L. WHITCOMB.

CONTROLLING MECHANISM FOR MOTOR VEHICLES.

APPLICATION FILED MAR. 15, 1909.

959,087.

Patented May 24, 1910.

3 SHEETS—SHEET 1.

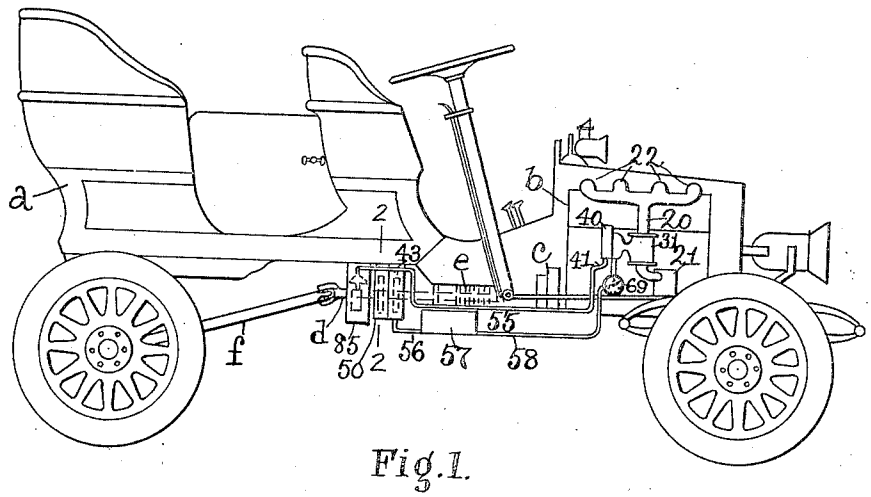

Fig. 1.

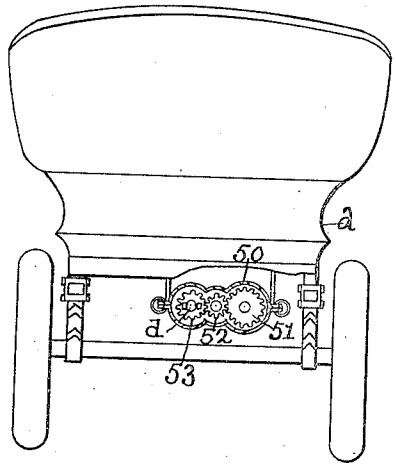

Fig. 2.

Witnesses.
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Inventor:
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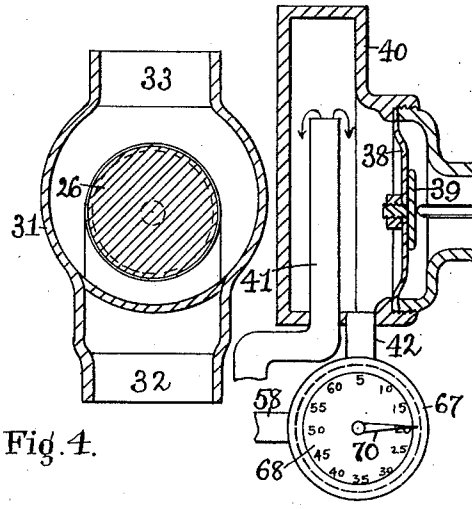

Fig. 4.

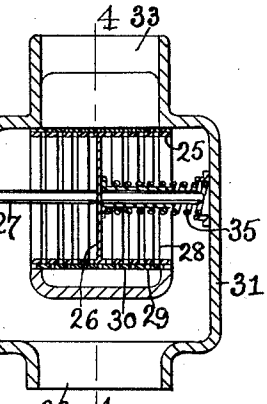

Fig. 3.

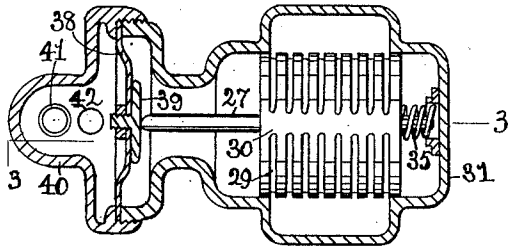

Fig. 5.

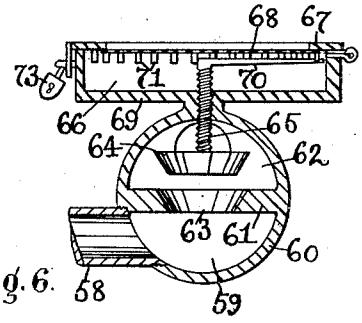

Fig. 6.

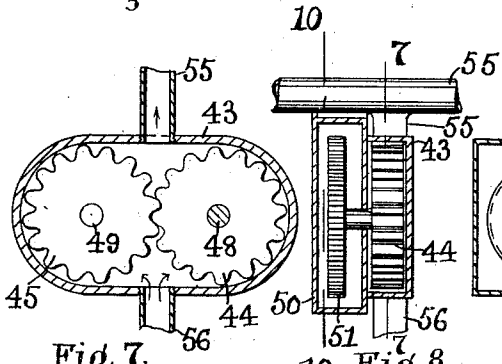

Fig. 7.

10 Fig. 8.

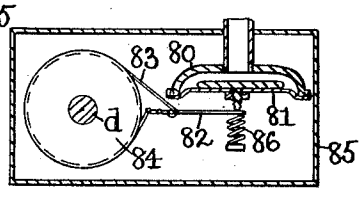

Fig. 9.

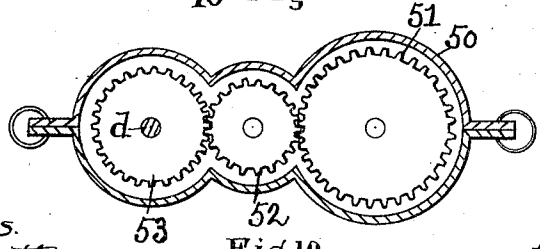

Fig. 10.

Witnesses.
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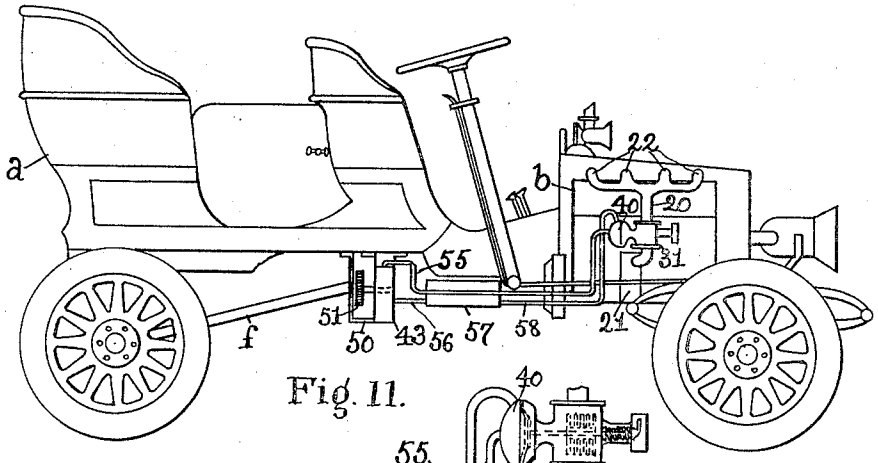

Fig. 11.

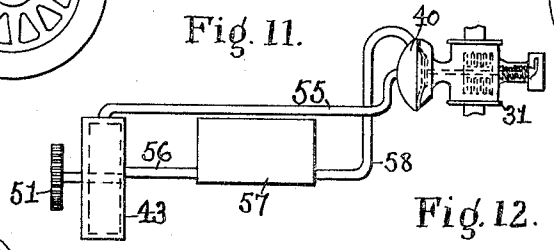

Fig. 12.

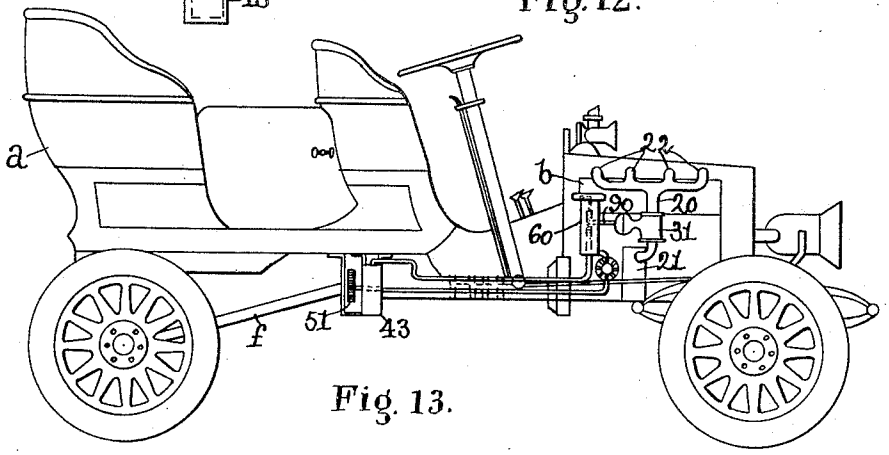

Fig. 13.

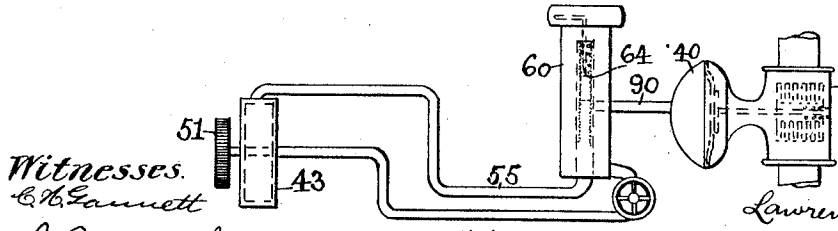

Fig. 14.

Witnesses.
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UNITED STATES PATENT OFFICE.

LAWRENCE WHITCOMB, OF BROOKLINE, MASSACHUSETTS.

CONTROLLING MECHANISM FOR MOTOR-VEHICLES.

959,087. Specification of Letters Patent. Patented May 24, 1910.

Application filed March 15, 1909. Serial No. 483,470.

To all whom it may concern:

Be it known that I, LAWRENCE WHITCOMB, a citizen of the United States, residing in Brookline, county of Norfolk, and State of Massachusetts, have invented an Improvement in Controlling Mechanism for Motor-Vehicles, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to motor vehicles of the explosive type and has for its object to provide novel and efficient means as will be described, for controlling the speed of the vehicle, whereby the latter is prevented from being driven at a speed in excess of a predetermined rate while leaving the motor free to develop its full capacity when the speed of the vehicle falls below the predetermined rate. For this purpose I employ a moving body of liquid, which is responsive to the speed of the vehicle and which actuates or controls the supply of gas or explosive mixture to the motor or which controls the ignition. The moving body of liquid is put in motion by the running gear of the vehicle and may be operatively connected with a throttle valve governing the supply of gas to the motor, or it may be operatively connected with a circuit controller in the igniter circuit. Provision is made for varying the maximum speed limit at which the vehicle may travel, and provision may also be made for utilizing the moving body of liquid for applying the brakes to the vehicle when the maximum speed limit is reached. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a side elevation of an automobile provided with a speed regulating mechanism embodying this invention. Fig. 2, a cross section on the line 2—2, Fig. 1, with the vehicle body in elevation. Fig. 3, a sectional detail on an enlarged scale of a throttle valve and its operating mechanism shown in Fig. 1. Fig. 4, a cross section on the line 4—4, Fig. 3. Fig. 5, a partial plan and section of the apparatus shown in Fig. 3. Fig. 6, a detail to be referred to. Figs. 7 and 8, details of the liquid pump shown in Fig. 1, Fig. 7 being a section on the line 7—7, Fig. 8. Fig. 9, a detail in section to be referred to. Fig. 10, a section on the line 10—10, Fig. 8. Figs. 11 and 12, elevations of a modification to be referred to, and Figs. 13 and 14, elevations of another modified form of apparatus.

Referring to Figs. 1 to 10, *a* represents the body of an automobile; *b*, a motor of the explosive type for propelling the same; *c*, the clutch for coupling the motor shaft not shown with a shaft *d* of the speed change gears *e*, and *f*, the driven shaft which connects the shaft *d* with the rear axles of the vehicle.

The parts as thus far described are and may be of any suitable or usual construction, such as now commonly used, and need not be specifically described as they form no part of the present invention, which is applicable to any motor vehicle employing an engine of the explosive type, and which consists in employing a moving body of liquid which is responsive to the speed of the vehicle and which controls the operation of the motor *b*.

In Fig. 1, the moving body of liquid controls a throttle valve in the gas supply pipe 20 leading from the carbureter 21 to the cylinders of the motor *b*, the pipe 20 being shown as provided with four branches 22. The throttle valve referred to, may be of any suitable construction, but in the present instance, one form, which may be preferred, is shown. Referring to Figs. 3, 4 and 5, the throttle valve is shown as a hollow piston valve 25 provided with a central wall or partition 26 through which is extended a piston rod 27, the said piston having a series of ports 28 in its circumference, which are adapted to register with corresponding ports 29 in a cylindrical shell or sleeve 30 located in a valve casing or fitting 31 provided with a gas inlet port 32 and with a gas outlet port 33. The inlet port 32 is connected with the carbureter 21, and the outlet port 33 is connected with the gas inlet pipe 20 leading to the cylinders of the motor. The valve shell or sleeve 30 is fixed within the casing 31 and is open at its ends, and the hollow piston valve is also open at its ends, so that gas can pass into the valve from the casing 31 at all times and pass to the motor when the ports 28 in the valve register with or uncover the ports 29 in the shell 30. The valve 25 is acted upon by a spring 35 so as to open the ports 29 and supply gas to the motor as long as the speed of the vehicle is below the maximum set as determined upon by the owner or other person. The valve 25 is moved to close the ports 29 and shut off the

supply of gas to the motor, when the speed of the vehicle reaches the maximum determined upon, and for this purpose, the valve stem or rod 27 coöperates with a diaphragm 38 of leather or other suitable material, which may be provided as shown with a metal bearing plate or button 39, and which is interposed between the casing or fitting 31 and a liquid containing chamber or well 40, herein shown as in screw-threaded engagement with the valve fitting or casing 31. The liquid chamber or well 40 may be designated a pressure chamber, which is provided with a liquid inlet pipe 41 extended up into it, and with a liquid outlet pipe 42 leading from the bottom of the pressure chamber, the said pipes communicating with a liquid pump, which is operatively connected with the running gear of the vehicle to be driven thereby only when the vehicle is in motion. In the present instance, one form of liquid pump is shown, which comprises a casing 43 containing two intermeshing gears or bucket wheels 44, 45, (see Fig. 7), which are mounted upon suitable shafts 48, 49, within the casing, one shaft as 48 being extended through one side of the casing 43 into a second casing 50, wherein it has mounted on it a gear 51 in mesh with a gear or pinion 52, which in turn meshes with a gear 53 fast on the driven shaft *d*, (see Figs. 2 and 10). The pump casing 43 is provided with an outlet pipe 55, which is extended to the pressure chamber and is connected with or forms part of the liquid inlet pipe 41 therefor. The pump casing 43 is provided with a fluid inlet pipe 56, which in the present instance is connected with a liquid supply tank or reservoir 57 (see Fig. 1), which is connected by a pipe 58 with the outlet chamber 59 of a regulating device shown separately in Fig. 6, and consisting of a casing 60 having a partition wall 61 forming the outlet chamber 59 and an inlet chamber 62, which are adapted to be connected by a port 63 in the partition wall 61, with which coöperates a valve 64. The inlet chamber 62 has connected with it the outlet pipe 42 for the pressure chamber 40. The valve 64 is provided as shown with a threaded stem 65, which is extended through the casing 60 and into a chamber 66 having a removable wall or cover comprising a metal ring 67 and a glass disk 68, through which numbers on the bottom 69 of the chamber and indicative of speed units, such as miles, may be seen. The valve stem 65 has attached to it a handle or pointer 70, which registers with the numbers referred to and which may coöperate with studs or pins 71 depending from the ring 67 and forming locking devices for the said pointer or handle to retain the latter and the valve 64 in their adjusted positions for a purpose as will be described. By turning the handle 70, the valve 64 may be moved toward or from the port 63 so as to restrict or enlarge the flow of liquid through the port and thereby increase or decrease the pressure of the liquid in the chamber 40 upon the diaphragm 38, with the corresponding result of diminishing or increasing the amount of gas supplied to the engine. The cover of the chamber 66 in which the regulating apparatus is located may be sealed or locked to unauthorized persons, including the chauffeur, by means of a lock 73, which may be of any suitable or desired construction.

In the arrangement of the apparatus herein shown, the valve 25 is represented as independent of the usual throttle valve not shown, but which is under the control of the operator of the vehicle, and when the vehicle or car is at rest, the valve 25 is opened wide by the spring 35.

When the car is in motion, the liquid pump is driven from the running gear of the vehicle and takes the liquid from the supply tank 57 and forces it into the pressure chamber 40, from which it passes through the pipe 42 into the chamber 62 of the regulator, and if the valve 64 is open, said liquid passes through the port 63, chamber 59, and pipe 58, back to the supply tank or reservoir 57. By varying the position of the valve 64 with relation to the port 63, the circulation of the liquid may be varied so that more or less liquid accumulates in the pressure chamber 40 and the pressure of the same upon the diaphragm is varied, so that the valve 25 is operated to supply more or less gas to the engine according to the maximum speed it is desired the vehicle should travel. For instance, let it be supposed, that it is desired to limit the maximum speed of the vehicle to twenty miles an hour. In this case, the owner of the vehicle or other authorized person sets the handle or pointer to register with the number 20 of the regulator. This movement of the handle causes the valve 64 to be moved with relation to the port 63, so as to restrict the flow of the liquid through the regulator and cause the liquid to accumulate in the chamber 40, until such pressure has been increased sufficiently to move the diaphragm 38 and the valve 25 so as to diminish the supply of gas to the motor to such extent as will prevent the speed of the vehicle exceeding the maximum set, say twenty miles per hour, and if desired, the valve 25 may be entirely closed at such time. When the speed of the vehicle drops below the maximum, the pressure in the chamber 40 diminishes, and allows the spring 35 to move the valve 25 in the opposite direction and increase the supply of gas to the motor.

While the vehicle is traveling below the maximum speed, the operator is free to develop the full power of the motor if desired, as for instance in climbing hills or traveling

over sandy roads. The spring 35 may be of such strength as will hold the valve 25 wide open until the vehicle is traveling at the maximum speed, at which time, the pressure in the chamber 40 has increased sufficiently to overcome the spring and completely cut off the motor from the gas supply, or if desired the spring 35 may be adjusted to permit of a gradual closing of the valve 25. If desired the liquid pressure may also be utilized to apply a brake to stop the vehicle when the maximum speed limit is reached, which may be accomplished as herein represented, by connecting the pipe 55 with a chamber 80 (see Figs. 1 and 9), having a diaphragm 81, which acts on a lever 82 connected with a band brake 83, which engages a brake-wheel 84 fast on the driven shaft *d*. The brake band 83 and its operating mechanism may be located in a suitable case 85. When the fluid pressure reaches the point at which the valve 25 is closed, it may be sufficient to actuate the diaphragm 81 and apply the brake 83 to the wheel 84, and when the pressure is reduced, the brake may be released by the spring 86 acting on the sleeve 82.

From the above description, it will be seen that simple and efficient means are provided for controlling the motor by the speed of the vehicle, so that the latter can be taken out of the control of the operator when it attains a predetermined maximum limit.

In Fig. 1, I have shown one construction of apparatus in which a moving body of liquid is responsive to the speed of the vehicle, but it is not desired to limit the invention to the particular construction shown. So also the pump for the liquid is shown as connected with the driven shaft *d*, but it is not desired to limit the invention in this respect, as it may be driven from some other part of the running gear of the vehicle, such, for instance, as the front wheel.

In Figs. 1 and 3, I have shown one form of pressure chamber, in which the inlet pipe therefor is extended up into the same in the nature of a stand pipe and the liquid overflows the same into the pressure chamber wherein it accumulates, but it is not desired to limit the invention in this respect, as the inlet pipe 42 may be connected with the pressure chamber, so that the liquid circulates therethrough after the manner represented in Figs. 11 and 12. So also, the pressure chamber may be separate from the diaphragm-containing-chamber and connected with the latter by a pipe 90, as represented in Figs. 13 and 14.

In the arrangement shown in Figs. 13 and 14, the regulator is shown as located in the chamber 40 and consists of the valve 64 in the form of a piston or plunger, which cooperates with a plurality of ports 63 in the upper end of the stand-pipe 41.

In all the arrangements of apparatus herein shown, it will be seen that a body of liquid is moved in response to the speed of the vehicle and controls the motor to render the latter ineffective to propel the vehicle beyond a predetermined limit.

In the present instance, the moving body of liquid controls the supply of gas to the motor, and while this arrangement may be preferred, it is not desired to limit the invention in this respect, as the body of liquid may be used to operate a suitable circuit controller in the ignition circuit.

Claims.

1. In a motor vehicle, in combination, a motor of the explosive type, mechanism driven by said motor for propelling the vehicle, means to operatively connect and disconnect said mechanism with and from said motor, a valve to control the supply of explosive medium to said motor, a chamber containing a diaphragm operatively connected with said valve, a liquid pump driven by said mechanism and actuated only when the vehicle is in motion and connected with said chamber to create a pressure upon said diaphragm by a moving body of liquid, and means for regulating the liquid pressure upon said diaphragm to operate said valve and control said motor when the speed of the vehicle reaches a predetermined point, substantially as described.

2. In a motor vehicle, in combination, a motor of the explosive type, mechanism driven by said motor for propelling the vehicle, means to operatively connect and disconnect said mechanism with and from said motor, a valve to control the supply of explosive medium to said motor, a chamber containing a diaphragm operatively connected with said valve, a liquid pump driven by said mechanism and connected with said chamber to create a pressure upon said diaphragm by a moving body of liquid, means for regulating the liquid pressure upon said diaphragm to operate said valve and control said motor when the speed of the vehicle reaches a predetermined point, a brake, and a diaphragm operatively connected with said brake and responsive to pressure of the said moving body of liquid, substantially as described.

3. In a motor vehicle, in combination, a motor of the explosive type, mechanism driven by said motor for propelling the vehicle, means to operatively connect and disconnect said mechanism with and from said motor, a valve to control the supply of explosive medium to said motor, a diaphragm operatively connected with said valve and actuated by a moving body of liquid, and means connected with the running gear of the vehicle to move said body of liquid and actuate said diaphragm to operate said valve when the speed of the

vehicle reaches a predetermined limit irrespective of the speed of the motor, substantially as described.

4. In a motor vehicle, in combination, a motor of the explosive type, mechanism driven by said motor for propelling the vehicle, means to operatively connect and disconnect said mechanism with and from said motor, a device to control said motor actuated by a moving body of liquid, and means connected with the running gear of the vehicle to move said body of liquid and actuate said device irrespective of the speed of the motor, for the purpose specified.

5. In a motor vehicle, in combination, a motor of the explosive type, mechanism driven by said motor for propelling the vehicle, means to operatively connect and disconnect said mechanism with and from said motor, a device to control said motor actuated by a moving body of liquid, means connected with the running gear of the vehicle to move said body of liquid and actuate said device irrespective of the speed of the motor, and means for varying the action of the body of liquid upon said device according to the maximum speed limit determined upon for the vehicle to travel, substantially as described.

6. In a motor vehicle, in combination, a motor of the explosive type, a valve controlling the supply of gas to said motor, a diaphragm to operate said valve, a governor means for operatively connecting the governor with the vehicle to cause the governor to respond to the speed of the vehicle at all times while the vehicle is in motion and irrespective of the speed of the motor, and means to operatively connect said governor with said diaphragm and responsive to the movement of the vehicle.

7. In a motor vehicle, in combination, an engine or motor, means to control the operation of said engine or motor, a diaphragm to actuate said means, a governor, means to operatively connect said governor with said diaphragm, and means for operatively connecting the governor with said vehicle to cause the governor to respond to the speed of the vehicle at all times while the vehicle is in motion and irrespective of the speed of the engine or motor and thereby operate said diaphragm only when the vehicle is in motion.

8. In a motor vehicle, in combination, a motor of the explosive type, running gear for said vehicle operatively connected with said motor means to control the operation of the said motor, a fluid-containing system independent of the motor, a diaphragm in said system actuated by the moving body of liquid to operate the means controlling the motor, and means connected with the running gear of the vehicle to move said body of liquid and actuate said controlling means independently of said motor.

9. In a motor vehicle, in combination, a motor of the explosive type, mechanism driven by said motor for propelling the vehicle, means to operatively connect and disconnect said mechanism with and from said motor, a device to control said motor actuated by a moving body of fluid, and means connected with the running gear of the vehicle to move said body of fluid and actuate said device irrespective of the speed of the motor, for the purpose specified.

10. In a motor vehicle, in combination, a motor of the explosive type, mechanism driven by said motor for propelling the vehicle, means to operatively connect and disconnect said mechanism with and from said motor, a valve to control said motor actuated by a moving body of fluid, and means connected with the running gear of the vehicle to move said body of fluid and actuate said valve irrespective of the speed of the motor, for the purpose specified.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

LAWRENCE WHITCOMB.

Witnesses:
JAS. H. CHURCHILL,
J. MURPHY.