J. P. WILSON & J. F. JACKSON.

VALVE FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED APR. 7, 1915.

1,172,093.

Patented Feb. 15, 1916.

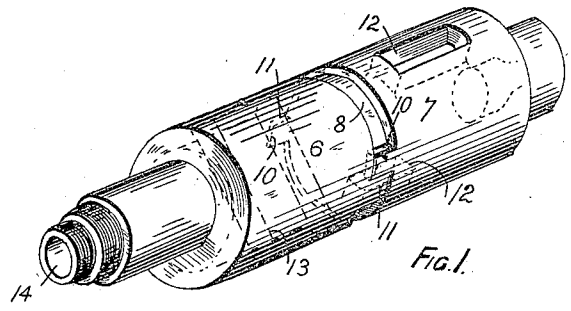


Fig. 1.

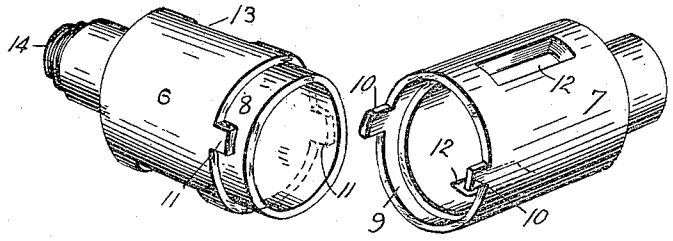


Fig. 2.

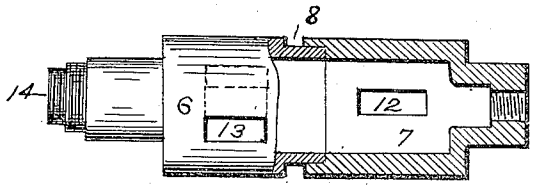


Fig. 3.

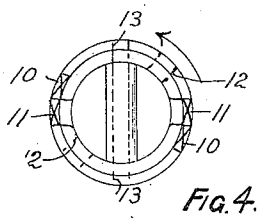


Fig. 4.

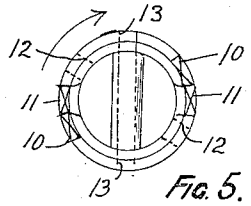


Fig. 5.

Witnesses:

W. E. McDade,

Inventors

John P. Wilson

John F. Jackson

by James L. Norris

Attorney

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN PALMER WILSON AND JOHN FRAZER JACKSON, OF SYDNEY, NEW SOUTH WALES, AUSTRALIA.

VALVE FOR INTERNAL-COMBUSTION ENGINES.

1,172,093. Specification of Letters Patent. Patented Feb. 15, 1916.

Application filed April 7, 1915. Serial No. 19,789.

To all whom it may concern:

Be it known that we, JOHN PALMER WILSON and JOHN FRAZER JACKSON, subjects of the King of Great Britain, residing at Sydney, in the State of New South Wales, Commonwealth of Australia, have invented certain new and useful Improvements in Valves for Internal-Combustion Engines, of which the following is a specification.

This invention relates to valves for four stroke internal combustion engines and its main object is to provide a four stroke internal combustion engine with simple valve arrangements for effecting a direct reversal.

The invention consists of a rotary valve comprising essentially a valve plug of special construction rotatable within a complementary shaped valve chamber. This plug is in two sections positioned end to end where they are in movable engagement one section being adapted to be revolved by synchronized gearing from the crank shaft of the engine and to transmit motion to the other section of the plug.

The two sections are preferably hollow their engaging ends forming a through passage. One section has a central hollow stem or spindle whose hollow is adapted to be in communication with the fuel supply or carbureter and it also has a diametrically disposed passage adapted to connect with the exhaust port of the engine and with a port in the valve chamber leading to the air or to a silencer. The other section is closed at its disengaged end and has in its periphery two diametrically disposed inlet ports to connect at the commencement of one of the four strokes of the engine as the plug is revolved with a port or passage in the valve chamber in communication with the cylinder of the engine. The engaging ends of the two sections of the plug are so constructed that the engine driven section may revolve free of the other section a short distance reversibly in order to adjust the supply and exhaust ports of the plug into correct relative positions for the direction of motion desired. This may be accomplished by providing sector projections, pins, stops or the like, upon the adjoining ends of the sections which projections or stops are adapted to engage upon or against one face or stop during revolution in one direction, and to revolve freely for a short distance and then engage upon or against another face or stop during the revolution in the other direction. But in order that our invention may be clearly comprehended, we now refer to the accompanying drawings in which the preferred form applied to a four cycle engine is illustrated.

Figure 1 is a perspective view of the valve, while, Fig. 2 is a similar view the two portions or sections of the valve being separated. Fig. 3 is a partial longitudinal section of Fig. 1. Figs. 4 and 5 are diagrammatic views.

The same numerals indicate the same parts.

6 and 7 represent the two sections of the valve the latter section being driven from the engine.

8 is a sleeve or ring integral or fixed to one end of section 6 and takes in a socket or recess 9 in the adjacent end of section 7. Projections 10 are formed on section 7 being capable of taking against the sides of corresponding projections 11 on section 6.

12 represent the inlet or supply ports of the valve and 13 the exhaust port which consists of a passage through the valve plug.

14 is inlet from carbureter.

In operation the reversal of the engine is accomplished by adjustment of the ignition device whereby the ignition stroke is advanced thereby causing the engine to be back fired. The effect of this is to cause an automatic adjustment of the valve plug by the slipping or non-rotation of section 6 which is normally in engagement with the engine driven section thereby providing for the proper and successive opening and closing of the supply and exhaust ports at their due times.

Having thus described our invention what we claim as new and desire to protect by Letters Patent is:—

1. In valves of the rotary type for internal combustion engines, a valve plug composed of two sections positioned end to end, the adjoining ends being provided with means to permit, on the reversal of the engine, one section to slip or non-rotate independently of the other section, one of said sections being provided with supply ports and the other with exhaust ports.

2. A valve for internal combustion engines, comprising a pair of hollow rotatable elements communicating one with the

other, one of said sections provided with means for connection to a fuel supply and having exhaust ports, the other of said sections adapted to be rotated by the engine and having inlet ports, and a driving connection between said elements permitting one to be partially rotated independently of the other.

3. A valve for internal combustion engines, comprising a pair of hollow rotatable elements arranged end to end and having their adjacent ends interengaging to provide a gas-tight joint between said ends and to permit one element to be partially rotated independently of the other, one of said elements having means for connection to a fuel supply and provided with an exhaust port, the other of said elements having an inlet port and adapted to be rotated by the engine.

4. A valve for internal combustion engines, comprising a pair of hollow rotatable members each having an open end, one having a sleeve on its open end, the other having a socket at its open end to receive the sleeve of the other member, and coupling means between said members permitting one member to partially rotate independently of the other, one of said members having means for connection to a fuel supply and exhaust ports, and the other having inlet ports and adapted to be rotated by the engine.

5. In a valve of the rotary type for internal combustion engines, a valve plug formed of two sections positioned end to end, coupled between the adjoining ends of said sections to permit one section to partially rotate independently of the other, one of said sections having a socket at one end and provided with inlet ports, the other of said sections having a sleeve at one end arranged within the socket of the other member and provided with exhaust ports.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JOHN PALMER WILSON.
JOHN FRAZER JACKSON.

Witnesses:
HENRY W. CLARKE,
PERCY H. SHAILER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."