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3,331,528

FUEL CONTAINER FOR LIQUEFIED GAS FUEL FOR LIGHTERS

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Fig. 1

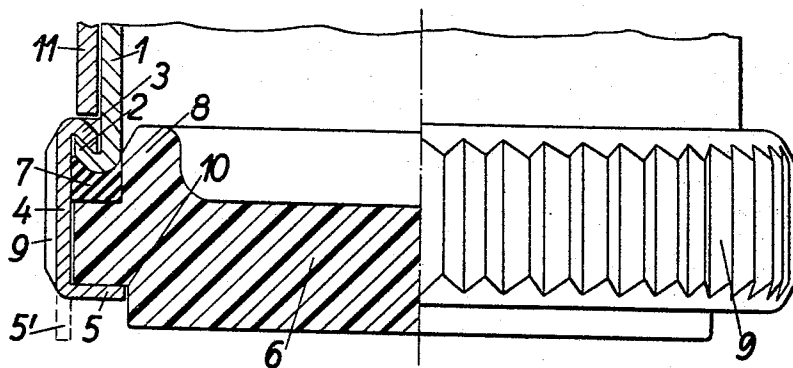
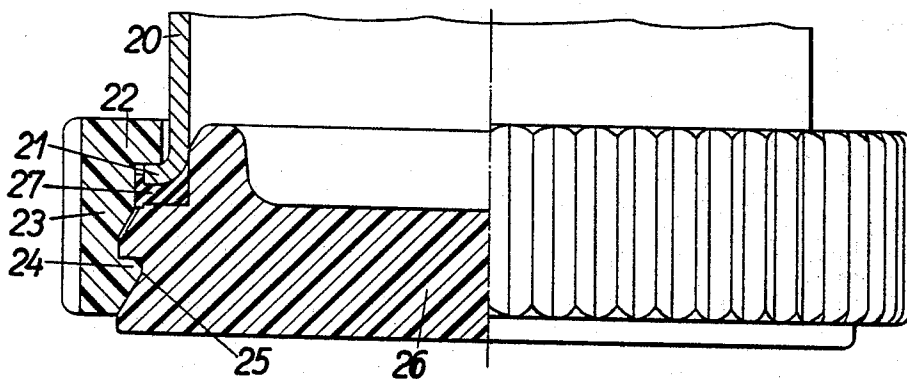


Fig. 2



1

2

3,331,528 FUEL CONTAINER FOR LIQUEFIED GAS FUEL FOR LIGHTERS

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4 Claims. (Cl. 220—67)

Known fuel containers for gas-fuelled lighters are made by cold extrusion from light metal and are open at one end and closed by a bottom, which is connected by adhesive and flange-seaming to the container shell. This method of manufacturing the containers has the disadvantage that an end which has been flange-seamed once cannot be flange-seamed a second time so that such containers cannot be refilled at the flange-seamed bottom by removing and again flange-seaming the bottom.

In view of the nature of gas-fuelled lighters, fuel containers have been disclosed which have a transparent bottom so that the user of such a lighter can check the filled condition of his container at any time and avoid unexpected exhaustion. In these known designs, however, in which the container shell is directly flange-seamed to the transparent bottom or is adhered to it if the shell consists of plastic material, it is also impossible to remove the bottom without destroying at least the gas container so that the same cannot be refilled from below. Moreover, such containers are not suitable for use in lighters in which the container partly protrudes from the housing.

Such a protruding portion is desired for an easy insertion of the container into the housing and for enabling a rotation of the container for adjusting the flame. The housing is suitably apertured adjacent to the protruding portion of the container so that a self-contained structure is obtained and the protruding portion appears as a portion of the housing.

It is an object of the invention to avoid the disadvantage of the known containers and provide a gas container, in which the container bottom and container shell may be connected in a simple manner, which is suitable for mass-manufacturing methods. Depending on the desired effect, it should be possible to provide the container with a transparent bottom and/or to insert it into a lighter so that a portion of the container protrudes from it and/or to refill it from below after use when only a relatively small part has been removed.

This is achieved by the use of a ring, which embraces and interengages with the bottom and/or shell to provide this joint.

The container according to the invention enables the provision of a container having a most pleasing appearance by the use of different materials for the ring and bottom, and a filling and, if desired, refilling from below. The bottom may consist of transparent material in spite of the fact that the ring consists of a hard-wearing material, such as metal or a hard plastic material, which is permanently suitable for being gripped. The material of the container shell may be an inexpensive, easily workable light metal or also a plastic material.

The invention will be explained more fully with reference to illustrative embodiments shown on the accompanying drawings, in which

FIGS. 1 and 2, respectively, show partly in section and partly in elevation by way of example the lower portion of two embodiments of a fuel container according to the invention.

According to FIG. 1, the lower rim of a container shell 1 made from light-gauge light-weight metal is reversely bent to form an upwardly inclined, annular outer flange 2. A downwardly inclined annular inner flange 3 of a connecting ring 4 fitted over the shell 1 interengages with this

flange 2 of the shell 1. The ring 4, made from plastic material or metal has a lower rim portion 5, which is flanged inwardly and extends below a bottom 6 consisting preferably of translucent or transparent material. When the rim portion 5 of the ring 4 is being flanged, the ring 4 is forced against a gasket 7 inserted between the lower end of the container shell 1 and the bottom 6. This gasket may be omitted if the bottom consists of a plastic material which is at least somewhat elastic. In such case the bottom will provide a seal by itself, particularly by its annular bead 8, which engages the inside of the container shell and acts as a sealing lip.

If the connecting ring 4 is made of metal, it should be non-oxidizable or the ring should be provided with a non-oxidizable coating layer on its outside surface. The connecting ring 4 is provided with milled grooves 9 at its periphery to improve the grip.

During assembly, the connecting ring 4 is fitted onto the container shell 1 until the two flanges 2, 3 interengage. Then the bottom 6 is forced against the lower end of the container shell with or without an interposed gasket 7. The lower rim 5 of the connecting ring 4 is indicated in its initial position at 5' and is then reversely bent into a peripheral recess 10 of the bottom 6.

The container is inserted into a lighter, which has a housing 11 that covers the shell but leaves the ring 4 exposed. For this reason the shell 1 need not consist of high-grade material. It is sufficient to use for the ring 4 a material which has a pleasing esthetic effect and can be gripped for inserting and extracting and, if desired, rotating the container. The depth to which the gas container can be inserted is limited by the ring 4.

In the embodiment shown in FIG. 2, the lower rim portion of a container shell 20 is laterally bent to form an outer flange 21, which supports an inner flange 22 of a connecting ring 23. The lower portion of this ring is formed on the inside with a peripheral projection 24, which has a cross-section substantially corresponding to a sawtooth. The projection 24 of the connecting ring 23 engages an annular groove 25 of the bottom 26 to provide elastic deformation of at least one of these parts 23, 26. A gasket 27 may be inserted, as shown, between the lower end of the container shell 20 and the bottom 26.

During assembly, the connecting ring 23 is fitted onto the container shell 20 until the two flanges 21, 22 engage. Then the gasket 27 is inserted and the bottom 26 is forced inwardly. The bottom may consist of a somewhat stiffer plastic material so that the main deformation during the interengaging operation is imparted to the ring 23, which is of elastic plastic material. Preferably, however, the bottom 26 is made from elastic plastic material and the connecting ring 23 is made from a harder material, such as metal. In this case the bottom will be deformed during the interengaging operation and it may not be necessary to insert a gasket between the bottom and the container 20.

Numerous modifications are possible within the scope of the invention. More particularly, the nature of the interlocking connection may be varied in manifold ways.

I claim:

1. A fuel container adapted for containing liquefied fuel for lighters, said container comprising a shell including a radially outwardly protruding flange at one end thereof, a bottom closure member inserted coaxially within said shell at said one end, said bottom member being constituted of a transparent elastic material and including an annular bead tightly fitted within said shell and forming a seal therewith, and a ring engaging said shell and said bottom member to secure the same together, said ring having opposite ends and including at one of said ends a radially inwardly projecting flange which engages the outwardly protruding flange of the shell, said inwardly directed flange on the ring and the outwardly protruding

flange on the shell being upwardly and outwardly inclined with respect to the common axis of the bottom member and the shell, said ring including at the other end thereof a second inwardly directed flange engaging the bottom closure member in secured relation.

2. A container as claimed in claim 1 further comprising an annular sealing member between the outwardly protruding flange of the shell and the bottom member, said second flange on the ring which engages the bottom member urging the latter towards the outwardly protruding flange of the shell to compress the sealing member.

3. A container as claimed in claim 1, wherein said bottom member has a recess accommodating the second flange on the ring.

4. A container as claimed in claim 1 in combination with a housing, said shell being adapted for insertion into said housing, the latter having a thickness such that said ring protrudes radially outwards of said housing so as to be externally accessible thereof, said ring having external axially extending grooves arranged in circumferential spaced relation thereon.

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