

A LIQUID GAS CYLINDER VALVE DEVICE

The invention relates to a valve device for a liquid gas cylinder, of the type including a valve housing adapted to be secured to the cylinder and having a bore within which is located a valve seat which, in use, faces the interior of the cylinder and is associated with a valve member having a control pin that projects axially through the valve housing bore on the side of the seat facing away from the cylinder, and is operative to open the valve by an axial displacement towards the cylinder end of the housing.

To control the displacement of the pin use is generally made of a pressure control member which the user mounts on the valve housing and removes again when the container has been emptied and shall be refilled at a filling station.

When the control member has been removed, the valve will normally be protected by a closure cap screwed onto the cylinder, but not all users comply with this prescription, thereby involving the risk that grains of sand or other dirt particles may penetrate the bore of the valve housing adapted to receive the control member. Due to user's failing conscientiousness the control member may also be fouled by impurities which during or after the mounting of the control member may fall downwards and penetrate the valve seat when opening the valve. Even though such dirt particles are frequently blown away by the discharging gas, this is not always the case, and they are then likely to interfere in the function of the valve, particularly by impeding a complete closing, thereby involving the risk of fire or explosion, and they may also cause increasing wear on the valve member and the seat.

Said drawback is eliminated in one form of the present invention in that the control pin projects through a chamber which is located in the valve housing bore and accommodates a sleeve which is carried by the pin and which has a resilient collar which in its unloaded condition extends at least almost to the peripheral wall of the chamber and which, when the valve is open in use, allows gas to flow through the valve housing bore past the collar.

In another form of the invention, the control pin projects through a chamber which is located in the valve housing bore and accommodates a sleeve which is carried by the peripheral wall of the chamber and which

has a resilient collar, the inner edge of which in its unloaded condition touches the pin, and which, when the valve is open in use, allows gas to flow through the valve housing bore past the collar.

The collar on the sleeve will catch possible impurities before they reach the critical area in the valve and will retain such particles at a harmless site until the container has been emptied. In a preferred embodiment, prior to the next refilling the valve may be blown clean, but this is, however, not required since the flow of filler gas owing to the flexibility of the collar causes the impurities to be entrained down into the cylinder in which they do no harm.

The invention will now be explained in more detail with reference to the accompanying drawing which is a partial view, substantially in axial section, of a liquid gas cylinder valve device according to the invention.

The drawing illustrates the top portion of the housing 1 of a liquid gas cylinder valve device that may be screwed in or welded to a gas cylinder, not shown, and which at its top is provided with a collar 2 on which a control member of a known type may be mounted. The valve housing 1 includes a downwardly facing seat 3 for a valve member 4 that is shown conical and may be made from rubber or similar resilient material and which is secured to a likewise conical flange 5 on a pin 6 extending somewhat up into a bore for receiving the lower part 7 of a control member adapted to control the discharge of gas through the valve 3, 4. 8 designates a gasket surrounding the part 7 accommodating a spindle 9 to exert a downward pressure on the pin 6 when gas is to be discharged, the pressure forcing the valve to open by overcoming a permanent closing load on the valve member 4. Said load may originate from the gas pressure in the cylinder and from a closing spring not shown, respectively.

A sleeve 11 is mounted on a reduced portion 10 of the pin 6, said sleeve merging at the top into a flexible, outwardly directed collar 12, extending at least almost to the internal surface 13 of a chamber 14 within the valve housing 1 and being adapted to receive and retain impurities that might otherwise fall down on the valve seat 3 and become jammed between said seat and the valve member 4.

In the illustrated embodiment the collar 12 is disc-shaped and is so positioned on the pin 6 that its outer edge in the closing position, as illustrated in the drawing abuts against a downwardly facing abutment surface 15 in chamber 14. This provides for additional security against impurities falling down on the seat 3 and at the same time the collar 12 acts together with the abutment surface as a supplementary valve to prevent leakage of gas, if the valve 3, 4 does not close completely.

Upon opening of the valve the sleeve 11 is also entrained downwards so that the collar 15 gets clear of the abutment surface 15 and the collar is so resilient that it is easily deformed by the gas pressure, the gas thereby flowing past the outer edge, even though said edge when unloaded may extend straight on to the chamber wall 13.

When the container is to be refilled, the inflowing gas everts the collar 12 downwardly and causes the valve 3, 4 to open. If impurities have collected on the surface of the collar, they will be blown down into the cylinder where they do no harm.

The sleeve of the valve device according to the invention may be carried out in other ways than illustrated in the drawing, and it should particularly be mentioned that a sleeve may be used which is secured to the chamber wall 13 and the collar of which with its inner edge touches the pin 6.



CLAIMS

1. A valve device for a liquid gas cylinder, comprising a valve housing adapted to be secured to the cylinder and having a bore within which is located a valve seat which, in use, faces the interior of the cylinder and is associated with a valve member having a control pin that projects axially through the valve housing bore on the side of the seat facing away from the cylinder, and is operative to open the valve by axial displacement towards the cylinder end of the housing, characterised in that the control pin projects through a chamber which is located in the valve housing bore and accommodates a sleeve which is carried by the pin and which has a resilient collar which in its unloaded condition extends at least almost to the peripheral wall of the chamber and which, when the valve is open in use, allows gas to flow through the valve housing bore past the collar.

2. A valve device for a liquid gas cylinder, comprising a valve housing adapted to be secured to the cylinder and having a bore within which is located a valve seat which, in use, faces the interior of the cylinder and is associated with a valve member having a control pin that projects axially through the valve housing bore on the side of the seat facing away from the cylinder, and is operative to open the valve by axial displacement towards the cylinder end of the housing, characterised in that the control pin projects through a chamber which is located in the valve housing bore and accommodates a sleeve which is carried by the peripheral wall of the chamber and which has a resilient collar, the inner edge of which in its unloaded condition touches the pin, and which, when the valve is open in use, allows gas to flow through the valve housing bore past the collar.

3. A valve device as claimed in Claim 1, characterised in that the collar has a concave side facing away from the valve seat and is carried by the pin in such a position that in the closed position of the valve member the outer peripheral edge of the collar rests sealingly against an end wall of the chamber.

4. A valve device for a liquid gas cylinder, substantially as described with reference to, and as shown in, the accompanying drawing.

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