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2,737,795

**PYROPHORIC GAS LIGHTERS**

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3 Claims. (Cl. 67—7.1)

This invention relates to a pyrophoric gas lighter wherein the fuel of the lighter consists of iso-butane, propane, or a similar fuel which is normally held in a liquid state within a supply container and within the fuel supply chamber of the lighter so that when the fuel is released from the fuel chamber it will be given off in a gas which is readily ignited by the sparks of a pyrophoric means.

A primary feature resides in a simplified construction of a lighter wherein the cover extending over the pyrophoric means and the gas nozzle is provided with a spring arm which depresses the valve stem of the gas nozzle to normally close the valve of the nozzle when the cover of the lighter is closed, and when the cover is opened, the spring arm is raised off the valve stem, thereby allowing the same to open to release gas from the nozzle for ignition by the pyrophoric means.

It is also a feature to provide the spring arm valve closure with an end hinge member which cooperates with a spring hinge member secured to the casing of the lighter to form a hinge for the cover of the lighter.

A further feature resides in a simplified form of lighter wherein the body of the lighter provides the chamber for a supply of liquefied fuel which gasifies when released to the outer atmosphere, and the flow of which is controlled by a suitable means adjacent the valve of the nozzle.

Further, I provide a lighter wherein the body thereof can be charged with a new supply of liquefied fuel which is maintained in the body under pressure, the source of supply being a throw-away cartridge which is temporarily attached to the body of the lighter and then discarded. In this form of the lighter the body thereof is sufficiently large to provide a suitable chamber for holding a supply of liquefied fuel.

In the drawings forming part of this specification:

Figure 1 is a longitudinal sectional view of my lighter.

Figure 2 is a partial sectional view of my lighter with the cover in raised position.

Figure 3 is a perspective view of my lighter with the cover in closed position.

The lighter A is simple in form and is composed of the hollow body 10 on which is hinged the cover 11 at the point 11'. The body 10 is formed with a hollow chamber 12 in which a supply of liquefied fuel is carried under pressure.

Normally the fuel used in the lighter is iso-butane or propane which liquefies under pressure and low temperature, and in a lighter of this character a large number of lights can be obtained.

The body 10 is composed of the side walls 13, the end walls 14, the bottom wall 15, and the top wall 16, all of which form the air-tight fuel chamber 12. Secured in the top wall 16 is the cylindrical casing 17 which has formed on the lower inner portion thereof the threads 18. The cylindrical valve support 19 has formed on the outer surface of the lower end thereof the threads 20 which engage with the threads 18 of the casing 17 to support

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the valve support 19 within the casing 17, the upper end of the valve support bearing against the resilient washer member 21.

5 Secured to the top 16 is the spring hinge member 22 which has an aperture 23 formed therein through which the nozzle 24 extends, the head of the nozzle bearing against the top surface of the base 22' of the hinge member 22. The nozzle 24 has the threads 25 formed thereon which engage with the threads formed in the upper end of the valve support 19, and when the nozzle 24 is 10 screwed down upon the base 22' of the hinge member 22, the latter is secured to the top wall 16. When the cylindrical valve support 19 is screwed into the casing 17 against the washer member 21, an air-tight seal is made.

I further provide the secondary partial top wall 25' on the top surface of which the corner edge 26 of the cover 11 rides when the cover 11 is opened against the action of the spring hinge member 22, and on which the cover 11 rests when held in fully open position. Secured to the inner surface of the end of the cover 11 is the spring valve closing member 27 which has formed on the end thereof the arcuated portion 28 adapted to turn within the arcuated end portion 29 of the spring member 22. 25 The spring valve closing member 27 is formed with the curved tip 30 which presses against and forces downwardly the upper end of the valve stem 31, thereby placing the head 32 upon the hole 33 to shut off the supply of gas from the chamber 12.

To accurately control the flow of gas from the chamber 12 out through the valve nozzle 24, I provide the porous pellet 34 positioned between filter discs within the lower end of the cylindrical valve support 19. I also provide the cork or plug member 36 30 which holds the moisture absorbing elongated member 37 which carries some of the liquefied gas to the filters 35 and thereby keeps the porous pellet 34 wet for more efficiently controlled escape of gas.

The flint abrading wheel 38 is rotatably mounted on the shaft 39 which is secured to the windshield wall members 40. Extending through the chamber 12 and secured to the body 10 is the flint tube 40' which receives the flint 41, the spring 42 maintaining the flint 41 against the abrading wheel 38 when held in position by the screw plug 43.

So that the chamber 12 may be charged with gas I provide the injection valve 44 which is mounted in the casing 45 secured to the bottom wall 15. The cap member 46 is removed, and the threaded end of a cartridge holding liquefied gas under pressure (such as disclosed in the patent issued to Felt, No. 2,561,270) is screwed into the valve 44, the pointed member 47 piercing the top of the closed cartridge and allowing the gas to enter the chamber 12. When the gas of the cartridge has been transferred to the chamber 12, the cartridge is unscrewed and the plug 46 replaced.

The cap 11 is formed with the projection 48 which is engaged with the thumb of the operator to open the cap or cover 11. As the cover 11 is opened, the tip 30 of the spring 27 is raised off the upper end of the valve stem 31, and the stem 31 moves upwardly thereby taking the head 32 off the opening 33 allowing gas to escape out the nozzle 24. As the cover is raised to a vertical position, the end of the cover rests on the shelf 28 holding the cover in a vertical position. Thus, by simply raising the cover 11 to open position, the valve 24 is automatically opened to allow gas to escape therefrom. The operator then turns the wheel 38 which abrades the flint 41 and showers sparks over the nozzle 24, thereby igniting the escaping gas. To extinguish the flame the operator merely closes the cover 11 whereby the tip 30 presses the head 32 upon the opening 33, and the gas supply is cut 70

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off. I have thus provided a pyrophoric gas lighter with relatively few moving parts, but which operates in a highly efficient manner to deliver a measured supply of gas for ignition.

I claim:

1. In a pyrophoric cigarette lighter, an enclosed body member forming a chamber for liquefied petroleum fuel under pressure, pyrophoric spark producing means mounted on said lighter, a gas outlet nozzle mounted on said body member, a valve having a stem slidably mounted in said nozzle, a cover member hingedly mounted on said body member adapted to cover said nozzle and said pyrophoric means, a spring arm member secured to the inner surface of said cover having an extended outer free end adapted to depress said stem when said cover is closed and be removed from said stem when said cover is open, said spring arm having an arcuated inner end, a complementary spring arm secured to the top of said body member having an arcuated end adapted to coact with said arcuated inner end of said spring arm of said cover to form a hinge for said cover, and means for introducing liquefied petroleum under pressure into said chamber.

2. In a pyrophoric gas lighter, an enclosed tank for storing a supply of compressed fuel, a fuel escapement valve secured to the top of said tank, pyrophoric spark producing means mounted on the top of said tank valve means for filling said tank, a cover member for the top of said tank having top and side walls adapted to enclose said escapement valve and spark producing means, said fuel escapement valve having a rod extending therefrom, a spring member secured to the inner surface of a wall of said cover and positioned substantially within the confines of said cover, one end of said spring extending away from said walls of said cover adapted to contact and depress said rod when said cover is closed, the other end of said spring having an arcuated hook portion formed thereon, a second spring member secured to the top of said tank and formed with an arcuated end portion

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in engagement with said arcuated hook portion to form a spring hinge and connection for said cover to hold said depressing spring arm against the rod when said cover is closed and release said rod when said cover is raised.

3. In a pyrophoric gas lighter, a pressure tight fuel chamber adapted to contain a fuel which remains liquid under pressure, pyrophoric sparking means, a filler injection valve contained in a wall of said fuel chamber, a pressure reducing gas escapement valve secured to the top wall of said fuel chamber, said escapement valve including porous pellet and filter means, wick means to keep said porous pellet and filter means wet with fuel, a gas escapement nozzle including a valve stem depressible therein to open or close said gas escapement valve, a cover member for the top of said fuel chamber having top and side walls adapted to enclose said escapement nozzle and pyrophoric means, a spring arm member secured to the inner wall of said cover, one end of said spring arm member extending away from said wall adapted to contact and depress said valve stem when said cover is closed, the other end of said spring arm member having an arcuated hook portion formed thereon, a second spring member secured to the top of said fuel chamber and formed with an arcuated free end to engage and coact with the arcuated hook of said spring arm member to form a spring hinge, said hinge members cooperating to hold said depressing spring arm member against the valve stem when said cover is closed and to release said valve stem when said cover is opened.

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