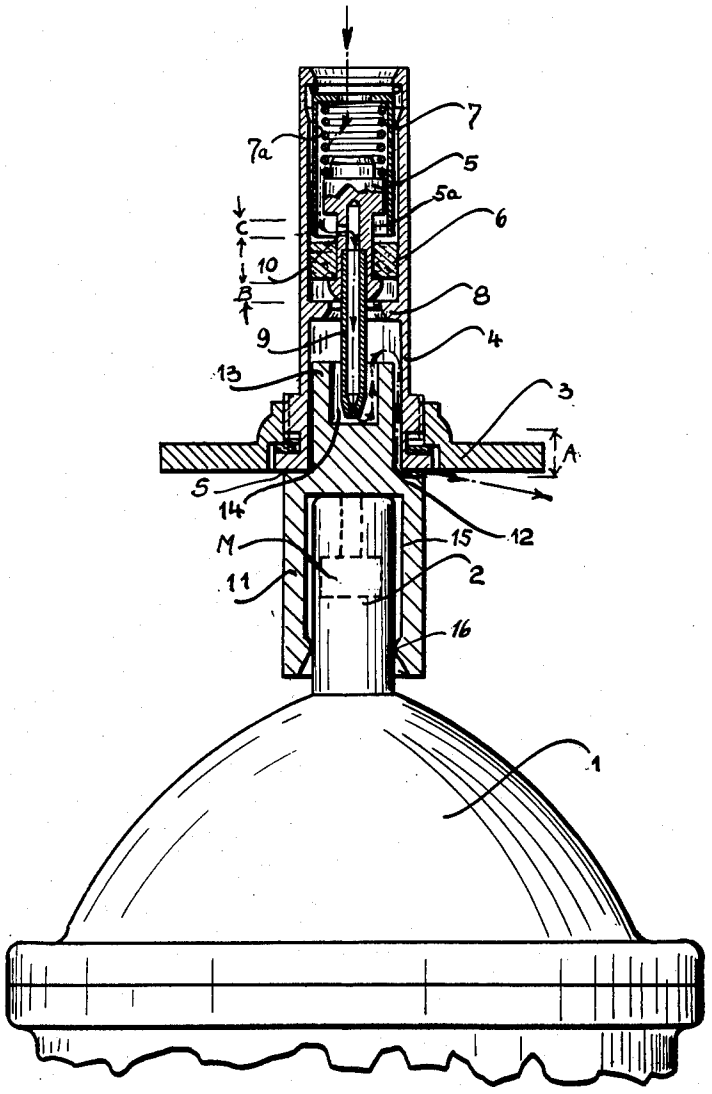
June 29, 1965 W. MALTNER 3,191,641

TOOL FOR BLEEDING A FUEL CONTAINING MEMBER

Filed April 22, 1963



United States Patent Office 3,191,641 Patented June 29, 1965

3,191,641
TOOL FOR BLEEDING A FUEL CONTAINING MEMBER

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Filed Apr. 22, 1963, Ser. No. 274,505
Claims priority, application Germany, Apr. 21, 1962, M 41,151
5 Claims. (Cl. 141—98)

This invention relates to tools and methods for bleeding fuel and the like from a fuel containing member.

The invention relates particularly to lighters which are intended to operate with liquefied gas and which are normally kept in closed condition by a valve member which is operated by the neck of a fuel source or container, the contents of which are to be supplied to the lighter.

In order to obtain a uniform flame in lighters of the above-noted type, it is desirable to avoid an excessive filling thereof or to bleed some of the fuel therefrom if a complete filling has occurred during the filling operation.

It is an object of the invention to provide an improved tool for permitting the above-noted bleeding operation.

Still another object of the invention is to provide an improver tool adapted for serving concomitantly as a cover for the associated fuel source.

It is a further object of the invention to facilitate operating the valve element in a lighter of the above-noted type.

Generally the invention contemplates the provision of a removable cap for the neck of a fuel source, the head of the cap being provided with an extension which corresponds to the neck of the fuel source and which is adapted for performing the functions thereof insofar as these functions relate to operating the valve member of the associated lighter or other such structure in which the valve member is positioned.

Advantageously, when not in use, the cap or cover of the invention fits on the fuel source and there is no need to accommodate the same separately.

Further, the cap is always readily available for a valve actuating operation, since it is normally intended to be employed only when the associated fuel source is to be inoperative.

Other objects, features and advantages of the invention will become apparent from the following detailed description of a preferred embodiment thereof, as illustrated in the accompanying drawing in which the sole drawing illustrates partially in section and partially broken away the combination of a fuel source, a fuel receiving device and a cover element associated therewith in accordance with the invention.

In the drawing is illustrated a fuel source or container **1**, having mounted thereon a neck **2** within which is positioned a means M which is schematically illustrated in the drawing and which is adapted for being engaged by an assoicated valve device as will be described hereinunder for purposes of releasing fuel from said source **1**.

Also shown in the drawing is the bottom portion **3** of a casing for a mechanism such as a lighter or the like adapted to operate with fuel supplied by the source **1**.

Mounted on the bottom portion **3** is a sleeve **4** accommodating therein a valve body **5**. Sleeve **4** is connected at one end thereof to the bottom portion **3** in hermetically sealed relationship therewith and has an innermost end extending into the casing, as is shown.

Valve body **5** includes a depending body portion **5***a* of lesser diameter, the body portion **5***a* extending through a packing **6** which encircles the same and is accommodated within the sleeve **4**.

A spring **7** is provided within a sleeve **7***a* located within

sleeve **4**, the spring **7** operating against valve body **5** to urge the same downwardly within the sleeve **4**.

Within the sleeve **4** and intermediate the ends thereof is provided an inwardly extending annular flange **8** having a central opening through which extends the hollow pin **9** mounted in the valve body portion **5***a*.

Hollow pin **9** communicates with a transverse bore or passage **10** in the valve body **5***a* to provide for the travel of fuel into the casing and out of the same.

Also illustrated in the drawing is a cap or cover **11** having a first cylindrical portion **12** connected to a second cylindrical portion **13** of lesser diameter, these two cylindrical portions cooperatively defining therebetween a shoulder S.

Cylindrical portion **13** is provided with an axially disposed blind bore **14**, the function of which will be hereinafter indicated in greater detail.

Cylindrical portion **12** is provided with a blind bore **15** also axially disposed and adapted for accommodating the neck **2** of fuel source **1**.

Within the bore **15** is provided a ridge **16** of annular shape adapted for making frictional engagement with said neck **2**.

The cylindrical portion **13** has an outer diameter such that is readily accommodated within the sleeve **4**. The cylindrical portion **12** is provided with an outer diameter which exceeds the diameter of the sleeve **4**, so that the shoulder S abuts against the lower end of the sleeve **4** or against the bottom portion **3**.

In the drawing are indicated three dimensions A, B and C. Dimension A denotes the axial distance between the bottom of bore **14** and the shoulder S, this distance being of sufficient magnitude to enable a depressing of the hollow pin **9** by an amount capable of displacing packing **6** against the lower end of inner sleeve **7***a* and further displacing body portion **5***a* with respect to the packing **6** to uncover the transverse passage **10** to provide for the escape of fuel from the lighter casing in the direction indicated by the arrows in the drawing.

It will be noted that the diameter of cylindrical section **13** is such that a clearance is provided between this portion and the sleeve **4** to enable the escape of the fuel as aforesaid.

Dimension B represents approximately the distance through which the packing **6** must be displaced from the flange **8** to the lower extremity of sleeve **7***a* until a relative movement takes place between body portion **5***a* and said packing.

Dimension C indicates the movement required between the shoulder formed between body portion **5***a* and valve body **5** on the one hand and the passage **10** in order to uncover the latter to permit the escape of fuel from the lighter casing.

From what has been stated above, it will be understood that with the cover **11** removed from the neck **2** of fuel container **1** the neck **2** is inserted into the sleeve **4** so that the hollow pin **9** engages the valve means M to admit fuel into the lighter casing from the source **1**. In this event the fuel follows a path leading through the hollow pin **9** and through the transverse passage **10** and thence via the bore of inner sleeve **7***a* into the casing.

When this operation has been completed, the cover **11** is placed on the neck **2** and if a bleeding operation is desired the cylindrical portion **13** is inserted into the sleeve **4** to the extent permitted by shoulder S, whereupon the hollow pin **9** is displaced to operate the valve structure in the above-stated manner.

It follows from the description given above that the invention proposes a container cover including first and second cover portions of generally cylindrical shape connected in coaxial relationship, the first cover portion including a blind bore adapted to accommodate the neck

of a fuel container and including an internal annular ridge in the blind bore for frictionally engaging this neck, the cover portions defining a shoulder therebetween which bears a determinable relationship to a blind bore provided in the second cover portion to enable the displacement of a valve pin in an associated casing.

It will also be understood that the invention contemplates a method of filling a casing with fuel via the neck of a fuel container and a valve in the casing, covering the neck with a cover member, and bleeding fuel from the casing by engaging the valve with the cover member.

Stated otherwise, the invention contemplates a method comprising selectively operating a valve pin of a lighter casing with the neck of a fuel container or with a cover positioned on this neck.

It will now be obvious to those skilled in the art many modifications and variations of the structures and methods set forth above. These modifications and variations will not however depart from the scope of the invention if defined by the following claims.

What is claimed is:

1. Apparatus comprising a lighter casing including a bottom portion provided with an opening therein, a sleeve in said opening having an innermost end extending into the casing and having a second end in hermetically sealed relation with said bottom portion, a flange on and within said sleeve between said ends, a valve body displaceable in said sleeve between said flange and the innermost end of said sleeve, a packing between said body and flange and adapted for limited movement in said sleeve, said body including a body portion extending slidably through said packing, means urging said body towards said flange and in a direction outwardly of said casing, said body being adapted to sandwich said packing against said flange, a hollow pin on said body portion, said body portion being provided with a passage coupling said pin with the interior of said casing, a container for supplying fuel under pressure to said casing, a hollow neck on said container and insertable into said sleeve and adapted to receive said pin, means in said neck engageable by said pin to release fuel into said casing via said neck and passage, and a container cover including first and second cover portions of generally cylindrical shape connected in coaxial relation, said first cover portion including a blind bore adapted to accommodate said neck, said first cover portion having an outer diameter exceeding that of the sleeve and therefore providing a shoulder adapted to abut against said sleeve, said second cover portion being provided with a blind bore having a diameter sufficient to accommodate said pin and further having bottom spaced axially from said shoulder, said second cover portion having an outer diameter enabling insertion thereof into the sleeve with clearance to permit escape of fuel from said casing via said passage, pin and clearance.

2. For use with a casing including a bottom portion provided with an opening therein, a sleeve in said opening having an innermost end extending into the casing and having a second end in hermetically sealed relation with said bottom portion, an annular flange on and within said sleeve, a valve body displaceable in said sleeve between said flange and the innermost end of said sleeve, a packing between said body and flange and adapted for limited movement in said sleeve between said ends, said body including a body portion extending slidably through said packing, a spring urging said body towards said flange and in a direction outwardly of said casing, said body being adapted to sandwich said packing against said flange, a hollow pin on said body portion and of a length to be recessed a determined distance within said sleeve with said body urging said packing against said flange, said body portion being provided with a passage coupling said pin with the interior of said casing, said passage being selectively obturated by said packing in accordance with the relative positions of said body portion and packing: an insert including first and second portions of generally cylindrical shape connected in coaxial relation, said first portion having an outer diameter exceeding that of the sleeve and therefore providing a shoulder adapted to abut against said sleeve, said second portion being provided with a blind bore having a diameter sufficient to accommodate said pin and further having a bottom spaced axially from said shoulder by a distance which is greater than said determinable distance by an amount which is greater than said limited movement, said second portion having an outer diameter enabling insetrion thereof into the sleeve with clearance to permit escape of fuel from said casing via said passage, pin and clearance.

3. For use with a lighter casing including a bottom portion provided with an opening therein, a sleeve in said opening having an innermost end extending into the casing and having a second end in hermetically sealed relation with said bottom portion, an annular flange on and within said sleeve between said ends, a valve body displaceable in said sleeve between said flange and the innermost end of said sleeve, a packing between said body and flange and adapted for limited movement in said sleeve, said body including a body portion extending slidably through said packing, a spring urging said body towards said flange and in a direction outwardly of said casing, said body being adapted to sandwich said packing against said flange, a hollow pin on said body portion and of a length to be recessed a determined distance within said sleeve with said body urging said packing against said flange, said body portion being provided with a passage coupling said pin with the interior of said casing, said passage being selectively obturated by said packing in accordance with the relative positions of said body portion and packing: a container cover including first and second cover portions of generally cylindrical shape connected in coaxial relation, said first cover portions including a blind bore adapted to accommodate a neck of a fuel container and including an internal annular ridge in the blind bore for frictionally engaging said neck, said first cover portion having an outer diameter exceeding that of the sleeve and therefore providing a shoulder adapted to abut against said sleeve, said second cover portion being provided with a blind bore having a diameter sufficient to accommodate said pin and further having a bottom spaced axially from said shoulder by a distance which is greater than said determinable distance by an amount which is greater than said limited movement, said second cover portion having an outer diameter enabling insertion thereof into the sleeve with clearance to permit escape of fuel from said casing via said passage, pin and clearance.

4. For use with a casing including a bottom portion provided with an opening therein, a sleeve in said opening having an innermost end extending into the casing and having a second end in sealed relation with said bottom portion, a flange on and within said sleeve between said ends, a valve body displaceable in said sleeve between said flange and the innermost end of said sleeve, a packing between said body and flange and adapted for limited movement in said sleeve, said body including a body portion extending slidably through said packing, a spring urging said body towards said flange and in a direction outwardly of said casing, said body being adapted to sandwich said packing against said flange, a hollow pin on said body portion and of a length to be recessed a determined distance within said sleeve with said body urging said packing against said flange, said body portion being provided with a passage coupling said pin with the interior of said casing, said passage being selectively obturated by said packing, and a container for supplying fuel under pressure to said casing, a hollow neck on said container and insertable into said sleeve and adapted to receive said pin, means in said neck engageable by said pin to release fuel into said casing via said neck and passage, said means being adapted to displace said pin and therefore said body portion relative to said packing to open said passage: a container cover including first and second

cover portions of generally cylindrical shape connected in coaxial relation, said first cover portion including a blind bore adapted to accommodate said neck and including an internal annular ridge in the blind bore for frictionally engaging said neck, said first cover portion having an outer diameter exceeding that of the sleeve and therefore providing a shoulder adapted to abut against said sleeve, said second cover portion being provided with a blind bore having a diameter sufficient to accommodate said pin and further having a bottom spaced axially from said shoulder by a distance which is greater than said determinable distance by an amount which is greater than said limited movement, said second cover portion having an outer diameter enabling insertion thereof into the sleeve with clearance to permit escape of fuel from said casing via said passage, pin and clearance.

5. Apparatus comprising a lighter casing including a bottom portion provided with an opening therein, a sleeve in said opening having an innermost end extending into the casing and having a second end in hermetically sealed relation with said bottom portion, an annular flange on and within said sleeve between said ends, a valve body displaceable in said sleeve between said flange and the innermost end of said sleeve, a packing between said body and flange and adapted for limited movement in said sleeve, said body including a body portion extending slidably through said packing, a spring urging said body towards said flange and in a direction outwardly of said casing, said body adapted to sandwich said packing against said flange, a hollow pin on said body portion and of a length to be recessed a determined distance within said sleeve with said body urging said packing against said flange, said body portion being provided with a passage coupling said pin with the interior of said casing, said passage being selectively obturated by said packing in accordance with the relative positions of said body portion and packing: a container for supplying fuel under pressure to said casing, a hollow neck on said container and insertable into said sleeve and adapted to receive said pin, means in said neck engageable by said pin to release fuel into said casing via said neck and passage, said means being adapted to displace said pin and therefore said body portion relative to said packing to open said passage; and a container cover including first and second cover portions of generally cylindrical shape connected in coaxial relation, said first cover portion including a blind bore adapted to accommodate said neck and including an internal annular ridge in the blind bore for frictionally engaging said neck, said first cover portion having an outer diameter exceeding that of the sleeve and therefore providing a shoulder adapted to abut against said sleeve, said second cover portion being provided with a blind bore having a diameter sufficient to accommodate said pin and further having a bottom spaced axially from said shoulder by a distance which is greater than said determinable distance by an amount which is greater than said limited movement, said second cover portion having an outer diameter enabling insertion thereof into the sleeve with clearance to permit escape of fuel from said casing via said passage, pin and clearance.

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