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L. A. FALLIGANT ET AL
GAS CANDLE

3,066,516

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2 Sheets-Sheet 1

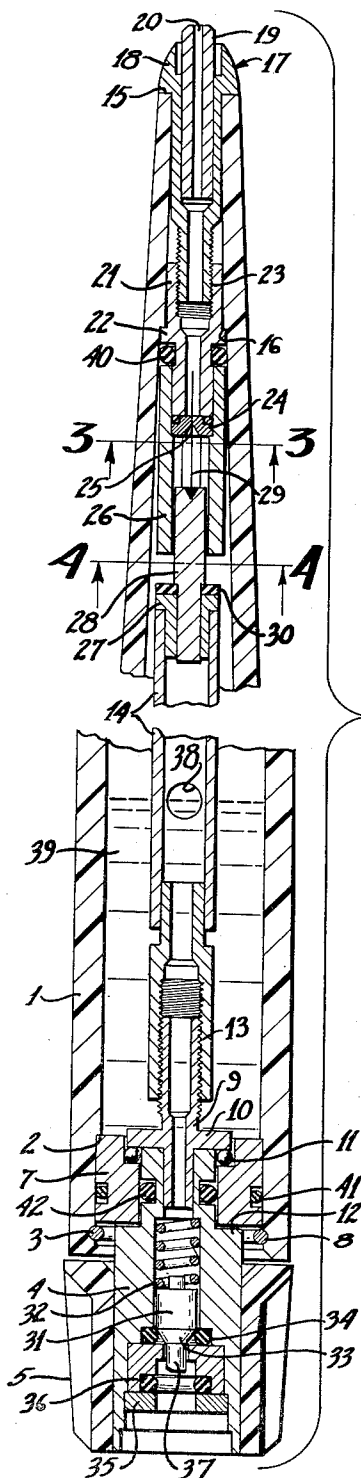


Fig. 2

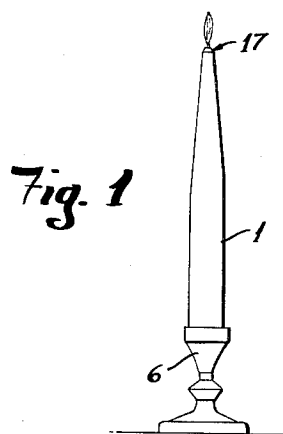


Fig. 1

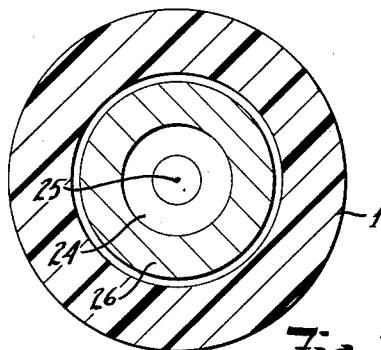


Fig. 3

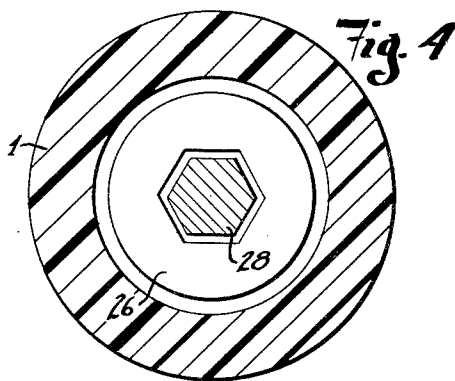


Fig. 4

INVENTORS
LOUIS A. FALLIGANT
FREDERICK W. KUFRIN
BY

Andrus & Starke

Attorneys

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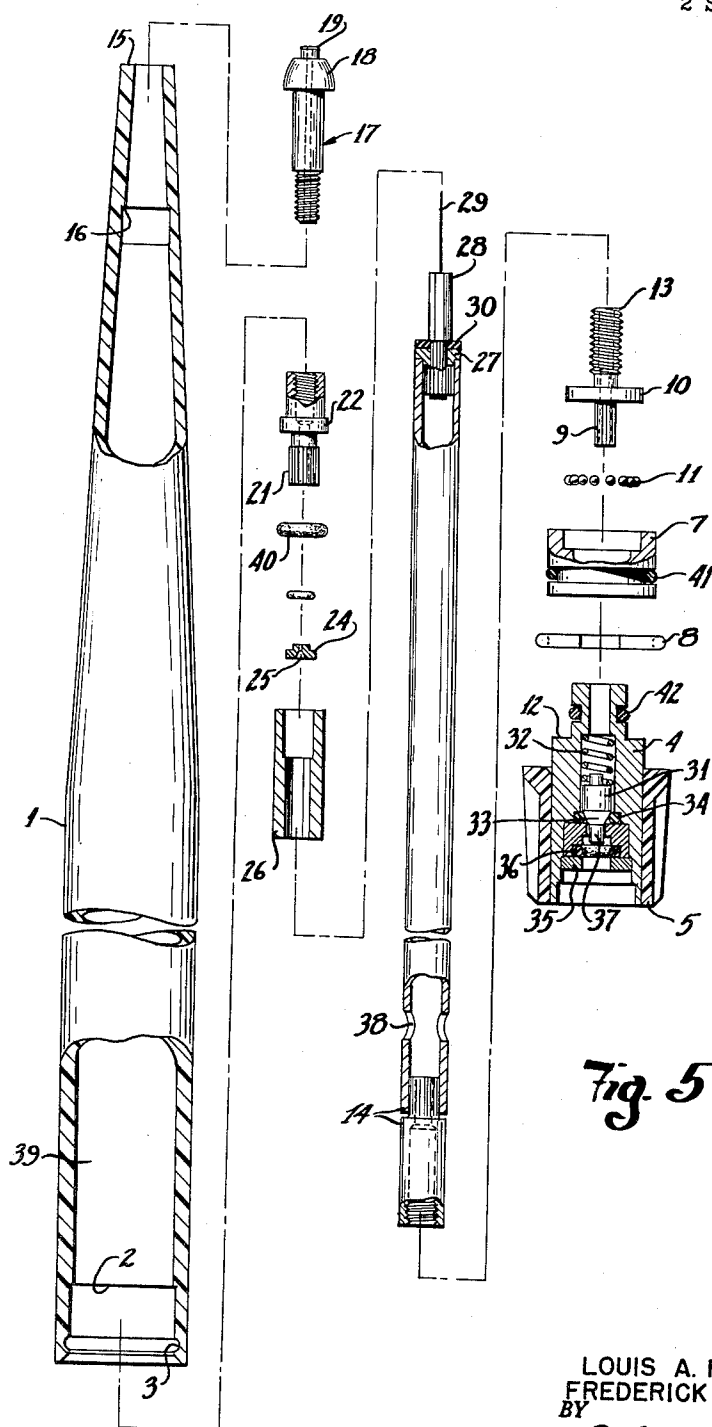


Fig. 5

INVENTORS
LOUIS A. FALLIGANT
FREDERICK W. KUFRIN
BY

Andrus & Starke

Attorneys

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3,066,516 GAS CANDLE

Louis A. Falligant, Edgerton, and Frederick W. Kufrin,
Janesville, Wis., assignors to Prepo Corporation,
Edgerton, Wis., a corporation of Wisconsin

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2 Claims. (Cl. 67-87)

This invention relates to a gas candle which simulates the shape and appearance of a wax candle and is adapted to contain liquid petroleum gas with control means to release the gas for flame propagation and regulation. Simple means are provided to replenish the liquid self pressurizing fuel when needed.

In the drawing:

FIGURE 1 is a side elevation of the candle constructed in accordance with the invention and mounted in a holder;

FIG. 2 is a substantially enlarged longitudinal axial section through the candle of FIGURE 1;

FIG. 3 is a further enlarged transverse section taken on line 3-3 of FIG. 2;

FIG. 4 is a further enlarged section taken on line 4-4 of FIG. 2; and

FIG. 5 is an exploded section showing the parts ready for assembly and with the shell partially broken away and sectioned.

The body of the candle is a molded tapered tubular shell 1 of suitable porcelain or synthetic plastic material, and which may be white or any suitable color and may be semi-translucent if desired, or opaque.

The larger diameter lower end of the tapered shell 1 has an internal downwardly facing shoulder 2 spaced upwardly from an internal circumferential groove 3.

The closure for the lower end of the shell comprises a tubular base 4 having an outer fluted tapered surface member 5 suitable for wedging in the usual candle holder 6. The inner end of base 4 carries a rotatable ring member 7 thereon and which is press fit into the lower end of shell 1 and against shoulder 2. A snap ring 8 is then inserted in groove 3 to retain the member 7 in fixed relation to shell 1. The fluted surface member 5 is then press fit onto the base 4 to give a continuity of outer appearance for the candle and cover the opening that received snap ring 8.

The ring member 7 is assembled upon the inner end of base 4 prior to assembly in shell 1, and a tubular extension 9 is press fit or otherwise secured to the inner end of base 4 coaxial therewith. The extension 9 has an outward circumferential flange 10 confining ball bearings 11 between it and rotatable member 7 so that the latter is confined axially between the bearing 11 and a shoulder 12 on base 4.

The inner or upper end of tubular extension 9 is suitably threaded to adjustably interconnect the same at 13 with and support the valve actuating rod 14 coaxial with the candle.

The upper end of shell 1 receives a tubular closure in two parts threaded together to secure the same in clamping relation to a portion of the shell between the upper end face 15 of the shell and a downwardly facing inner shoulder 16 of the shell.

The outer upper part 17 of the closure has a head 18 which rests on the end face 15 of shell 1 and provides a tapered continuity of outer surface for the candle. A suitable tubular refractory burner piece 19 is press fit within part 17 and has a passage 20 there-through for supplying gas to the candle flame.

The inner lower part 21 of the closure has a flange 22 engaging shoulder 16 when the threaded connection 23 between the parts 17 and 21 is tightened. The

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inner or lower end of part 21 carries a closure member 24 having a minute orifice 25 centrally thereof and coaxial with the candle. The closure member 24 is surrounded by a cylindrical member 26 secured to part 21 and which extends downwardly into the hollow shell 1 for a substantial distance to serve as a guide for the valve rod 14.

The rod 14 is preferably tubular and closed at its upper end by a plug 27 which carries a guide post 28 extending upwardly into the cylindrical guide member 26. The guide post 28 carries a long very slightly tapered needle 29 which extends into and through the orifice 25 at all times.

The cylindrical member 26 and the plug 27 are preferably of the same diameter, and one of them carries a gasket 30 facing the other so that when rod 14 is adjusted upwardly by threaded connection 13 it can close the gap between the two and prevent escape of gas through the orifice 25. When rod 14 is adjusted downwardly by threaded connection 13 the seal of gasket 30 between cylindrical member 26 and plug 27 is broken and gas can escape from the body of the candle into the member 26 and out through orifice 25 and passage 20 to propagate the candle flame.

The guide post 28 is disposed to slide loosely within cylindrical member 26 and is splined thereto or otherwise rotationally interlocked therewith so that the rod 14 will turn with parts 17 and 21 when shell 1 is turned by hand relative to base 4 fixed in a candle holder. By means of this simple turning of the shell 1 by hand the gas is turned on and allowed to escape to the flame or shut off as desired. The tapered needle 29 provides a minute adjustment for the orifice 25 to adjust the size of the flame.

The inside of shell 1 constitutes a fuel reservoir and is sealed at the lower end by a check valve 31 pressed downwardly by a spring 32 within the body of base 4. The valve 31 may have various designs, that shown having a conical outer portion 33 normally engaging an O-ring 34 confined in a groove in base 4 by the end plug 35.

The plug 34 is tubular and carries an O-ring seal 36 internally thereof for sealing with the head of a filling member when it is desired to fill the candle with self pressurizing fuel such as butane or a suitable blend of butanes or similar petroleum fuels. For the purpose of filling, the valve 31 has a stem 37 which extends into plug 35 and is adapted to be pressed inwardly by the head of the filling member to unseat the valve portion 33 from O-ring 34 and admit fuel to the candle.

As the fuel passes valve 31 it passes axially through extension 9 into hollow rod 14 and through radial port 38 into the chamber 39 within shell 1 for storing the fuel.

The several parts are suitably sealed against shell 1 to prevent leakage of fuel from chamber 39. For this purpose, an O-ring 40 is provided between part 21 and the shell, an O-ring 41 is provided between member 7 and the shell, and an O-ring 42 is provided between base 4 and member 7.

To fill the candle the shell 1 and base 4 are first adjusted rotationally to seal gasket 30 between the inner end of cylindrical member 26 and plug 27 and thereby close off any escape of fuel at the upper end of the candle. A filler member (not shown) is then inserted into end plug 35 and sealed therewith by O-ring 36. As the filler member engages the stem 37 it lifts conical portion 33 of valve 31 from the valve seat composed of O-ring 34 and admits fuel through the axial passage in base 4, extension 9 and rod 14, and through port 38 into the fuel chamber 39. When the latter is suf-

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ficiently filled with fuel, the filling member is removed, and spring 32 biases valve 31 outwardly to seal the conical portion thereof on the O-ring seat 34, thereby confining the fuel in a pressurized state in the candle.

To operate the candle, after the fluted surface 5 of base 4 has secured the same in the candle holder 6, the operator turns the shell 1 in a direction to turn rod 14 on the threaded connection 13 and thereby effect axial downward movement of rod 14 which then opens the discharge passage between gasket 30 and the end of member 26 to allow the escape of gas head from chamber 39 through the orifice 25 around needle 29 and through the tubular parts 17 and 21 and passage 20 to the tip of the candle for lighting.

After the flame is established it may be regulated in size by turning of the shell 1 to thereby move the tapered needle 29 axially in the orifice 25 and adjust the effective size of the orifice. The needle 29 never fits tight in the orifice and so there is no wear on the parts. Movement of the needle 29 axially in the orifice 25 tends to prevent any clogging should there be any foreign matter entering it.

The candle provided by the present invention is substantially of long life and can be stored without danger of warping and used as desired with as many re-fillings of fuel as may be needed.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims, particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

We claim:

1. A candle comprising a base adapted to be fixed in a candle holder, a tapered shell rotatably mounted on said

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base and simulating the appearance of a wax candle, said shell constituting a chamber for self pressurizing liquid fuel adapted to provide a head of gas therein, means fixed in the upper end of said shell providing an orifice for the escape of gas to a flame at the tip of the candle, an axially movable member within said shell and carrying a tapered needle extending loosely through the orifice for regulating the flame by axial movement of the member relative to the orifice, means responsive to axial movement of said member in one direction to seal said member against said first named means and prevent gas from escaping to said orifice and responsive to axial movement of said member in the opposite direction to break the seal and admit gas to the orifice, means to prevent relative rotation between said shell and said axially movable member, and a threaded interconnection between said base and said axially movable member to effect axial movement of said member by turning of said shell relative to said base.

2. The construction of claim 1 in which said base is tubular, and a normally closed check valve in said base to retain the pressurized fuel within said shell, said check valve being operable to provide for filling of the candle with fuel.

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