

J. S. GOLDBERG.
 PRIMING MEANS FOR INTERNAL COMBUSTION ENGINES.
 APPLICATION FILED MAR. 23, 1916.

1,365,824.

Patented Jan. 18, 1921.

2 SHEETS—SHEET 1.

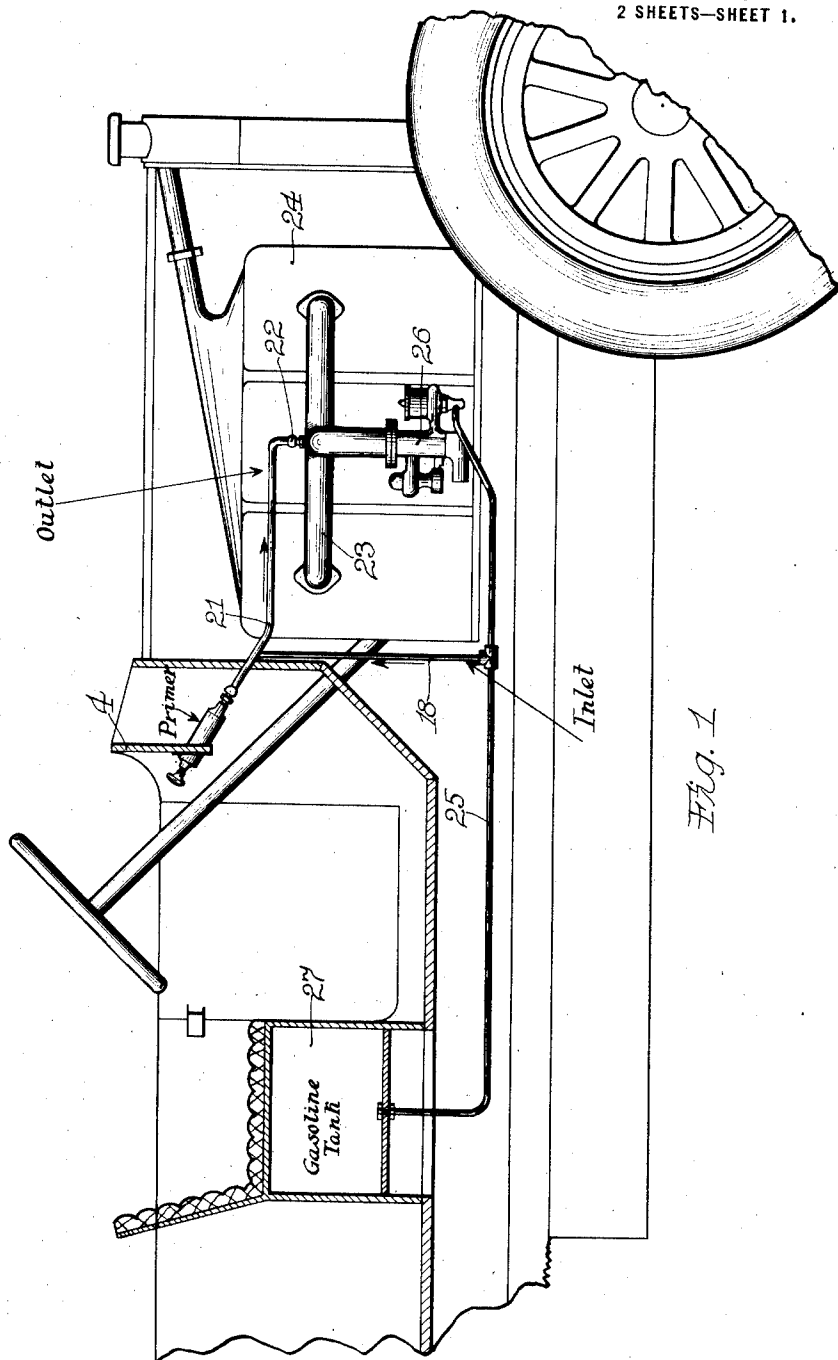


Fig. 1

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Fig. 3

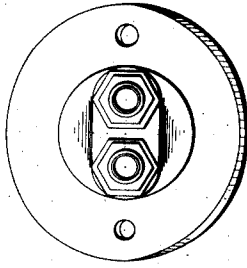


Fig. 4

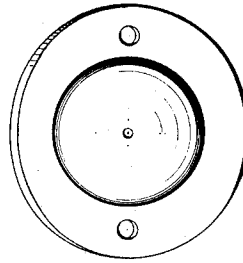


Fig. 2

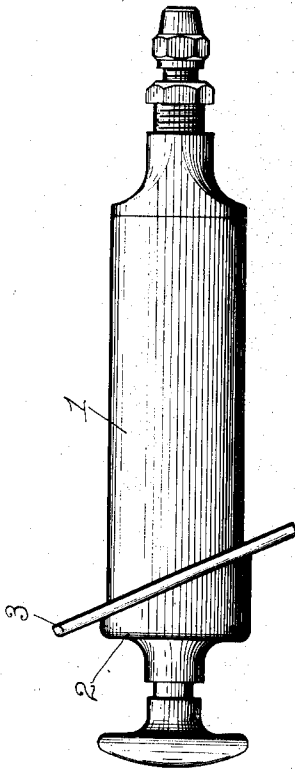
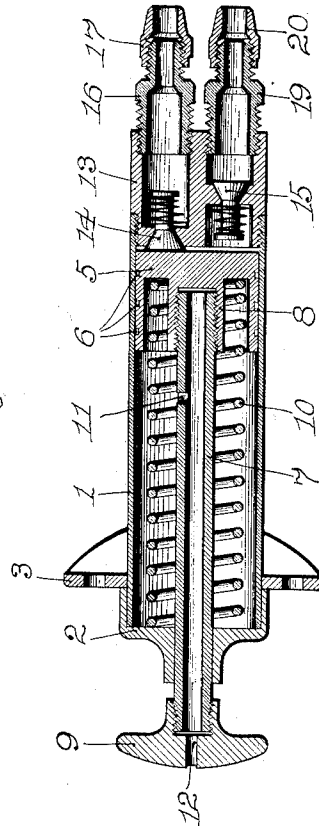


Fig. 5



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UNITED STATES PATENT OFFICE.

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PRIMING MEANS FOR INTERNAL-COMBUSTION ENGINES.

1,365,824.

Specification of Letters Patent. Patented Jan. 18, 1921.

Application filed March 23, 1916. Serial No. 86,090.

To all whom it may concern:

Be it known that I, JOHN S. GOLDBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Priming Means for Internal-Combustion Engines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to priming means for internal combustion engines, more particularly automobile engines. The starting of internal combustion engines in cold weather is rendered difficult by the failure of the liquid fuel to vaporize sufficiently rapidly in the carbureter to start the engine. It becomes necessary either to heat the carbureter or employ some other expedient in order to increase the vaporization. Another way of increasing the amount of vaporization is to expose a larger surface of the liquid fuel to the air which is drawn into the engine. This has been accomplished heretofore by flooding the carbureter. But such operation is inexact as there is no way of telling to what extent flooding has been accomplished and the fuel is not brought any nearer to the engine than it was previously.

My invention aims to provide a priming mechanism which will discharge a predetermined quantity of liquid fuel into the intake manifold of the engine as near as possible to the engine cylinder.

This device is preferably mounted upon the dashboard of the automobile in order to be in convenient position for operation. Fuel may be drawn from the regular liquid fuel supply tank, or from a special tank adapted to supply fuel of a low vaporizing point. In the accompanying drawings which illustrate one manner in which my invention may be carried out—

Figure 1 shows a liquid fuel supply system embodying my invention in connection with the engine of an automobile;

Fig. 2 is a side elevation;

Fig. 3 is a lower plan view;

Fig. 4 is a top plan view; and

Fig. 5 is a cross-sectional view of the spring operated pump which is employed in

discharging a predetermined quantity of fuel into the engine manifold.

The spring pump comprises a barrel or cylinder portion 1 which is closed at the outer end by a cap 2, the lower edge of which cap is cut obliquely and is secured to a cylindrical flange 3, set at an angle to the barrel 1 so that the pump may be conveniently mounted in the position shown in Fig. 1 upon the dash 4 of the automobile body. The cylinder 1 contains a piston 5 which fits closely into the bore of the cylinder and is provided with suitable leakage packing rings 6 in the surface thereof. The top of the cap 2 forms a guide for the stem or plunger rod 7 which is connected at its lower end as by the screw-threads 8 to the piston 5. The upper end of the hollow plunger rod 7 is secured to a convenient handle or knob 9 which may be grasped between the fingers when it is desired to draw the piston 5 outward against the tension of the spring 10 which lies between the piston 5 and the cap 2. The piston 5 is grooved, as is shown in Fig. 5 to receive the lower end of the spring 10 and to decrease the weight of the plunger. The plunger rod 7 is hollow, the bore of which is connected with an outlet 11 in the side thereof and a suitable outlet 12 in the knob 9 to prevent trapping of air in the upper end of the cylinder 1 between the piston 5 and the cap 2. The lower end of the cylinder 1 is closed off by a head 13 which is screw-threaded into the open end of the cylinder 1. The cylinder head 13 is of substantially the same diameter as the cylinder 1 so that fitting and mounting of the device upon the dashboard, or other convenient location, can be performed with a minimum of difficulty.

The cylinder head 13 is provided with an intake valve 14 and a discharge valve 15 which are provided, as shown in Fig. 5, with suitable valve seats formed in the metal of the cylinder head 13. These valves are held upon their seats by suitable springs which play in counterbores in the cylinder head structure. The passage of the intake valve 14 is connected by means of a screw-threaded nipple 16 to a union 17, this union being adapted to be connected to a pipe of small bore leading to the fuel tank.

The passage of the valve 15 is connected by a screw nipple 19, similar in all respects to the nipple 16. The nipple 19 is connected with a suitable union 20 which joins the discharge or outlet pipe 21 with the nipple or plug 22 which discharges into the intake manifold 23 of the automobile engine 24.

The discharge nipple or nozzle 22 is connected to a portion of the manifold which lies substantially in a horizontal plane.

As shown in Fig. 1, the inlet pipe 18 is connected to the fuel supply pipe 25 which supplies the carbureter 26 with liquid fuel from the tank 27.

It can now be seen that when the knob 9 is pulled outward against the tension of the spring 10, and then released, that a definite charge of fuel will be drawn through the pipe 18 and discharged through the pipe 21 into the manifold 23 of the engine. The pump is made preferably of such proportions that a single stroke will serve to discharge sufficient liquid fuel into the manifold pipe to present a large vaporizing surface and facilitate the starting of the engine. Thus the only operation required is pulling out of the knob 9, just preparatory to cranking or starting the engine 24. The diagonal flange 3 insures installation of the device at such an angle as to allow of convenient operation by the operator.

It is to be noted that the pump or primer is placed above the level of the discharge point 22 in order that the priming charge, which is measured off thereby, will run to the manifold without regard to the size of the piping between the primer and the manifold.

The valve 14 projects from the surface of the cylinder head 13 so that the piston 5 normally presses against the same holding the valve shut not only under its own tension but also under the tension of the main

spring 10. This prevents any liquid fuel being drawn by the suction in the manifold through the pipes 21 and 18.

It is at once obvious that the plunger may be arranged in other mechanical position with respect to the ports. It is essential only that when released or in normal position it shuts off the port of at least one of the valves to prevent drawing or siphoning of the fuel into the manifold when the engine is operating.

I claim:

1. In combination a cylinder, a cap for said cylinder, said cap embracing the end of said cylinder, a peripheral flange obliquely disposed on said cylinder and resting against said cap, a piston in said cylinder, a hollow plunger rod connected to said piston, a knob or handle connected to the outer end of said rod, said knob and said rod having an air passage therethrough, a spring between said cap and said piston and a cylinder head of substantially the same diameter as said cylinder for closing the end of said cylinder.

2. In combination a cylinder, a cap for one end of said cylinder, a plunger rod passing through said cap, said plunger rod having an air passage therethrough, a piston connected to said rod, a spring between said cap and said piston, a cylinder head of substantially the same diameter as said cylinder closing off the end of said cylinder, said head having intake and discharge valve passages therethrough, screw nipples connecting with said passages and pipe unions connected to said screw nipples, said nipples and unions projecting longitudinally from said cylinder head.

In witness whereof I hereunto subscribe my name this 21 day of March 1916.

JOHN S. GOLDBERG.