

O. P. LOOMIS.
RETARDATIVE RETURN VALVE.
APPLICATION FILED FEB. 18, 1911.

1,187,537.

Patented June 20, 1916.

Fig. 1.

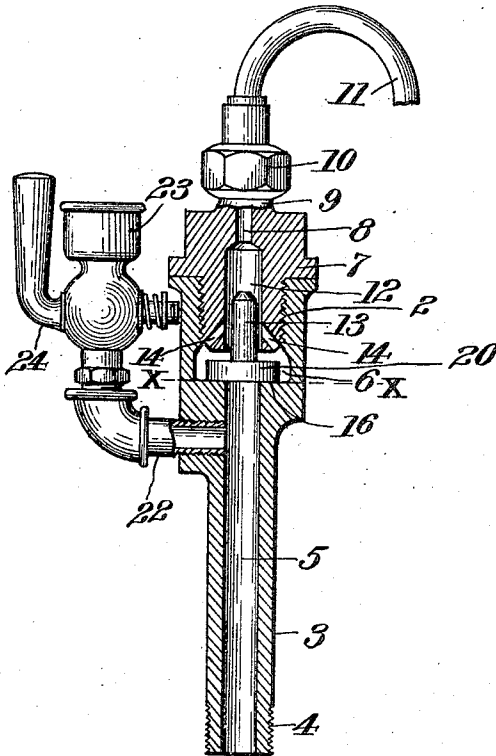


Fig. 3.

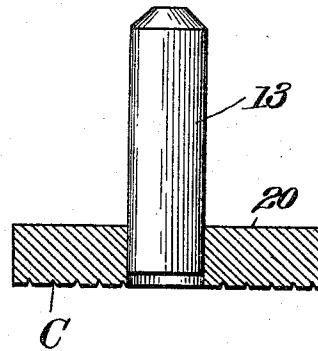


Fig. 4.

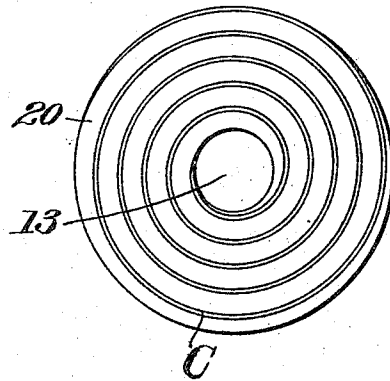
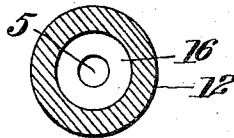


Fig. 2.



Witnesses

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OSBORN P. LOOMIS, OF NEWPORT NEWS, VIRGINIA.

RETARDATIVE RETURN-VALVE.

1,187,537.

Specification of Letters Patent. Patented June 20, 1916.

Application filed February 18, 1911. Serial No. 609,473.

To all whom it may concern:

Be it known that I, OSBORN P. LOOMIS, a citizen of the United States, residing at Newport News, in the county of Warwick and State of Virginia, have invented certain new and useful Improvements in Retardative Return-Valves, of which the following is a specification.

My invention relates to a retardative return-valve and has for its object to provide a valve, which will permit substantially free passage of the fluid in one direction, and provide a slow or high resistance leakage in the other direction.

It is the further object of my invention to so construct the valve that there shall be no liability of the gas-return passage or passages being clogged.

These objects I attain by the constructions shown in the following drawings in which:

Figure 1 is an elevation partly in section; Fig. 2 is a plan on the section-plane X—X of Fig. 1; Fig. 3 is a section of a modification of the valve shown in Fig. 1; and Fig. 4 is a bottom plan view of the valve shown in Fig. 3.

Referring to the drawings, 2 is a valve-casing having a tubular extension 3 with a screw-thread 4 enabling it to be attached to the cylinder of a gas-engine, or other source of pressure-fluid. The passage 5 opens into a chamber 6 within the valve-casing 2, this chamber being closed by a screw-plug 7, having in its top, a hole 8, extending into a nipple 9, to which is secured by any suitable coupling 10, a tube 11, which may lead to a pressure-gage, or to a device for indicating explosive pressure in gas engines, such as is shown in my application Ser. No. 483,096, filed March 13, 1909.

The plug 7 has a chamber 12, within which is located and guided the stem 13 of the valve. It will be noted that this valve is free to move in this chamber, and that a space is left between the stem and the walls of the chamber. Passages 14, 14 through these walls provide additional passages for gases from the chamber 6. As shown in Fig. 1, the valve has a lower portion 20 resting on the valve-seat 16.

In Figs. 3 and 4, the leakage valve is shown, on an enlarged scale. This valve consists of a disk 20, preferably of non-corrosive metal such as the well-known Monel metal, driven onto a stem 13 and brazed thereto, though obviously the valve may be

made in one piece. On the face of the disk 20 is cut a groove C, preferably of inverted V-shape, this groove extending spirally from the outer periphery of the valve toward the center. When this valve is placed in the casing 2, the gases in order to leak back from the chamber 6 must pass through this long groove, which forms a high-resistance passage, and as the valve is continually lifting, when the device is attached to a gas-engine cylinder, any small particles of soot, dirt, etc., which might possibly have lodged in the groove are blown out, and, further, the valve, by reason of its stem being loose in its guiding channel 12, is continually seating in a new position, which keeps the seat worn down true and smooth. It will be noted that this flat disk form of valve has a relatively large diameter, and it has been found in practice to seat and wear better than one having less surface in contact with the seat, the larger area of the valve also affording space for a long groove.

The tube 22 may be screwed onto the casing, and has attached thereto a priming-cup 23, provided with a valve 24, so that a priming liquid, such as gasolene, may be introduced into the passage 5 and thence into the engine-cylinder.

When used in connection with the pressure indicating apparatus of my application Ser. No. 483,096, previously referred to, which apparatus has a chamber of some size for retaining gas under pressure, the back-leakage of the cooled gas from pipe 11 has a tendency to cool off and expel the hot and flame-containing gases from the clearance space and prevent back-firing.

It is to be understood that I am not to be limited to mere details of construction, as many variations of structure may be made without going beyond the scope of my invention. Thus, the valves may obviously be made either in one piece, or in several pieces; the grooved passage may be either in the face of the valve or in the seat; or other details may be varied within the skill of those familiar with the art without affecting the mode of operation of my device.

I claim:

1. A retardative-return valvular device, comprising a casing having therein a valve chamber provided with a passage, a valve seat arranged about the end of said passage, a valve transversely and longitudinally movable in said chamber and arranged to rest

on the seat in contact therewith, one of the contact surfaces being provided with a circuitous channel arranged to connect the spaces on opposite sides of the valve.

5 2. A retardative-return valvular device, comprising a casing having therein a valve chamber provided with a passage, a valve seat arranged about the end of said passage, a valve transversely and longitudinally movable in said chamber and arranged to rest
10 on the seat in contact therewith, one of the contact surfaces being provided with a spiral groove arranged to connect the spaces on opposite sides of the valve.

15 3. A retardative-return valvular device, comprising a casing having therein a valve chamber provided with a passage, a valve seat arranged about the end of said passage, a valve transversely and longitudinally movable in said chamber and arranged to rest
20 on the seat in contact therewith, one of the contact surfaces being provided with a circuitous V-shaped channel arranged to connect the spaces on opposite sides of the valve.

25 4. A retardative-return valvular device comprising a casing having a downwardly-

extending tube, a flat valve seat about the end of the tube, a disk-valve resting on said valve seat, said valve having an upwardly-
30 extending stem, said casing having a chamber in which said stem is loosely guided, said valve having on its lower face a circuitous groove or channel arranged to connect the spaces on opposite sides of the valve.

5. A retardative-return valvular device
35 comprising a casing having a downwardly-extending tube, a flat valve seat about the end of the tube, a disk-valve resting on said valve seat, said valve having an upwardly-
40 extending stem, said casing having a chamber in which said stem is loosely guided, said valve having on its lower face a circuitous groove or channel, V-shaped in cross-section, arranged to connect the spaces on opposite
45 sides of the valve.

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

OSBORN P. LOOMIS.

Witnesses:

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