C. RORABECK.

ADMISSION VALVE.

APPLICATION FILED DEC. 23, 1912.

1,066,755. Patented July 8, 1913.

Fig. 1.

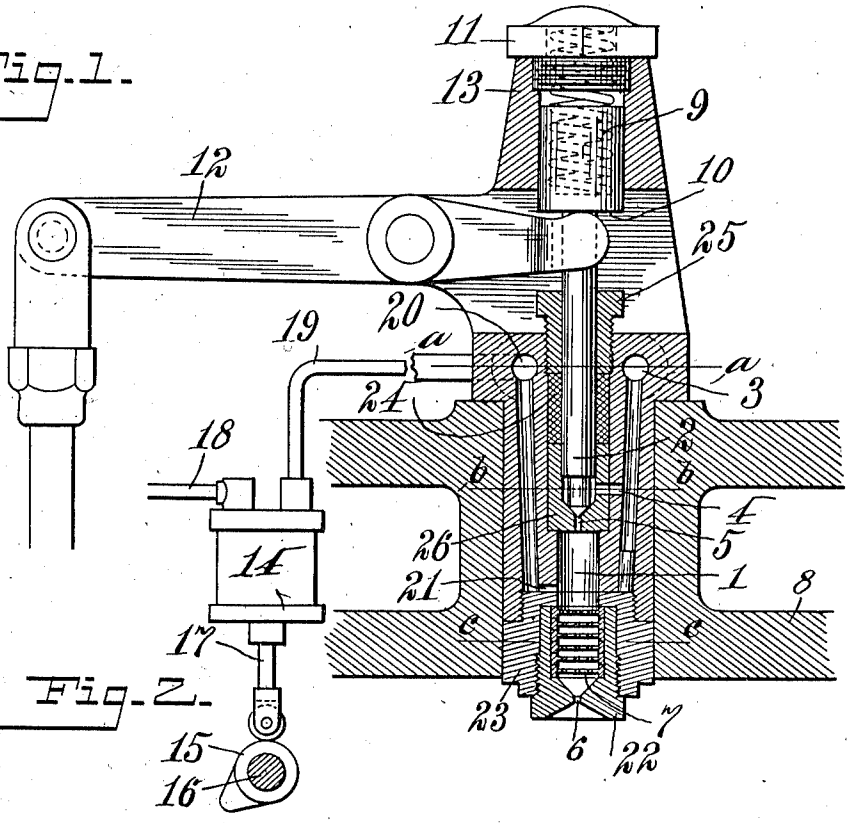


Fig. 2.

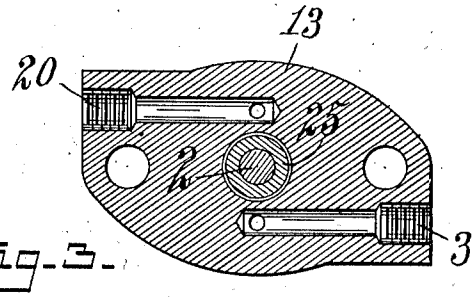


Fig. 3.

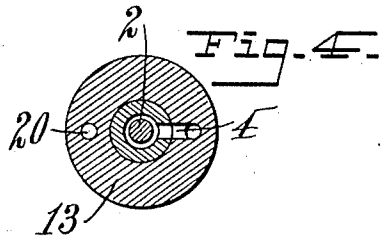


Fig. 4.

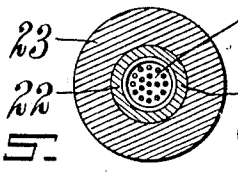


Fig. 5.

Witnesses

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ADMISSION-VALVE.

1,066,755. Specification of Letters Patent. Patented July 8, 1913.

Application filed December 23, 1912. Serial No. 738,227.

To all whom it may concern:

Be it known that I, CLAUDE RORABECK, citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Admission-Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention comprises an improved admission valve for constant pressure types of gas or oil engines.

The object of the invention is to provide a valve of such type which is suitable for feeding a low grade of oil as well as the higher grades and whereby efficiency and smooth operation of the engine are obtainable.

A distinguishing feature of the invention is the provision of means whereby the oil is introduced into the lower portion of a hot air pocket separately from the introduction of the air to said pocket and at a point where it mixes with the air after the latter has become heated. The result is that a more perfect ignition of the fuel at the various loads of the engine is obtained.

Preceding a detailed description of the invention, reference is made to the accompanying drawings of which—

Figure 1 is a sectional elevation of the valve organism and the adjacent portion of the engine cylinder head and valve operating lever; Fig. 2 is an elevation of the oil pump; Fig. 3, is a section on the line *a*—*a* of Fig. 1; Fig. 4 is a section on the line *b*—*b* of Fig. 1; Fig. 5 is a section on the line *c*—*c* of Fig. 1.

In a detailed description of the invention, similar reference characters indicate corresponding parts in the several views of the drawings.

The injection of the oil is controlled by a pump 14 which feeds into the hot air chamber 1 of the valve. The air is injected into said chamber 1 through a suitable valve 2 whose seat is provided in a steel bushing 26. The air enters said chamber through a passage 3 and lateral passage 4 in the valve cage 13 and bushing 26 and port 5 extending from the valve seat. It will be observed that the port 5 which is controlled by the valve 2 communicates directly with the upper portion of the hot air chamber 1. The compressed gas in the engine cylinder (not shown) enters the chamber 1 and serves to maintain said chamber in a heated condition for the reception of the air. This compressed gas enters said hot air chamber or pocket through the port 6 and passes through atomizers or grids 7. The valve organism is mounted in the head 8 of the cylinder and the atomizers or grids 7 are located nearer the inner surface of the head. The valve 2 is maintained on its seat by the spring 9 which is inclosed in a guide 10 and is held by a cap 11. The said valve is lifted from its seat at the proper time by the lever 12 which is operated by a cam from the cam shaft 16 which is suitably timed. The cam for operating this lever is a well known instrumentality and for this reason it has not been deemed necessary to illustrate the same. The pump 14 is operated by a suitable cam or eccentric 15 from the said cam shaft 16. The said cam or eccentric 15 operates upon the pump plunger 17. Oil is introduced to the pump from the source of supply through a pipe 18 and is delivered to the valve cage 13 through a pipe 19, and enters a passage 20 in said valve cage and thence to the hot air pocket 1 through a lateral port 21. It will be observed that the lateral oil port 21 communicates with said air pocket at the lower portion thereof while the air port 5 enters said pocket at the top thereof. It, therefore, follows that the oil mixes with the air when the latter is heated. The injection of the oil is suitably timed with the engine.

When the valve 2 is raised, the mixture of the hot air and oil is injected from the pocket 1 through the atomizers or grids 7 and port 6 to the engine cylinder. The grids 7 serve to thoroughly atomize the oil and commingle it with heated air before the mixture enters the cylinder of the engine. The admission of the oil and the air into the mixing pocket or chamber 1 is so timed that said injection takes place at about the highest point of compression in the cylinder. At the various loads of the engine, the quantities of oil and air are likewise varied to suit the conditions of loading so that a more perfect and desirable ignition of the motive fluid is obtainable at the different loads of the engine.

The grids 7 are located within a plug 22 that is tapped into a bushing 23 which lies adjacent to the inner side of the cylinder head. Therefore, the said grids may be conveniently removed whenever it becomes necessary to cleanse the same. The valve 2 is sealed by suitable packing 24 which is compressed by a lock packing nut 25 to prevent any valve leakage.

While I have with some particularity described the structural features of my improved fuel admission valve, I do not wish it to be understood that each particular element or feature might not be varied within the scope of the invention for it is obvious that the construction might be modified to some extent without departing from the fundamental principles of the invention. These involve means for injecting the oil into the lower portion of a mixing chamber which is maintained in a heated condition from the compression of the engine cylinder, the air being discharged into said chamber at a point remote from the point at which the oil is introduced to said chamber and the arrangement of an atomizer between the point of introduction of the oil and the interior of the engine cylinder. By such an arrangement a very desirable mixture of fuel is obtained to meet the varied requirements of the engine.

Having described my invention, I claim,

1. In an admission valve of the type specified, the combination with the head of an engine cylinder, of a valve housing mounted therein and provided with a mixing chamber adjacent to the inner side of the cylinder head, and an oil passageway communicating with the inner portion of said mixing chamber, a valve seat forming the outer inclosure of said mixing chamber having a lateral air port communicating with an air passage in the valve housing, a valve controlling the port in said valve seat, and an atomizer located between the inner end of the mixing chamber and the interior of the cylinder head, substantially as specified.

2. In a valve of the type specified, the combination with the head of an engine cylinder, of a valve housing mounted therein and provided with a mixing chamber extending through the inner end thereof, and an independent oil passage communicating with the inner portion of said mixing chamber, a bushing united to the inner end of said valve housing and forming a continuation of the mixing chamber, an atomizer mounted in said bushing and intercepting the passage of the mixture from the mixing chamber to the interior of the cylinder head, a valve seat forming the outer inclosure of said mixing chamber, said valve seat having an air port leading to the mixing chamber and a lateral port extending into the valve housing, and a valve controlling the port in said valve seat to admit air to said mixing chamber at a point remote from the point at which the oil is introduced to said chamber, substantially as specified.

3. In a valve of the type specified, the combination with the head of an engine cylinder, of a valve housing mounted therein and having a mixing chamber and parallel independent air and oil passages leading to said mixing chamber, the oil passage leading to the inner portion of said mixing chamber, a valve seat forming the outer inclosure of said mixing chamber and with which the air passage communicates, a valve controlling the admission of air to the mixing chamber through said valve seat, means for supplying said oil passage with oil under pressure, and an atomizer communicating with the inner end of said mixing chamber and lying between said mixing chamber and the interior of the cylinder head, substantially as specified.

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

CLAUDE RORABECK.

Witnesses:
R. J. McCarty,
Matthew Siebler.