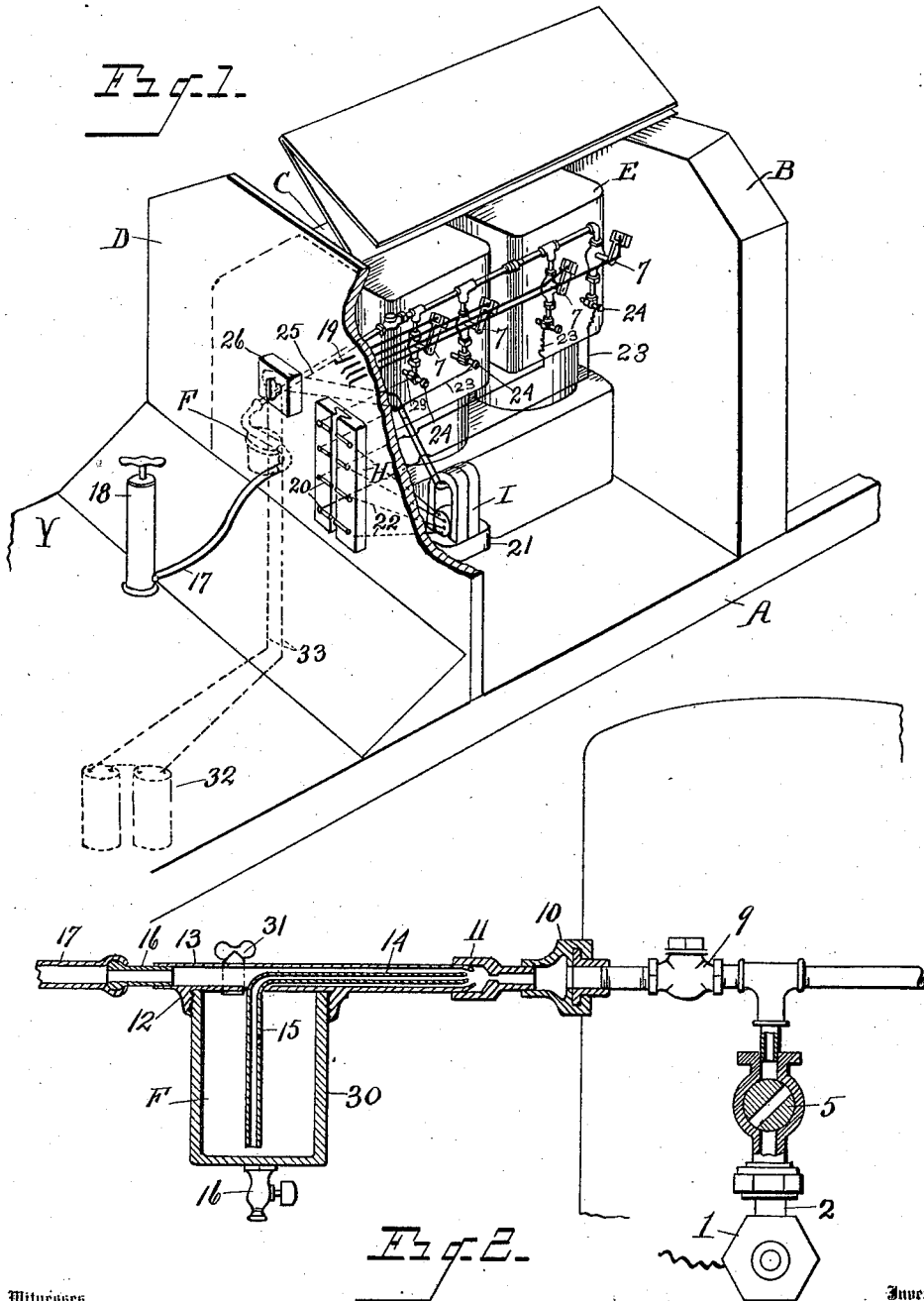


F. G. S. HEWITT.
 SELF STARTER FOR AUTOMOBILES.
 APPLICATION FILED MAY 8, 1911.

1,030,583.

Patented June 25, 1912.

2 SHEETS—SHEET 1.



Witnesses

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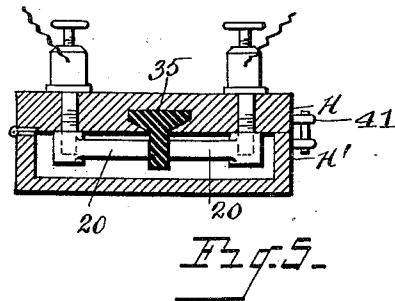
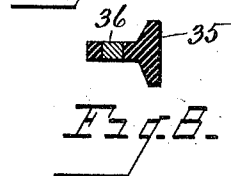
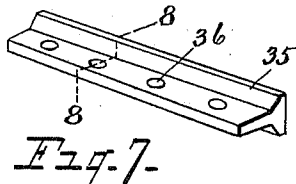
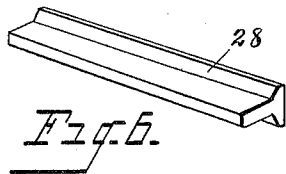
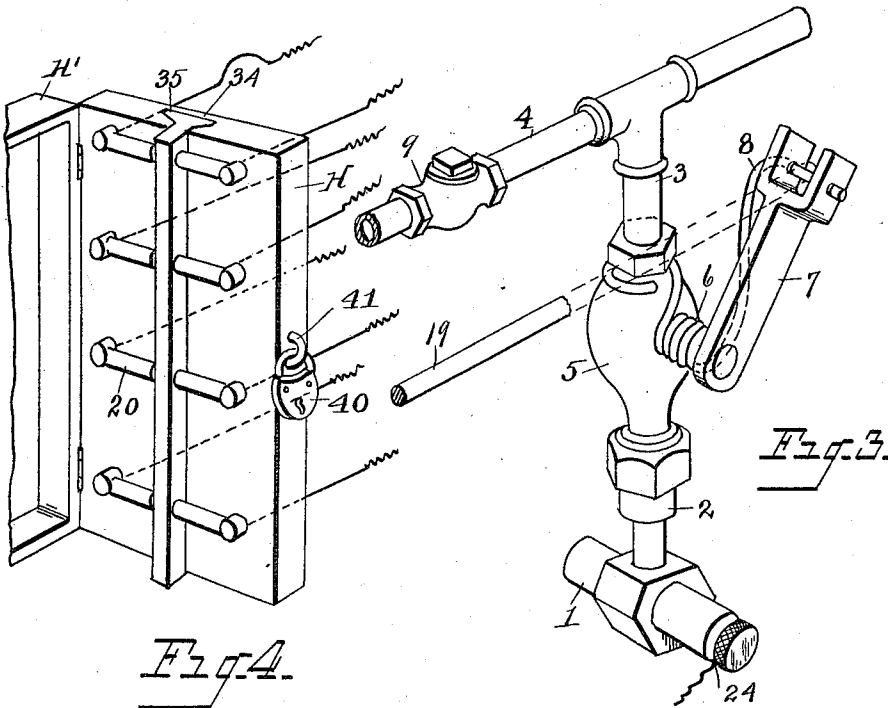
By *Parker W. Burton*
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UNITED STATES PATENT OFFICE.

FREDERICK G. S. HEWITT, OF DETROIT, MICHIGAN.

SELF-STARTER FOR AUTOMOBILES.

1,030,583.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed May 8, 1911. Serial No. 625,699.

To all whom it may concern:

Be it known that I, FREDERICK G. S. HEWITT, a subject of the King of Great Britain, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Self-Starters for Automobiles, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to self-starters for automobiles and other explosive engines.

It has for its object a device which will indicate the cylinder which is ready to be fired and which supplies a charge of fuel to such cylinder.

A further object is a means for indicating troubles which may occur in the ignition system.

A further feature of this device is a means for locking the car so that it may not be stolen.

In the drawings:—Figure 1, is a side elevation of the hood of an automobile opened and showing the engine, and the parts of my invention in elevation. Fig. 2, is a plan view of the atomizer, which is shown in section, and the pipe connections with one of the cylinders showing the stop-cock in section. Fig. 3, is an elevation of the fuel-pipe and the stop-cock. Fig. 4, is a front elevation of the box containing the indicating means with the circuit-completing slide in position. Fig. 5, is a horizontal cross section of said box showing the insulating bar in cross section. Fig. 6, is an elevation of the insulating bar. Fig. 7, is an elevation of the circuit-completing slide. Fig. 8, is a cross section of the circuit-completing slide.

A is an automobile frame upon which is supported a radiator B, a hood C and a dash D, which inclose the gas engine E. Leading from each cylinder in the engine is a tubular plug 1. Pipe-couplings 2 and 3 connect the tubular plug 1 with the main fuel conduit 4. Between these pipe-couplings is interposed a stop-cock 5 of ordinary construction. This stop-cock is actuated by connecting pin 6 upon which the lever arm 7 is fast. A spiral spring 8 is attached to the lever arm, coiled about the connecting pin 6, and fastened about the stop-cock casing 5. This spring serves to keep the stop-cock closed

except when its stress is overcome by manual actuation. The fuel conduit 4 leads from the cylinders, it being understood that the connection with each cylinder is as described, to the atomizer F. A check valve 9 intervenes between the atomizer and the pipe connections with the first cylinder, as does also the pipe coupling 10 and the nozzle 11, which discharges into the pipe coupling 10. The atomizer F serves as the fuel receptacle and is die-cast, comprising a cylindrical tank 30 and a cover 12. A passage 13 leads through the cover and discharges into the nozzle 11. Within this passage is set a pipe 14 concentric to the passage and extending from the opening into the nozzle 11 to the axis of the tank 30, and then bent to a run coaxial with such tank, terminating near the bottom of the tank. At a point in the run of the pipe just above the fuel line is an aperture 15. This aperture 15 is cut to a size which is accurately calculated to allow the passage of just the proper amount of air to insure proper mixture of the charge. At the bottom of the tank 30 is a drain-cock 16, and at the top is a priming cup 31 through which the fuel is poured to fill the tank. A pipe-coupling 16 leads into the end of the passage 13 opposite the end through which the pipe 15 discharges. A flexible tube 17 fits over this pipe-coupling and leads to the pump 18, which is set upon the floor G of the car. This pump may be of any well-known construction, a tire pump being available for this purpose.

To each lever arm 7 is attached a reach-rod 19. These reach-rods extend through the dash and within convenient reach of the driver. On the dash D an indicator box H is fastened. In this box are a number of terminals, a pair for each cylinder, and to each terminal is connected a conductor-bar 20. The conductor-bars of each pair of terminals are separated at their ends by a small gap through which an arc is produced when the current is on. The current for ignition purposes may be furnished by various means, the particular system used being immaterial; the system shown in the drawings can be used or any other system in common use. In the system shown in the drawings the primary current is supplied by the dry-cells or storage battery 32 and is delivered through the connecting wires 33 to a coil in the switch-box 26, thence from the coil the current passes through the conductors 25 to

the winding of the magneto I. The magneto is supported on the bracket 21 where a secondary current is induced. The above is a common form and is no part of my invention.

The conductors 22 lead from the magneto I to one set of terminals in the box H, thence through the gaps which are arced to the opposite terminals. Conductors 23 connect the last-mentioned terminals, one with each spark plug 24.

The operation of my device is as follows: When the driver desires to start the engine the current is switched on, and the door of the box H is opened. An arc will occur between one pair of the conducting bars. This arc indicates which cylinder is ready for firing. The driver may then pull the reach-rod which controls the stop-cock of the cylinder which has been indicated. Two or three strokes are then given the pump 18 which causes the air to pass through the conduit 17, pipe coupling 16, the passage 13 to the nozzle 11, where it enters the pipe 14, passing therefrom to the aperture 15 and out from said aperture into the tank 30 where it exercises a pressure on the top of the fuel contained therein, causing the fuel to pass through the pipe 14 and thereout at the nozzle 11, where it is atomized by the compressed air rushing through the pipe 13. The charge then passes through the coupling 10, the fuel-pipe 4, the check-valve 9, the coupling 3, the stop-cock 5, the coupling 2 and the tubular plug 1, into the cylinder. The fuel is drawn out of the tank by the pipe 14, after the flow has begun, by reason of the vacuum created by the rush of air about the mouth of the pipe 14. The current is then turned on again and the charge in the cylinder is fired causing the engine to begin its work.

The indicator box H is ordinarily closed by the door H' when the car is running. The indicator box has a groove 34, or this may optionally be placed upon the door H'. In this groove the circuit-completing slide 35, which is in bar form of insulating material, with conductor inserts 36, may be slid, and the conductor inserts caused to register with the ends of each pair of conductor bars, thus completing the circuits. When it is desired to lock the car, the insulating bar 28 may be inserted in the groove 34 instead of the circuit-completing slide 35, and the door closed and locked with a key or otherwise. The ignition system is thus permanently interrupted until the insulating bar is removed, which cannot be accomplished without opening the box. The arrangement of the terminals and conducting bars 20 in the box H also serves another very useful purpose, for if there is trouble at any point in the ignition system, it is quickly shown on the indicator box on which circuit and with

respect to which cylinder the trouble occurs. I also find that the efficiency of the spark in the cylinder is in no way diminished by the arcing gaps, but is, on the contrary, intensified.

What I claim is:—

1. A self-starter for gas engines, having in combination with a plurality of cylinders, a fuel supply and connections therefrom with each cylinder, an ignition system for firing the cylinders, the said ignition system having electric circuits which have gaps through which the current is adapted to arc, means for preventing the current arcing said gaps when desired, means for preventing one gaining access to said last mentioned means, and means for opening said fuel connections only into one cylinder shown by the said arcing current to be ready for firing, substantially as described.

2. A self-starter for gas engines, having in combination with a plurality of cylinders, a fuel supply and connections therefrom with each of said cylinders, an ignition system for firing the cylinders, the said ignition system having electric circuits which have gaps through which the current is adapted to arc, means for opening said fuel connections only into the one cylinder shown by the said arcing current to be ready for firing, and means for connecting the terminals of each circuit forming the gaps after the engine has been started, substantially as described.

3. A self-starter for gas engines, having in combination with a plurality of cylinders, a fuel supply and connections therefrom with each cylinder, an ignition system for firing the cylinders, the said ignition system having electric circuits which have gaps through which the current is adapted to arc, means for opening said fuel connection only into the one cylinder shown by the said arcing current to be ready for firing, means for preventing the current arcing said gaps, means for preventing access to said last mentioned means, and means for connecting electrically the terminals forming said gaps after the engine has been started, the said last mentioned means being interchangeable with the means preventing arcing on said gaps, substantially as described.

4. In a self-starter for gas engines, the combination of a plurality of cylinders, an ignition system therefor comprising a circuit connecting with each cylinder, each circuit having a gap adapted to be arced by the current whereby the cylinder ready for firing is indicated, means for furnishing a charge to said one cylinder ready for firing and a circuit completing bar adapted to be inserted between the terminals of each circuit and complete the said circuits after the engine has been started, substantially as described.

5. In a self-starter for gas engines, a plurality of cylinders, an ignition system having spaced terminals for each circuit, adapted to allow an arcing of the current at the gap of the circuit connecting the cylinder ready for firing, means for introducing a charge into such cylinder alone, an insulating bar adapted to be inserted in said gaps, and means for locking said insulating bar in place, substantially as described.

6. In a self-starter for gas engines, the combination of a plurality of cylinders, an ignition system therefor comprising a circuit connecting with each cylinder, each circuit having a gap adapted to be arced by the current, whereby the cylinder ready for fir-

ing is indicated, means for furnishing a charge to said one cylinder ready for firing, an insulated bar adapted to be inserted in the gaps in the ignition circuits, means for locking said ignition bar in place, and a circuit-completing bar adapted to be interchanged with said insulation bar, thereby adapted to complete the ignition circuits when the engine is running, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

FREDERICK G. S. HEWITT.

Witnesses:

STUART C. BARNES,
VERA PILLMAN.

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