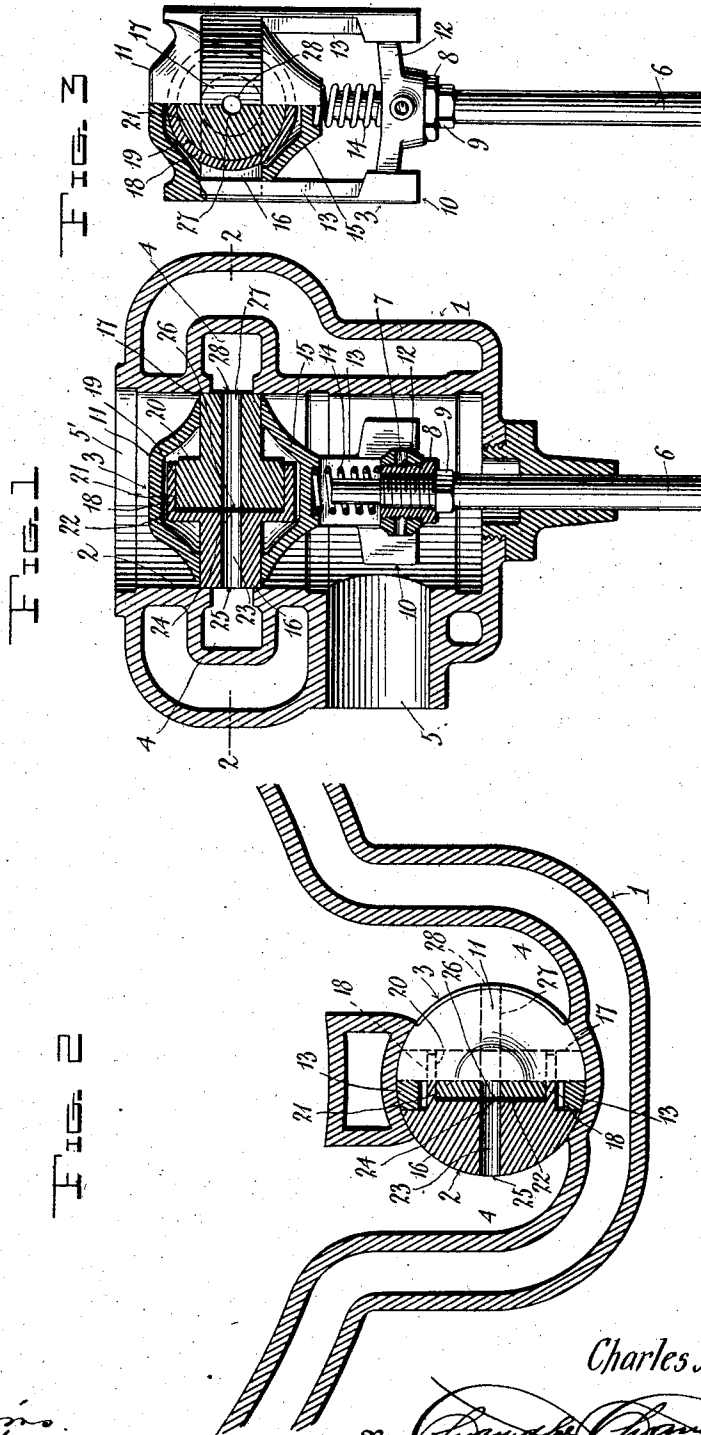


C. H. JARVIS.
VALVE.

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Witnesses

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VALVE.

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To all whom it may concern:

Be it known that I, CHARLES H. JARVIS, a citizen of the United States, residing at Charlotte, in the county of Eaton, State of Michigan, have invented certain new and useful Improvements in Valves; and I do hereby 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.

My invention relates to valves, and more particularly to new and useful improvements in valves for internal combustion motors, and the object of my invention is to provide a valve which will be close fitting at all times, and a further object is to provide a valve which will automatically expand to take up its wear.

With these and other objects in view my invention consists in general in a controlling valve for internal combustion engines, maintained in proper bearing relation to its complementary casing and ports by the fluid which it governs. And my invention still further consists in a controlling valve for fluid pressure engines formed in sections cushioned apart by the fluid which it controls, the area of the cushioned surfaces being greater than the surfaces subject to the admitted fluid.

Referring more particularly to the drawings which accompany and form a part of this application, Figure 1 is a central longitudinal section of the valve casing and valve. Fig. 2 is a transverse section on the line 2—2 of Fig. 1. Fig. 3 is a side elevation partially in section showing the valve removed from its casing.

Referring more particularly to the drawings which show a preferred embodiment of my device 1 designates in general, a water cooled valve casing which may be of the customary or any preferred type and which is provided with the usual cylindrical valve seat 2 in which is seated the valve, which in its entirety is designated 3.

Opening upon the valve seat 2 upon either side thereof, are the ports 4 which ports are connected to the cylinder of the motor by suitable passages not shown in the drawings. The lower part of the valve casing 1 is also provided with an inlet port 5, while the upper part of the casing has an exhaust port 5'.

The valve rod 6 is threaded near its end and provided with the internally and externally threaded collar 7 having an annular flange 8 and a set nut 9 for holding the collar 7 in place. A valve frame 10 consisting of the top member 11, base member 12 and side members 13 has a centrally located threaded aperture in its base 12 adapted to screw over the collar 7 of the valve rod 6 thereby joining the valve rod to the frame. A helical spring 14 is seated upon the top of the collar 7 surrounding the end of the valve rod 6. A clamping member 15 is slidably mounted upon the side members 13 of the frame 10 and rests upon the top of the spring 14.

Referring more particularly to the valve construction it will be seen, that the valve proper consists of two members 16 and 17, slidably mounted upon the side members 13 of the valve frame 10, said members being held against the top of the frame by the clamping member 15 which in turn, is held in place by the spring 14. It will be apparent that the force exerted against the clamping member by the spring 14 may be regulated by means of the threaded collar 7 and the set nut 9.

As will be seen by referring to the drawings the valve consists of two members 16 and 17, said members having their outer faces fitted to bear against the cylindrical valve seat 2. The inner face of the valve member 16 is enlarged as at 18 and provided with a centrally located socket 19, while the inner face of the valve member 17 is enlarged as at 20 and provided with the outwardly extending portion 21 adapted to fit closely within the socket 19 of the valve member 16 leaving a slight space 22 between the base of the socket and the extension 21, the surrounding portions of said inner faces bearing against each other when the members are in assembled position. The valve member 16 is provided with a longitudinal passage 23 leading from the port 24 in its socket 19 to the port 25 in its outer face. The outwardly extending portion 21 of the valve member 17, is provided with a port 26 registering with the port 24 of the member 16, a passage 27 connecting this port 26 with the port 28 in the outer face of the valve member 16. These ports 25 and 28 are adapted to register with the cylinder ports 4 of the valve seat 2 when the valve is in its

closed position. The inner portions of the valve members 16 and 17 are enlarged as described, in order that the areas of the inner faces of the socket 19 and the extension 21 shall be greater than the areas of the portions of the outer valve faces subject to pressure through the cylinder ports 4.

In operation the valve 3 reciprocates in its seat 2 in the customary manner, permitting the cylinder to be alternately charged through the ports 4 and 5, and discharged through the ports 4 and 5', the operation thus far being identical with that of the usual valve of this type.

My invention resides in the fact that each time the valve ports 25 and 28 register with the cylinder ports 4 the cylinder gases will pass by the ports 25 and 28 and the passages 23 and 27 into the socket recess 22 between the valve members. As the areas of the faces of this recess are greater than the areas of the cylinder ports 4 the pressure in the recess 22 tending to separate the valve members 16 and 17 will be greater than the pressure on the outer faces of these valve members. This pressure will cause the valve to fit closely in its seat 2 at all times, and will also cause the valve to take up its own wear.

It will thus be seen that I have constructed a valve formed in sections, said sections being adapted to be cushioned apart by the pressure of the fluid which it governs, and it will be further seen that in a valve so constructed, the greater pressure to which it is subjected, the more closely it will engage its seat.

What I claim is:

1. A valve for fluid pressure engines, comprising, a frame having top, bottom and side members, a valve rod adjustably secured to said bottom member, a spring carried by

said valve rod, a clamping member slidable on said frame and controlled by said spring, and coupled members slidable in said frame and clamped against the top thereof by said clamping members, and transverse passages through said members, said passages being in alinement when said members are in their coupled position.

2. In an internal combustion motor the combination with a valve seat, of a valve loosely engaging in said seat and comprising a plurality of members, and fluid pressure means acting upon said valve only during compression and working strokes to forcibly extend its members to engage closely with said valve seat.

3. In an internal combustion engine the combination with a valve seat having cylinder ports therein, of a valve reciprocally mounted in said seat, said valve comprising two members, one member having a cylindrical socket in its inner face engaging a cylindrical extension upon the inner face of the other, and bores through said members communicating in said socket, and adapted to register with the cylinder ports in one position of the valve.

4. In a fluid pressure engine the combination with a valve seat having a cylinder port therein, of a valve loosely engaging in said seat and comprising a plurality of members, and fluid pressure means acting upon said valve only during the time the cylinder port is closed to forcibly extend its members to engage closely with the said valve seat.

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

CHARLES H. JARVIS.

Witnesses:

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