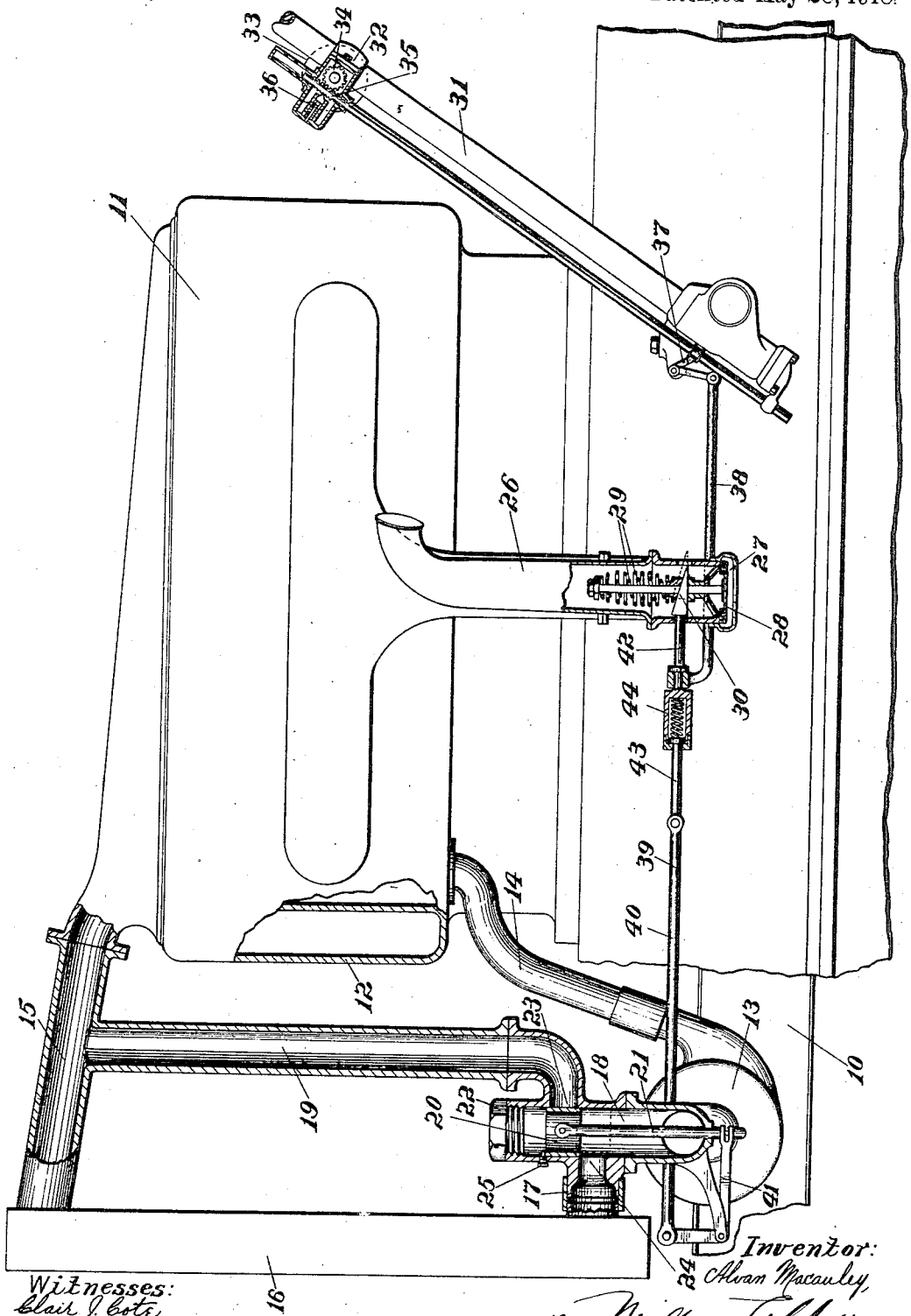
A. MACAULEY.

MOTOR VEHICLE.

APPLICATION FILED AUG. 16, 1915.

1,267,783.

Patented May 28, 1918.



Witnesses:
Blair J. Cote
A. R. Dyer

Inventor:
Alvan Macauley,
By Miller & Kettz,
Attorney.

UNITED STATES PATENT OFFICE.

ALVAN MACAULEY, OF DETROIT, MICHIGAN, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

MOTOR-VEHICLE.

1,267,783. Specification of Letters Patent. Patented May 28, 1918.

Application filed August 16, 1915. Serial No. 45,795.

To all whom it may concern:

Be it known that I, ALVAN MACAULEY, a citizen of the United States, and resident of Detroit, Wayne county, State of Michigan, have invented certain new and useful Improvements in Motor-Vehicles, of which the following is a specification.

This invention relates to motor vehicles and particularly to the motor and its control.

It is well known that hydrocarbon motors operate better when warm than when cold and that a richer mixture is required when the motor is cold than when it is warm or in normal working condition. Therefore, when a water cooled hydrocarbon motor, such as is used on motor vehicles, is started it ordinarily takes some time to warm it up and various devices are in use for temporarily adjusting the carbureter to give a mixture richer than normal to better operate the motor while it is warming up. Devices are in use also for controlling the water circulation through the cylinder jackets during the warming up process.

The present invention contemplates combining the control of the water system and the carbureter and adapting the water system and the carbureter to such combination in a novel and effective manner, and the primary object of the invention therefore, is to provide such novel combination of elements together with new and useful constructions of the individual elements that go to make up the combination.

This and other objects of the invention will appear from the following description taken with the drawings which form a part of this specification, and in which the figure is a side elevation of the front end of a motor vehicle embodying the invention.

Referring to the drawings, 10 represents one of the side members of a frame of a motor vehicle, upon which is suitably supported a motor 11. The motor shown is of the usual hydrocarbon type, having a surrounding water jacket 12 and a water circulation system comprising a pump 13, a pipe 14 leading from the pump to the water jacket 12, a pipe 15 leading to a radiator 16, and a pipe 17 leading back to the pump 13 through a valve chamber 18. There is also a by-pass 19 arranged in the water circulation system and comprising a pipe leading from the pipe 15 adjacent the upper part of the radiator 16 to the valve chamber 18.

The valve chamber 18 contains a sliding valve 20 operated by rod 21 which it will be seen extends out through the bottom of the casing. The upper part of the casing 18 is closed by a cap 22. It will be seen that the by-pass 19 connects with the valve casing 18 through a port 23 which is at a higher level or in a different zone from a port 24 which forms the inlet from the pipe 17. Thus the valve 20 is adapted to close one of said ports at a time or it may partly close both of them. Its upper position is determined by a stop 25.

26 represents the carbureter of the motor, which carbureter is provided with suitable means for varying the mixture, that is, for changing the proportion of air and gas. As shown, the auxiliary air intake 27 of the carbureter is provided with a puppet valve 28 which is spring closed as by the springs 29. Thus it will be seen that the tension of these springs determines the degree of opening of said valve by the suction of the motor, and thus determines the amount of air to be supplied to the carbureter to mix with the gasolene which enters through the usual nozzle, not shown.

The valve 28 may be adjusted, that is, the tension of its springs 29 may be adjusted, to suit various motor and climatic conditions by a wedge 30 which operates beneath the springs 29 and increases or decreases their tension as the case may be. When the tension of the springs is increased the valve 28 opens with greater difficulty and the mixture supplied by the carbureter is rich, and when the wedge 30 is drawn out and the tension on the springs thereby decreased, the mixture is rarer or contains a greater proportion of air.

Suitably mounted upon the vehicle is a steering column 31 upon which is a hand controlled device 32 comprising a hand wheel 33 which operates a pinion 34 meshing with a rack bar 35, which bar is thus adapted to be adjusted longitudinally and yieldingly held in adjusted position as by a spring pawl 36. This hand controlled device is adapted to operate or adjust the valves 20 and 28 hereinabove referred to, and for this purpose it is connected as by a bell-crank 37 and rod 38 with a sectional rod 39, which forms an interconnection be-

tween said valves 20 and 28. This rod 39 has a section 40 which connects through a bell-crank 41 with the stem 21 of the valve 20. It also comprises a part 42 formed as a rigid part of the wedge 30, and further there is a part 43, which is pivotally connected to the part 40 and has a yielding sliding joint 44 with the part 42. This joint 44 permits the simultaneous operation or adjustment of the valves 20 and 28 throughout the full range of movement of the valve 20 and then allows the wedge 30 a further range of adjustment under the springs 29 after the valve 20 has reached the stop 25.

In the drawing the parts are shown in normal operative position, that is with the motor warm and running under normal conditions. With the motor cold the hand wheel 33 would be operated to move the rod 35 upwardly and this action would bring the valve 20 down into the position in which it is shown in dotted lines and the wedge 30 would be moved into the position in which it also is shown in dotted lines. Thus the port 24 would be closed by the valve 20 and the port 23 opened so that water in the circulation system would flow through the by-pass 19 and would not pass through the radiator 16. Also the springs 29 would be at their greatest tension and practically no air could be drawn through the auxiliary air intake 27 of the carbureter so that the mixture would be very rich. Thus with the radiator cut out of action the motor would warm up very quickly when started and with the valve 28 closed the carbureter would supply a rich mixture which is best and really necessary for use in a cold motor. As the motor warmed up the operator would move the rod 35 and thereby open the port 24 and begin to close the port 23 and as soon as the motor had reached its normal condition the latter port would be fully closed and all the water would circulate through the radiator 16. Also the wedge 30 would have been withdrawn to the position in which it is shown in full lines in the drawing and if it was found that in that position the mixture was still too rich, said wedge 30 could be further moved to give additional adjustment to the springs 29 without further operation of the valve 20, the latter having reached the stop 25. In this additional movement of the wedge 30, the yielding joint 44 would permit the action described above.

It will be understood that various modifications of the invention may be made without departing from the spirit or scope thereof.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a motor vehicle, the combination with the motor having a carbureter and a water circulation system, a valve in said carbureter, and a valve in said system, of a steering column on the vehicle, and a device mounted on the steering column and accessible to the vehicle driver for adjusting both of said valves.

2. In a hydrocarbon motor, in combination, the water circulation system having a valve therein, a carbureter having a mixture control valve, and a hand controlled device for operating both of said valves.

3. In a hydrocarbon motor, in combination, the water circulation system having a valve therein, a carbureter having a mixture control valve, and a hand controlled device for opening and closing the water system valve and connected for independent adjustment of the mixture valve when the water system valve is in a given position.

4. In a hydrocarbon motor, in combination, the water circulation system having a valve therein, a carbureter having a mixture control valve, and a hand controlled device for simultaneous adjustment of both of said valves.

5. In a hydrocarbon motor, the combination with the water circulation system including a radiator, a by-pass around the radiator, a valve for said by-pass, a carbureter having a hand controlled mixture valve, and an operating connection from said by-pass valve to the carbureter mixture valve.

6. In a hydrocarbon motor, the combination with the water circulation system and the carbureter, valves in said system and carbureter, and a single hand controlled device for adjusting said valve.

7. In a hydrocarbon motor, in combination, the water circulation system having a valve therein, a carbureter having an automatic air valve, a device to control the adjustment of said air valve, and a connection from said device to the valve in said water system.

8. In a hydrocarbon motor, in combination, the water circulation system having a valve therein, a carbureter having an automatic air valve, a device to control the adjustment of said air valve, and a connection from said device to the valve in said water system for operating said latter valve throughout part of the range of adjustment of said air valve.

9. In a hydrocarbon motor, in combination, the water circulation system having a valve therein adapted to open and close a passage in said system, a carbureter having a mixture valve, and means adapted to open and close the valve in said water system and to independently adjust the mixture valve when the valve in said water system is open.

10. The combination with the water circulation system and the carbureter of a hydrocarbon motor, of valves in said system and carbureter, interconnections between said

valves, and a device for adjusting said valves, said interconnections permitting independent adjustment of one of said valves when the other valve has reached a given position.

11. The combination with the water circulation system and the carbureter of a hydrocarbon motor, of valves in said system and carbureter, a yielding connection between said valves, and a device for adjusting one of said valves through a given range, said yielding connection causing the other valve to be adjusted through part of said range and permitting it to remain stationary through the remainder of said range.

In testimony whereof I affix my signature in the presence of two witnesses.

ALVAN MACAULEY.

Witnesses:
VIVAIN SHORTT,
F. P. ROBINSON.

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