April 23, 1929. A. L. WERTZ 1,710,635

VALVE

Filed Aug. 6, 1924

Fig. 1

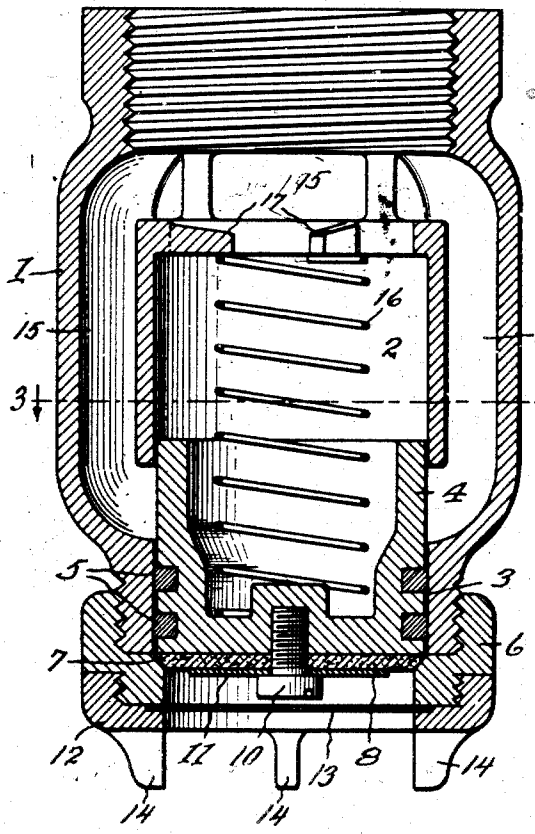
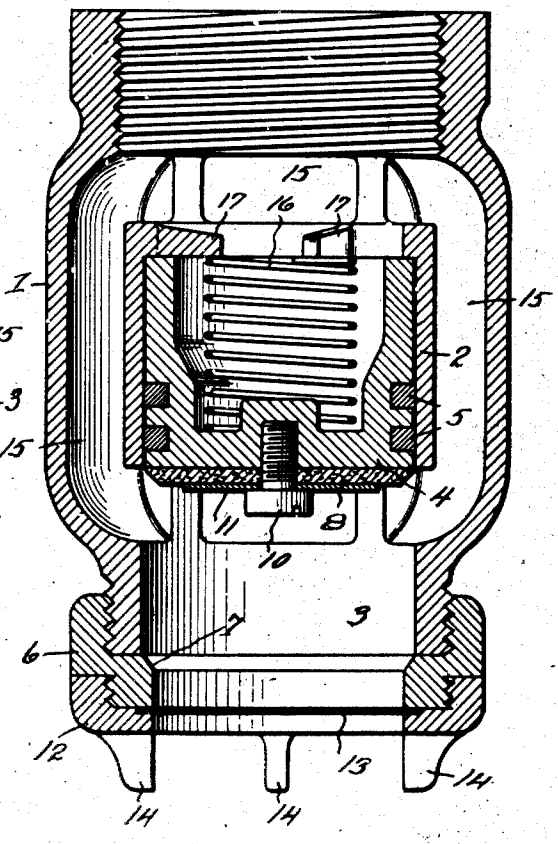


Fig. 2



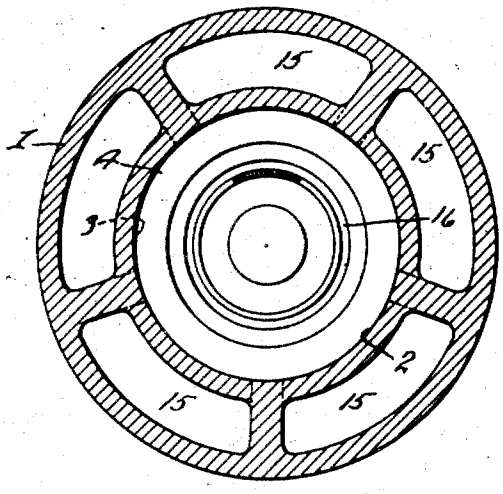


Fig. 3

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UNITED STATES PATENT OFFICE.

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VALVE.

Application filed August 6, 1924. Serial No. 730,344.

This invention relates to an improved check valve or so-called foot valve and while the same is applicable to many purposes, it is especially suitable for use in connection with the gasoline pumps of filling stations, the same being adapted to be applied to the lower end of a riser which leads from the storage tank to the pump, and serving to prevent the return flow of gasoline from the pump to the tank when the operation of the pump ceases.

Valves of this class which have heretofore been employed with gasoline pumps invariably leak, allowing the contents of the pump to gradually recede after each operation and thus being responsible for short measure.

It is the primary purpose of my invention to overcome this difficulty by providing a check or foot valve which is absolutely leak proof and yet which operates with ease.

Further objects are to provide a valve of the aforesaid class which is comparatively simple and inexpensive, and is so designed as to expedite manufacture and facilitate assembly and disassembly.

The foregoing objects, with other and more specific ones which will appear as the description proceeds, are attained in the construction illustrated in the accompanying drawing wherein Fig. 1 represents a central vertical section through the valve, showing the same closed; Fig. 2 is a similar view, showing the valve open; and Fig. 3 is a horizontal section on the line 3—3 of Fig. 1.

The valve body or casing 1 has a cylindrical interior that is divided into a guide portion 2 and a receiving chamber 3 for the piston-like valve member 4. The valve member is provided with circumferential grooves that are occupied by packing elements 5 in the nature of expansible piston rings.

The lower end of the body or casing 1 is externally threaded for the application of an annulus 6 incorporating a tapered valve seat 7 wherewith the correspondingly tapered edge portion of a pad 8 is adapted to cooperate when the valve member occupies closed position. The pad 8 is of suitable packing material and its edge portion, being compressible, assumes the exact contour of the seat 7, thereby assuring a tight seal. The pad is secured to the valve member 4 by means of a screw 10 that is threaded into a thickened portion of the bottom wall of the valve member, and a plate 11 is shown as interposed between the head of the screw and the pad.

An annular cap 12 is adapted to be screwed onto a threaded extension of the annulus 6 and a screen 13 is clamped between the cap and the annulus, the cap being rabbetted about its inner edge to accommodate the periphery of the screen. Lugs 14 depend from the cap 12 to space the valve from any adjacent object and thus insure the opening of the valve being kept clear.

A suitable number of ports or passageways 15 extend vertically through the wall of the body of the casing 1 from a point below to a point above the guide 2. The aggregate capacity of the ports 15 is preferably equal to or greater than the capacity of the main opening of the valve body.

While ordinarily the valve member will gravitate to closed position, especially under the weight of the sustained column of liquid, I may include a spring 16 for assisting in closing the valve, the same being shown as compressed between the bottom wall of the valve member and a plurality of lugs 17 which project inwardly from the upper end of the guide 2. A flange surrounds the upper end of the guides and serves as a stop to limit the upward movement of the valve member or piston 4.

When the pump is operated, suction is created above the valve and the member 4 is retracted within the guide 2, to the position shown in Fig. 2, thereby opening the inlet end of the valve and uncovering the lower ends of the ports 15, permitting the liquid to pass freely through said ports and on to the pump. As soon as the operation of the pump ceases, the valve member will drop to its closed position, as shown in Fig. 1, assisted by the spring 16.

Attention is called to the fact that when the valve is closed a triple seal is effected by two packing elements or rings 5 and the edge portion of the pad 8 where it rests upon the seat 7. While the piston-like valve member, with its expansible rings 5, is regarded as ample assurance against leakage of liquid past the valve member, the pad 8 may be included as an additional safeguard.

My improved valve, considering its efficiency, is very simple and comparatively

cheap of manufacture. The body and the piston-like valve member are adapted to be cast in accordance with prevailing practice, the ports 5 being cored. The only machine work required on the body is the threading of its lower end for the application of the annulus 6, and the internal threading of its opposite end for application to a riser or the like. Its interior is reamed from the lower end inwardly to the upper end of the guide 2. The valve member is turned down for a sliding fit within the cylindrical chamber 3 and guide 2, and is grooved for the reception of the packing rings 5. When the parts are so finished, the valve member, with the packing rings 5 and pad 8 applied to it, is inserted into the cylindrical chamber 3; the annulus 6 is screwed onto the end of the body, and before or after the annulus is so placed upon the body, the cap 12 is applied to the annulus with the screen 13 in place.

Having thus described my invention, what I claim is:—

1. A valve of the class set forth comprising a body having a cylindrical interior, longitudinally spaced portions of which constitute a guide and a chamber for the reception of a valve member, said chamber opening through one end of the body, an annulus applied to said end of the body and incorporating a valve seat adjacent the end of said chamber, a piston-like valve member reciprocable within the guide for projection into and retraction from said chamber, a packing element applied to the end of the valve member for cooperation with the said seat, the body having a passageway through which parts of the interior of the body at opposite ends of the guide communicate, an annular cap applied to said annulus, and a screen held in place by said cap.

2. A foot-valve adapted to be applied to the lower end of a supply pipe for a measuring pump, comprising a body having a through passageway including a cylindrical chamber, a guide within said passageway in axial alignment with and constituting an extension of said chamber, an annular valve seat threadably secured to the lower end of said chamber and having a threaded extension thereon, a valve member reciprocable within said guide for projection into and retraction from said chamber and arranged for cooperation with said valve seat, an annular cap screwed onto said threaded extension and having lugs depending therefrom and spaced apart whereby to space said valve seat from the surface upon which said body rests.

In testimony whereof, I hereunto affix my signature.

AUSTIN L. WERTZ.