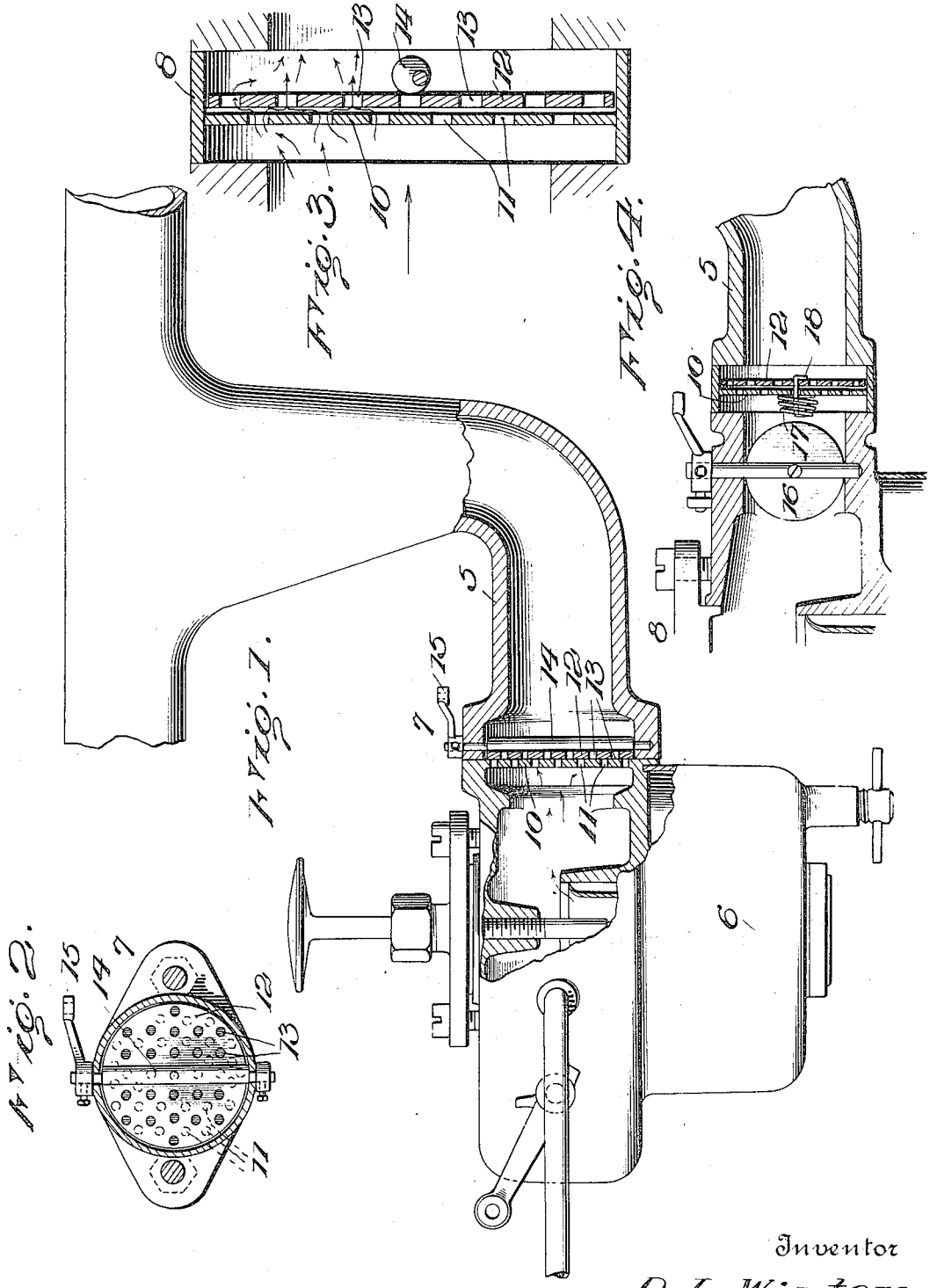
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VALVE.

APPLICATION FILED MAY 22, 1917.

1,243,122. Patented Oct. 16, 1917.



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VALVE.

1,243,122. Specification of Letters Patent. Patented Oct. 16, 1917.

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To all whom it may concern:

Be it known that I, DAVID L. WINTERS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves and more particularly to throttle valves or attachments adapted to be used in connection with gas engines of the explosive type.

Because of the comparatively low grade gasolene now being used, the charge, as it passes from the carbureter to the engine, contains small globules of fuel, which have not been thoroughly atomized, or vaporized.

This is especially the case in cold weather, or when only a small amount of power is required since the velocity of the air through the mixing chamber of the carbureter at such times, is not sufficient to thoroughly vaporize the fuel.

Incomplete combustion, together with an undue accumulation of carbon in the cylinders of the engine, always accompanies the use of a charge that has not been sufficiently vaporized.

This condition is well known to manufacturers of motor cars, and to compensate for the additional waste of fuel in this manner in cold weather, they recommend a readjustment of the fuel valve that will supply the engine with the additional fuel that is thus wasted.

It is one of the objects of this invention to vaporize or atomize that portion of the fuel which has not been properly vaporized or atomized in the mixing chamber of the carbureter.

Another object of the present invention is to provide a simple and practical attachment in the nature of a valve adapted to be placed in the manifold leading from the carbureter to the engine which will be more reliable and efficient in use and operation than devices now in use. A further object is to provide a device of the above general character having relatively few parts which will be inexpensive to manufacture and may be installed in engines now in use without material expense. A further object is to provide a device of the first above mentioned character adapted to produce a most thorough and intimate mixing of the air and gasolene and to fully and completely vaporize the gasolene prior to the entrance of the explosive mixture into the cylinder.

Other objects will be in part obvious from the annexed drawings and in part indicated in connection therewith by the following analysis of this invention.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof, all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a preferred form and and also a modification have been annexed as a part of this disclosure, and in such drawings like characters of reference denote corresponding parts throughout all the views, in which—

Figure 1 is a view partly in section of the device and associated parts of an engine;

Fig. 2 is a vertical transverse sectional view showing the device in operative position in the manifold of the engine, taken on the line 2—2, Fig. 1;

Fig. 3 is an enlarged detail sectional view;

Fig. 4 is a sectional view of a modification.

Referring now to the drawings in detail and more particularly to Fig. 1, 5 denotes the manifold leading from a carbureter 6, between which is positioned the throttle valve or attachment, denoted broadly by the numeral 7, leading to the engine cylinder. This attachment for convenience, ease of manufacture and installation preferably comprises an outer body member 8 which may be secured to the adjacent separated ends of the parts 5 and 6, and holds in relatively fixed position a disk 10 provided with a relatively large number of small perforations 11 throughout its surface. Adjacent this disk or perforated plate 10 is a second plate 12 of substantially the same size and thickness and having a corresponding number of perforations 13 and held in any desired manner against relative rotation. These plates are held adjacent each other by an eccentric valve stem 14 having a crank 15 operated in the usual manner by the driver.

This construction permits the plate 12 to move relatively away from the fixed plate

10 where a partial vacuum is formed in the manifold 5 on the intake stroke of the piston and the throttle is opened. It is to be noted that the holes in the two plates are not in register but are offset with respect to each other for the purpose of producing a plurality of circuitous passages for the explosive mixture as it passes therethrough.

The perforations are preferably about one-sixteenth of an inch in diameter, and the area of the perforations in each disk should be equal to the area of the vapor passage between the carbureter and the engine. It will thus be seen that when the disks are separated approximately one-thirty second of an inch, the engine will be supplied with a full charge of vapor.

By thus dividing the vapor into small streams, and reducing these streams to films of vapor between the disks, where they unite with other films moving with great velocity in opposite directions, the partial vaporization of the fuel which has taken place in the mixing chamber of the carbureter, is effectually completed.

This is not only the case when the engine is being supplied with a full charge of vapor, but is equally so when the engine is being supplied with a comparatively small charge, because the space between the disks is increased or diminished in accordance with the volume of the charge, the velocity of the vapor at this point remaining substantially the same. It is of course clear that these air and gas currents will not all move in the same direction which consequently results in the fact that certain currents passing through the holes in the plate 10 move toward each other in order to pass out through an intervening hole 13 in the movable plate 12. This results in a most intimate and thorough mixing of the air and gasolene and owing to the relatively small space between the two plates during the intake stroke of the engine any globules of gasolene will become completely and thoroughly broken up and vaporized.

This operation is manually controlled in the modification shown in Fig. 1, yet it is of course to be understood that the separation of the plates may be automatic if so desired, as shown in the modification in Fig. 4, in which case the device acts in connection with a throttle valve 16 for controlling the amount of explosive mixture allowed to pass through the manifold 5. Any convenient means may be employed for permitting a separation of the plates but I prefer to use a mechanism such for example as shown in Fig. 4, in which a spring 17 acts against the fixed plate and has a shank 18 adjustably connected to the plate 12 by means of a nut if desired or the shank may be bent as shown.

From the above it will be seen that the present invention comprises a simple and practical attachment or valve particularly adapted for use in connection with the intake manifold of a gas engine for obtaining the maximum efficiency therefrom. This inexpensive device which may be so conveniently installed practically eliminates the chance of any globules of gasolene entering the cylinders as the intermingling currents passing through the perforated plates completely breaks up the same, thereby resulting in the maximum power being obtained from a given quantity of gasolene. The parts are so positioned, arranged and constructed as to permit ready assembling, disassembling or replacing thereof, as may be necessary, and the invention is believed to accomplish, among others, all of the objects and advantages herein set forth.

Without further analysis, the foregoing will so fully reveal the gist of this invention that others can by applying current knowledge readily adapt it for various applications without omitting certain features that, from the standpoint of the prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

I claim:

1. A device of the character described comprising a body member suitable for attachment to the intake manifold, a pair of perforated disks within said body member capable of relative movement toward and from each other, the perforations in said disks being out of alinement, thereby to cause a plurality of circuitous passages for the explosive mixture passing therethrough.

2. A device of the character described comprising a body member, a plurality of disks within said member, each having perforations out of alinement with those in the adjacent disk, and means holding said disks in engagement but permitting separation thereof on the intake stroke of the engine whereby a plurality of circuitous passages are provided for thoroughly and intimately mixing the air and gasolene passing therethrough.

3. A device of the character described comprising a ring, a pair of perforated disks supported by said ring one of which is held against movement, means normally holding said disks in contact and means for preventing relative rotation of the disks with respect to each other, the perforations in said disks being out of alinement with those of the other whereby when separated on the intake stroke of the engine they will produce a plurality of circuitous passages for the air and gasolene passing therethrough.

4. A device of the character described com-

prising a ring, a pair of perforated disks supported by said ring one of which is held against movement, means normally holding said disks in contact and means for preventing relative rotation of the disks with respect to each other, the perforations in said disks being out of alinement with those of the other whereby when separated on the intake stroke of the engine they will produce a plurality of circuitous passages for the air and gasolene passing therethrough, and means holding said disks against separation.

5. A device of the character described comprising a ring, a pair of perforated disks supported by said ring one of which is held against movement, means normally holding said disks in contact and means for preventing relative rotation of the disks with respect to each other, the perforations in said disks being out of alinement with those of the other whereby when separated on the intake stroke of the engine they will produce a plurality of circuitous passages for the air and gasolene passing therethrough, and means for controlling the degree of separation of said disks.

6. A device of the character described comprising a ring, a pair of perforated disks supported by said ring one of which is held against movement, and spring means normally holding said disks in contact, the perforations in said disks being out of alinement whereby on the intake stroke of the engine they will separate and produce a plurality of circuitous passages for the air and gasolene passing therethrough.

7. A manually operated device of the character described, comprising a pair of perforated members, the perforations in which are out of alinement, and upon the separation of which the explosive mixture passing therethrough is divided into a multiplicity of films directed against each other, and in which the velocity of the explosive mixture between said members remains substantially constant irrespective of the volume thereof.

8. An automatically operated device of the character described, comprising a pair of perforated members, the perforations in which are out of alinement, and upon the separation of which the explosive mixture passing therethrough is divided into a multiplicity of films directed against each other, and in which the velocity of the explosive mixture between said members remains substantially constant irrespective of the volume thereof.

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

DAVID L. WINTERS.

Witnesses:

EMILY F. CAMP,

K. E. KLEIN.