April 24, 1934. W. HOFFERBERTH 1,956,235

VALVE

Filed Sept. 1, 1932

Fig. 1.

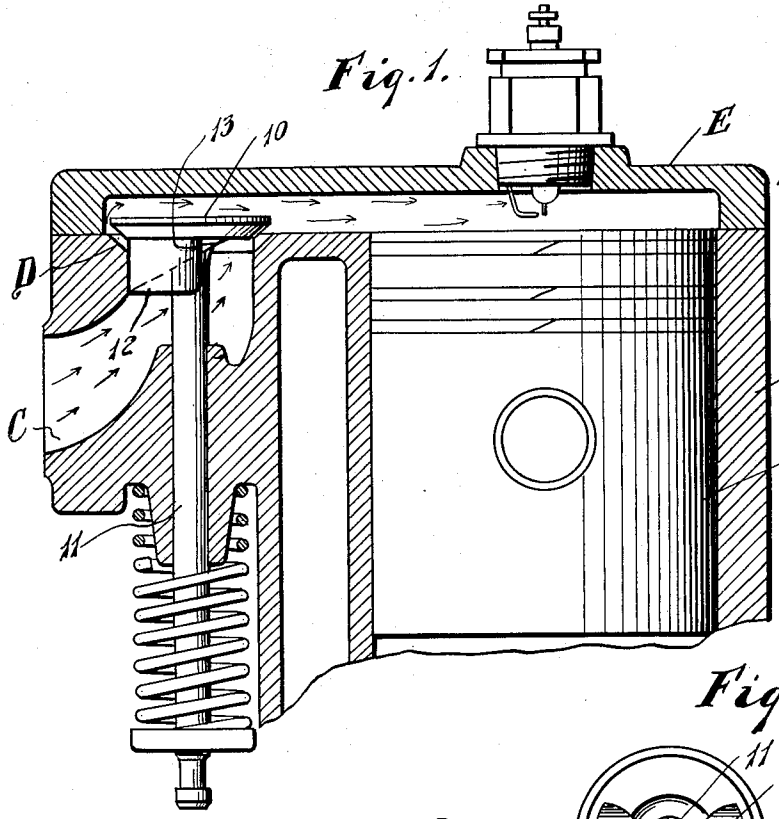


Fig. 2.

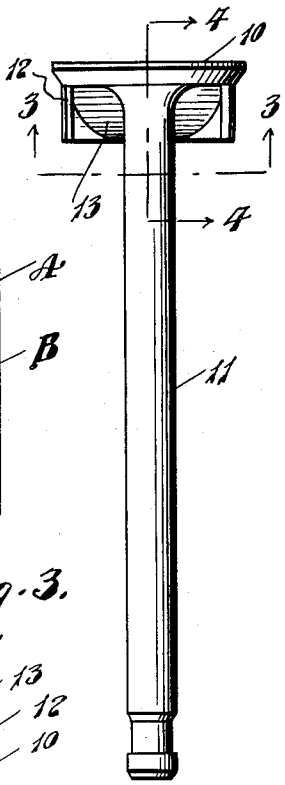


Fig. 3.

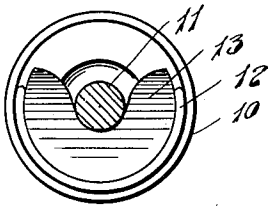


Fig. 5.

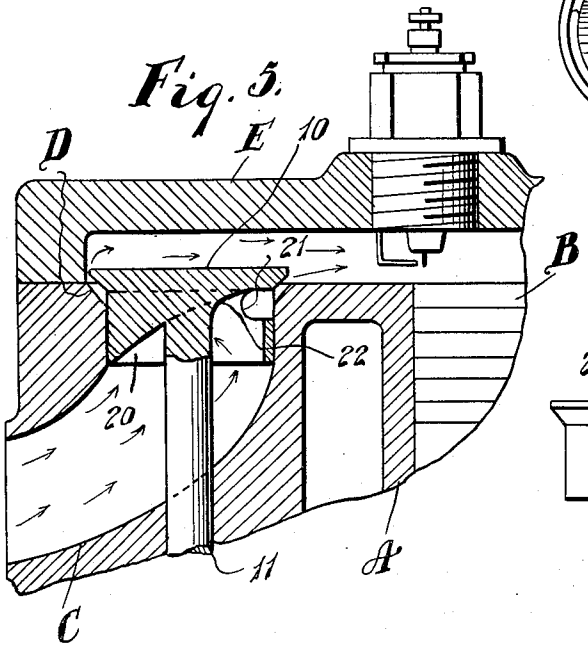


Fig. 4.

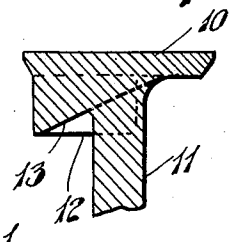
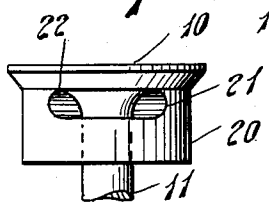


Fig. 6.



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UNITED STATES PATENT OFFICE

1,956,235

VALVE

William Hofferberth, Baltimore, Md.

Application September 1, 1932, Serial No. 631,403

2 Claims. (Cl. 123—188)

The invention relates to valves of the poppet type, and has particular reference to valves as used in internal combustion engines, and has for its principal object the provision of an improved construction of valve whereby the products of combustion are directed through one side of the valve only so as to direct the charge of fuel immediately over the piston and thereby provide more power for the same quantity of the fuel.

To this end the invention consists in providing a skirt dependent from the valve head adjacent to its edge and having the skirt either provided with an opening in one side thereof through which the fuel or explosive charge escapes into the cylinder, or the skirt is interrupted on one side for the same purpose.

The invention also includes an inclined deflector leading to the opening or interrupted portion whereby the explosive charge in the intake branch is directed to the opening or interrupted portion, said deflector also having a tendency to more thoroughly break up the explosive mixture and thereby contribute to a more thorough combustion of the explosive mixture, making starting easier as well as adding power to the explosion, and reducing the amount of carbon formed on the cylinder head and piston.

The invention will be described in detail hereinafter and will be found illustrated in the accompanying drawing in which

Figure 1 is an elevational view of the improved valve shown in position in a conventional internal combustion engine, the engine being shown fragmentarily and in section,

Figure 2 is a side view in elevation on an enlarged scale of the valve looking at it from a different position from that shown in Figure 1,

Figure 3 is a transverse sectional view on a plane indicated by the line 3—3 of Figure 2, and

Figure 4 is a sectional detail on a plane indicated by the line 4—4 of Figure 2,

Figure 5 is a sectional view of a fragment of an internal combustion engine showing a modified construction of valve, the valve being shown partly broken away and in section, and

Figure 6 is a fragmentary view of the valve shown in Figure 5.

In the drawing similar reference characters are used to designate corresponding parts in all the views.

In Figures 1 and 5 are shown a conventional internal combustion engine including a cylinder A, a piston B, an intake branch C, and a valve seat D, E indicating the head of the engine. The invention comprises an improvement in the valve which includes a head 10 adapted to engage the valve seat D and a valve stem 11 carrying the head. Depending from the head 10 and adjacent to its outer edge is a skirt or a shroud 12 that wipes against the walls of the intake branch C and extends part way around the valve only, being interrupted on one side thereof, the side nearest to the engine cylinder A and piston B, so that the explosive mixture is directed immediately into the space between the piston B and the head E. The under side of the head 10 of the valve is provided with an inclined deflecting wall 13, being inclined from the edge of the valve where the skirt is interrupted, or the outlet portion, and inclines downwardly under the head 10 to the lower edge of the skirt opposite to said outlet or interrupted portion. The deflecting wall 13 serves not only to direct the explosive mixture to the outlet portion between the end of the skirt where interrupted, but also serves to pick up and more intimately mix the products of combustion entering the engine cylinder so that a more thorough combustion of the explosive mixture is secured, making starting of the engine easier and reducing the amount of carbon formed by the explosion.

It will be understood that the skirt 12 by wiping the walls of the intake branch C prevents the explosive mixture escaping except through the outlet formed between the interrupted ends of the skirt, thus compressing the mixture flowing into the cylinder, which also contributes to a more thorough mixture of the products in the combustible mixture, and also reduces the amount of the mixture flowing into the engine, as obviously the space under the head over the skirt 12 will provide a dead gas space, and to the extent of the dead gas in the space reducing the quantity of live combustible mixture admitted to the engine cylinder.

In Figures 5 and 6 is shown a modified construction in which the valve head 10 is provided with a skirt 20 extending entirely around the valve and having an opening 21 therein for the outlet of the gas or the explosive mixture. The modified construction also has a deflector 22 similar in construction to the deflector 13 and performing the same function.

In addition to the advantages heretofore set out of less consumption of gas, the more thorough breaking up of the explosive mixture, the placing of the charge of gas directly over the piston, it will be apparent that the above described valve may be substituted for the valves now in use with internal combustion engines, and that it may be used either on the type of engine shown in the

drawing, that is, the valve and head, or it may be used on engines employing overhead valves.

A further advantage of the skirted valve structure is that the engine timing is more regular and gas knocks are practically dispensed with because the gas is placed in one spot and burned more thoroughly and faster and furthermore as less gas is consumed the engine does not heat to an excess temperature.

In installing the valve in valve-in-head or overhead valve motors, the shroud or skirt will be positioned opposite to the gas intake so as to divert the flow of the explosive mixture in entering the cylinder thus more thoroughly mixing the explosive mixture and also putting the mixture directly over the piston.

What is claimed is:—

1. In a valve having a head and stem, a depending skirt on the head arranged adjacent to the edge of said head and provided with an outlet on one side only of said head and stem, and a deflecting wall within the skirt and inclined downwardly from the outlet to the lower edge of the skirt intermediate of the ends of said outlet.

2. In combination with the intake conduit of an internal combustion engine, a valve seat at the end thereof, a valve stem operating in said conduit and having a head to engage said valve seat, and a skirt depending from said head and having an outlet on one side of said valve and seat, said skirt engaging the wall of said conduit and closing the opening between the valve and seat except through the outlet aforesaid, and a deflecting wall located within the skirt and inclined downwardly from the valve head to the lower edge of the skirt intermediate of the ends thereof.

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