H. GROSS.

CARBURETER ADJUSTING ATTACHMENT.

APPLICATION FILED MAY 31, 1918.

**1,308,707.**

Patented July 1, 1919.

2 SHEETS—SHEET 1.

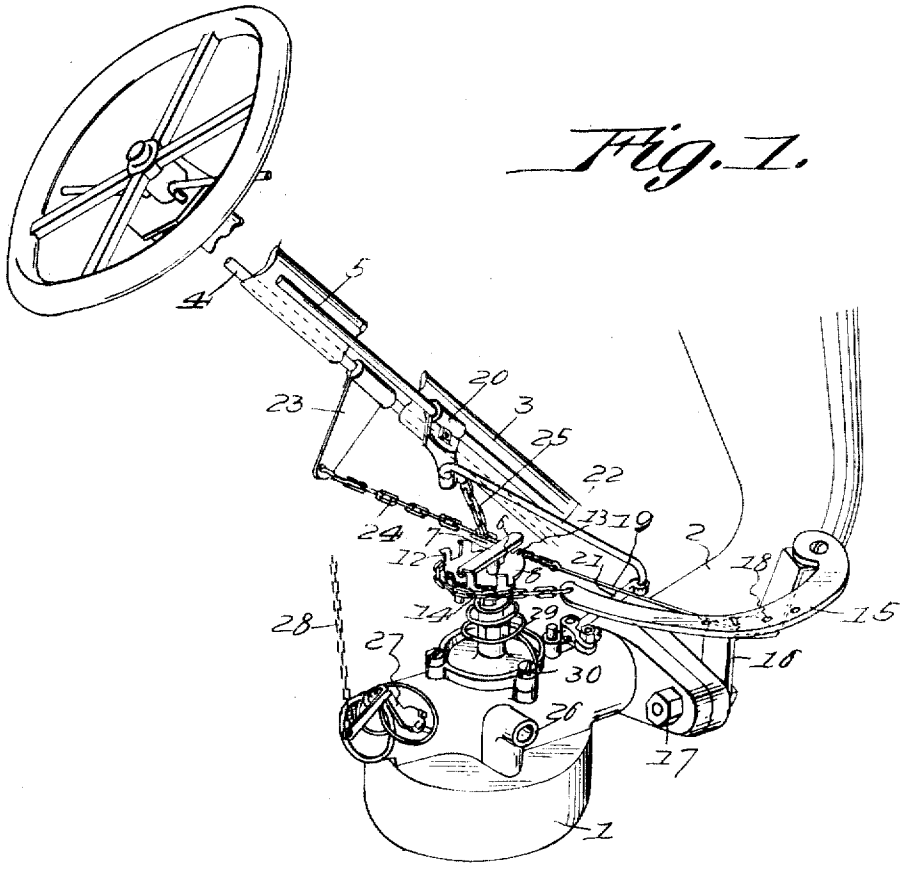



Fig. 1.

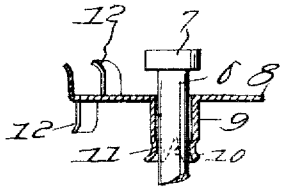



Fig. 4.

Inventor

Herman Gross,

By Albert G. Talbert

Attorney

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2 SHEETS—SHEET 2.

Fig. 2.

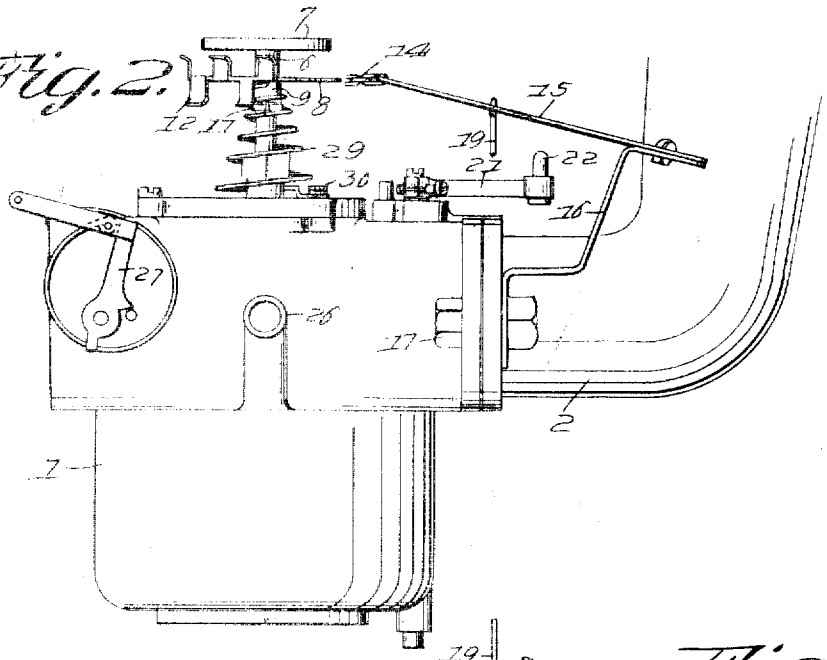
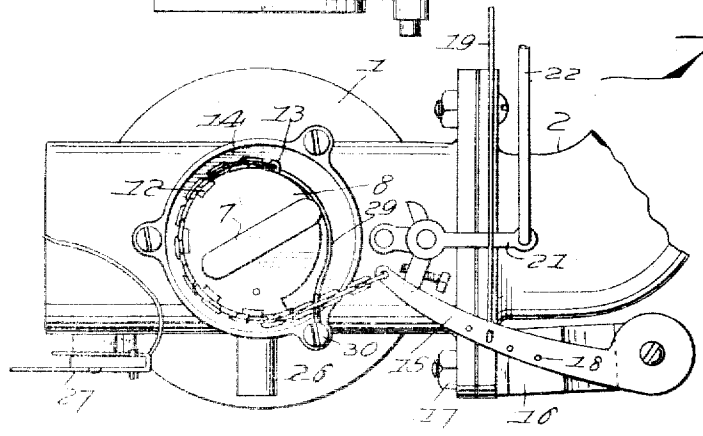



Fig. 3.




Inventor

Herman Gross,

By G. Bruce Talbert

Attorney

# UNITED STATES PATENT OFFICE.

HERMAN GROSS, OF LA FAYETTE, INDIANA.

## CARBURETER-ADJUSTING ATTACHMENT.

1,308,707. Specification of Letters Patent. Patented July 1, 1919.

Application filed May 31, 1918. Serial No. 237,598.

*To all whom it may concern:*

Be it known that I, HERMAN GROSS, a citizen of the United States, residing at La Fayette, in the county of Tippecanoe and State of Indiana, have invented new and useful Improvements in Carbureter-Adjusting Attachments, of which the following is a specification.

As an attachment for carbureters for auto vehicle engines, the invention seeks to provide, as its principal object, a device of this character whereby the needle valve of the carbureter may be placed under the control of both the throttle lever and spark lever of the vehicle on which the device is used.

A still further object of the invention is to provide a device whose use will permit the admission of a rich fuel mixture into the engine at the moment of starting, thereby providing for the easy starting of the engine.

A still further object is to provide a device, the use of which makes for economy when driving the vehicle, as it provides for the admission into the engine of a fuel mixture that will obtain the best results.

A still further object is to provide a device of this character by means of which the fuel mixture can be regulated to prevent carbon deposits in the cylinders of the engine, thus providing for clean spark plugs and the seldom dismantling for cleaning.

A still further object is to provide a device of this character which is simple in construction, durable and effective in operation, inexpensive to manufacture and easily applied to a carbureter with which it is to be used.

Still further and other objects will appear in the following detailed description.

The drawings illustrate and the specification describes a particular embodiment of the invention to which embodiment, however, it is not to be restricted. The right is reserved to make such changes or alterations as the actual reduction to practice may show to be of advantage, providing such changes or alterations are comprehended in spirit by the annexed claims.

In the accompanying drawings:

Figure 1 is a view in perspective illustrating the practical application of the invention,

Fig. 2 is a side elevational view, certain parts being omitted for the sake of clarity,

Fig. 3 is a top plan view,

Fig. 4 is a detail sectional view showing the disk applied to the stem of the needle valve.

Referring to the drawings, there are shown a carbureter 1, the portion 2 of the intake manifold of an auto vehicle engine, the steering column 3, the spark control rod 4 and the throttle control rod 5. These are all of the conventional design and assembled in the usual way, as is common in conjunction with auto vehicles.

On the stem 6 of the needle valve of the carbureter, there is carried at the top, the usual handle 7 to permit the manual operation of the needle valve. Below this handle the valve carries the disk 8 which is provided with a sleeve 9 formed integral therewith, the sleeve being provided at its free end with longitudinal slits 10, and being formed near its free end with a circumferential depression 11, the latter resulting in a bulge on the interior of the sleeve by means of which it is held frictionally on the stem 6, the slits providing for sufficient spring to enable this firm but frictional engagement.

For a prescribed arc on its periphery, the disk is provided with a series of ears 12, half of which are turned upwardly and half downwardly, the alternate ears being turned in the same direction, and the adjacent ears in opposite directions. Further than the ears 12, the disk 8 is provided with an ear 13 in which there is formed a hole for receiving one end of the chain 14, the latter lying in the channel provided by the downwardly and upwardly turned ears 12. The remaining end of the chain 14 connects with the free end of a lever 15. This lever is mounted on a bracket 16 on which it is pivotally held, the bracket in turn being secured beneath the bolt 17 which in conjunction with another similar bolt serves to attach the carbureter 1 to the intake manifold 2.

The lever 15 is pivotally mounted at the

end remote from that with which the chain 14 connects, and at suitable points between the two ends, it is provided with holes 18, any one of which may be engaged by the hooked end of a link 19.

The throttle control rod 5 is provided with the usual arm 20 which is connected to the throttle valve arm 21 by means of the link 22.

The spark control rod 4 is provided with an arm 23 similar to the arm 20 and carried by the rod 4 at approximately the same position on the latter that the arm 20 occupies on the rod 5. Both the rods 4 and 5 are designed to operate the lever 15 and to that end there is provided a chain 24 which connects the free end of the arm 23 with the end of the link 19, and there is further provided a chain 25 connected one end with the arm 20, and the remaining end with one of the links of the chain 24, the point of connection of the chain 25 with the chain 24 being an appropriate distance to the right of the rod 5, so that the manipulation of either of these rods may not result in the operation or movement of the other.

The carbureter 1 is provided with the usual fuel intake 26, and the air intake controlled by the conventional butterfly valve 27, the chain 28 of which is carried to the front dash of the vehicle to permit the regulation of the butterfly valve from that point.

The stem 6 of the needle valve between the top of the carbureter and the disk 8 is surrounded by a spiral spring 29 whose one end is secured under the screw 30 of the carbureter and whose other end is connected with the disk 8. This spring 29 is so coiled that its tendency is to keep the needle valve normally closed and when the spark lever is in the advanced position, and the throttle lever in the closed position, as shown in Fig. 1, the chain 14 is wound around the periphery of the disk 8 because of the action of the spring 29. This results in the free end of the lever 15 being moved to a position where its free end is at its normally farthest position away from the rods 4 and 5, the point of connection between the chains 24 and 25 being well to the right of these rods.

In the use of the invention, the operation is as follows:

In starting the motor of a vehicle, it is always advisable to admit a rich fuel mixture into the motor to effect its initial movement and at the same time retard the spark to avoid back-firing. With the present invention, the spark lever is moved to the retarded position, the butterfly valve 27 having first been regulated to nearly or fully close the air intake, so that the initial mixture will be rich with gasolene. With the movement of the spark lever to the retarded position, the chain 24 through the link 19 acts to draw the lever 15 over in the direction of the steering column 3, this movement resulting in the turning of the disk 8 because of the chain connection 14 between the lever and the disk. The turning of the disk 8 operates to turn and open the needle valve and when the throttle valve is open slightly by a slight turning of the throttle lever, the fuel is admitted through the needle valve and through the throttle to the intake manifold. When the motor is started and after it has attained its proper speed, the spark lever is advanced in order to ignite the mixture at a time when it gives the best results for driving. The movement of the spark lever to the advanced position results in slacking the chain 24, when the spring 29 operates to partially close the needle valve, setting it to a position where it draws the chain 14 taut, that portion of the chain 14 comprehended between the end of the lever 15 and its initial point of contact with the disk being substantially tangent with the disk, thus precluding any further movement of the needle valve toward closure position.

The movement of the throttle lever to the full open position operates through the chain 25 and a portion of the chain 24 to move the needle valve to a position where it further uncovers the orifice admitting fuel into the carbureter, thereby enriching the fuel mixture to enable the motor to readily take care of an increased load imposed by climbing a hill or over rough ground.

The disk 8 being frictionally connected to the stem 6 permits the needle valve to be adjusted by hand through the handle 7, the stem 6 being turned by the latter and with reference to the disk, so that the needle valve may be initially set in the desired position to be thereafter operated by the spark and throttle levers and their attendant connections with the valve.

The provision of a plurality of holes 18, any one of which may be engaged by the link 19 makes it possible to vary the arc of movement of the free end of the lever for a prescribed angular movement of the spark and throttle levers. It is obvious that if the link 19 is attached to the lever 15 in that hole 18 nearest its pivotal connection, the lever will define a greater arc of movement for a specified angular movement of the spark or throttle levers than if the link 19 connects with the lever 15 in the hole 18 farthest away from its pivotal connection.

The invention having been described, what is claimed as new and useful is:

1. In a device of the class described, the combination with a carbureter having a

needle valve, of a disk mounted on the stem of the needle valve, a lever pivotally mounted on the carbureter, a flexible member partially surrounding the disk on its periphery and having one end fixedly connected thereto and the other end connected with the free end of the lever, and means for connecting the lever to both the throttle control and spark control rods of an auto vehicle, whereby the needle valve is operated as a result of the operation of either of the said rods.

2. In a device of the class described, the combination with a carbureter having a needle valve, of a disk mounted on the stem of the needle valve, a lever pivotally mounted on the carbureter, a flexible member partially surrounding the disk on its periphery and having one end fixedly connected thereto and the other end connected with the free end of the lever, a spring surrounding the stem of the needle valve and operating to normally close the said valve, connections whereby the lever may be connected to the throttle control and spark control rods of an auto vehicle to effect the operation of the valve, and means whereby the point of connection of the said connections with the lever may be varied.

3. In a device of the class described, the combination with a carbureter having a needle valve, of a disk mounted on the stem of the needle valve and held frictionally thereon, so that the stem may be adjusted angularly with respect to the disk, a lever pivotally mounted on the carbureter, a flexible member partially surrounding the disk on its periphery and having one end fixedly connected thereto, and the other end connected with the free end of the lever, a spring surrounding the stem of the needle valve and operating to normally close the said valve, and means for connecting the lever to both the throttle control and spark control rods of an auto vehicle, whereby the needle valve is operated as a result of the operation of either of the said rods.

4. In a device of the class described, the combination with a carbureter having a needle valve, of a disk mounted on the stem of the needle valve, a lever pivotally mounted on the carbureter, a flexible member partially surrounding the disk on its periphery and having one end fixedly connected thereto and the other end connected to the free end of the lever, a spring surrounding the stem of the needle valve and operating to normally close the said valve, connections whereby the lever may be connected to the throttle control and spark control rods of an auto vehicle to effect the operation of the valve, a link loosely connected with the lever between its pivoted and free ends, and flexible connectors joined to the link and designed for connection to the throttle and spark control rods of an auto vehicle.

5. The combination with the throttle and spark control rods and carbureter of an auto vehicle, of means for connecting the needle valve of the carbureter with both of said rods whereby the needle valve is partially or fully opened as a result of the movement of said rods, and resilient means tending normally to close the needle valve.

In testimony whereof I affix my signature.

HERMAN GROSS.