No. 717,990. PATENTED JAN. 6, 1903.

W. M. HARVEY.

VALVE SEAT FOR EXPLOSIVE ENGINES.

APPLICATION FILED AUG. 18, 1902.

NO MODEL.

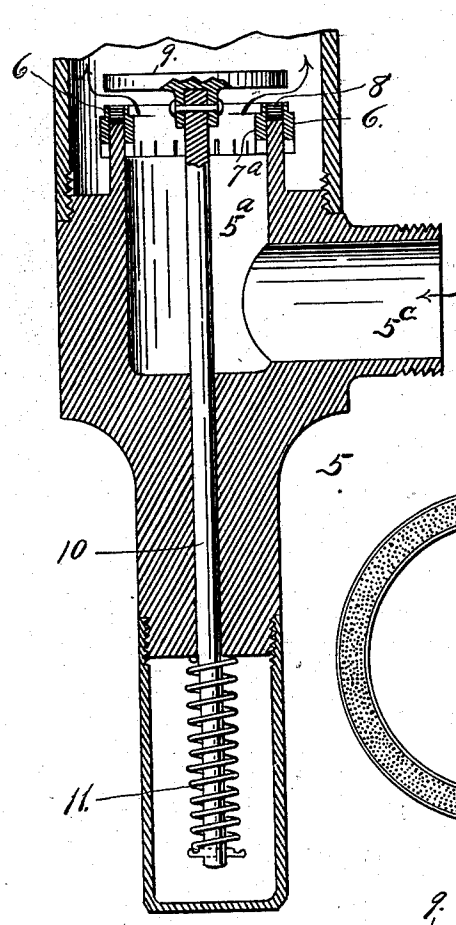


Fig. 1.

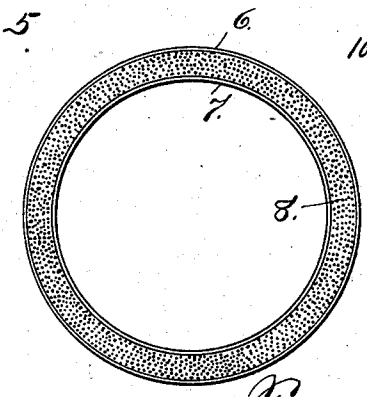


Fig. 4.

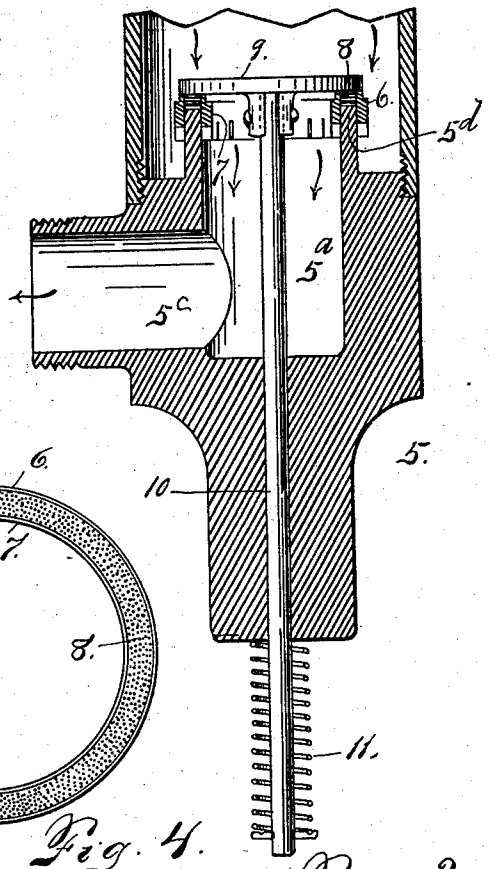


Fig. 2.

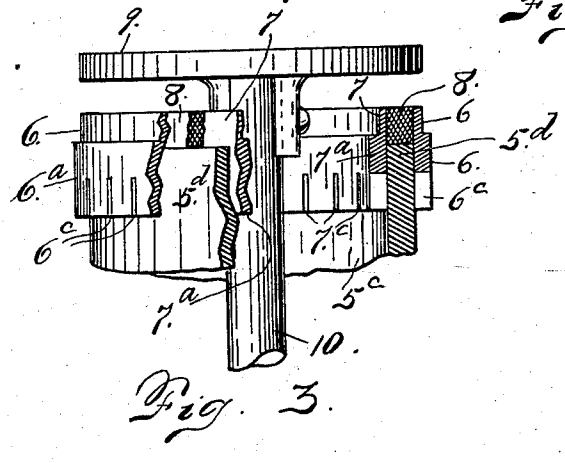


Fig. 3.

WITNESSES:

Otto E. Hoddick.

Dena Nelson.

INVENTOR.

W. M. Harvey.

BY

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WINFRED M. HARVEY, OF DENVER, COLORADO.

VALVE-SEAT FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 717,990, dated January 6, 1903.

Application filed August 18, 1902. Serial No. 120,005. (No model.)

To all whom it may concern:

Be it known that I, WINFRED M. HARVEY, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Valve-Seats for Explosive-Engines; 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in valve-seats, and more particularly to a valve-seat for gasolene and other explosive engines. Its object is to produce a valve-seat that is self-adjusting, in which the wear of its packing is automatically taken up, is simple in its construction, and may readily be repacked.

To this end it consists of an annular groove for the reception of a composite packing, the side walls of said groove being formed by two adjustable rings fitted over the mouth of the valve.

The invention will now be described in detail, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical central section of a valve arranged according to my invention and provided with a spring-pressed valve-plate. Fig. 2 is a similar view of a valve with the valve-plate arranged to be operated by a plunger. (Not shown.) Fig. 3 is a detail view, partially broken away, showing the construction of valve-seat. Fig. 4 is a top plan view of the wearing-surface of valve-seat.

Referring to the drawings, like reference characters refer to like parts throughout the several views, in which—

5 is the body of the valve, having the central passage 5^a and side passage 5^c leading into it at right angles to the passage 5^a. The mouth of the passage 5^a is provided with the annular projection 5^d, and upon this annular projection is mounted my improved valve-seat, which consists of the two hard-metal rings or collars 6 and 7, which are closely fitted over the outer and inner walls, respectively, of the annular projection 5^d and extend above said projection, so as to form an annular groove 8 for the reception of a composite packing 8^a, with which said groove 8 is filled. These rings or collars 6 and 7 present a thin annular edge to each side of the packing-chamber 8; but their lower ends 6^a and 7^a are made thick, so as to resist the action of the extreme heat common to valves of this class. To insure and retain a close fit of the collars 6 and 7, their lower or thickened portions are provided with open slots or cuts 6^c and 7^c. Fitted over the valve-seat is the valve-plate 9, which consists of a steel disk loosely pivoted to a stem 10. The stem 10 passes through the valve and has a spiral spring 11 surrounding its protruding end. This spring 11 serves to hold the valve normally in its closed position, as shown in Fig. 2. In Fig. 1 the valve is shown applied to a supply-port in which the valve is opened and the gas is drawn up through the passage 5^a and 5^c by the suction created in the cylinder, while in Fig. 2 it is shown as applied to the exhaust-port, in which a plunger (not shown) intermittently engages the stem 10, raising the disk 9 and permitting the exhaust-gas to escape down through the passages 5^a and 5^c.

In operation it will be seen that the loosely-pivoted valve-plate 9, resting over the annular exposed surfaces of the packing in the groove chamber or channel 8, will automatically adjust itself to a closely-sealed fit when the valve is closed, and as the packing wears away the impulse of the plate 9 on the edges of the collars 6 and 7 will force said collars over the annular projection 5^d in proportion to the wear of the packing, in this manner preserving a smooth packed face to the seat of the valve until all of the packing in the groove 8 has been consumed or worn away, when the valve-seat may be repacked by raising the collars 6 and 7 and refilling the groove thus formed with a new supply of packing.

It has been found in practice that the composite packing arranged in the face of the valve-seat, as above described, will sufficiently absorb the moist burned gases common to motors of this class, leaving a free and dry surface to the valve-plate 9.

Having thus described my invention, what I claim is—

1. The combination with a valve, of a valve-seat comprising a projection surrounding the

passage to be controlled, two rings applied to the opposite surfaces of the projection and normally projecting beyond the same, to form a groove or channel, and a suitable packing located in said groove, the rings being automatically adjustable by the action of the valve, to compensate for the wear of the packing, substantially as described.

2. A valve-seat comprising a projection surrounding the passage to be controlled, two rings adjustably applied to the opposite surfaces of the said projection and normally extending beyond the projection to form a groove or channel for the purpose set forth.

3. A valve-seat comprising a projection surrounding the passage to be controlled, two rings applied to the opposite surfaces of the said projection and normally extending beyond the same to form a groove or channel, and a packing placed therein, the said rings being constructed to fit the projection tightly but adapted to move in response to valve-pressure as the packing wears away, substantially as described.

4. The combination with a valve and stem, the valve being pivotally connected with the stem, and a projection surrounding the passage to be controlled by the valve, of two rings applied to the opposite surfaces of the said projection and slotted to permit adjustment while fitting the projection tightly, the said rings normally extending beyond the projection to form a packing-chamber, and a suitable packing placed in said chamber, the arrangement being such that the rings are automatically adjustable in response to the valve-pressure as the packing wears away, substantially as described.

5. The combination with a valve and a part surrounding the passage to be controlled, of two rings applied to the opposite surfaces of the said part, the said rings being reduced in thickness to form a valve-seat, their thicker portions being slotted to cause them to fit the said part tightly, and at the same time permit adjustment, the reduced portion of the rings projecting beyond the said part and forming a packing groove or chamber, substantially as described.

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

WINFRED M. HARVEY.

Witnesses:
DENA NELSON,
A. J. O'BRIEN.