

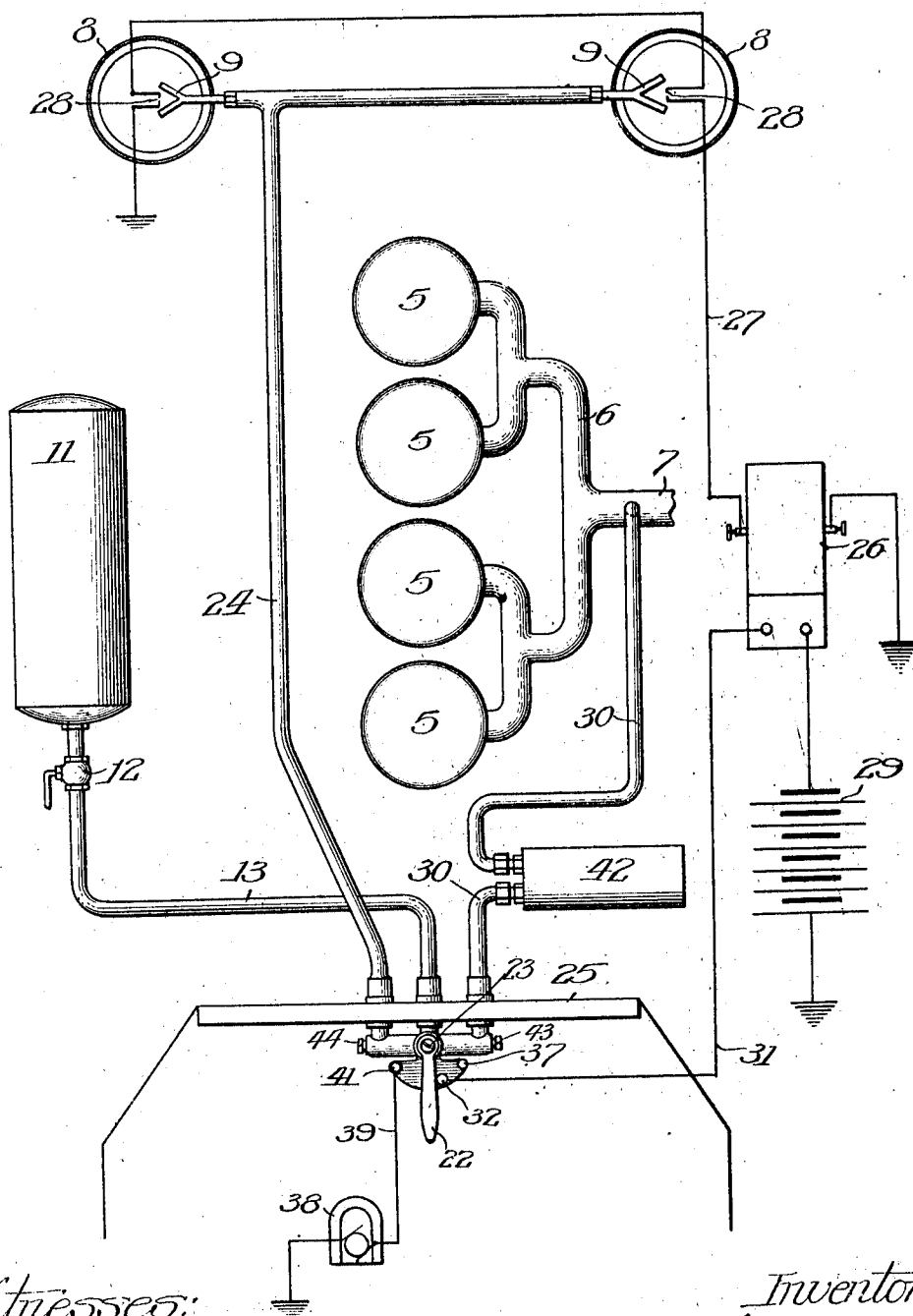
W. G. WORDINGHAM.
 AUTOMATIC STARTER AND LIGHTER FOR AUTOMOBILES.
 APPLICATION FILED NOV. 8, 1911.

1,031,308.

Patented July 2, 1912.

2 SHEETS-SHEET 1.

Fig. 1



Witnesses:
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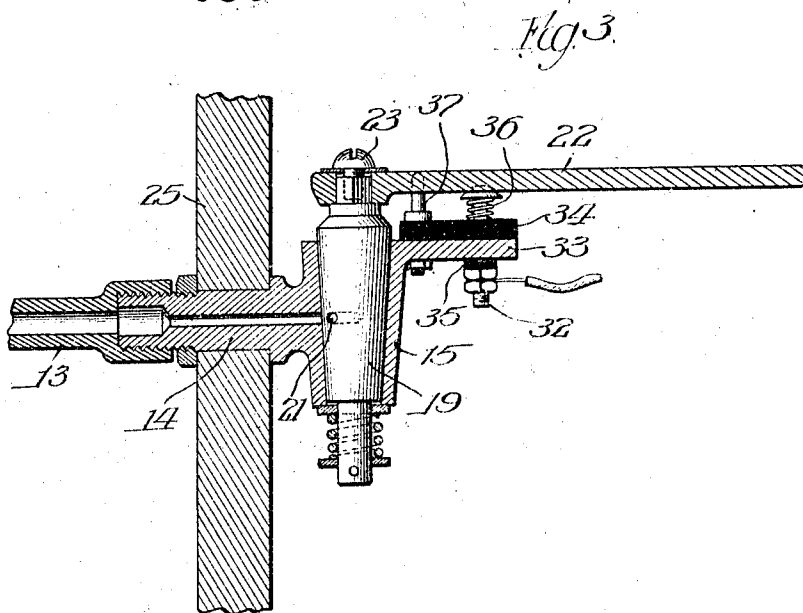
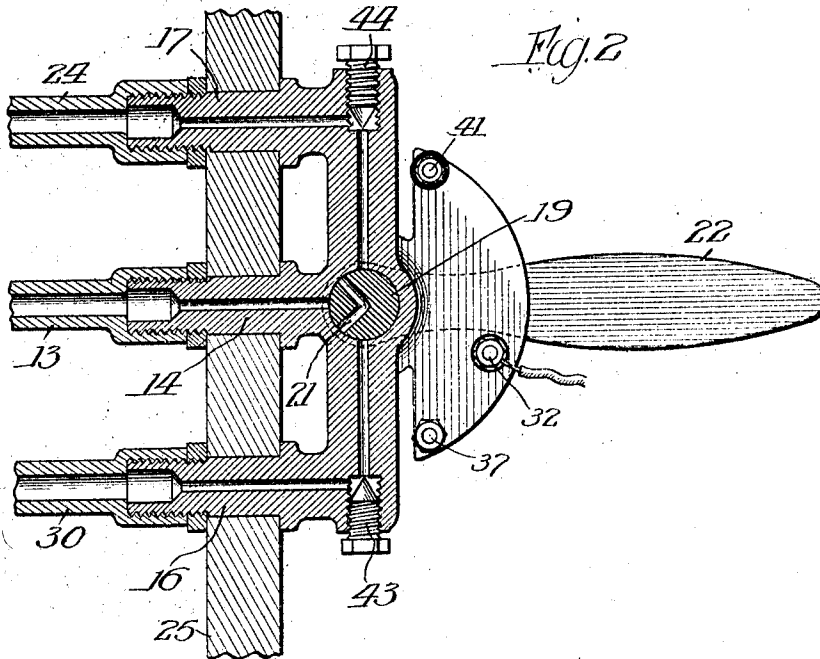
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 William G. Wordingham
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UNITED STATES PATENT OFFICE.

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AUTOMATIC STARTER AND LIGHTER FOR AUTOMOBILES.

1,031,308.

Specification of Letters Patent.

Patented July 2, 1912.

Application filed November 8, 1911. Serial No. 659,082.

To all whom it may concern:

Be it known that I, WILLIAM G. WORDINGHAM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Automatic Starters and Lighters for Automobiles, of which the following is a specification.

My present invention relates in general to improvements in automobiles and more particularly to a system by means of which the engine may be started without cranking and the lamps may be lighted by the driver without leaving his seat.

One of the principal objects of the invention is the provision of a system of the general character indicated which will be entirely controlled by the manipulation of a single lever, the system being so constructed and arranged that when the lever is moved in one direction gas will be turned on to the lamps and a spark will be produced to ignite the lamp burners and when turned in the opposite direction gas will be admitted to the engine cylinders and the sparking within the cylinders will be stopped thus permitting the cylinders to fill with gas so that the engine may be started when desired by simply turning on the spark.

My invention will be best understood by reference to the following description when considered in connection with the accompanying drawings illustrating one practical form of the invention.

Referring to the drawings—Figure 1 is a diagrammatic view of a system embodying my invention. Fig. 2 is a longitudinal sectional view of the controlling device; and Fig. 3 is a transverse sectional view taken through the center of the device shown in Fig. 2.

On the drawings, 5 represents the cylinders of an explosive engine of any preferred type or construction, the engine in the present instance being of a 4-cylinder type, but will be apparent as the invention is more fully understood that any number of cylinders may be employed and that the particular type or character of the explosive engine is immaterial so far as the present invention is concerned. The cylinders receive their explosive mixture through the manifold 6 from supply pipe 7 connected with a carburetor in the usual and well known manner. The lamps 8 may be of any preferred type or con-

struction but I have shown them provided with forked burners 9 such as are commonly employed in acetylene lamps in use at the present time.

Instead of being supplied with acetylene generators to generate acetylene gas for the lamps many automobiles are equipped with a storage tank in which a quantity of acetylene gas is stored under pressure. Such a pressure tank is shown on the drawings at 11. Ordinarily this tank is connected directly with the lamps, the flow of gas to which is controlled by an ordinary shut off cock 12. My present invention aims to utilize the gas from this tank not only for lighting purposes but for starting the engine and to this end I have connected the tank by a pipe 13 to the central branch 14 of a valve casing 15 having also a pair of outlet branches 16 and 17 which are connected respectively with the lamps and the engine manifold.

A plug valve 19 is positioned in the valve casing at the juncture of the passages leading to the branches 14, 16 and 17 and this valve is provided with a passageway 21, as shown in Fig. 2, adapted when the operating handle 22 connected to the end of the plug by a screw fastening 23 is turned in one direction or the other to establish communication between the intake branch 14 and one or the other of the outlet branches 16 and 17. The branch 17 is connected through the pipe 24 with the lamps 8 and when the handle 22 is turned to the right, viewing Fig. 1, it will be obvious that communication will be established between the pipes 13 and 24 through the valve casing so that gas will be supplied to the lamps from the supply tank 11. The controlling device, consisting of the valve casing 15 and its accessories, is preferably mounted upon the dashboard 25 of the automobile where it will be readily accessible to the driver. In order that the driver may not be obliged to leave his seat in lighting the lamps and, furthermore, to insure against explosions which sometimes occur when the gas is turned on to the lamps for some time before the flame or spark is applied I have provided a lighting circuit which produces a continuous spark or a series of sparks adjacent the lamp burners prior to the admission and during the initial admission of the gas thereto. The sparking system comprises a coil 26 of usual

construction, the secondary circuit 27 of which runs through the lamps and is provided with sparking terminals 28 located adjacent the forked burners 9 and the primary circuit energized from the battery 29. One wire 31 of the primary circuit is connected with the terminal 32 carried by the disk 33 preferably formed integral with the valve casing 15. The terminal 32 is insulated from the disk by suitable insulation-strips 34 and 35 and the terminal stud is normally held in the elevated position shown in Fig. 3 by the coil expansion spring 36. The upper end of the stud is rounded as shown and normally extends up sufficiently into the path of the operating lever 22 so that when said lever is moved across the top of the stud contact is made which closes the primary circuit and causes a prolonged and continuous sparking at the spark points 28 of the secondary circuit. An abutment or pin 37 limits the movement of the operating lever to a position where the passageway 21 in the valve is in full communication with the branch 14 and the branch 17.

When it is desired to turn on the lights the operating lever 22 is moved slowly toward the right, viewing Fig. 1. The handle will contact with the rounded upper end of the stud 32 before communication is established between the pipes 13 and 24 and a continuous spark will be produced in the lamps beginning prior to the admission of gas thereto and continuing until the gas is nearly fully turned on. The lamps will thus be lighted as soon as the gas begins to flow thereto and any possibility of an accumulation of gas in the lamps which might result in an explosion is precluded. When the lever is thrown to full position against the stud 37 it will have passed beyond the terminal stud 32 and while the lamps are burning no sparking will take place at the terminals 28 since the primary circuit is opened as soon as the handle passes beyond the terminal stud 32.

The branch 16 of the valve casing is connected with the manifold of the engine cylinders by a pipe 30 so that when the operating handle 22 is moved to the left, viewing Fig. 1, communication will be established between the supply pipe 13 leading from the gas tank and the pipe 30, thereby permitting the gas to flow directly to the manifold 6 and into the engine cylinders. The sparking magneto 38 is connected with the spark plugs of the cylinders in the usual way, but from one of the armature brushes I have run a connecting wire 39 to the terminal 41 mounted on but insulated from the disk 33. It will be evident that when the operating handle 22 is thrown into contact with the terminal 41 the magneto will be grounded through the machine body and the sparking in the cylinders will be stopped. When it is desired to shut down the engine the gasoline

is shut off in the usual manner and the lever 22 is then moved to the left, viewing Fig. 1, into contact with the terminal 41. When the handle is in this position the magneto is grounded and sparking in the cylinders is stopped and gas is admitted from the supply tank 11 through the pipes 13 and 30 to the engine manifold from whence it is drawn into the cylinders as the engine continues to turn over a few times under its own inertia. When the engine finally stops the cylinders will have more or less acetylene gas in them which has been supplied from the tank 11 depending upon the position of the pistons therein. One at least will contain the gas under compression and when the spark is turned on in the usual manner an explosion will occur in this cylinder which will start the engine whereupon explosions will follow consecutively in the other cylinders to speed up the engine sufficiently to draw the mixture from the carbureter.

In order that a sufficient quantity of gas may be supplied to promulgate series of explosions in the cylinders I have provided an auxiliary storage chamber or tank 42 which is interposed in the pipe 30. This chamber will be filled when gas is admitted from the main tank 11 to the cylinders and, when the engine begins to move upon starting, the accumulated gas in the chamber will be drawn into the cylinders to speed up the engine. It will be understood that communication is established between the supply pipe 13 and the pipe 30 leading to the cylinders only when the engine is dying down and that after the engine is stopped the lever is thrown back to the normal position shown in Figs. 1 and 2, shutting off the gas supply or, if desired, it may be thrown to lighting position so that the lamps can be left burning. For the purpose of regulating the amount of gas which will be permitted to flow from the tank 11 to the lamps and to the cylinders I have provided adjusting valves 43 and 44 in each end of the valve casing which may be threaded into or out of the casing to reduce or enlarge, as desired, the passageways leading to the branches 16 and 17.

It is believed that my invention will be understood from the foregoing without further description and it will be manifest that I have provided a system in which the engine can be started by simply turning on the spark in the usual manner and by means of which the lamps can be lighted or extinguished at will, all of these operations being controlled from a single operating lever positioned within easy reach of the driver. While I have shown and described a preferred embodiment of my invention it will be obvious that various changes in the structural details of the form illustrated may be resorted to without departing from 130

the spirit of the invention or sacrificing any of the material advantages thereof.

I claim:

1. Means for controlling the supply of
5 gas to points of use and for controlling
sparkling at such points of use, including a
valve casing having an inlet adapted for
connection with a gas supply, two outlets
adapted for connection with different
10 points of use, a turning plug controlling the
inlet and outlets, a crank arm carried by the
turning plug and constituting a switch
member, and two insulated terminals carried
by the casing and in the path of the
15 switch member, one terminal being disposed
for contact by the switch member when one
of the outlets is open, and the other terminal
being disposed for engagement by
the switch arm before and during the initial
20 opening only of the other outlet, substantially
as and for the purpose described.

2. The combination with a gas supply,
points of use in communication with the gas
supply, each point of use having a sparking
25 device, of a single controller for establishing
communication between the gas supply and one
point of use and cutting off communication between
the gas supply and the other point of use, and for
30 energizing the sparking device at one point of

use when such point of use is in communication
with the gas supply, and for de-
energizing the sparking device at the other
point of use when said point of use is in
communication with the gas supply, substantially
as described. 35

3. The combination with a gas supply,
points of use in communication with the gas
supply, each point of use having a sparking
40 device, and an electric circuit for each
sparkling device, of a single controller for
establishing communication between the gas
supply and one point of use and cutting off
communication between the gas supply and
the other point of use, said controller having
45 a switch member, and insulated terminals,
one of the terminals and the switch being
included in one of the electric circuits,
whereby such circuit may be closed when
the switch is in engagement with said terminal,
50 and a shunt connection between the
other terminal and the other electric circuit,
whereby said other electric circuit may be
shunted from its sparking device when the
switch is in engagement with said terminal. 55

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Witnesses:

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