GASEOUS FUEL REGULATING DEVICE FOR LIQUEFIED GAS LIGHTERS

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Fig. 1

Fig. 2

Fig. 3

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The present invention relates to a gaseous fuel regulating device for a liquefied gas lighter. It is one object of the present invention to provide a gaseous fuel regulating device for a liquefied gas lighter, wherein the flow of gas through the burner in the lighter, such as used for lighting cigarettes, cigars and pipes is precisely controlled by adjusting the diameter of the central passageway, through which the gaseous fuel flows, which passageway is bored in elastic material in such a manner that the elastic material is compressed from its periphery to the central axis thereof, resulting in the change of the diameter of the passageway.

With this and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 is a vertical sectional view of the adjustable fuel regulating device of the present invention, illustrating the initial step of the process of controlling the flow of gaseous fuel to the burner; FIGS. 2 and 3 are partial vertical sectional views similar to that of FIG. 1, showing the change of diameter of the central passageway bored in elastic material by compressing the same gradually.

Referring now to the drawing, a cylindrical body a is provided, the substantial part of which is held within a liquefied gas reservoir and secured to the wall thereof, the cylindrical body defining a chamber which is divided into an upper space 1, having a threaded inner wall, a middle space 2 of smaller inside diameter than that of said upper space and a lower space 3 of the smallest inside diameter, and finally having at its bottom a narrow passageway 4 which is bored in the center of the bottom thereof. A regulating member b is screwed into the chamber, and in particular into the upper space 1 and has a tapered downwardly projecting part 5. A passageway 6 approximately of a diameter equal to that of the passageway 4 is pierced through the center of the regulating member b. The lower end of the tapered projecting part 5 is formed into an annular ridge 5'. A packing ring 7 is fitted around an intermediate, annular bottom face 5b of the tapered projecting part 5 and in close contact with the inner face of the middle space 2. A body c of thick elastic material, which is immune against the flowing liquid, is disposed in the lower space 3. The body c of elastic material has a central bore 8, which communicates with the passageways 4 and 6 and has a considerably smaller diameter than those of the passageways 4 and 6. An operating flange 9 is formed upon the uppermost part of the regulating member b, as a portion thereof.

In the embodiment shown in the drawing, which is constructed as stated above, upon lowering the regulating member b by turning the operating flange 9, the lower end of the tapered projecting part 5 will contact the surface of the body c of the elastic material around the passageway 8, and when the member b is farther lowered, the body of elastic material c will be compressed and deformed by means of the lower end of the projection part 5.

Namely, since the body c of the elastic material is closely fitted in the lower space 3, an upper portion of the body around the passageway 8 enclosed by the annular ridge 5' on the lower end of the projection part 5 will be pushed up to fill a trumpet-shaped small space inside of the annular ridge 5' toward the lower end of the passageway 6, and another upper portion of the body c outside of the annular ridge 5' will be pushed up outwardly between the annular ridge 5' and the wall of the space 3, as shown in FIG. 2. Thus, the central part of the body c will be subjected to some forces toward the passageway 8, so that the diameter of the passageway 8 will be contracted, resulting in decreasing the flow of fuel passing between the passageways 4 and 6; and finally the passageway 8 will be closed to prevent the flow of fuel, as shown in FIG. 3.

When the regulating member b is raised by turning inversely thereof from the above conditions, the compression of the elastic body c caused by the lower end of the tapered projecting part 5 will be released gradually and the elastic body c will restore its original state through inverse progress, thus the flow of fuel through the passageway 8 will be increased.

The above mentioned function may be fully effected by using the compressive force imposed upon the elastic body c within the elastic limit thereof, otherwise some degree of permanent deformation of the material will be invariable. Although a preferred embodiment of the invention is herein disclosed for purposes of explanation, various modifications thereof, after study of this specification, will be apparent to those skilled in the art to which the invention pertains. Reference should accordingly be had to the appended claims in determining the scope of the present invention.

I claim:

A valve device comprising a hollow cylindrical body having upper, middle and lower wall portions defining communicating coaxial upper, middle and lower cylindrical spaces, respectively, said upper space being of larger diameter than that of said middle space, and said lower space being of smaller diameter than said middle space, said upper wall portion having an inner threaded, said hollow cylindrical body having an axial passage extending through its bottom portion, a cylindrical body of elastic material disposed in said lower space of said hollow cylindrical body and having an axial, central bore of a diameter smaller than that of said axial passage, a regulating member having an outer thread at its upper portion threadedly received by said inner thread of said upper wall portion, said regulating member having an axial passage communicating with said central bore of said body of elastic material and forming at its lower end an annular ridge surrounding the lower end of the axial passage of said regulating member, for engagement with the opposite face of said body of elastic ma-
terial in order to exert axial pressure upon the latter upon screwing downwardly said regulating member, so that depending upon the axial position of said regulating member in said hollow cylindrical body, said central bore is widened and narrowed, respectively, and a packing ring disposed in said middle space of said hollow cylindrical body between the inner face of said middle wall portion and the outer face of said regulating member in order to seal off any fluid flow between the latter and said hollow cylindrical body.

References Cited in the file of this patent

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Inventor(s)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,657,663</td>
<td>Devereux</td>
<td>Jan. 31, 1928</td>
</tr>
<tr>
<td>2,442,746</td>
<td>Anderson et al.</td>
<td>June 8, 1948</td>
</tr>
<tr>
<td>2,724,253</td>
<td>Morgan</td>
<td>Nov. 22, 1955</td>
</tr>
<tr>
<td>2,927,765</td>
<td>Morris</td>
<td>Mar. 8, 1960</td>
</tr>
</tbody>
</table>