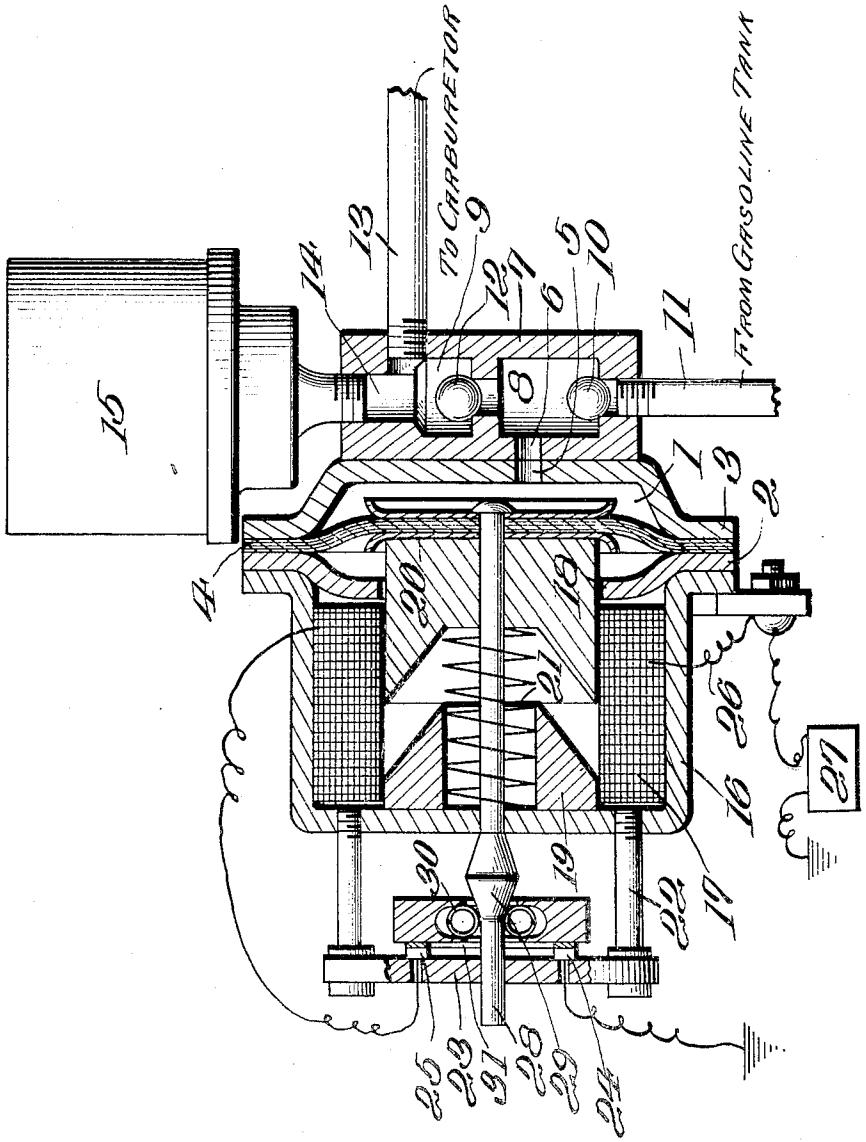
Nov. 26, 1929. A. G. REDMOND 1,737,389

ELECTRIC MOTOR

Filed May 18, 1925



Inventor

A. G. REDMOND

By

Attorney

Patented Nov. 26, 1929 1,737,389

UNITED STATES PATENT OFFICE

ALBERT G. REDMOND, OF FLINT, MICHIGAN, ASSIGNOR TO MARVEL CARBURETER COMPANY, OF FLINT, MICHIGAN, A CORPORATION OF DELAWARE

ELECTRIC MOTOR

Application filed May 18, 1925. Serial No. 31,081.

This invention relates to fuel feeding systems for motor vehicles for feeding fuel from a low level tank to the carbureter of the internal combustion engine, the object being to provide a fuel feeding system which can be readily installed on any of the well known types of motor vehicles now in use whereby a constant supply of fuel will be supplied to the carbureter under all conditions of the engine, thereby overcoming the difficulties now existing with the vacuum type of fuel feeding systems.

Another object of my invention is to provide a fuel feeding system in which a diaphragm pump is employed having a solenoid for operating the same so constructed that the movement of the diaphragm automatically makes and breaks a circuit so as to energize and deenergize the solenoid.

A further object of my invention is to provide a novel form of circuit maker and breaker whereby a positive action is obtained so as to make and break the circuit at the proper time in respect to the movement of the piston.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claim.

In the drawing I have shown a vertical section, partly in elevation, of my improved construction of pump used in connection with fuel feeding systems, wherein a pump chamber 1 is formed by a pair of discs 2 and 3 between which is arranged a flexible diaphragm 4 preferably formed of a series of discs of fabric, said pump chamber having an opening 5 registering with an opening 6 leading into a valve casing 7 which is provided with superposed chambers 8 and 9.

The chamber 8 is provided with an inlet valve 10 and has extending therefrom a pipe 11 from the gasoline tank which is preferably arranged on the rear of the motor vehicle. The chamber 9 is provided with a valve controlled inlet 12, the valves 10 and 12 forming the usual check valves used in connection with pumps so that fuel will be drawn into the chamber 7 on the suction stroke and discharged from the chamber 9 through an outlet pipe 13 on the discharge stroke, said pipe 13 leading to the carbureter of the internal combustion engine used in connection with the motor vehicle.

The chamber 9 is provided with an additional outlet 14 which communicates with an air chamber 15 for maintaining the fuel at a constant pressure as it is delivered to the charge forming device.

Arranged to the rear of the disc 2 is a casing 16 in which is arranged a coil 17 forming a solenoid having a movable core 18 and a stationary core 19, the movable core 18 being connected to the flexible diaphragm 4 by discs 20 arranged upon the opposite face of the diaphragm. The movable core and stationary core 18 and 19 have their opposing faces shaped to receive one another, the stationary core being conical and the movable core having a conical socket and the stationary core is provided with a bore in which is arranged a coil spring 21 for forcing the diaphragm to the right after it has been drawn to the left by the solenoid so that after the suction stroke has been made and the circuit is broken, the spring will force the diaphragm so as to discharge the fuel drawn into the chamber 1 to the carbureter.

Extending outwardly from the end of the casing 16 is a pair of posts 22 carrying a fiber disc 23 provided with contacts 24 and 25 arranged in electric circuit 26 which has its source of energy in the form of the usual battery 27 so that when the circuit is completed between the contacts 24 and 25, the solenoid will be energized so as to attract the movable core towards the fixed core which produces the suction stroke. When the circuit is broken, the spring 21 forces the diaphragm to discharge the liquid out of the chamber through the medium of the inlet and outlet check valves and the gasoline from the low level tank is drawn upwardly and forced into the carbureter.

In order to provide means for closing the circuit by the movement of the diaphragm, I secure to the disc 20 carried by the diaphragm a rod 28 which is provided with a double conical portion 29 adapted to work

through an opening formed in the disc 30, said opening being surrounded by a coil spring ring so that as the double conical portion works backwards and forwards by the movement of the diaphragm, the member 30 is moved back and forth. The member 30 carries a silver ring 31 which engages the contacts 24 and 25 so as to complete the circuit between said contacts and it will be seen that when the diaphragm is in the position shown in the drawing, which is at the end of the discharge stroke of the pump, the contacts will be completed so as to energize the solenoid which draws the diaphragm to the left carrying with it the rod 28 so as to force the double conical portion through the opening 30 which causes the member 30 to move to the right so as to break the circuit between the contacts 24 and 25.

When the circuit is broken, the solenoid is deenergized so as to allow the spring 21 to force the diaphragm to the right so as to discharge liquid out of the chamber 1. This movement is repeated as long as the fuel is consumed by the carbureter and the spring 21 is of such a strength that it does not overcome the action of the float in the bowl of the charge forming device. This prevents the pump from operating when the fuel is not being consumed as the back pressure holds the diaphragm to the left until the pressure is reduced.

From the foregoing description it will be seen that I have provided a novel pump for a fuel feeding system for internal combustion engines wherein the movement of the diaphragm is controlled by the amount of fuel consumed.

What I claim is:—

A motor comprising a casing, a solenoid having a movable and a fixed core, an electric circuit including a pair of spaced fixed contacts, a source of energy, a rod having a double conical portion, a movable member mounted on said rod having a contact in the form of a ring secured to one face of said member and adapted to engage the fixed contact, a pair of members projecting from said casing, a fiber disc carried by said member for supporting said fixed contacts, said movable member having an opening surrounded by a coiled wire spring adapted to ride over said double conical portion thereof to intermittently make and break said electric circuit for energizing and deenergizing said solenoid.

In testimony whereof I hereunto affix my signature.

ALBERT G. REDMOND.

CERTIFICATE OF CORRECTION.

Patent No. 1,737,389. Granted November 26, 1929, to

ALBERT G. REDMOND.

It is hereby certified that the State of Incorporation of the assignee in the above numbered patent was erroneously given as "Delaware", whereas said State should have been given as "Indiana", as shown by the records of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of January, A. D. 1930.

M. J. Moore,
Acting Commissioner of Patents.

(Seal)

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