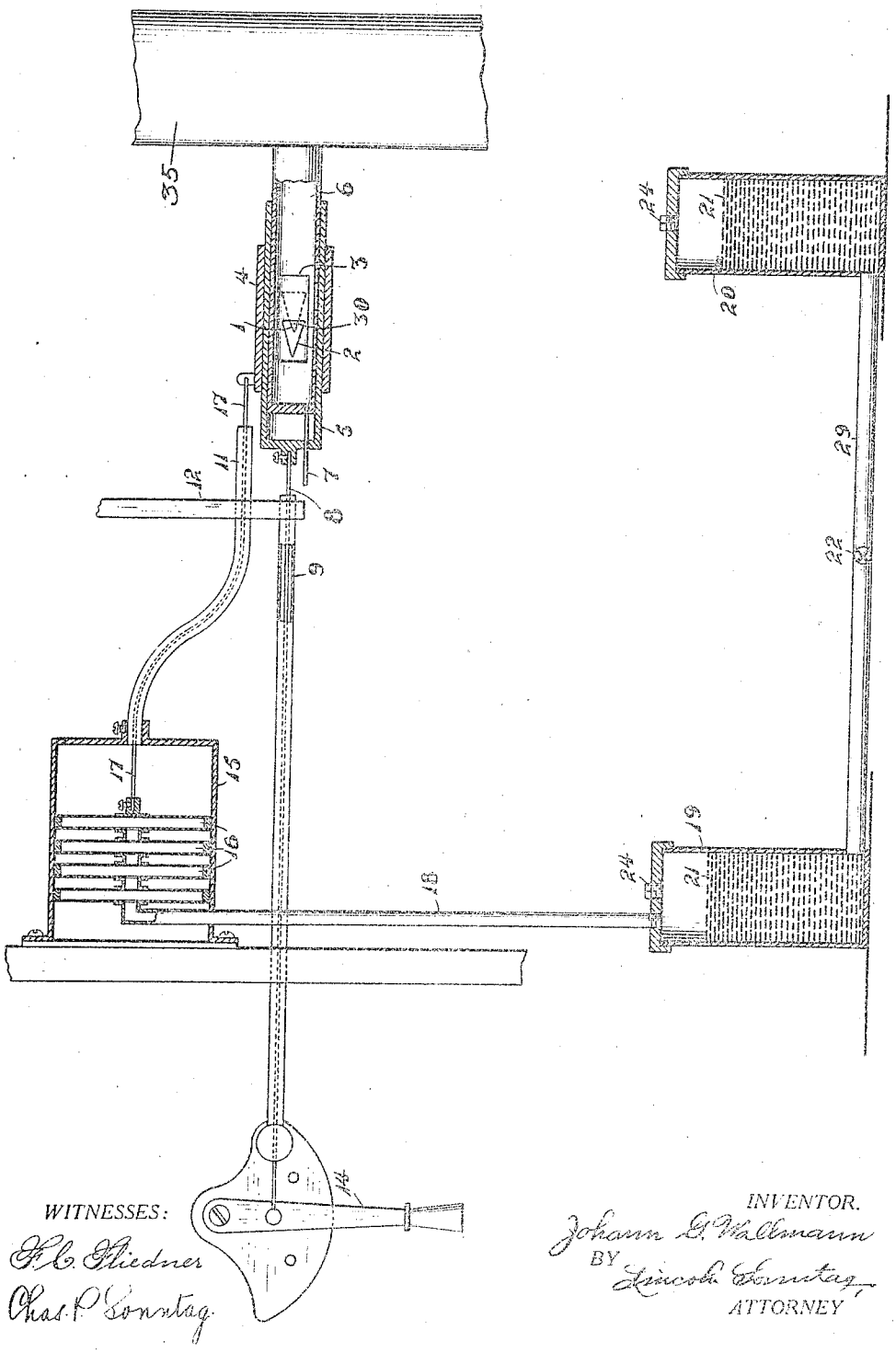
J. G. WALLMANN.

LIQUID FUEL CONTROL FOR MOTOR CARS.

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1,124,564. Patented Jan. 12, 1915.



WITNESSES:

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LIQUID-FUEL CONTROL FOR MOTOR-CARS.

1,124,564. Specification of Letters Patent. Patented Jan. 12, 1915.

Application filed December 3, 1913. Serial No. 804,437.

To all whom it may concern:

Be it known that I, JOHANN G. WALLMANN, a citizen of the United States, residing at the city of Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Liquid-Fuel Controls for Motor-Cars, of which the following is a specification.

My invention relates to fuel-saving devices for motor-cars.

The object of my invention is to provide a device for motor-cars which is particularly designed to effect a saving in liquid fuel as used therein, and also to give the engine therein greater power and speed and a lower temperature, while permitting the use of a heavier gasolene than usually used. The device is also designed to relieve to a great extent the wear and tear on brakes in hill work; automatically adjusting the proper mixture for ascending and descending grades. On descending steep grades it automatically permits a large amount of air to enter the cylinders as hereinafter mentioned and the car can be allowed to run down the grade on compression. The mixture used can be made temporarily rich on stopping as a means for starting "on the spark," and the mixture can be corrected for altitude while the operator of the car is seated at the wheel without touching the carbureter adjustment.

My invention consists in the combination and arrangement of parts shown in the accompanying drawing, described in the following specification and claimed in the appended claims.

Referring to the accompanying drawing, the same is an elevation if my device as secured in a motor-car.

In the drawing 4 indicates a cylinder having a V-shaped slot 1. A slidable cylinder 5 having a V-shaped slot 2 is contained in said cylinder 4. A fixed cylinder 6 is secured or screwed into the manifold 35, and said cylinder has an oblong slot 3 as shown. A regulating control lever 14, manually operated, is pivoted on the steering post of an automobile or other suitable conveyance, where it is in reach of the driver of the conveyance. A guide pin 7 is fixed in the end wall of cylinder 6 as shown.

8 represents a wire, preferably of steel, and 9 is a guide tube containing said wire. A guide tube 11 contains a wire 17, preferably of steel, fixed at its upper end as shown. A suitable bracket is shown at 12. A casing 15 contains diaphragms 16 separated and secured as shown. A vessel 19 is provided with a cover having a plug 24, and a pipe 18 is secured in said cover and leads from said vessel upwardly into casing 15 and thence at right angles therein. Mercury 21 is contained in said vessel 19 for its operation, and a pipe 29 leads from the base of said vessel 19 into the base of a similar vessel 20 having a cover and also provided with a plug 24, the last mentioned vessel also containing mercury 21. A hand-valve 22 is secured in pipe 29 for regulating the flow of mercury through said pipe. Diaphragms 16 by their casing are preferably fixed to the dashboard of a car. The mercury controlling device is affixed to the car in a suitable place which is convenient to the operator, while not encroaching on space to be used, and should be on the level when the car is on level ground, the pipe 18 being then connected from the diaphragms to the mercury pressure control beneath as shown.

In the operation, on moving lever 14 backwardly, the wire 8 in the guide tube 9 forces cylinder 5 in the same direction, closing port 30. The car is now ready to start as it allows a rich mixture to enter the engine cylinders from the carbureter by way of the manifold. While the car is moving on level ground and the operator wishes to get the proper mixture to run on level ground, he should push forward the lever 14, which will gradually open port 30, allowing air to pass through port 30 into the manifold by way of cylinder 6—this air mixing with the gas. By the gradual opening of the port 30 the operator can easily ascertain by the running of the engine if he has the right proportion of liquid fuel for smooth and economical running of the car on level roads. Thus the mixture is adjusted for level roads and the weather, and the lever does not require handling again as the other

apparatus will adjust the mixture for hill climbing and automatically cut off the gas allowing the operator to go down grades on compression.

The device operates as follows:—On ascending a grade the mercury will flow from the vessel 20 into the vessel 19, vessel 20 being in the forward part of the motor-car and higher than vessel 19 causes the mercury to seek its level by flowing through tube 29 and valve 22 to cylinder 19; the mercury entering the vessel 19 compresses the air in its upper part, such compressed air passing by the tube 18 to the diaphragms 16, which causes them to expand forwardly in their guide casing 15. The forward movement of the diaphragms causes the wire 17 to be moved forwardly in the guide tube 11, and which in turn causes the movable cylinder 4 to be pushed forwardly thereby closing the open port 30. In this way a rich mixture of fuel is allowed to enter the cylinders and which is necessary for hard effort in climbing hills. On reaching the top of a hill and level ground the diaphragms in the car are automatically adjusted to their normal position by the mercury flowing backwardly from vessel 19 to 20, relieving the air pressure in them, and this condition opens the port 30 again as it stood before ascent of the hill and allows the proper mixture for work on level ground. On descending a grade the vessel 19 being the higher of said vessels, causes the mercury to flow into vessel 20 and causes a partial vacuum to be formed in the upper part of cylinder 19. This partial vacuum causes the diaphragms to contact, thereby causing the movable cylinder to be carried backwardly and thereby opening the port 30. The steeper the grade the larger the port required. Such opening of the port allows a great amount of air to enter the manifold and to be taken into the cylinders by the suction of the engine. Now by closing the throttle of the carbureter the operator of the car can allow the engine to go down the grade on compression, saving wear on the brakes and at the same time cooling the engine by the contact of cool air.

The hand valve 22 is intended to be used to close the tube in which it is located by permitting no mercury to flow therein. In this way the operator can shut off the apparatus if he does not desire to use it.

I claim:

1. In a motor-car, a manifold, inclosed diaphragms, a fixed cylindrical shell having a head and a side aperture and opening into said manifold, a slidable cylindrical shell having a side aperture and a head telescoping said fixed cylindrical shell, a movable shell having a side aperture and telescoping said slidable cylindrical shell, means between said movable shell and said diaphragms for imparting impulse to said shell, and means for introducing air into said casing for actuating said diaphragms.

2. In a motor-car, a manifold, inclosed diaphragms, a fixed cylindrical shell having a head and a side aperture and opening into said manifold, a slidable cylindrical shell having a side aperture and a head telescoping said fixed cylindrical shell, a movable shell having a side aperture and telescoping said slidable cylindrical shell, means between said movable shell and said diaphragms for imparting impulse to said shell, means for introducing air into said casing for actuating said diaphragms, and means in engagement with said slidable cylindrical shell for the movement thereof.

3. In a motor-car, a fixed cylindrical shell having a head at one end thereof and a side aperture, a slidable cylindrical shell having a side aperture and a head telescoping said fixed cylindrical shell, a movable shell having a side aperture and telescoping said slidable cylindrical shell, a casing, diaphragms in said casing; means between said diaphragms and said movable shell for imparting impulse to said shell, and means for introducing air into said casing for actuating said diaphragms.

4. In a motor-car in combination with a manifold, a fixed cylindrical shell having a head at one end thereof and a side aperture and opening into said manifold, a slidable cylindrical shell having a side aperture and a head telescoping said fixed cylindrical shell, a movable shell having a side aperture and telescoping said slidable cylindrical shell, a casing, diaphragms in said casing, means between said diaphragms and said movable shell for imparting movement to said shell, a pipe leading from said casing, a pair of vessels for containing a fluid-substance, a pipe between and opening into the bases of said vessels, one of said vessels having open connection with the pipe leading from said casing.

5. In a motor-car, in combination with a manifold, a pair of vessels fluid-conducting means including a valve leading into the bases of said vessels and connecting the same, a casing, diaphragms spaced apart in said casing and having central apertures, a diaphragm in said casing positioned forwardly of said diaphragms a tube leading laterally from the forward end of said casing, a pipe having open connection with one of said vessels and opening rearwardly into said casing, a flexible wire extending through said tube and into said casing and having one end connected to said diaphragm, a fixed cylindrical shell having a head and a side aperture and opening into said manifold, a slidable cylindrical shell having a side aperture

and a head telescoping said fixed cylindrical shell, a movable shell having a side aperture and telescoping said slidable cylindrical shell, said movable shell being connected to said wire; a pivoted lever connected to said slidable cylindrical shell for moving said shell, and a pin fixed into the head of said fixed cylindrical shell and penetrating the head of said slidable cylindrical shell for guiding the last-mentioned shell.

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

JOHANN G. WALLMANN.

Witnesses:

GEORGINA BOWES,

HENRY QUITTMAN.