J. F. READ.

COMBINATION AUXILIARY AIR INTAKE AND PRIMER FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED MAY 26, 1917.

1,277,644. Patented Sept. 3, 1918.

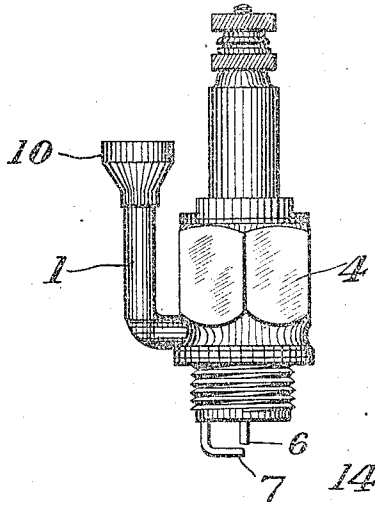


Fig. 1

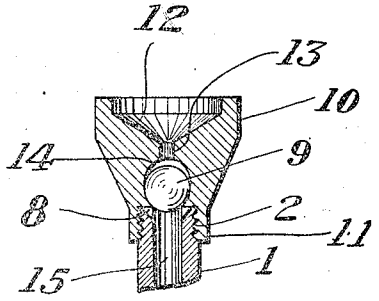


Fig. 4

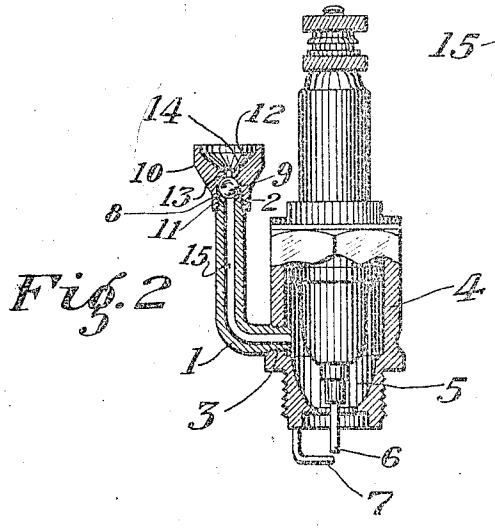


Fig. 2

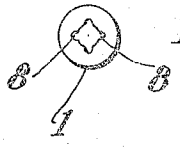


Fig. 3

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COMBINATION AUXILIARY AIR-INTAKE AND PRIMER FOR INTERNAL-COMBUSTION ENGINES.

1,277,644. Specification of Letters Patent. Patented Sept. 3, 1918.

Application filed May 26, 1917. Serial No. 171,100.

To all whom it may concern:

Be it known that I, JOSEPH F. READ, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Combination Auxiliary Air-Intakes and Primers for Internal-Combustion Engines, of which the following is a specification.

This invention has for its object the provision of a neat, simple, and inexpensive device, easily attached at an effective point and capable of the combined functions of an auxiliary air intake and primer for an internal combustion engine.

In the accompanying drawings forming part of this specification and in which like numbers of reference denote like parts wherever they occur,

Figure 1 is a side elevation showing this device attached to an ordinary spark-plug;

Fig. 2 is a sectional view of this device and of the lower part of a spark-plug;

Fig. 3 is a plan view of the end of the intake tube of this device showing a plurality of air passages located around the space occupied by a ball valve when seated on the end of said tube; and

Fig. 4 is a sectional view of the cup and valve and adjoining passages.

The drawings are approximately actual size of the device, except Figs. 3 and 4, which are on an enlarged scale.

It is well known that soot points in a spark-plug are very undesirable. Soot or carbon results from imperfect combustion. One way in which to overcome imperfect combustion is to feed more air to the point of ignition. In an internal combustion engine, it is economical to increase the proportion of air in the gas admitted into the cylinders through the carbureter. This device, by reason of its location, feeds air to the interior of the cylinder in such a manner that the air is obligated to pass by the ignition points of the spark plug, which not only mechanically, on account of the forced draft, tends to clean the said points, but provides an abundance of oxygen in that part of the cylinder (not shown in the drawings) where the explosion occurs and adjacent to the said spark points.

The inlet tube 1 is L-shaped and threaded at 2 and 3. At 3 the said tube is threaded into the side or casing of a spark-plug 4, which has the central chamber 5 and the ignition points 6 and 7. At the outer end of the tube 1 notches 8 are formed, which when ball 9 is seated on the said outer end of the tube 1 permit the passage of air around the said ball and into the tube or pipe 1. A cup 10, having threaded flange 11 at its base, screws at 2 upon tube 1.

The cup 10 has sloping sides 12 from a relatively wide mouth and a constricted opening or passage-way 13 for the air. The flange 11 terminates inwardly in a concaved cup or valve-seat 14 for the ball valve 9.

When the piston (not shown in the drawings) begins to move in the direction to compress the gas, ball 9 seats on valve-seat 14, and prevents the escape of gas, and remains in this position while the explosion occurs, and thus prevents the waste of explosive force. On the other hand, when the piston (not shown) is moving in the direction to draw in the gas preparatory for explosion, ball 9 seats on the outer end of tube 1, the notches 8 or similar enlargement of the passage at the mouth of pipe 1 allowing the air to pass around the ball 9 and enter the passage 15 within the pipe 1 and to pass through the same into the chamber 5 of the spark-plug and past the ignition points 6 and 7 into the cylinder, the air in the first instance being sucked into the cup 10 and through the passage 13.

It will be observed that making the pipe 1 L-shaped, as shown in the drawings, results in compactness and neatness of arrangement and, also, insures that the ball 9 will always be seated by gravity on the outer end of the tube 1 except when an explosion causes it to seat upon the tight seat 14 to close passage 13. However, the suction of the moving piston will, without the aid of gravity, cause it to seat upon the outer end of tube 1 when the piston is drawing in gas to the explosion chamber.

The operation of the device is automatic either to prevent loss of explosive force or to allow the auxiliary intake of air for the purpose of improving combustion, increasing the force of the explosion by increasing the volume by thinning the mixture of gas, and mechanically cleaning the ignition points by air friction. It is automatic, also, in closing the outlet 13 while the piston is compressing the gas.

This device can be used, also, as a primer,

the priming fluid being poured into the cup 10 and entering through the passages 13 and 15 and chamber 5 into the cylinder to be primed. The convenience of such a device for a primer will be readily perceived in lieu of opening the pet-cocks as customarily practised. The presence of ball valve 9 and its tight outer seat and apertured inner seat prevents the presence of such primer interfering with the proper operation of the engine or the inlet of the priming fluid.

Other means than the notches 8 may be provided for allowing the entrance of air into tube 1 while ball 9 is seated on the said tube, such, for instance, as any other form of notch or projection on the outer end of the said tube or an air pin hole through the wall of tube 1 at any point between the outer extremity thereof and the inmost extension of the flange 11, the said projection and the said pin-hole not being illustrated in the drawings.

Having thus described this invention, I hereby reserve the benefit of all changes in form, arrangement, order, or use of parts, as it is evident that many minor changes may be made therein without departing from the spirit of this invention.

I claim:

A device of the type described, including the combination of a spark-plug, an L-shaped tubular member leading to the spark-plug chamber and having a cup-like member at its upper end terminating in a downwardly-tapering chamber leading to a vertical passage, this, in turn, leading to a spherical chamber below, with a plurality of by-passes in communication therewith, said spherical chamber forming a valve seat at the lower end of said vertical passage, and a spherical valve positioned in said spherical chamber, the latter being adapted to allow of an upward and downward seating movement of said valve, said tubular member having its bore flared below said spherical chamber to provide for communication therebetween and said plurality of by-passes.

In testimony whereof I hereunto affix my signature.

JOSEPH F. READ.