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LIQUEFIED PETROLEUM GAS LIGHTER

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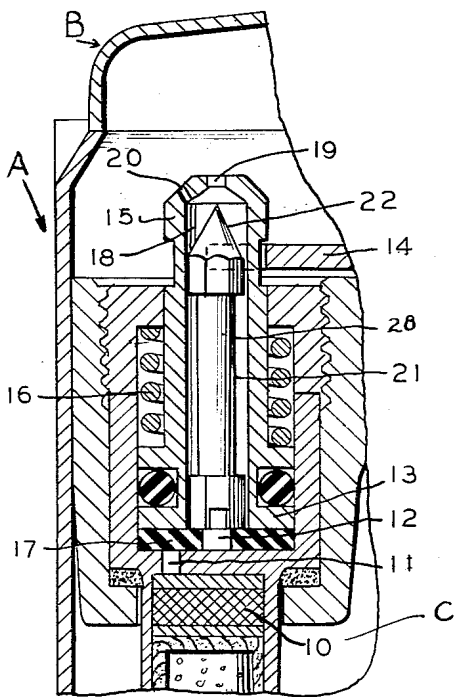


FIG. 1.

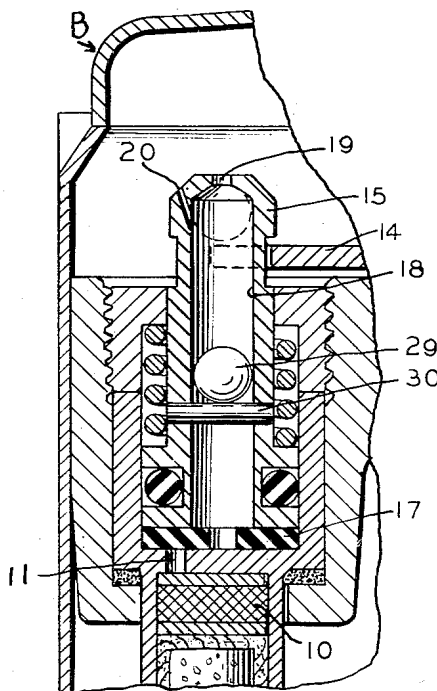


FIG. 4.

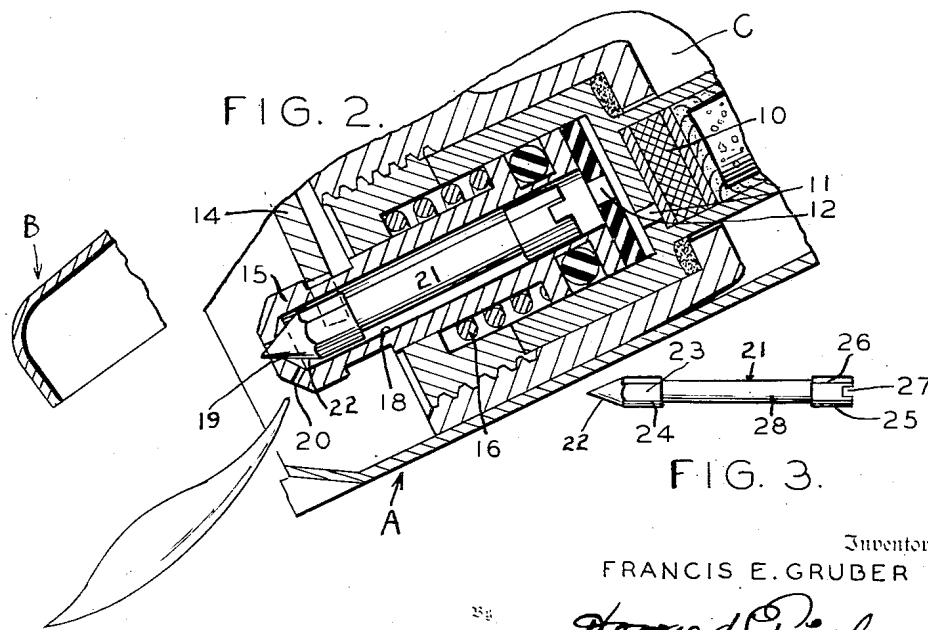


FIG. 2.

FIG. 3.

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LIQUEFIED PETROLEUM GAS LIGHTER

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2 Claims. (Cl. 67-7.1)

This invention relates to liquefied petroleum gas lighters of the character disclosed in Patent No. 2,561,270 dated July 17, 1951, Patent No. 2,594,754 dated April 29, 1952 and Patent No. 2,594,755 dated April 29, 1952 wherein liquefied petroleum fuel is employed to provide the fuel for the lighter.

A feature of this lighter resides in providing a burner for the fuel which does not use a wick such as was used in the old type of gasoline lighters. The burner of this lighter is in the form of a hollow burner nozzle having a primary hole out of which the gas escapes when the valve of the lighter is opened as is set forth in the above entitled patents.

The burner nozzle of this lighter is adapted to be normally closed by spring means and is opened by lifting the valve against the action of the spring whereupon the fuel of the lighter in the form of gas escapes out of a primary axial hole in the nozzle and at the top thereof. It is a feature to provide an auxiliary nozzle hole out of which the gas may escape and which may be smaller in diameter than the primary gas-hole of the nozzle.

A further feature of this lighter resides in providing a loose movable valve rod within the hollow nozzle which is provided with a pointed or valve end to close the primary gas hole of the nozzle when the lighter is tilted sufficiently to allow the rod valve to slide in the hollow nozzle. When the lighter is tipped in this manner the gas will continue to flow out of the auxiliary gas hole which is positioned near or at an angle to the primary gas hole. Thus, when the lighter is operated in this manner to close the primary gas hole in the burner nozzle, the flame of the lighter will be projected at a forward angle so as to provide a jet-like flame which may be used as a jet flame for lighting a pipe.

The hollow nozzle of my lighter may also be equipped with a ball valve which is freely movable in the axial hollow opening in the valve nozzle so that when the lighter is tipped the ball in this form of lighter can roll down and close off the primary gas hole leaving the secondary or auxiliary gas hole open so that a jet flame may be formed from the auxiliary nozzle hole.

A feature of the invention resides in providing a burner nozzle with the valve of the lighter which normally shuts off the flow of gas out of the fuel chamber of the lighter with a hollow axial passageway leading to the small primary gas hole out of which the gas escapes when it is to be ignited and placing within the hollow gas nozzle an element which will move within the nozzle to shut off the primary gas escapement hole and leave the auxiliary or secondary hole open so as to provide a jet flame. The construction of the valve nozzle is simple and a jet flame may be obtained by the lighter by the simple concealed moving member within the nozzle.

These features, together with other details and objects of the invention, will be more clearly hereinafter defined.

In the drawings forming part of the specification:

Figure 1 is a sectional detail of a portion of a lighter wherein liquefied petroleum is used which is adapted to

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escape out of the exhaust valve associated with the burner nozzle in the form of gas, such as is described in the foregoing patents listed above.

Figure 2 is a similar sectional detail to Figure 1 showing the lighter tilted so that the primary gas escapement hole in the nozzle is shut off and the auxiliary hole is open to provide a jet flame from the burner nozzle of the lighter.

Figure 3 illustrates the slidable rod valve in my burner used in the preferred form of my burner nozzle of my lighter.

Figure 4 is an alternative form of burner nozzle wherein a ball valve is employed which is adapted to move freely in the hollow burner nozzle.

In the drawings I have only illustrated a segment or portion of the lighter A which is normally closed by a decorative cover B.

A fuel chamber C is adapted to contain the liquefied petroleum such as butane or propane or other suitable fuel which is capable of being compressed into liquid form. With the fuel in the fuel chamber C compressed into liquid form it is adapted to be exhausted out of the lighter A through the valve 10 which allows the fuel to expand to a gas and permits the same to escape through the holes 11 and 12 when the valve 13 is opened by the valve lifting lever 14 which moves the valve and its connecting nozzle 15 against the action of the spring 16. A suitable valve seat 17 of soft material closes the exhaust hole 11 when the valve 13 is in closed position. The spring 16 causes the valve 13 to normally remain closed.

The nozzle 15 is formed with a hollow passageway 18 and has a primary gas escapement hole 19 in the apex of the nozzle.

The valve lifting lever 14 is similar in form to the lever 42 in Patent No. 2,594,754 and as illustrated in the other patents above set forth.

The burner nozzle 15 is formed with an auxiliary gas escapement hole 20 adjacent the hole 19. Within the hollow chamber or passageway 18 of the nozzle 15 I provide a slideable valve rod 21 which is formed with a conical or pointed end 22 adapted to form a valve means for closing the primary gas escapement hole 19 when the rod valve 21 slides down upon the tipping of the lighter A to cause the valve to slide in a position to close the hole 19.

The closing of the gas escapement hole 19 occurs when the lighter is tilted or tipped so as to permit the valve rod 21 to slide in the passageway 18 where the valve rod 21 is freely operated.

When the lighter A is operated in this manner the escaping gas from the nozzle out of the hole 19 is ignited by a pyrophoric ignition means not shown in the drawings but illustrated in the foregoing patents ignites the escaping gas and provides a gas flame for the lighter A. If the operator desires to have a jet flame projecting so as to light a pipe, it is only necessary for the operator to tilt the lighter permitting the valve rod 21 to slide into position to close the hole 19 leaving the hole 20 open and thus providing a jet gas flame which will project in a manner to permit the operator to easily light a pipe or other object.

The valve rod 21 is formed with a head portion 23 which may be hexagonal (as illustrated) or square or any suitable shape so as to provide longitudinal edges 24 for engagement within the passageway 18 to guide the valve rod in its sliding movement. The lower end of the valve rod 21 may also be provided with a base portion 25 which is formed with guide edges 26 and also a gas passage slot 27. The head portion 23 and the base portion 25 are comparatively short so as to reduce the longitudinal friction in the sliding of the valve rod 21. The central portion 28 of the rod 21 is cut away so the

portion of the valve rod between the head and the base will not contact the inner wall of the passageway 18. This construction provides a valve with sufficient weight owing to the length of the valve so that it will quickly slide when desired to close the hole 19. This is important in the proper operation of the lighter to obtain a jet flame.

In the alternative form of my valve nozzle 15 illustrated in Figure 4 in place of the valve rod 21 I use a ball valve 29 which may be held by a transverse rod 30 to limit the movement of the ball in the hollow longitudinal chamber 18 of the valve nozzle. The transverse rod 30 may be dispensed with and one or more balls can be used within the passageway 18 so as to supply sufficient weight to cause the ball valve 29 to roll freely from one end to the other of the longitudinal chamber 18.

In the alternative form of my lighter the ball valve 29, either by its own weight or being urged by several other balls back of the same which are not shown in the drawings, will roll to the top of the nozzle 15 when the lighter is tilted closing off the primary gas escapement hole 19 and leaving the auxiliary gas escapement hole 20 open so that a jet flame is obtained by the operation of the lighter A.

The operation of my lighter A with the auxiliary valve rod 21 or ball valve means 29 is simple, inexpensive in construction, easy to operate and dependable to function to close the primary gas escapement hole 19 in the nozzle 15 of the lighter.

It is also a feature to provide the valve rod 21 with the pointed end 22 which fits into the hole 19 acting to normally close the hole when the rod slides into position to cause the pointed end to enter the hole 19 and also acting as a means of clearing the hole 19 and permitting the valve rod 21 to slide freely in the longitudinal hollow chamber 18 of the valve nozzle 15. The weight of the valve rod 21 is sufficient to keep the valve rod freely movable during the operation of the lighter and

thus insure a quick and ready jet flame whenever the operator of the lighter desires the same.

I claim:

1. A liquefied petroleum gas lighter having a fuel chamber for compressed liquefied fuel, a pressure reducing exhaust valve causing the liquid fuel to escape therefrom in the form of gas, a single hollow burner nozzle mounted on said fuel chamber, a primary axially disposed gas escapement hole in said burner nozzle, a secondary angularly disposed gas escapement hole in said nozzle adjacent said primary hole, and a valve rod means within said nozzle adapted to slide into position to close said primary gas hole when said lighter is inverted, said angularly disposed hole remaining open and providing an angularly disposed jet flame from said nozzle.

2. A lighter having a chamber for receiving compressed liquefied fuel under pressure, an exhaust valve mounted in said chamber adapted to emit the fuel in the form of gas, a burner nozzle extending from said exhaust valve, an axially disposed burner opening formed in the upper end of said nozzle, a non-axially angularly disposed burner opening formed in the side of said nozzle at the upper end thereof and valve means within said nozzle adapted to move to close said axial opening when said lighter is moved toward inverted position leaving said non-axial opening open providing an angularly disposed jet flame when said lighter is tilted into a substantially inverted position.

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