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PYROPHORIC GAS LIGHTER

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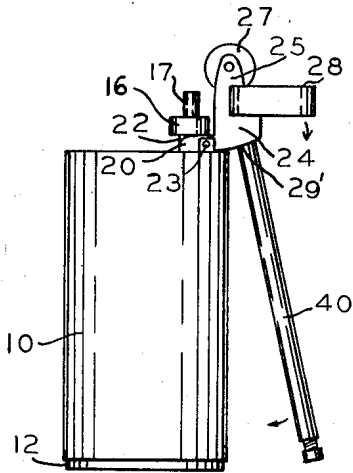


FIG. 2.

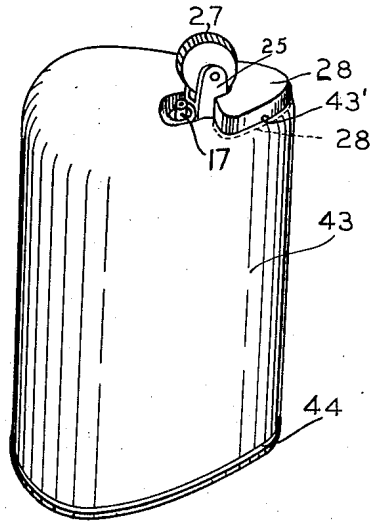


FIG. 1.

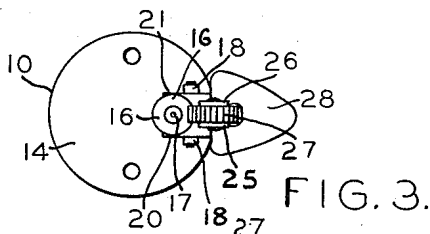


FIG. 3.

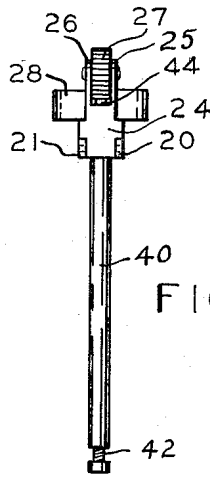


FIG. 5.

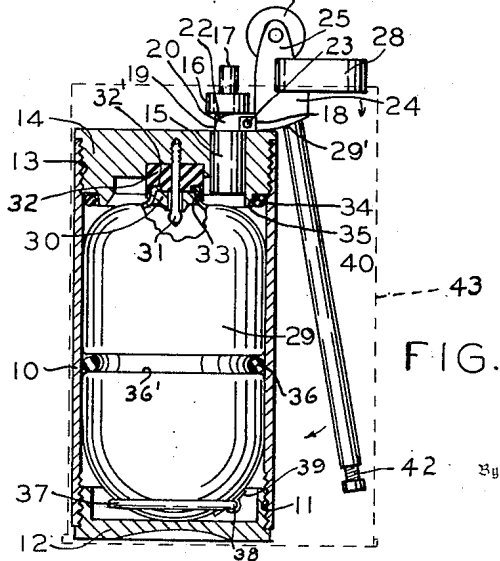


FIG. 4.

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PYROPHORIC GAS LIGHTER

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3 Claims. (Cl. 67—7.1)

My invention relates to an improvement in a pyrophoric gas lighter and more particularly to a type which may be held in the hand and ignited by a single movement of the operator's finger.

It is an object of my invention to provide a pyrophoric gas lighter having a casing in which is retained a cartridge filled with compressed liquefied petroleum gas, the cartridge having a frangible element pierced by a sharpened member when the cartridge is inserted into the casing.

It is a further object to provide a valve lifting member pivotally mounted on the casing of the lighter which member mounts the abrading element or sparking wheel and also mounts a finger pressure extension member closely adjacent the sparking wheel so that with a single movement of the operator's finger on the sparking wheel and downwardly against the extension member, a valve secured in the casing is opened virtually simultaneously with the sparks produced, thereby giving a light issuing from the nozzle of the valve. With continued pressure on the extension member or pressure plate, the valve remains open and closes automatically upon the release of pressure.

It is an additional feature to provide an outer decorative shell for enclosing the casing and a small portion of the extension member and the flint receiving tube which also pivots with the movement of the valve lifting member. The abrading element or sparking wheel together with a substantial portion of the extension member extend upwardly beyond the upper edge of the decorative shell for the lighter for easy engagement with the finger of the operator.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing by way of example a preferred embodiment of the inventive idea.

In the drawings forming part of the application:

Figure 1 is a perspective view of my lighter.

Figure 2 is a view of the lighter with the outer shell casing removed.

Figure 3 is a top plan view of the lighter shown in Figure 2.

Figure 4 is an enlarged view partially in section of the lighter shown in Figure 1.

Figure 5 is a front view of the ignition and valve actuating unit removed from the lighter.

My pyrophoric gas lighter is composed of the casing 10 having the threads 11 formed in the lower end thereof adapted to receive the lower closure cap 12. The top end of the casing 10 is threaded at 13 which receives the threaded plug member 14. The plug member 14 has secured therein the spring urged escapement valve unit 15, which has the collar 16 secured thereto, and the nozzle end 17 through which gas is allowed to escape when the valve 15 is opened as will be hereinafter described.

Formed on the top surface of the plug member 14 are the spaced apart upstanding lug members 18. I further provide an ignition and valve actuating unit which in-

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cludes the bifurcated valve lifter 19 formed with the lever arms 20 and 21 which are positioned beneath the collar 16. The forward ends of the lever arms 20 and 21 are rounded as at 22 to provide for easy sliding contact engagement with the under side of the collar 16. A pin 23 extends through the upstanding lug members 18 and also through the arms 20 and 21 of the valve lifter 19 to pivotally mount the valve lifter on the top of the plug 14. Secured to and as part of the valve lifting member 19 and the ignition and valve actuating unit is the flint holding casing portion 24 which has formed on the top end thereof of the upstanding ears 25 and 26 between which the abrading element or flint wheel 27 is rotatably mounted.

Adjacent the flint wheel 27 and secured to the flint holding casing 24 is the extension or finger pressure plate member 28 adapted to receive pressure from the operator's finger as it turns the flint wheel 27. The lower end of the flint holding casing portion 24 is arcuated as at 29' so that when the extension member 28 is pushed downwardly, the lever arms 20 and 21 will pivot on 23 and raise upwardly, thereby pushing the collar 16 upwardly and opening the valve unit 15 internally against a spring therein allowing gas to escape out the nozzle 17 from the cartridge 29.

The gas filled cartridge 29 has formed on the upper end thereof the frangible portion 30 which is pierced by the piercing member 31 when the cartridge 29 is forced upwardly into the casing 10. I also provide a resilient washer 32 which is anchored in the plug member 14 and against which the upper end 32' of the cartridge 29 abuts and through which the piercing element 31 extends. Formed in the upper end 32' of the cartridge 29 is the opening 33 which allows gas to escape from the inside of the cartridge 29 to the valve unit 15 when the piercing element 31 has pierced the frangible element 30. To maintain a seal of the upper portion of the casing 10, I provide the O ring 34 which fits into the annular recess 35 formed in the under surface of the plug member 14. To seal gas within the casing 10 which has come through the opening 33, I provide the O ring 36 which is retained in the recess 36' formed in the capsule 29 and which contacts the inner walls of the casing 10. In order that the capsule 29 may be easily removed from the casing 10 when the gas supply has been exhausted therefrom, I provide the ring handle member 37 which is pivoted at 38 by means of the clamp member 39 which is secured to the surface of the cartridge 29.

Secured to the arcuated surface 29' is the tube 40 which has positioned in the upper end thereof the flint 41, said tube also containing a spring to force the flint 21 upwardly against the flint wheel 27. To maintain the flint 41 in position against the flint wheel 27 by means of the spring positioned within the tube 40, I provide the adjustable screw 42 which may adjust the tension of the spring.

In operating my one-handed, single movement lighter, the thumb is forced downwardly upon the flint wheel 27 and at the same time upon the upper surface of the extension lever 28, thereby rotating the flint wheel 27 and pushing down the lever extension 28 at the same time, which results in the opening of the valve unit 15 by means of the pivoted lever arms 20 and 21 moving upwardly against the collar 16 by means of the pivot 23. Thus, by a single stroke of the thumb or finger a spark is produced and the valve opened to allow gas to escape from the nozzle 17 and be ignited by the spark. In effect, the movement and pressure of the finger originates on the wheel 27 and is virtually simultaneously transferred to the lever 28. Upon release of pressure on the extension 28, the valve 15 is automatically closed.

I further provide a decorative shell-like casing 43 which virtually covers the entire lighter and forms a convenient surface for the hand to grip. The shell 43 is adapted to

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receive the lower cap member 44 which closes off the bottom open end of the outer shell 43 and forms a base on which the lighter stands. The shell casing 43 has formed in the upper end thereof the opening 43' through which the finger pressure plate 28 extends and through which the plate 28 is depressed as the flint wheel 27 is rotated as stated above.

I claim:

1. In a pyrophoric lighter, an outer casing for holding a supply of liquefied fuel under pressure, an escapement valve for the liquefied fuel, a combined ignition and valve actuating unit pivotally mounted at a single point on said casing directly adjacent said valve, said unit including a casing portion having an abrading element mounted on a horizontal axis thereon, a finger pressure plate secured to said casing portion adjacent said abrading element, a flint member for engagement with said abrading element, valve lifting arms secured to said casing portion adapted to open said escapement valve when a single stroke of pressure of the operator's finger is applied to said abrading element and said finger pressure plate.

2. In a pyrophoric lighter, a reservoir member, an outlet valve mounted on said reservoir member, a casing member pivotally mounted on said reservoir directly adjacent said outlet valve, a flint abrading wheel mounted on a horizontal axis on said casing member for engagement with the operator's finger, a flint mounted on said casing member for abrasion by said wheel, valve lifting

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finger means formed on said casing member, a finger pressure plate connected to and extending horizontally from said casing member directly adjacent said abrading wheel for pressing contact by the operator's single finger as the finger turns said abrading wheel.

3. A pyrophoric lighter having a reservoir of compressed liquid fuel adapted to be released as a gas, said lighter having a supporting wall, a pyrophoric unit mounted on said supporting wall including a flint abrading wheel rotatable in a vertical plane, a flint adapted to be abraded by said wheel, an escapement valve for gas from said reservoir secured to said supporting wall adjacent said pyrophoric unit, a horizontally disposed finger pressure plate pivotally mounted on said wall directly adjacent said flint abrading wheel, said plate having a valve opening means connected thereto to cause the valve to be opened with pressure thereon virtually simultaneously with the operation of said flint wheel to ignite the escaping gas from said valve.

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