PATENT SPECIFICATION

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COMPLETE SPECIFICATION

DRAWINGS ATTACHED

Improvements in or relating to Filling Valves for Liquefied-Gas Lighters

We, LA NATIONALE S.A., a Company organised under the laws of Switzerland of 2, Rue des Falaises, Geneva, Switzerland, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statements:—

Patent No. 726,982 relates to a liquefied gas lighter having a filling valve provided with a hollow needle to enable the reservoir or container of the lighter to be connected to a filling vessel containing liquefied gas, the valve being characterised by two parts movable in relation to each other, one being fixed to the body of the lighter, these two parts being so arranged that they can occupy two relative positions: a filling position in which the reservoir of the lighter is connected on the one hand with the filling vessel by a filling passage and the hollow needle and on the other hand to the atmosphere by way of another passage, of small cross-section, the said passages being closed in the other position.

The present invention concerns an improvement or modification of this valve which dispenses with the hollow needle for connecting the reservoir of the lighter to the filling vessel.

According to the present invention in the improved lighter the hollow needle is omitted and the movable part of the filling valve is formed with a bore the outer end of which is adapted to co-operate in a free but fluid-tight manner with the filling vessel to connect the vessel with the filling passage in the valve, there being no tubular member which penetrates the filling vessel during the filling operation.

In the annexed drawing, which shows schematically and by way of example an embodiment of a valve in accordance with the present invention:

Figures 1 and 2 are sectional views of the valve respectively in the closed and open position.

The valve consists of two parts 2 and 3 movable one relatively to the other, the first part 2 being secured to the wall 1 of the lighter and having a central recess with cylindrical walls threaded at 4 on a portion of its length. The movable part 3 is formed by a body with cylindrical walls having on its part 5 a screw-thread which engages with the threaded portion 4. A groove 21 is milled in the threaded part 5.

The part 3 has a central axial bore 6 which forms part of a filling passage. The lower portion 7 of the part 3 is smaller in diameter so that it forms a shoulder 8. Portion 3*a* of the part 3 has a six-sided internal surface into which enters, when filling, a six-sided part 42 of the connecting piece 40 of the filling vessel (not shown in Fig. 2). In this manner, the connecting piece 40 of the filling vessel serves at the same time as a key for operating the valve.

Between the shoulder 8 of the part 3 and the end 9 of the recess in part 2 are located a metal washer 10, a rubber ring 11, a metal ring 12 and a rubber ring 13.

As shown in Fig. 2, the ring 11 is slightly smaller in diameter than the recess in the part 2 in which it is located. The same applies to the metal ring 12. The rings 11 and 12 are located on the portion 7 of the part 3. The ring 12 has a peripheral annular groove 14 opposite which opens a calibrated passage 15 of small cross-sectional area, passing through the wall of the part 2.

In the end 9 of the part 2 is formed a recess 16 into which leads a passage 17 passing through the wall of said part 2 and leading into the reservoir of the lighter. At the centre of the end 9 is a bore 18 in which is located the lower end of the part 3, which

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is tubular in shape.

A ring 19, having a force fit in the open end of the part 2, prevents the part 3 from unscrewing completely during the bringing of the parts of the valve into the filling position shown in Fig. 2. Between the ring 19 and the upper end of the part 3 is provided a clearance leaving a free annular opening.

The part 3 has, close to the top of the bore 6, a sealing member 45 in the form of a ring, the periphery of which rests in an annular groove 46 in part 3. This sealing member is intended to ensure fluid-tightness between the bore 6 of the part 3 and a passage 47 provided in the connecting piece 40 of the filling vessel when engaged in the valve.

To fill the lighter, the user puts the connecting piece 40 of the filling vessel into the part 3, as shown in Fig. 1. In principle, the filling vessel or its connecting piece, has a valve or a closure tap which is not shown in the drawing. The movable part 3 is unscrewed by turning the connecting piece of the filling vessel which is used as a key, because its portion 42 engages in the corresponding six-sided portion 3*a* of the part 3. The valve is then in the position shown in Fig. 2 and when the valve (not shown) of the filling vessel is open, liquid gas can penetrate into the reservoir of the lighter by way of the channels 6 and 18, recess 16 and passage 17.

The air and a part of the gaseous fuel contained in the reservoir escapes by the calibrated passage 15, space 20 between the ring 11 and the wall of the part 2, the groove 21 and the free circular space between the ring 19 and the part 3. The calibrated passage 15 is of such cross-section that the pressure in the interior of the reservoir is slightly less than the pressure of the liquefied gas.

Thus the reservoir of the lighter may be filled completely and the user knows when filling is completed, since liquid gas begins to issue from between the ring 19 and the part 3 as soon as the level of the liquid gas in the reservoir reaches the passage 15.

All that is then necessary is to screw the part 3 into the part 2 by means of the connecting piece in co-operation with the part 3*a*.

The ring 11 and the ring 13 are then compressed. The first presses against the wall of the part 2 and fills the free space 20 while the second fills the recess 16 and closes the passage 17.

Thus all communication to the exterior by the passages 15 and 17 is prevented.

It will be understood that the connecting piece 40, instead of being mounted on the filling vessel, may be connected thereto by a flexible pipe. This connection may also carry the valve of the filling vessel.

WHAT WE CLAIM IS:—

1. The improvement in or modification of the lighter claimed in Patent No. 726,982 in which the hollow needle is omitted and the movable part of the filling valve is formed with a bore the outer end of which is adapted to co-operate in a free but fluid-tight manner with the filling vessel to connect the vessel with the filling passage in the valve, there being no tubular member which penetrates the filling vessel during the filling operation.

2. A lighter according to claim 1, in which the movable part has a sealing member of elastic material to ensure fluid-tightness between its bore and the filling vessel.

3. A lighter according to claim 1, constructed and arranged substantially as hereinbefore described with reference to the accompanying drawing.

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