L. O. DEMERS.

PRIMER AND GAS SAVER FOR GASOLENE ENGINES.

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Fig. 1.

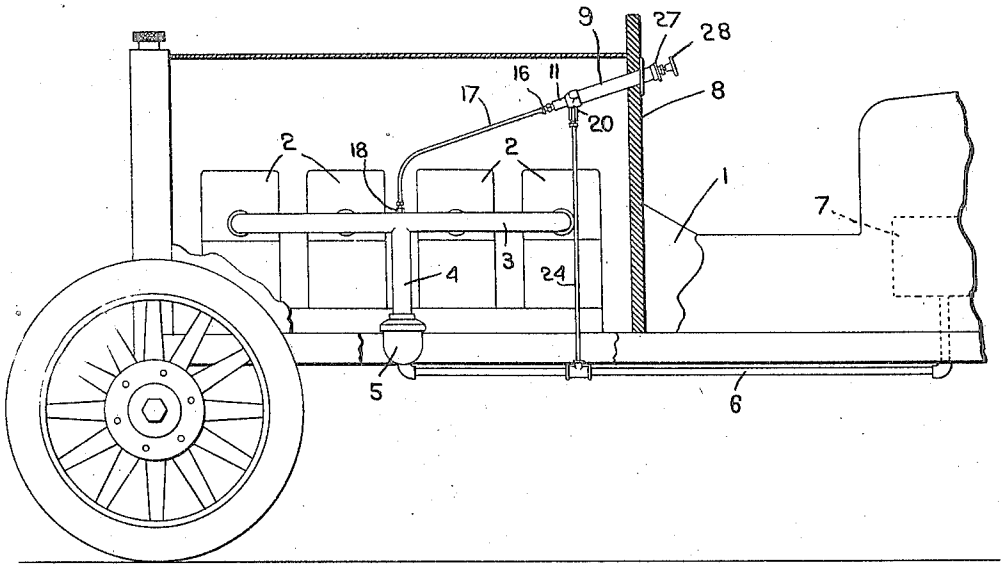


Fig. 2.

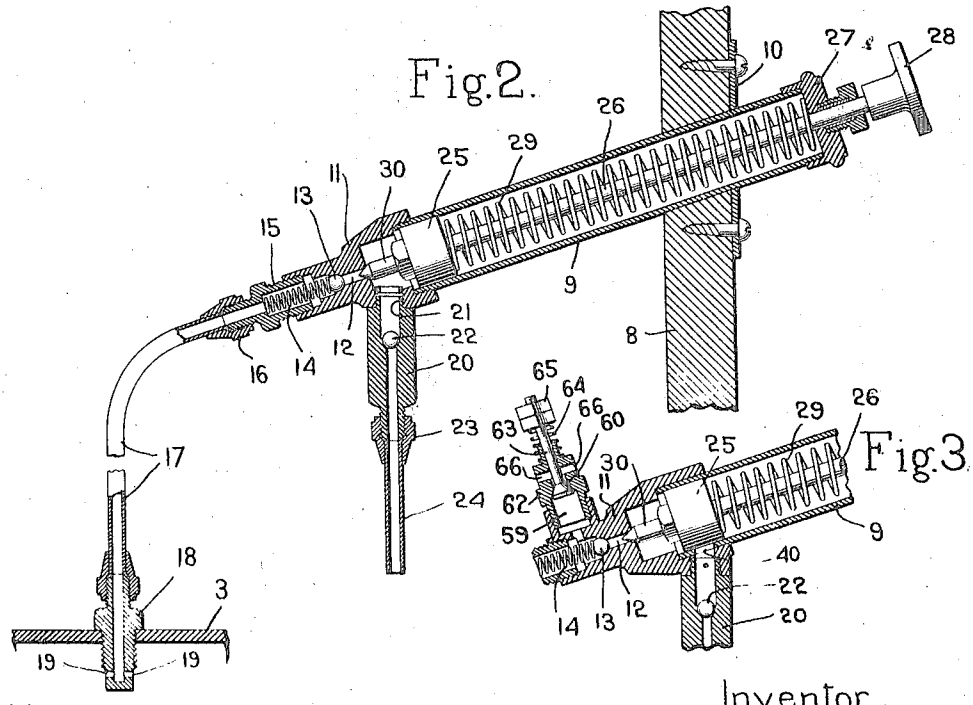


Fig. 3

Witnesses.

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PRIMER AND GAS-SAVER FOR GASOLENE-ENGINES.

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To all whom it may concern:

Be it known that I, LOUIS O. DEMERS, a subject of the King of Great Britain, residing at Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Primers and Gas-Savers for Gasolene-Engines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a combined primer and gas saver for gasolene engines by which the starting of the engine when cold can be facilitated, and by which a saving in gasolene is effected after the engine has been running for a while and is thoroughly warmed up.

The invention is especially designed for use in connection with automobile engines, although it is capable of use with gasolene engines for operating motor boats or other types of gasolene engines.

My improved device is simple in construction and is effective both in assisting to start the engine and in the saving of gasolene after the engine is thoroughly warmed up.

In order to give an understanding of my invention I have illustrated in the drawings a selected embodiment thereof which will now be described, after which the novel features of the invention will be pointed out in the appended claim.

Figure 1 is a partial view of an automobile showing the engine therein equipped with my improved primer; Fig. 2 is a sectional view through the primer; Fig. 3 is a detail sectional view showing another embodiment of my invention.

I have shown at 1 a portion of an automobile having an engine 2, the engine herein illustrated being a four-cylinder engine, the cylinders of which are supplied with gasolene vapor through the usual manifold 3 that is connected by a pipe 4 with the carbureter 5. The carbureter is shown as connected by a pipe 6 to the supply tank 7 which may be situated in any suitable location. The parts thus far described may be of any suitable construction and form no part of my present invention.

My improved device comprises a pump cylinder connected both to the manifold 3 and to the gasolene supply pipe 6, and a piston operating in said cylinder and by which a charge of gasolene can be transferred from the pipe 6 directly into the manifold 3. The pump will preferably be placed in a location where it can conveniently be reached by the operator of the automobile, such, for instance, as on the dash-board or instrument-board 8. The pump cylinder of my improved primer is shown at 9 and it extends through the dash-board 8 and has connected thereto a flange 10 which is secured to the dash-board and by which the pump is held in position. At the lower end of the pump cylinder is a head or connection 11 provided with a discharge port 12 which is normally closed by an outwardly-opening check valve 13, said valve being held to its seat by a suitable spring 14. The spring 14 is held in position by a nipple member 15 which is screw-threaded into the end of the member 11, and this nipple member 15 is connected by a suitable coupling 16 with a delivery pipe 17 that leads into the manifold 3. The lower end of the pipe 17 is shown as coupled to a distributing plug 18 which screws into the top of the manifold 3 and is provided with two lateral ports 19 extending in opposite directions, said ports being directed toward the two ends of the manifold 3. The head or connecting member 11 has also detachably secured thereto an inlet connecting member 20, said member being shown as provided with a screw-threaded nipple 21 that screws into the head 11. This member 20 is provided with an inwardly-opening check valve 22 and is connected by a suitable coupling 23 with a supply pipe 24 which in turn is connected to the gasolene pipe 6.

Operating in the cylinder 9 is a piston 25 of any suitable construction, the piston rod 26 of which extends through the head 27 of the cylinder and is provided with a suitable cross piece or handle 28 by which it may be operated. A spring 29 encircles the piston rod and acts at one end against the head 27 and at the other end against the piston 25, said spring tending normally to urge the piston toward the lower end of the cylinder. Associated with the piston 25 is a valve member 30 which when the piston is in the position shown in Fig. 2 seats against the end of the port 12 and closes said port.

In order to prime the engine with the priming device herein illustrated the operator merely draws backwardly on the head 28 of the piston thereby to draw into the cylinder a charge of gasolene from the pipe

6 and through the pipe 24. The operator then forces the piston downwardly, during which operation the valve 22 will be closed and the valve 13 will be opened, the charge of gasolene being thus forced through the pipe 17 into the manifold. In passing into the manifold, the gasolene will escape through the two ports 19 and will thus be divided into two streams or jets that are directed toward each end of the manifold. The charge of gasolene will, therefore, be evenly distributed throughout the manifold so that any one of the four cylinders can receive a priming charge as soon as the engine is started.

When the piston occupies the position shown in Fig. 2 the valve 30 will positively close the port 12 so that when the engine starts there will be no danger or possibility that the suction in the manifold will draw gasolene from the pipe 6 through the pipes 24 and 17 as might occur unless some positive valve were provided for this purpose. When, therefore, the engine is running and the piston is in the position shown in Fig. 2, the presence of the primer will not affect the engine in any way.

The spring 29 serves as a means for automatically keeping the valve 30 closed against the end of the port 12 when the device is not in use, and, therefore, the operator does not need to manipulate any special valve to shut the primer off from the engine when it is not in use. This is quite an important feature of my invention.

In Fig. 3 I have illustrated a different embodiment of my invention wherein a double valve is provided to close communication between the pipe 24 and the pipe 17 when the primer is not in use. In this embodiment of the invention the duct through the inlet connecting member 20 communicates with a port 40 leading into the cylinder 9, which port is normally closed by the piston 25 when the valve 30 is seated. With this construction it will be seen that when the primer is not in use and the parts assume their normal position the communication between the pipes 24 and 17 will be closed not only by the valve 30, but also by the fact that the piston 25 covers the port 40. There is thus a double check against any possible leakage of gasolene from the pipe 24 into the pipe 17.

My improved device is also constructed so as to effect a saving of gasolene after the engine has been running sufficiently long to become thoroughly heated up. I accomplish this herein by providing an air inlet port 59 leading to the port 12 in the rear of the check valve 13, which port 59 is controlled by an inwardly-opening spring-controlled check valve 60. This check valve 60 is adjusted so that the suction developed in the pipe 17 when the engine starts and before the engine is thoroughly warmed up will be insufficient to open the check valve. After the engine has been running for some time and has become thoroughly heated, a greater suction will be produced in the manifold and pipe 17 and the check valve 60 is adjusted so that this increased suction will open it, thus admitting air to the manifold which will mix with the charge delivered to the manifold from the carbureter, thus effecting an economy in the use of the gasolene. This check valve 60 may be constructed in various ways without departing from my invention. In the illustrated embodiment the check valve is contained in a nipple 62 which is screw-threaded to the connection or head 11, said nipple having a valve seat to receive the valve 60. The valve is provided with a stem 63 extending up through the nipple 62, and a spring 64 encircles the valve stem and is confined between the nipple and nuts 65 screw-threaded to the valve stem, said spring serving to hold the valve seated. The nipple is provided with air inlet ports 66. As stated above, the spring 64 will be so adjusted that the suction produced in the pipe 17 when the engine starts will be insufficient to open the valve 60, but the increased suction which is developed after the engine gets thoroughly heated will be sufficient to open the valve so as to allow an increased amount of air to be drawn into the manifold. This gasolene-saving feature of my invention operates automatically, and when it is once adjusted, it needs no manipulation on the part of the operator, for when the engine has reached the stage when a less amount of gasolene is sufficient to operate it economically, the valve 60 will automatically open to allow an added quantity of air to be delivered to the manifold. My invention is simple in construction and effective in operation. The priming of the engine merely involves an outward and inward movement of the piston, and when the piston has been thus manipulated, the pipe 24 is automatically shut off from the pipe 17. The gas-saving feature of the invention is automatic in its operation and requires no manipulation on the part of the operator.

While I have illustrated herein a selected embodiment of my invention, I do not wish to be limited to the constructional features shown.

I claim:

In a device of the class described, the combination with a manifold of a gasolene engine, a carbureter connected thereto, and a gasolene supply pipe, of a priming pump comprising a cylinder having inlet and outlet ports, one connected to the gasolene supply pipe and the other to the manifold, check valves for said ports, a piston within said cylinder constructed to close both ports when it is at the end of its stroke, an automati-

cally-opening air inlet valve, said cylinder having a head provided with means for securing thereto said air inlet valve, whereby said air inlet valve is placed in communication with the outlet port on the discharge side of the check valve controlling the same.

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

LOUIS O. DEMERS.

Witnesses:
BERTHA F. HEUSER,
THOMAS J. DRUMMOND.