C. L. SHEPPY.

ACTUATING MEANS FOR THROTTLE VALVES OF CARBURETERS.

APPLICATION FILED DEC. 29, 1919.

1,397,987. Patented Nov. 22, 1921.

Fig. 1.

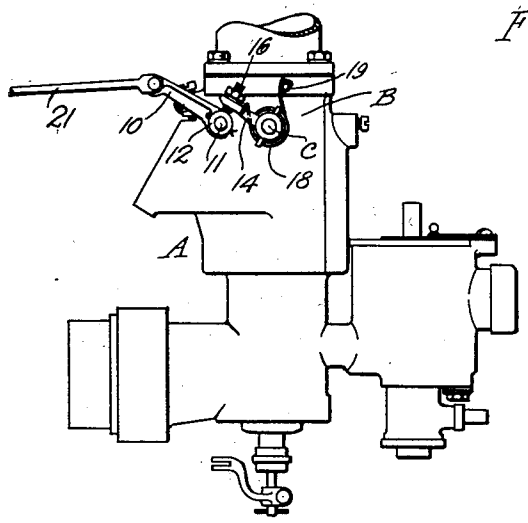


Fig. 2.

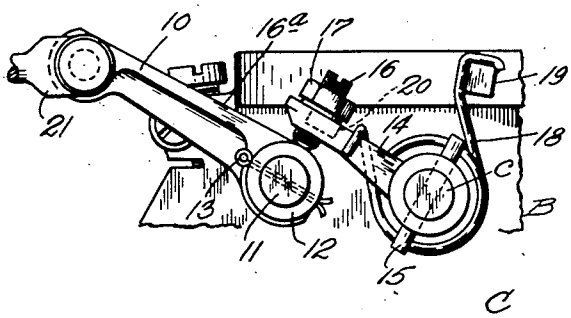
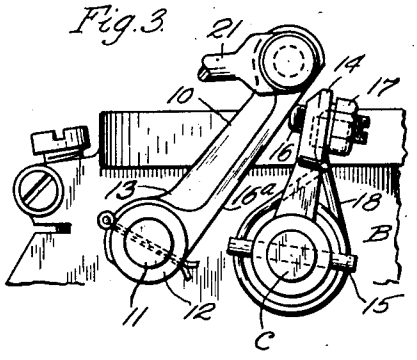


Fig. 3.



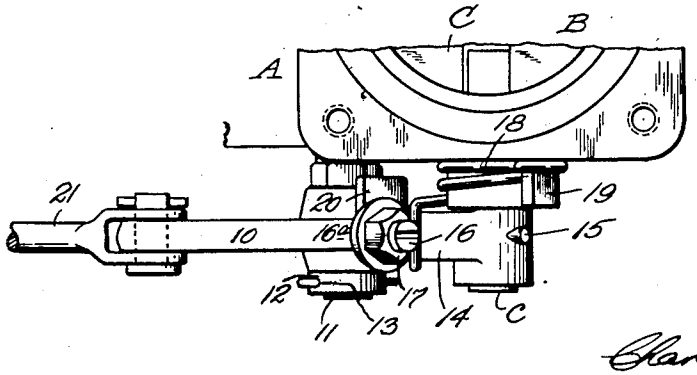


Fig. 4.

INVENTOR.

Charles L. Sheppy,

By Parker & Prickett

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CHARLES L. SHEPPY, OF BUFFALO, NEW YORK, ASSIGNOR TO THE PIERCE ARROW-MOTOR CAR COMPANY, OF BUFFALO, NEW YORK.

ACTUATING MEANS FOR THROTTLE-VALVES OF CARBURETERS.

1,397,987. Specification of Letters Patent. Patented Nov. 22, 1921.

Application filed December 29, 1919. Serial No. 347,940.

To all whom it may concern:

Be it known that I, CHARLES L. SHEPPY, citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Actuating Means for Throttle-Valves of Carbureters, of which the following is a specification.

In carbureters which are provided with a throttle valve of the usual butterfly type, trouble is experienced in opening the valve slowly enough during the first part of the travel of the valve. The volume of fluid permitted to pass the throttle valve should increase slowly at first and more rapidly as the opening movement of the valve continues, but it is very difficult, if not practically impossible, to obtain such a movement with the throttle valve operating mechanisms ordinarily employed.

One object of this invention is to provide a desirable and practical operating mechanism for the throttle valves of carbureters, whereby, with the ordinary actuation or movement of the usual operating device or lever, the valve is caused to open with a motion which is slow during the first portion of its movement and increases gradually as the movement continues, until at the last portion of the movement the travel of the valve is relatively much more rapid.

Another object of the invention is to improve valve operating mechanisms for carbureters in the other respects herein described and set forth in the claims.

In the accompanying drawings:—

Figure 1 is a side elevation of a carbureter provided with a throttle valve operating mechanism embodying the invention.

Fig. 2 is a fragmentary similar view on an enlarged scale, showing the position of the parts when the valve is closed.

Fig. 3 is a similar view showing the position of the parts when the valve is wide open.

Fig. 4 is a fragmentary plan view thereof showing the position of the parts when the valve is closed.

A represents a carbureter, which may be of any usual or suitable construction, and B the chamber or passage thereof in which the throttle valve is arranged to control the flow of the explosive mixture to the engine with which the carbureter is connected. C represents the throttle valve, which is of the usual butterfly type, consisting of a disk or plate pivoted in the passage B so as to swing to close or open the passage. *c* is the stem or pivot shaft of the throttle valve. This stem extends out through a hole in the wall of the valve chamber or passage. Ordinarily, in motor vehicles, this valve stem is provided with an arm connected by a rod to the valve-operating lever or device on the steering post of the vehicle so that the valve is opened or closed by swinging this lever in one direction or the other.

10 represents an actuating lever, cam or device which is adapted to move independently of or differentially relative to the valve shaft and is preferably pivoted to swing about an axis at one side of or at a distance from the throttle valve shaft. The lever 10 is shown as loosely pivoted on a fixed stud 11 projecting from the side of the carbureter and is retained on the stud by a collar 12, secured by a cotter pin 13 on the outer end of the stud. An arm 14 is fixed in any suitable manner, for instance by a cross pin or key 15, to the outer end or portion of the throttle valve stem *c*. This arm is preferably provided with an adjustable screw or member 16 which rests or bears against one edge or face 16ª of the lever 10. 17 indicates a lock nut for the adjusting screw 16. The screw or adjusting device 16 is held in engagement with the lever or cam 10 by a suitable spring 18 which acts to close the throttle valve. This spring preferably consists of a spring wire coiled about the bearing for the throttle valve stem, with one end hooked on a fixed stop or projection 19 on the carbureter and the other end hooked on the arm 14.

When the lever or cam 10 is swung in one direction, for instance to the right in the drawings, its edge 16ª, which is eccentric to the lever pivot, acts as a cam against the screw 16 and swings the arm 14, thus opening the throttle valve. When the lever or cam 10 is swung in the opposite direction the spring 18 causes the arm 14 to follow the lever or cam and thus close the throttle valve. In the position of the parts shown in Fig. 2, when the throttle valve is closed, the screw 16 on the arm 14 of the throttle valve bears against the lever or cam 10 close to the lever pivot, and as the lever swings, the screw slides along the cam edge 16ª of the lever or contacts therewith at a successively

increasing distance from the axis of the lever or cam. The opening movement of the throttle valve, therefore, will be slow at first and will gradually increase as the movement of the lever or cam 10 continues. In this way the area of the opening made by the movement of the throttle valve enlarges or increases in area slowly at first and more rapidly as the opening movement continues. The edge or face 16ª of the lever or cam 10 on which the screw 16 bears can be either straight, concaved or convex, or of other formation, as may be necessary to give the desired varying or increasing motion of the throttle valve. This edge or face of the lever or cam and also the adjusting screw or member 16 are preferably hardened to reduce the wear thereon, and the bearing end of the adjusting screw is preferably rounded as shown. By adjusting this screw 16, the initial position of the throttle valve in the closed position of the operating mechanism can be regulated as desired.

Preferably, the arm 14 of the throttle valve is provided with a stop lug or projection 20 adapted to strike the stop 19 on the carbureter, or other suitable stop, to arrest the movement of the throttle valve when it has reached its wide open position.

21 indicates an operating rod which is pivoted or connected in any suitable manner to the actuating lever or cam 10. This operating rod, which in ordinary constructions is connected to the arm on the throttle valve stem, extends to the operating lever or device on the steering post or foot accelerator for transmitting the movement therefrom for opening and closing the throttle valve.

I claim as my invention:

1. The combination with a carbureter having a pivoted throttle valve, of a separate actuating device therefor which is movable relatively to the throttle valve, and operative connections between said actuating device and the throttle valve constructed to produce a varying rate of motion of the throttle valve which increases as the opening movement of the actuating device continues.

2. The combination with a carbureter having a pivoted throttle valve, and an arm connected to said throttle valve, of a separate actuating device movable relatively to the throttle valve and having a face engaging a part on said arm for swinging the latter, said face being shaped to produce a varying rate of motion of the throttle valve which increases as the opening movement of the actuating device continues.

3. The combination with a carbureter having a pivoted throttle valve, and an arm connected to said throttle valve, of a separate actuating lever pivoted to move relatively to the throttle valve and having a face engaging a part on said arm for swinging the arm, said face being shaped to produce a varying rate of motion of the throttle valve which increases as the opening movement of the lever continues.

4. The combination with a carbureter having a pivoted throttle valve, and an arm connected to said throttle valve, of an actuating lever pivoted to swing about an axis distant from the pivotal axis of the throttle valve and having a face engaging a part on said arm for swinging the arm, said face being shaped to produce a varying rate of motion of the throttle valve which increases as the opening movement of the lever continues.

5. The combination with a carbureter having a pivoted throttle valve, and an arm connected to said throttle valve, of an actuating lever therefor pivoted on an axis parallel to the pivotal axis of said throttle valve, said lever having a face engaging a part on said arm for swinging the arm, whereby opening movement of said lever results in a gradually accelerating opening movement of said throttle valve.

6. The combination with a carbureter having a pivoted throttle valve, of an actuating lever therefor pivoted to swing about an axis distant from the pivotal axis of the throttle valve, an arm fixed to said throttle valve, and a spring which tends to close the throttle valve and holds a part of said arm in sliding contact with a face on said lever eccentric to the pivotal axis of the lever whereby when the lever is swung it produces a varying rate of motion of the throttle valve.

7. The combination with a carbureter having a pivoted throttle valve, of a separate actuating lever therefor pivoted to swing relatively to the throttle valve, an arm fixed to said throttle valve, an adjustable member on said arm, and a spring which holds said adjustable member in sliding contact with a face on said lever eccentric to the pivotal axis of the lever whereby when the lever is swung it produces a varying rate of motion of the throttle valve.

8. The combination with a carbureter having a pivoted throttle valve, and an arm connected to said throttle valve, of a separate actuating lever therefor pivoted to move relatively to the throttle valve and toward the axis of said throttle valve, said lever having a face engaging a part on said arm for swinging the arm, whereby opening movement of said lever results in a gradually accelerating opening movement of the throttle valve.

Witness my hand this 24th day of December, 1919.

CHARLES L. SHEPPY.

Witnesses:
C. F. MAGOFFIN,
CHARLES PLEUTHNER.