

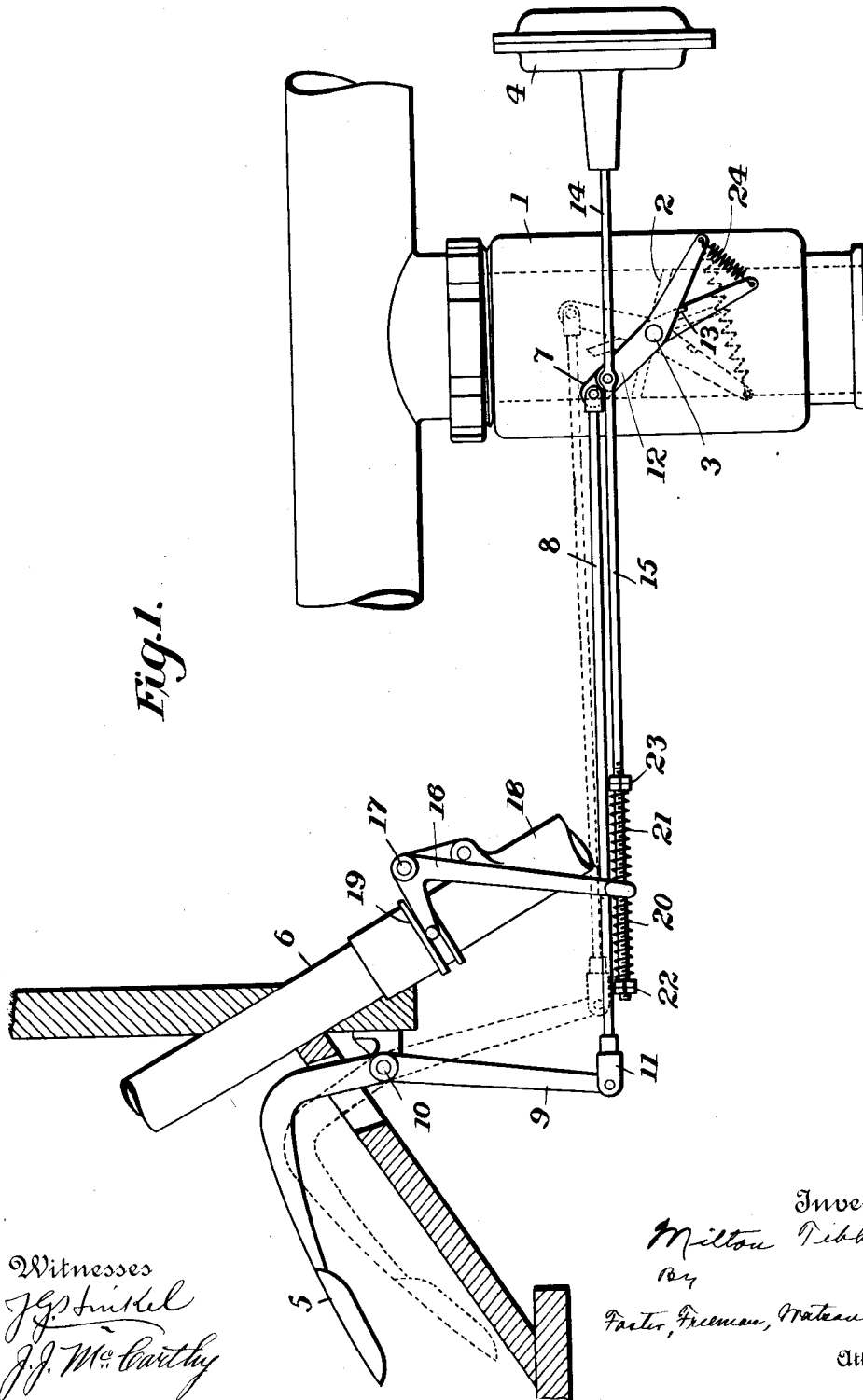
M. TIBBETTS.  
CONTROLLING MECHANISM FOR MOTOR VEHICLES.  
APPLICATION FILED FEB. 5, 1909.

Patented Mar. 11, 1913

3 SHEETS-SHEET 1.

1,055,834.

Fig. 1.



Witnesses  
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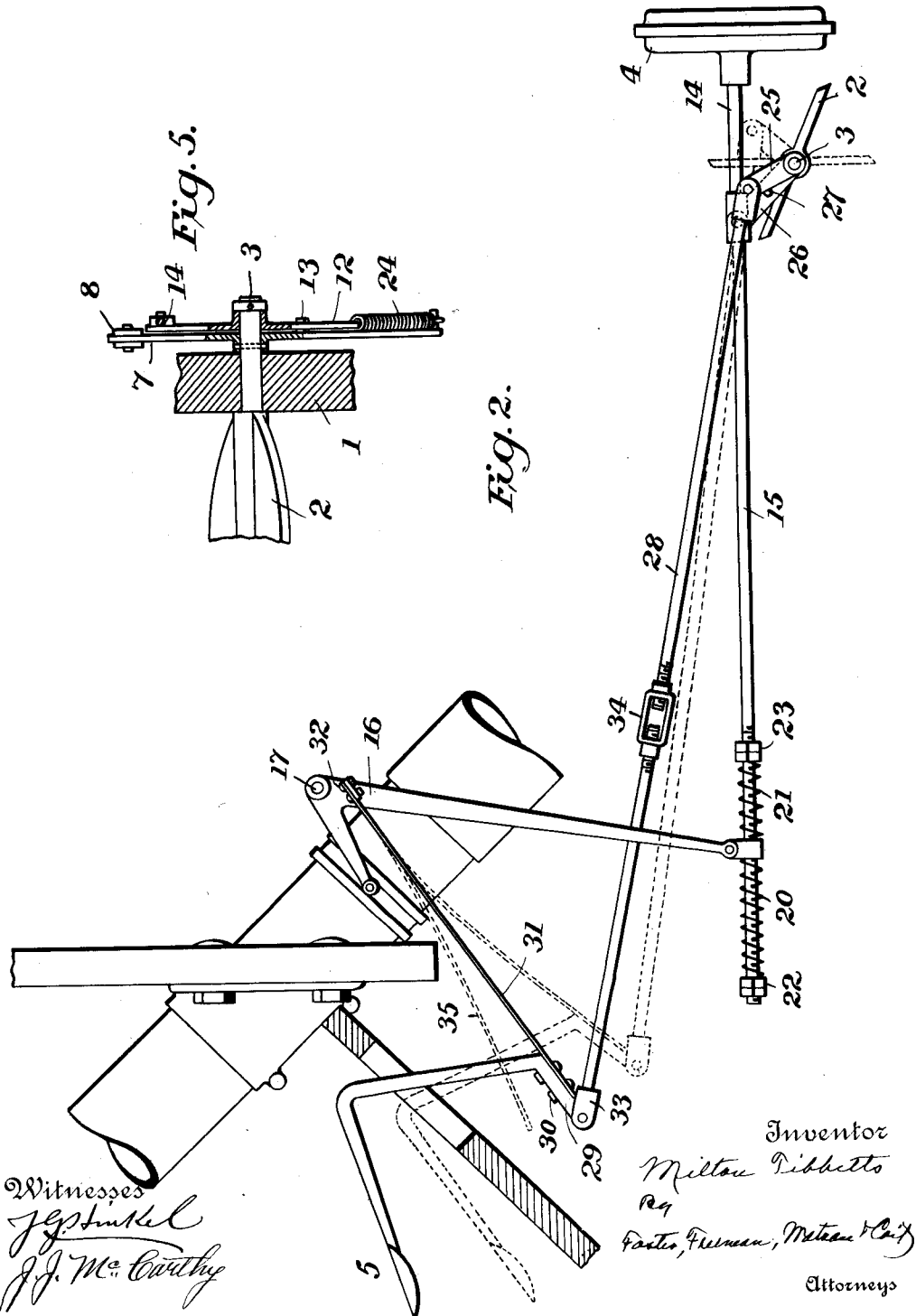
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

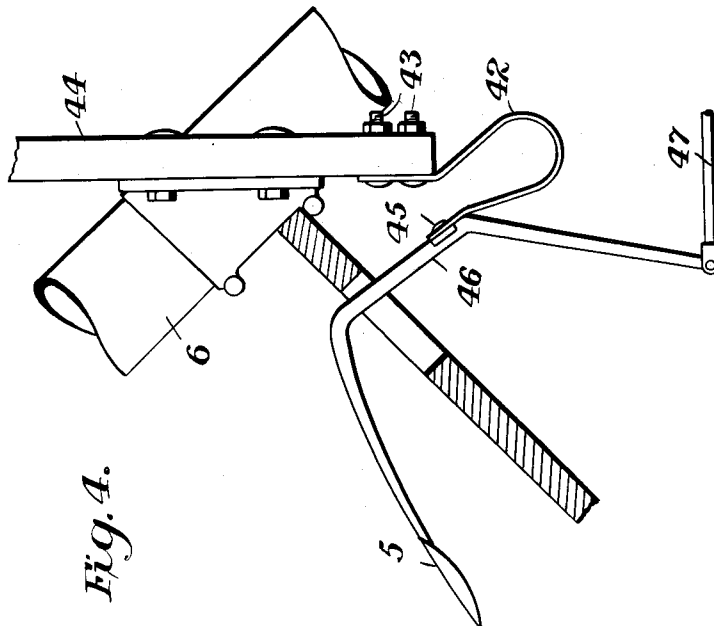


Fig. 4.

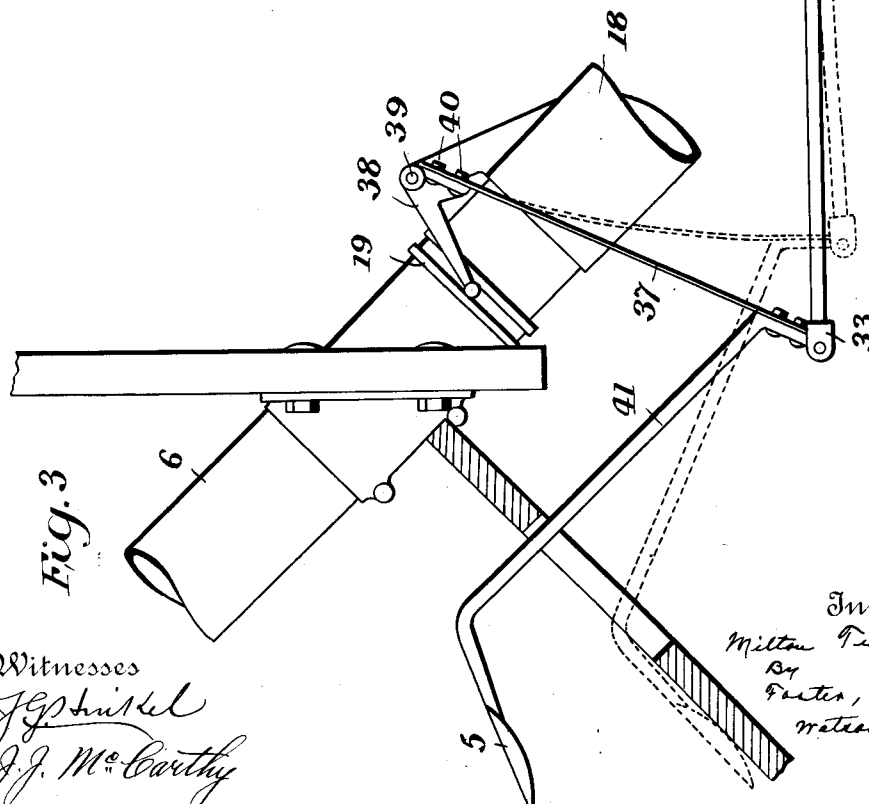


Fig. 3.

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# UNITED STATES PATENT OFFICE.

MILTON TIBBETTS, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO  
PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF  
MICHIGAN.

CONTROLLING MECHANISM FOR MOTOR-VEHICLES.

1,055,834.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed February 5, 1909. Serial No. 476,485.

*To all whom it may concern:*

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

This invention relates to the controlling mechanism of hydrocarbon engines, and has particular reference to the throttle control in motor vehicles.

It consists in novel means for supporting the various sets of operating mechanism, the means for connecting them together, and the means for connecting them to the throttle valve, whereby certain novel functions and results are secured.

As hereinafter set forth I have in the present instance applied the various features of my invention to a motor vehicle provided with an automatic governor, a hand lever and a foot lever, all adapted to operate the throttle valve in the intake pipe of the hydrocarbon motor.

It will be understood that the various features of my invention are not confined to use in the particular form and combination shown.

The novel features of the invention will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings:—Figure 1 is a side elevation of the intake pipe of a hydrocarbon motor, together with controlling devices for the throttle valve embodying some features of my invention. Fig. 2 is a side elevation of the controlling device having a slightly different arrangement. Fig. 3 is a view similar to Fig. 2 showing a different connection between the throttle valve and hand lever; Fig. 4 is a side elevation showing a modified spring support for the foot lever; and Fig. 5 is a section through the shaft of the throttle valve showing the connection of the operating arms.

Referring particularly to Fig. 1, I have illustrated the intake pipe 1 for the combustible mixture which passes to the motor, and in this pipe I have placed the ordinary butterfly throttle valve 2 upon the shaft 3 pivoted in the intake pipe 1. This throttle valve is operated by an automatic governor 4, by

a foot lever 5 called the "accelerator pedal," and by a hand lever on the top of the steering column 6. This last lever is not shown in the drawings, but will be understood by those skilled in the art. In the form shown in Fig. 1, the operating arm 7 is rigidly secured to the shaft 3 of the throttle valve on the outside of the intake pipe and the rod 8 connects this arm 7 with the downwardly depending arm 9 of the accelerator pedal 5, which is pivotally supported at 10. The connection between the rod 8 and arm 9 is made by the clevis 11 which may be made adjustable to regulate the length of the connection with the valve. An arm 12 is loosely mounted upon the shaft 3 outside of and immediately beside the arm 7, and it will be observed that the arm 7 is provided with a stop 13 which projects in the path of the arm 12, thus preventing the arm 12 from passing the arm 7 when rotating in one direction. To one end of the arm 12 is secured a rod 14 connected with the governor 4 and a rod 15 connected with the depending arm of the bell crank lever 16 pivotally mounted at 17 upon the fixed base 18 of the steering column. The bell crank lever 16 is operated by the sliding sleeve 19 carried by the steering column, and in turn operated by the hand lever at the top of the steering column through mechanism extending down within that column. The rod 15 is surrounded by coiled springs 20, 21 held in place by the adjustable nuts 22, 23, and these springs bear upon opposite sides of the depending arm of the bell crank lever 16, thus furnishing a flexible connection between the hand lever and the arm 12 of the throttle valve. The lower ends of the arms 7 and 12 are connected by a spring 24 which tends to draw those arms together and hold them in the position shown in full lines in Fig. 1, the strength of this spring being sufficient to make the fixed arm 7 and the connected throttle valve turn with the loose arm 12, unless the arm 7 is positively held against turning.

It will be observed that in the above construction the accelerator pedal 5 is rigidly connected to the throttle valve and that any motion of that pedal will be directly communicated to the valve. The governor 4 is rigidly connected to the arm 12, but that arm is not rigidly connected to the throttle

valve except when the arm 12 engages the stop 13 and the rigid connection then operates only in one direction. The connection is flexible in closing the valve by reason of spring 24 and is rigid in opening the valve after the two arms are in contact. The hand lever is flexibly connected through springs 20 and 21 to the arm 12 and consequently has no rigid connection with the throttle valve at any time. It will be observed that by this construction it is not necessary in operating the accelerator pedal 5 to overcome the force of the governor 4, tending to close the throttle valve, since such valve may be positively opened by the foot pedal without moving the governor as is clearly illustrated in dotted lines in Fig. 1, where the loose arm 12 remains stationary and the fixed arm 7 moves with relation thereto, expanding the spring 24. The only force to be overcome in this operation is the tension of the spring 24 which may be made very slight. The spring 24 should however be made sufficiently strong to return the accelerator pedal to its elevated position in case no separate spring is used for that purpose.

In the modification shown in Fig. 2 the connection between the governor and hand lever and the throttle valve is substantially the same as in the form shown in Fig. 1, but I have here shown a different means for supporting the accelerator pedal, and have shown different means for securing the spring connection between the fixed and loose arm on the throttle valve. In this instance the arm 25 is rigidly secured to the shaft 3 of the throttle valve and the arm 26 provided with a stop 27 is mounted to turn loosely upon the shaft 3 and is connected to the governor by the rod 14 and to the bell crank lever 16 by the rod 15. The rod 28 is connected to the fixed arm 25 and to the bottom portion 29 of the foot pedal 5. In this instance the foot pedal is not mounted upon a pivot, but is secured by bolts 30 to the lower end of a leaf spring 31 which spring is secured at its upper end by bolts 32 to the bell crank lever 16 near its pivot 17. The spring 31 not only supports the accelerator pedal without any pivot joint, but also performs the functions which are performed by the spring 24 in the form shown in Fig. 1. In other words the spring 31 tends to keep the arms 25 and 26 together so that the throttle valve will normally open and close as the loosely mounted arm 26 is turned. The tension of the spring 31 may be adjusted in any suitable way, such as by the adjustment of the clevis 33 upon the end of the rod 28, which changes the length of that rod, or by a turnbuckle 34 on the rod 28. In this figure of the drawings I have shown the spring 31 in dotted lines at 35, this being intended to represent the

position which the spring would occupy if it were not held flexed by its connection with the throttle valve.

In Fig. 3 I have shown a modified connection between the hand lever and the throttle valve and have used the flexible spring support for the accelerator pedal as a part of that connection. In this instance the foot pedal 5 is connected with the rod 28 in substantially the same manner as in Fig. 2, and this rod 28 is connected to the arm 36, rigidly secured to the shaft of the throttle valve. The accelerator pedal is carried by the lower end of the flexible leaf spring 37 which is secured to the bell crank lever 38 pivoted at 39 by means of the bolts 40. The bell crank lever which is operated by the hand lever at the top of the steering column 6 is not in this instance provided with a separate arm connected with the throttle valve, but the sole connection is made through the spring 37. It will be seen that a depression of the sleeve 19 by the hand lever will turn the bell crank lever 38 upon its pivot 39 and will thereby tend to move the spring 37 to the right, carrying the rod 28 with it, and turning the throttle valve upon its shaft to open it. The connection between the hand lever and the throttle valve is thus flexible and the spring 37 performs the functions, in so far as this lever is concerned, of the springs 20, 21 in the form shown in Fig. 1. In order to secure proper leverage I prefer to arrange the spring 37 more nearly vertical than the spring 31 in the form shown in Fig. 2, and for that purpose provide the foot pedal 5 with a long stem 41. In this form of the device I have shown the governor 4 connected directly to the fixed arm 36 of the throttle valve, but it will be understood that my invention contemplates the use of the loosely mounted arm such as shown in Figs. 1 and 2, connected with the governor, whereby it will not be necessary to overcome the force of the governor in operating the accelerator pedal. The hand lever controlling the bell crank lever 38 may be set in various positions, thus adjusting the tension of the spring 37, and regulating the control of the throttle valve.

In Fig. 4, I have illustrated a curved spring 42 connected by bolts 43 to the lower edge of the vehicle dash 44, and this spring is secured by a screw 45 to the bent portion 46 of the accelerator pedal 5. In this form I have not shown the other connections to the throttle valve, but it will be understood that they are substantially those shown in Figs. 1 and 2, the rod 47 being connected to the fixed arm of the throttle valve. The spring 42 is made strong enough to normally support the pedal 5 in its elevated position, as shown in Fig. 4, and consequently with the use of this spring, the spring 24, de-

scribed in connection with Fig. 2 for holding the two operating arms of the throttle together, may be made very weak and only strong enough to overcome the pressure of gas in the intake. The spring 42 furthermore may be made sufficiently resilient to hold the two operating arms together as described in connection with Fig. 2, and in that instance the spring 24 may be dispensed with entirely. It will be understood that in this instance, as well as in the other forms, means are provided for adjusting the tension of the spring.

Having thus described the invention, what is claimed is:

1. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of two actuating devices for said valve, one of which is connected positively therewith and the other of which is connected to positively open said valve and to flexibly close it.

2. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of two actuating devices for said valve, one of which is connected positively therewith and the other of which is connected to positively open said valve and to flexibly close it, and a manual operating lever for operating said last mentioned actuating device.

3. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of two actuating arms for said valve, one of which is connected positively therewith and the other of which is connected to positively open said valve and to flexibly close it, and means for operating each of said arms independently of the other.

4. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of two actuating arms for said valve, one of which is connected positively therewith and the other of which is connected to positively open said valve and to flexibly close it, manual controlled means for operating one of said arms and a governor for operating the other arm.

5. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of two actuating arms for said valve, one of which is connected positively therewith and the other of which is connected to positively open said valve and to flexibly close it, a foot pedal for operating one of said arms and hand and governor devices for operating the other arm.

6. In a motor vehicle controlling means, the combination with the inlet pipe and throttle valve therein, of two actuating arms for said valve one of which is positively connected therewith, a stop on one of said arms to so connect the positive arm with the other arm that the former is positively

moved by the latter in one direction, and a spring to yieldably hold the stop against the other arm.

7. In a motor vehicle controlling means, the combination with the inlet pipe and throttle valve therein, of two actuating arms for said valve one of which is positively connected therewith and the other of which is mounted to turn independently of the valve, the said arms being so mounted that the freely movable arm will make contact with the positively connected arm when moved in one direction, a spring tending to prevent the separation of said arms and independent means for operating the two arms.

8. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of two actuating devices for said valve one of which is connected positively therewith and the other of which is connected to positively open said valve and to flexibly close it, a lever for controlling one of said devices, and a flexible connection between said lever and the body of the vehicle.

9. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of an actuating arm positively connected with said valve, a pedal lever for operating said arm, a second arm adapted to positively open said valve when turned in one direction and having connections for flexibly closing it when turned in the opposite direction, and a governor directly connected to said last mentioned arm for actuating it.

10. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of an actuating arm positively connected with said valve, a pedal lever for operating said arm, a second arm adapted to positively open said valve when turned in one direction and having connections for flexibly closing it when turned in the opposite direction, a governor directly connected to said last mentioned arm for actuating it, and hand operated actuating means connected with said last mentioned arm.

11. In a motor vehicle controlling means, the combination with the motor inlet pipe and throttle valve therein, of an actuating arm positively connected with said valve, a pedal lever for operating said arm, a second arm adapted to positively open said valve when turned in one direction and having connections for flexibly closing it when turned in the opposite direction, a governor directly connected to said last mentioned arm for actuating it, and hand operated actuating means flexibly connected with said last mentioned arm.

12. In a motor vehicle controlling means, the combination with the motor inlet pipe, of a throttle valve therein, an arm rigidly

connected to said valve for turning it, a second arm mounted to turn freely concentric with the first arm, means on the arms for preventing one from passing the other, 5 separate means for operating said arms, and yielding means tending to prevent the separation of said arms.

13. In a motor vehicle controlling means, the combination with the vehicle body and 10 a motor part to be controlled, of a member to control said part, and a flexible support for said member on said body.

14. In a motor vehicle controlling means, the combination with the vehicle body and 15 a motor part to be controlled, of a pedal lever to control said part, and a flexible support for said lever on said body.

15. In a motor vehicle controlling means, the combination with the vehicle body, the 20 motor inlet pipe and throttle valve therein, of a controlling lever connected with said valve, and a spring supporting the lever on the vehicle body.

16. In a motor vehicle controlling means, the combination with the vehicle body, the 25 motor inlet pipe and throttle valve therein, of a controlling lever connected with said valve, and a leaf spring connecting said lever with the vehicle body and constituting 30 a flexible support for the lever.

17. In a motor vehicle controlling means, the combination with the vehicle body and a motor part to be controlled, of a longitudinally movable rod connected at one end 35 to the said motor part, a controlling member, a leaf spring connecting said member with and supporting it from the vehicle body, and connections between said member and rod.

18. In a motor vehicle controlling means, the combination with the motor inlet pipe and the throttle valve therein, of an actuating arm for said throttle, a hand control 40 lever, a spring connection between said lever and said arm, and a pedal lever supported by said spring.

19. In a motor vehicle controlling means, the combination with the motor inlet pipe and the throttle valve therein, of an actuating arm for said throttle, a hand control 45 lever, a spring connection between said lever and said arm, and a pedal lever supported

by said spring and pivotally connected to said arm.

20. In a motor vehicle controlling means, 55 the combination with the motor inlet pipe and the throttle valve therein, of two actuating devices for said valve, the first of which is connected to positively open and close said valve and the second of which is 60 connected to positively open said valve only, a pedal lever unyieldably connected with said first device, a hand controlled lever yieldably connected with said second device, and a spring supporting said pedal 65 lever and adapted to return it to normal position after being depressed, said spring also constituting means for connecting said second device to flexibly close said throttle valve. 70

21. In a motor vehicle controlling means, the combination with the motor inlet pipe and the throttle valve therein, of two actuating devices for said valve, the first of which is connected to positively open and close 75 said valve and the second of which is connected to positively open said valve only, a pedal lever unyieldably connected with said first device, a hand controlled lever yieldably connected and a governor positively 80 connected with said second device, and a spring supporting said pedal lever and adapted to return it to normal position after being depressed, said spring also constituting means for connecting said second 85 device to flexibly close said throttle valve.

22. In a motor vehicle controlling means, the combination with the motor inlet pipe and the throttle valve therein, of a spring supported operating device for said throttle 90 tending normally to hold said throttle closed.

23. In a motor vehicle controlling means, the combination with the motor inlet pipe and the throttle valve therein, of an operating device for said throttle, a leaf spring 95 constituting the support for said device and tending to hold said throttle closed.

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

MILTON TIBBETTS.

Witnesses:

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B. C. RUST.