

A. C. SARGENT.  
PRIMING DEVICE FOR GAS ENGINES.  
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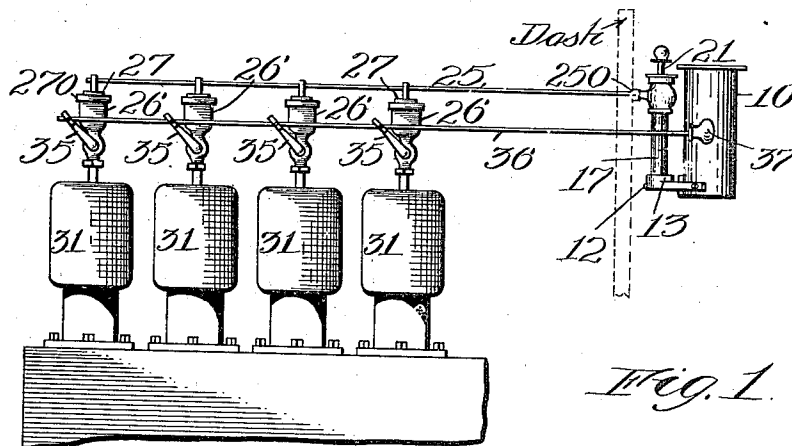


Fig. 1.

Fig. 2.

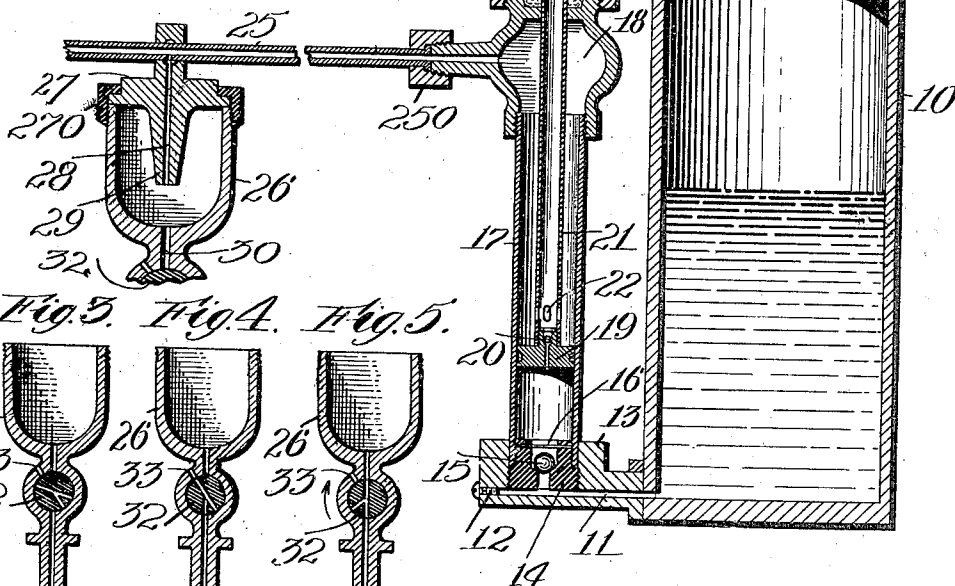
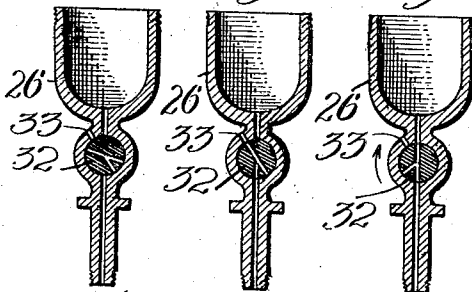


Fig. 3. Fig. 4. Fig. 5.



Witnesses

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# UNITED STATES PATENT OFFICE,

ALLAN C. SARGENT, OF WESTFORD, MASSACHUSETTS.

PRIMING DEVICE FOR GAS-ENGINES.

1,009,185.

Specification of Letters Patent.

Patented Nov. 21, 1911.

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To all whom it may concern:

Be it known that I, ALLAN C. SARGENT, a citizen of the United States, residing at Westford, in the county of Middlesex and State of Massachusetts, have invented a new and useful Priming Device for Gas-Engines, of which the following is a specification.

This invention relates to a device for automatically priming gas engine cylinders.

In using automobile gas engines it is the custom to raise the bonnet and inject an indefinite quantity of gasoline from a can into the cylinders through the relief cocks, opening and closing the same one at a time in order to start the engine with as little cranking as possible. This is troublesome and takes considerable time and does not always work as the amount of gasoline supplied to each cylinder may not be right.

The principal objects of this invention are to provide means whereby this priming can be done from the dash in a simple and convenient manner without involving the necessity of handling a can and without requiring special attention being given to each of the relief cocks; to provide a simple and inexpensive mechanism for accomplishing this result; to provide means whereby the compression in the cylinders may be relieved so as to permit the gasoline to flow into them; to provide receptacles for directing the gasoline into the cylinders having means whereby the amount of gasoline in each one will be equalized; to provide a convenient means whereby the receptacles can be filled simultaneously from a stationary reservoir; to provide certain improved features of construction for accomplishing these results.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying sheet of drawings, in which—

Figure 1 is an elevation of a portion of a four-cylinder gas engine showing how this invention may be applied thereto; Fig. 2 is a transverse sectional view of the gasoline reservoir, pump, and cup shown in Fig. 1; and Figs. 3, 4, and 5 are sectional views of the cup or receptacle for feeding the cylinders showing the relief cocks in three different positions.

Preferably located on the dash when the invention is to be applied to an automobile, is a gasoline reservoir 10 having an outlet 11 provided with a removable plug 12 where-

by the outlet may be cleaned. In a projection 13 in which these parts are located is screwed a removable bottom plug 14 having a passage communicating with the outlet, and provided with a ball-valve 15 and a pin 16 for keeping the valve in position. This plug is connected with the cylinder 17 of a pump, which is provided with a chamber 18 at the top. The piston head 19 is perforated, and is provided with a ball valve 20, and is connected with a hollow piston 21 which has outlets 22. The upper end of the cylinder is connected by a tube 25 with a series of gasoline cups or receptacles 26. The tube 25 is removably connected to the pump cylinder by a coupling 250. Each cup is provided with a removable air-tight cover 27 held thereto by a coupling 270 which has an inlet opening 28 communicating with the tube 25. These inlet openings are located in projections 29 which extend down toward the bottom of the cup, and as the incoming gasoline will seal the bottom of this inlet opening the amount of gasoline in each cup will tend to be equalized and the compression of the air above the liquid in all the cups will be substantially uniform. Each cup or receptacle is provided with an air outlet passage 30 which communicates with its engine cylinder 31 through a relief valve 32. Each relief valve is provided with a passage which permits the compression in the cylinders to be relieved as the valves are turned from the position shown in Fig. 3 to that shown in Fig. 4, the casing of each valve having a perforation 33 for communicating with the passage in the valve for this purpose.

When the valve is turned to the position shown in Fig. 5, the cup or receptacle communicates directly with the cylinder, and the pressure having been relieved, the gasoline will flow in. In order to admit the gasoline in the cups to the cylinders simultaneously, and also to relieve the compression automatically before the cylinders are put into communication with the cups, each relief valve is provided with an arm 35, and these arms are connected with a sliding rod 36 having a handle 37 projecting through the dash into a position adjacent to the pump.

The operation of the device will be obvious. First the pump piston is operated to fill the several receptacles 26 with gasoline with the valves in normal position as shown in Fig. 3, and then the handle 37 is pulled

to bring the valves to the position shown in Fig. 4 to relieve the compression and then the handle is pulled still farther to bring the valves to the position shown in Fig. 5 and to open communication between the cups and cylinder. It is found in practice that when the cocks are placed in the position shown in Figs. 1 and 3 after the engine has been primed in this manner and when the spark is switched on the engine will usually start without requiring any cranking. By removing the coupling 250 and unscrewing the coupling 270 the cups may be got at for adjustment or removal.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications may be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore, I do not wish to be limited to all the details shown, but

What I do claim is:—

1. The combination with a gas engine having a plurality of cylinders, of a receptacle connected with each cylinder for receiving liquid fuel having a closed air space above the level of the fuel, means whereby each receptacle is supplied with substantially the same quantity of fuel, and means for simultaneously relieving the compression in all the cylinders and thereafter simultaneously connecting each cylinder with its receptacle to introduce the fuel into the cylinder.

2. The combination with a gas engine having a plurality of cylinders, of a receptacle connected with each cylinder for receiving liquid fuel, means for simultaneously connecting each cylinder with its receptacle to introduce a fixed quantity of fuel into each of the cylinders, and means for equalizing the amount of fluid therein comprising an inlet tube projecting from the top downwardly into the liquid fuel.

3. The combination with a gas engine having a plurality of cylinders, of a receptacle connected with each cylinder for receiving liquid fuel, means for simultaneously relieving the compression in each cylinder and thereafter simultaneously connecting each cylinder with its receptacle to introduce the fuel into the cylinder, and means for partially filling said receptacles and equalizing the amount of fuel therein.

4. The combination with a gas engine having a plurality of cylinders, of a plu-

rality of cups, one connected with each cylinder, a cap for each cup having an inlet projecting downwardly into the interior of the cup, and means for introducing fuel through said inlets.

5. The combination with a gas engine, of a cup connected with the cylinder thereof and having a removable air tight cap provided with an inlet projecting downwardly into the cup and opening below the top thereof, and means for connecting said inlet with a source of supply of liquid fuel.

6. A device of the class described, comprising an explosion engine having a cylinder, a primer for said cylinder for supplying rich explosive to said cylinder when starting, means for operating said primer, said primer consisting of a valve having means for establishing communication between the cylinder and the atmosphere, and then for effecting communication between said cylinder and a supply of explosive fluid with the communication to the atmosphere closed.

7. A device of the class described, comprising an explosion engine, a primer for said engine having a valve, said valve having a port leading to the atmosphere, a port leading to the cylinder and a port leading to a supply of explosive, the movable portion of said valve having intercommunicating ducts for effecting communication between said cylinder port and a supply of explosive fluid and between said cylinder port and the atmosphere.

8. A device of the class described, comprising an explosion engine, a primer for said engine having a valve, said valve having a port leading to the atmosphere, a port leading to the cylinder and a port leading to a supply of explosive, the movable portion of said valve having intercommunicating ducts for effecting communication between said cylinder port and a supply of explosive fluid and between said cylinder port and the atmosphere, and a valve rod and crank to operate the movable member of said valve.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

ALLAN C. SARGENT.

Witnesses:

OSBORN H. CILLEY,  
FRED W. SWAIN.