United States Patent

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[54] **VALVE MECHANISM IN CARBURETOR FOR CAR**
3 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **261/23,** 261/65, 137/601, 137/637, 251/250, 251/266
[51] **Int. Cl.** **F02m 9/12**
[50] **Field of Search** 137/595, 601, 607, 637; 251/250, 266; 261/23.1, 41.3, 65

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ABSTRACT: A valve mechanism in a liquid gas carburetor for use in car, in which a pair of valve driving axles arranged symmetrically in juxtaposition are each provided with a reverse screw, with a plate valve being screwed thereto, and in which a cogwheel secured to an end of each of said valve driving axles is rotated by a rack so as to simultaneously slidingly open and close the plate valves screwed to the valve driving axles in a plate casing.

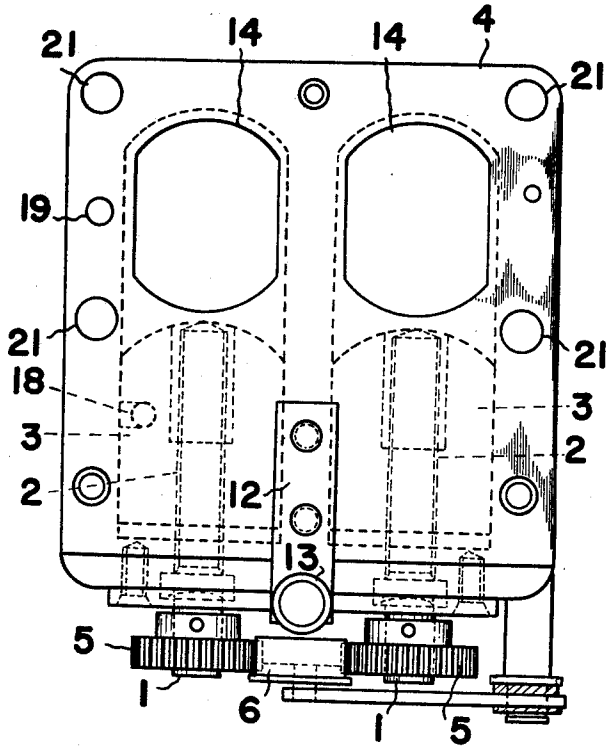


FIG. 1.

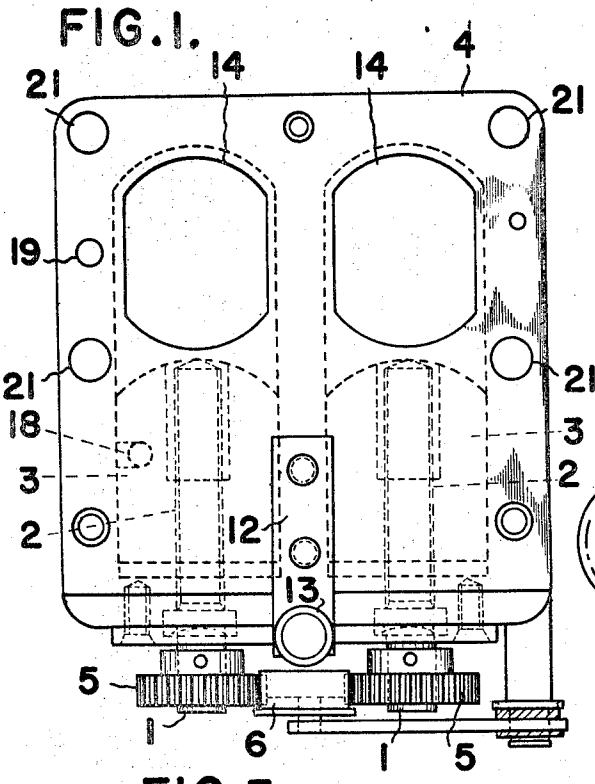


FIG. 2.

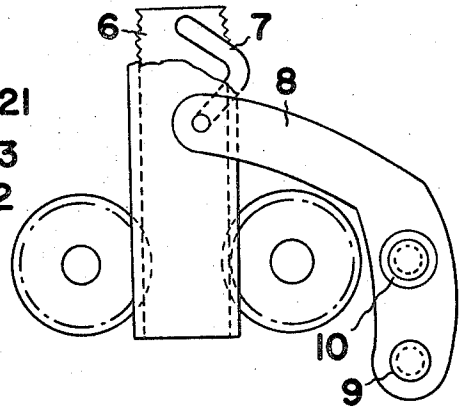
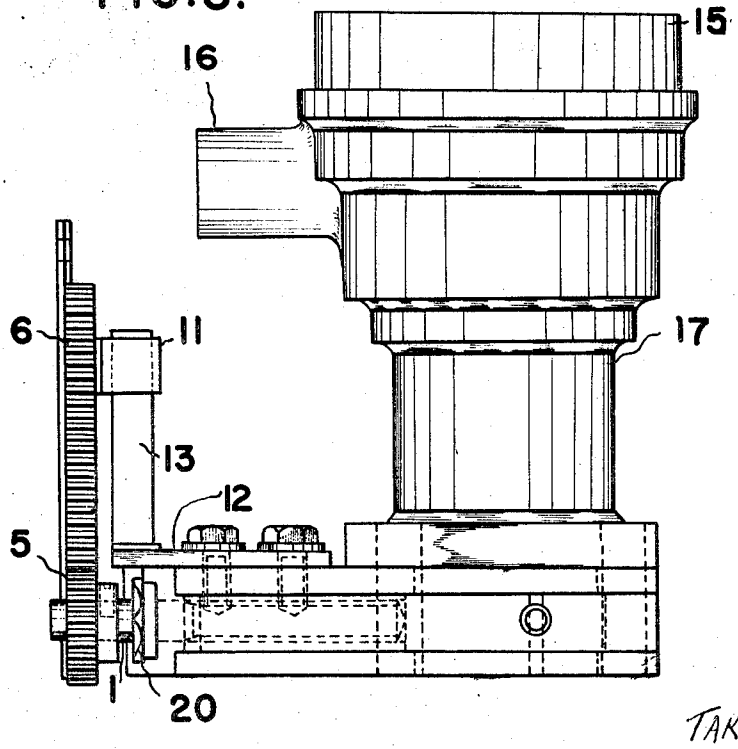


FIG. 3.



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VALVE MECHANISM IN CARBURETOR FOR CAR

The present invention relates to a valve mechanism to be adapted in a carburetor used in a liquefied gas car, and the primary object of the invention is to completely eliminate the various defects and faults inherent to the conventional such valve mechanisms where flap valves are rotatably mounted each in a separate cylindrical valve casing and to obtain a valve mechanism of this type having extremely excellent combustion efficiency, whereby driving energy is doubled and instantaneous acceleration and quick starting are made possible.

In the accompanying drawings, FIG. 1 is a plane view showing an embodiment of the present invention;

FIG. 2 is a block diagram showing the mechanism of the valve driving part; and

FIG. 3 is a side elevation of the present device as it is combined with a cap body.

The present invention relates to a carburetor valve used in a liquefied gas car, whereby it is designed to get rid of the defects accompanying the conventional valve mechanisms of this type where flap valves are rotatably mounted each in a separately provided cylindrical valve casing.

The invention will now be described in detail by way of a preferred embodiment thereof with reference to the drawings. Referring to the drawings in general, numerical signs 1, 1 designate a pair of symmetrically juxtaposed valve driving axles which have secured thereto reversed screws 2, 2 to which plate valve bodies 3, 3 are screwed. Arrangement is made such that rotation of said valve driving axles urges said plate valve bodies 3, 3 to make simultaneous back and forth sliding movements in the valve casing 4. 5, 5 denote a pair of cogwheels each being mounted at an end, extended outside of the valve casing, of each of said valve driving axles 1, 1. 6 is a rack meshed with said cogwheels 5, 5. Said rack is connected with an L-shaped rod 7 and a lever 8, as shown in FIG. 2, and vertically moved by tensioning or slackening an end 9 of said lever 8 and rotating said lever with a pivot 10 as its fulcrum. 11 designates a stroke ring provided on the back side of the rack 6, said ring being loosely fixed to a stanchion 13, erected on a supporting plate 12, 14, 14 mixed gas passages, 15 an air port 16 a gas port, 17 a gas mixing chamber, 18 and 19 air ports which are communicated when the valves are closed to guide the air to the upper part inside of the cylinder, 20 a corrugated spring, and 21 clamping holes whereat the side plates composing the valve casing are clamped.

In operating the above-described valve mechanism of the present invention used in a liquefied gas car carburetor, an end 9 of the lever 8 is tensioned and dragged by stepping on a pedal (reference being made to FIG. 2), causing the lever 8 to move on the pivot 10 as its fulcrum to jerk the L-shaped rod 7, whereby the rack 6 connected to said rod 7 is allowed to move downward while being guided by the stanchion 13 having the stroke ring 11 secured to the valve casing on the backside of the rack 6, thus causing the cogwheels 5, 5 meshed with the rack and their respective valve driving axles to rotate in the opposite directions to each other, while permitting the plate valve do bodies 3, 3 screwed to the valve driving axles 1, 1 to simultaneously move sliding in the plate valve casing, thereby opening the mixed gas passage ports 14, 14 in the valve casing. When pressure on the pedal is released, just the contrary operation is effected.

It will be noted that the mixture of air and liquefied gas from the air port 15 and the gas port 16 of the mixing chamber 17 is passed through the mixed gas passages 14, 14, and this mixed gas, after passing said passages 14, 14, is supplied into the cylinder where it is burnt. In the conventional liquefied gas car in general, the valve assembly used in the carburetor is composed of two flap valves which are simply housed rotatably each in a separate cylindrical value casing, and in making adjustment of the mixture of air and gas in the cylinder, such flap valves inevitably produce considerably high suction resistance, resulting in poor accelerating performance and loss of power capacity. According to the present invention, the mixed gas is supplied into the cylinder while being suitably adjusted by slidingly opening and closing the plate valve bodies

in such a manner that said valve bodies make right angles with the mixture gas in the plate valve casing, so that the above-described defects are totally removed and the suction resistance is relatively small, with consequent improved accelerating performance and little loss of power. Further, when the mixed gas is fed into the combustion cylinder to obtain driving power, two ports are simultaneously opened to permit almost double as much flow-in of the gas as in the conventional devices, so that driving energy is also doubled, thus enabling momentary powerful acceleration. It is thus possible with the present invention to attain quick starting, acceleration and "passing" of another car and also combustion efficiency is extremely excellent, so that the present invention is an exceedingly useful and practical device particularly for passenger cars like taxi or high-class sedans.

It is apparent from the above description and the drawings that with the structure of the invention a fuel-supply means 16 and an air-supply means 15 both communicate with a mixing chamber 17 in which a fuel-air mixture is formed. This chamber 17 forms an inlet duct means for supplying the fuel-air mixture to the passage means 14 which is capable of being opened or closed to a given extent by the valve means 3. This valve means takes the form of a flat plate, and the casing 4 forms a guide means which guides the valve plate 3 for movement only in its own plane across the passage means 14 away from and back to the illustrated position where the valve means 3 is entirely withdrawn from the passage means 14 so that the latter is completely unobstructed, to achieve a flow of the fuel-air mixture therethrough without any resistance from any valve elements. The rotary screw 2 together with the rotary gear 5 and shaft 1 operatively connected thereto and together with the rack 6 and accelerator-operated components 7—9 form a valve-operating means actuated by the accelerator of the vehicle for determining the position of the valve means 3 with respect to the passage means 14, so as to control the flow of the fuel-air mixture therethrough. Of course the dual arrangement of a pair of passage means 14 with the pair of valve means 3 simultaneously actuated by the pair of gears between the common rack 6 provides an accelerator-operated valve-actuating means for simultaneously controlling a pair of passage 66 means 14.

I claim:

1. In a carburetor, passage means through which a fuel-air mixture is adapted to flow, inlet means communicating with said passage means for supplying a fuel-air mixture thereto, said inlet means forming a chamber in which fuel and air are mixed, fuel supply means communicating with said chamber for supplying fuel thereto, air-supply means communicating with said chamber for supplying thereto air to be mixed with said fuel so that the fuel-air mixture will flow from said inlet means to said passage means, valve means for opening and closing said passage means including a flat valve plate and a guide means guiding said plate for movement across said passage means away from and back toward a position completely retracted out of said passage means to provide for unobstructed flow of the fuel-air mixture therethrough, valve-operating means operatively connected with said valve plate for moving the letter with respect to said guide means away form and back toward said position retracted out of said passage means, and accelerator-actuated means coacting with said valve-operating means for actuating the latter from an accelerator to control the flow of the fuel-air mixture through said passage means, there being a pair of said passage means both communicating with said inlet means as well as a pair of said valve means respectively coacting with both of said passage means, said valve-operating means actuating both of said valve means simultaneously so that a dual flow of fuel-air mixture through the pair of passage means can be achieved, said valve-operating means including a pair of rotary screws respectively connected operatively to said valve plates for respectively moving the latter, a pair of gears respectively fixed coaxially to said a screws, a rack extending between said gears and having opposed tooth edges respectively meshing

with both of said gears, said accelerator-operated means being operatively connected with said rack for longitudinally moving the latter so as to simultaneously move both of said valve plates.

2. The combination of claim 1 and wherein both of said valve plates are located in a common plane in which they are simultaneously moved by said valve-operating means.

3. The combination of claim 2 and wherein said accelerator-operated means includes a first lever operatively connected to said rack, and a second lever supported for swinging movement about a given axis and operatively connected to said first lever, a said second lever being adapted to be moved upon operation of the accelerator.