel in certain weather conditions where such assistance is highly desirable.

In the form of device shown in Fig. 3, the clamp bolt *h* is made hollow, this tube being designated by reference-character *h'*, and the supply pipe *b* is connected to the

outer end thereof, so that the gasolene will be conducted to the interior of the coil and vaporized therein, the vapor issuing from the open end of the tube h' at the inner end of the coil. This construction does away with the duct g and requires that the terminals of the coil q shall extend through the plug f and be insulated therefrom. The cylinder m is clamped against the base of the plug by means of nut m' acting through the medium of the washer i'.

Having thus described my invention, what I claim is:

1. In an apparatus of the class set forth, a metallic plug adapted to be inserted in the intake of an internal combustion engine, this said plug being provided with an opening through it and also with a duct leading to its inner end, means for supplying gasolene to said duct, a rod extending through the opening in said plug, an electric generator wired respectively to said rod and to said plug, a metallic vaporizing tube surrounding said rod and abutting against the inner end of the said plug, means coöperating with said rod for closing the inner end of said tube and removably clamping it in place against the plug, and an electric coil inclosed within said tube and insulated from the rod and also from said tube and having one end connected to said rod and the other end to said tube, for the purpose set forth.

2. In a device of the class set forth, a plug adapted to be inserted in the intake of an internal combustion engine, a cylinder abutting against the inner end of the plug and projecting into the interior of the intake, a heating coil insulatively inclosed within said cylinder, a rod extending through the plug and said cylinder, and means coöperating therewith for closing the inner end of said cylinder and removably clamping said cylinder against the end of the plug, means for transmitting an electric current through said coil, and means for supplying hydrocarbon to the member heated by said coil, for the purpose set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

LESTER L. FORDE.

Witnesses:
THOS. J. GILL,
E. W. BRYANT.