

W. HEIDELMANN.
CARBURETER.
APPLICATION FILED MAY 18, 1912.

1,063,030.

Patented May 27, 1913.

Fig. 1.

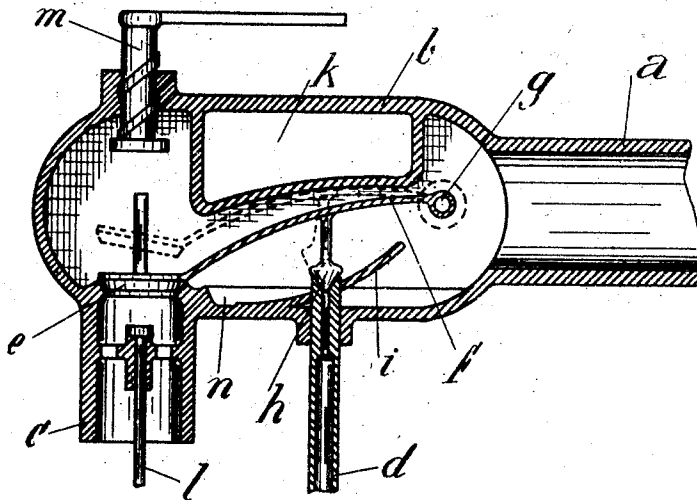
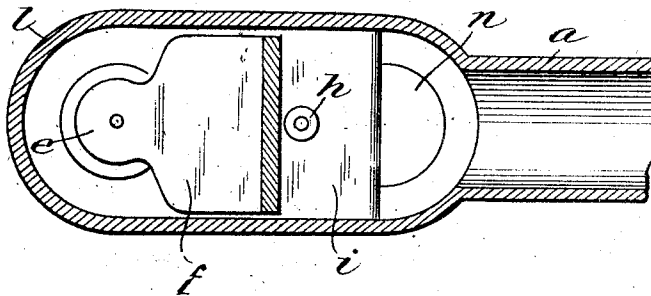


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

WILHELM HEIDELMANN, OF BRUNSWICK, GERMANY.

CARBURETER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILHELM HEIDELMANN, a subject of the German Emperor, residing at Brunswick, Germany, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to carbureters of the kind in which the vaporizing surface is heated by exhaust gases. In carbureters of this kind a part of the exhaust gases is generally conducted through a conduit of small sectional area for heating the carbureter, and the gases are quickly cooled in such a conduit, particularly during the first working of the motor, while the walls of the tube get covered with particles of soot. This occurs each time the motor is started, and especially in the case of automobiles, such heating passages are often found to be clogged to such degree as to put the carbureter out of action. If the passage were of large sectional area and kept clean, there would on the other hand be danger of spontaneous ignition of the mixture.

The present invention has for its object to obviate these defects, and its main feature consists in the arrangement that a lever pivoted within the carbureter casing and carrying the air and fuel inlet valves, has a part which constitutes a vaporizing surface and which comes into intermittent contact with a wall of a chamber heated by the exhaust gases.

The carbureter according to my invention is intended to be attached directly to the exhaust valve chamber of the motor so that the chamber virtually forms part of the exhaust passage. The walls of the chamber become extremely hot, yet spontaneous ignition of the mixture cannot take place, since the vaporizing surface portion of the lever absorbs heat from the chamber only during short intervals of contact therewith.

The carbureter according to this invention is illustrated in the accompanying drawing in which—

Figure 1 is a sectional side elevation, and Fig. 2 is a horizontal section at A—B respectively.

The carbureter consists of a casing *b* connected to the suction pipe *a* of the engine cylinder or the like. At the bottom of the said casing is provided a pipe or extension *c* for the supply of air, and a pipe *d* for the supply of liquid fuel.

According to this invention the pipe *c* for the supply of air, is closed by a valve *e* secured to a long, fairly wide, lever *f* bent in an arc and provided, near its pivot point *g*, above the fuel supply pipe *d*, with the conical closing valve *h* for the latter. The valve *h* is shown as carried by the end of a stem out of normal to the plate *f*, so that when this plate lifts, the valve is moved laterally clear of the nozzle, which allows the fuel jet to impinge unobstructedly on the plate *f*. Around the mouth of the fuel supply pipe *d*, in the casing *b* is provided a strip of sheet metal *i* which is bent in the opposite direction to the curve of the lever *f*. In the casing *b* is provided a chamber *k*, the bottom face of which is curved to suit the curvature of the lever *f*. A centrally guided rod *l* is used for lifting the valve *e*, and a screw *m* enables the lift of the said valve to be regulated.

The operation of the device is as follows—When the movement of the piston in the engine cylinder produces a reduction of pressure in the suction pipe *a* air enters in through the pipe *c* and lifts the valve *e*. Simultaneously with that lifting, during which the lever *f* turns about the point *g*, the conical valve *h* is lifted from its seat on the fuel supply pipe, and fuel is admitted through the spraying nozzle into the casing *b*. A light fuel, such as for instance petrol, is vaporized immediately on coming out from the nozzle. Heavier fuels on the contrary must be specially prepared for vaporizing. To that end, the chamber *k* is provided and is heated by the hot exhaust gases of the engine. The bottom wall of the chamber *k* is curved so that each time the valve is lifted, the lever *f* comes into contact with its highly heated surface, and is itself heated to a certain extent, or to a sufficient extent to convert into vapor at once heavy fuels which are sprayed from the nozzle against the lever *f*. It is of great importance that the lever *f* which also forms a movable wall against which the fuel impinges after leaving the spraying nozzle, should not be constantly in contact with the highly heated chamber wall, but should only come into contact with the same intermittently. In that way, the surface of the lever *f* is prevented from becoming too hot and bringing about spontaneous ignition of the fuel or vapor. The guide or baffle plate *i* arranged below the nozzle, guides the current of vapor along

the hot surface of the lever *f*, so that even when heavy fuels are used, efficient vaporization is insured. The bottom part of the casing *b* is formed into a tray *n* around the injection nozzle, and is used for collecting the fuel escaping from the nozzle when the valve *e* is raised by the rod *l* before the engine is started.

The lever *f* can be so designed that the weight of the valve *e* together with the lever action, produces a firm contact of the conical valve *h* with the nozzle of the fuel supply pipe. When a carbureter such as described is required to work in any position, for instance in aerial machines, the weight action of the valve *e* must be replaced by a spring action.

I claim—

1. In a carbureter, a casing having air and fuel inlets, a chamber within the casing and adapted to receive waste gases, a fuel vaporizing surface in the form of a plate lever pivoted within the casing and so disposed as to come intermittently into heat absorbing contact with a wall of the chamber, a valve for the air inlet attached to the lever, and a valve for the fuel inlet controlled by the lever.

2. In a carbureter, a casing, a chamber within the casing and adapted to receive waste gases, a fuel vaporizing surface in the form of a plate lever pivoted within the casing and so disposed as to come intermittently into heat absorbing contact with a wall of the chamber, an air inlet, a valve

controlling the air inlet and carried by the free end of the plate lever, a fuel inlet situated opposite the heated part of the plate lever, and a valve for the fuel inlet controlled by the lever.

3. In a carbureter, a casing having air and fuel inlets, a chamber heated by waste gases and arranged within the casing at the upper part thereof, a fuel vaporizing surface conforming with the lower wall of the chamber and forming part of a plate lever pivoted at one end within the casing, a valve for the air inlet carried by the other end of the lever, and a valve for the fuel inlet carried by the part of the lever contacting with the chamber.

4. In a carbureter, a casing having air and fuel inlets, a chamber heated by waste gases and arranged within the casing, a fuel vaporizing surface in the form of a plate lever pivoted within the casing and so disposed as to come intermittently into heat absorbing contact with a wall of the chamber, a valve for the air inlet carried by the free end of the lever, and a valve for the fuel inlet carried by the stem oblique to the lever and fixed to the middle part thereof.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILHELM HEIDELMANN.

Witnesses:

HEINRICH BOROSZK,
FRIEDA BARTELS.