Oct. 22, 1957 L. J. MAYER, SR 2,810,282

PYROPHORIC GAS LIGHTER

Filed Aug. 27, 1951

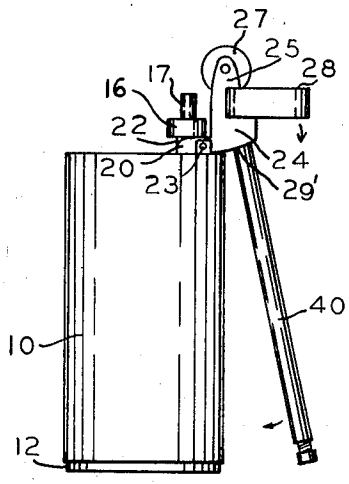


FIG. 2.

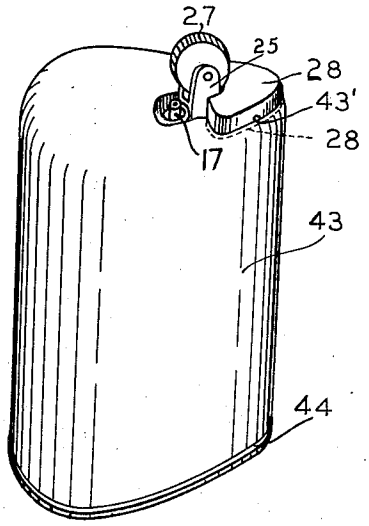


FIG. 1.

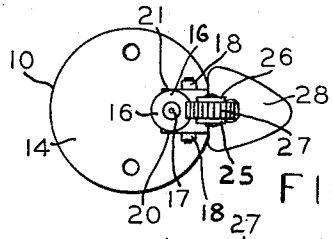


FIG. 3.

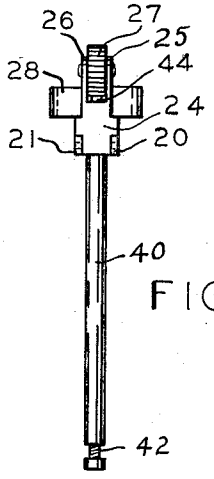


FIG. 5.

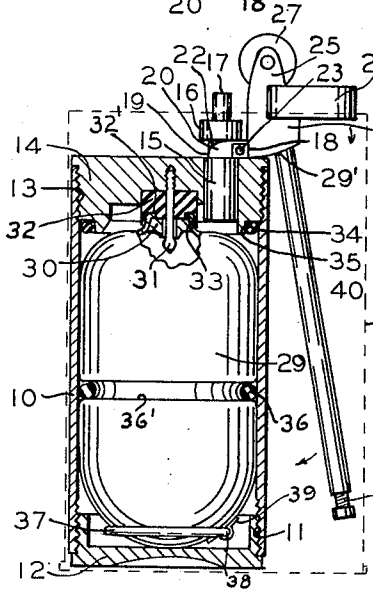


FIG. 4.

Inventor
LOUIS J. MAYER, SR.

By Thomas Fiedler

Attorney

United States Patent Office 2,810,282 Patented Oct. 22, 1957

2,810,282

PYROPHORIC GAS LIGHTER

Louis J. Mayer, Sr., St. Paul, Minn., assignor to Brown & Bigelow, St. Paul, Minn., a corporation of Minnesota

Application August 27, 1951, Serial No. 243,792

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 nad 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 includes 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 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

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 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.

References Cited in the file of this patent

UNITED STATES PATENTS

2,495,345	Quercia et al.	Jan. 24, 1950
2,509,744	Quercia et al.	May 30, 1950
2,612,033	Flamm	Sept. 30, 1952

FOREIGN PATENTS

923,219	France	Feb. 17, 1947