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GAS FUELED LIGHTER

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9 Claims

ABSTRACT OF THE DISCLOSURE

A gas fueled lighter comprising a housing having a burner and an ignitor projecting longitudinally from one end thereof in side-by-side relation. The burner is threadedly connected to the housing and carries a valve which opens and closes a fuel outlet passage in response to rotation of the burner in opposite directions by means of a handle connected thereto. A wind guard is connected to the burner and has a spark aperture which registers with the ignitor upon rotation of the burner into a position to open the valve. A removable cover telescoped over one end of the housing encloses the burner and the ignitor and engages the handle on the burner to prevent opening of the valve. The ignitor, comprising a flint and striker wheel, is removably disposed in a socket in the housing. At the inner end of the socket is a check valve through which gaseous fuel of the liquefied petroleum type may be introduced into a reservoir within the housing upon removal of the ignitor from its socket.

BACKGROUND OF INVENTION

The present invention relates in general to a gas fueled lighter and, more particularly, to a lighter which utilizes a gaseous fuel of the liquefied petroleum type under pressure.

Such a lighter conventionally comprises a housing provided therein with a reservoir for the gaseous fuel. An inlet passage equipped with a check valve means serves to permit the introduction of gaseous fuel into the reservoir. An outlet passage leads from the reservoir to a burner or burner means and is equipped with a valve or valve means for opening and closing the outlet passage. A porous membrane in the outlet passage serves to regulate the flow of gaseous fuel when the valve is open. An igniting means, comprising a flint and striker wheel, is disposed adjacent the burner, the igniting means and the burner projecting longitudinally of the housing from one end thereof in side-by-side relation. A removable cover encloses the igniting means and the burner when the lighter is not in use. The igniting means is removably disposed in a socket in the housing and the inlet passage for filling the reservoir is located at the inner end of such socket.

OBJECTS OF INVENTION

A primary object of the invention is to provide a gas fueled lighter of the foregoing general character having a unique means for shielding the flame emanating from the burner in such a manner that it is virtually impossible for the flame to be extinguished by wind. Thus, the lighter of the invention is capable of utilization as a survival lighter under extreme weather conditions, which is an important feature.

An important object of the invention is to provide a lighter wherein the burner is threadedly connected to the housing, wherein the valve means is connected to and responsive to rotation of the burner so that it opens and closes the outlet passage upon rotation of the burner in opposite directions, and wherein a wind guard is connected to and encloses the burner and is provided with

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a spark aperture which registers with the igniting means upon rotation of the burner into a position to open the valve means, the wind guard being otherwise imperforate except for the usual flame discharge opening at the top thereof.

With the foregoing construction, the valve means opens the outlet passage to the proper extent as the spark aperture in the wind guard is rotated into register with the igniting means, thereby insuring opening of the outlet passage to the proper extent before ignition can occur, which is an important feature. The spark aperture in the wind guard provides the only means for admitting combustion air into the wind guard, and thus a well shielded flame results, which is an important feature.

The burner is provided with a handle for rotating it in opposite directions to open and close the valve means and to move the spark aperture in the wind guard into and out of register with the igniting means. An important object in this connection is to provide cooperating means on the handle, and on the cover for the burner and the igniting means, for maintaining the handle in a position corresponding to the closed position of the valve means when the cover is in place. With this construction, the valve means cannot be opened accidentally or inadvertently as long as the cover is in place, which is an important feature of the invention.

Another object of the invention is to provide a means for retaining the igniting means in its socket in the housing which comprises a U-shaped clip insertable into the socket and embracing the igniting means. A related object is to provide cooperating means on the housing and the clip for releasably securing the igniting means in its socket and for orienting the igniting means toward the burner.

The foregoing objects, advantages, features and results of the present invention, together with various other objects, advantages, features and results thereof which will be evident to those skilled in the gas fueled lighter art in view of this disclosure, may be achieved with the exemplary embodiment of the invention illustrated in the accompanying drawing and described in detail hereinafter.

DESCRIPTION OF DRAWING

In the drawing:

FIG. 1 is a longitudinal sectional view of a gas fueled lighter of the invention, showing a cover of the lighter in place to maintain a valve means of the lighter in its closed position;

FIG. 2 is a view similar to FIG. 1, except that the cover has been removed and the valve means has been opened;

FIG. 3 is a transverse sectional view taken as indicated by the arrowed line 3—3 of FIG. 1, the latter figure being taken as indicated by the arrowed line 1—1 of FIG. 3; and

FIG. 4 is a top plan view of the lighter in the condition in which it is shown in FIG. 2.

DESCRIPTION OF EXEMPLARY EMBODIMENT OF INVENTION

Referring to the drawing, the gas fueled lighter of the invention is designated generally therein by the numeral 10 and includes a cylindrical housing 12 comprising a cup 14 telescoped over and suitably secured to the lower end of a lighter body 16 which closes the upper end of the cup. The lower end of the cup 14 is spaced from the lower end of the lighter body 16 to provide a reservoir 18 for a gaseous fuel of the liquefied petroleum type under pressure. When the lighter 10 is not in use, a removable cover or cap 20 is telescoped over the upper end

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of the lighter body 16 and seated against the upper end of the cup 14. If desired, a coil spring 22 may encircle the lower end of the skirt portion of the cap 20 to bias same inwardly into frictional engagement with the upper end of the lighter body 16.

As best shown in FIG. 1, the lighter 10 includes an igniting means 24 and a burner means 26 projecting longitudinally from the upper end of the lighter body 16 in side-by-side relation. The igniting means 24 is removably disposed in a longitudinal bore or socket 28 in the lighter body 16. The igniting means 24 includes a tubular flint post 30 which is telescoped into the socket 28 and which carries a striker wheel 32 at its upper end. The flint post 30 is disposed in and seated on a U-shaped spring clip 34 the arms of which fit into diametrically opposite, longitudinal recesses in the exterior of the flint post. Within the flint post 30 is a flint 36 biased upwardly into engagement with the striker wheel 32 by a compression coil spring 38 seated against the bottom of the spring clip 34. The upper end of the lighter body 16 is provided with a lateral opening 40 which communicates with the socket 28, adjacent the upper end thereof, and which receives the upper end of one of the arms 42 of the spring clip 34 therein. The upper end of such arm 42 and the lateral opening 40 provide cooperating means on the lighter body 16 and the spring clip 34 for releasably securing the igniting means 24 in its socket 28 and for orienting the striker wheel 32 toward the burner means 26.

At the lower end of the socket 28 is an inlet passage 44 through which liquefied gaseous fuel may be introduced into the reservoir 18 upon removal of the igniting means 24. The inlet passage 44 is normally closed by a downwardly-opening check valve means 46 comprising a check valve 48 carrying an O-ring 50 which provides a fluid-tight seal. The upper end of the check valve 48 projects upwardly into the lower portion of the socket 28 and is provided with a recess 52 to receive and properly locate the top of a nozzle, not shown, for unseating the O-ring 50 and for introducing the liquefied gaseous fuel. The check valve 48 is seated in a cup 54 which is biased upwardly to close the check valve means 46 by a compression coil spring 56. The lower end of this spring is seated against a member 58 which is telescoped into and suitably secured to the lower end of the lighter body 16. It will be understood that, instead of the O-ring 50, other types of seals may be used.

The lighter body 16 is provided therein with an outlet passage 60 which communicates with the reservoir 18 and with the lower end of an internally threaded cylindrical socket or bore 62 in the lighter body 16 alongside the socket 28. Flow through the outlet passage 60 is regulated by a porous membrane 64 which traverses the outlet passage. The porous membrane 64 is clamped between two seals 66 one of which is seated against the lower end of the lighter body 16 and the other of which has a member 68 seated thereagainst. The member 68 is biased upwardly, to clamp the porous membrane 64 between the seals 66, by a compression coil spring 70 the lower end of which is seated against the member 58. As is well known, the porous membrane 64 limits the flow of gaseous fuel through the outlet passage 60 to a predetermined maximum.

The burner means 26 includes a burner element 72 threaded into the bore 62 and sealed relative to the lighter body 16 by an O-ring 74. Gaseous fuel can flow through the burner element 72 by way of radial ports 76, a longitudinal passage 78, and a burner orifice 80. The latter is positioned opposite the point of engagement between the striker wheel 32 and the flint 36 so that when the striker wheel is rotated in the counterclockwise direction, as viewed in FIGS. 1 and 2, the sparks produced are directed toward the orifice 80.

The lower end of the burner element 72 carries valve means 82 for opening and closing the outlet passage 60 in response to rotation of the burner element in opposite

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directions. The valve means 82 comprises an O-ring 84, or other suitable seal, which is seated against the lower end of the bore 62, as shown in FIG. 1, to close the upper end of the outlet passage 60 in response to rotation of the burner element 72 in one direction. When the burner element is rotated in the opposite direction, the O-ring 84 is lifted off its seat to permit the flow of gaseous fuel, as regulated by the porous membrane 64, into the lower end of the bore 32, and thence to the burner orifice 80 by way of the radial ports 76 and the longitudinal passage 78. This construction provides a very simple way of opening and closing the outlet passage 60.

Telescoped over the upper end of and suitably secured to the burner element 72 is a tubular wind guard 86 having a laterally-facing spark aperture 88 in one side thereof. When the valve means 82 is closed, as shown in FIG. 1, the spark aperture 88 faces away from the igniting means 24. When the valve means 82 is open to the proper extent, the spark aperture 88 faces toward and registers with the igniting means 24 so that sparks produced by counterclockwise rotation of the striker wheel 32 relative to the flint 36 can reach the gaseous fuel emanating from the burner orifice 80. It will be noted that the wind guard 86 is imperforate, except for the spark aperture 88 and its open top. With this construction, the flame emanating from the burner orifice 80 is extremely well shielded so that it will not be extinguished under even very severe wind conditions.

Connected to the wind guard 86, as by being formed integrally therewith, is a laterally extending handle or handle means 90 for rotating the burner element 72 to open and close the valve means 82 and to move the spark aperture 88 into and out of register with the igniting means 24. The handle 90 is provided with a stop 92 engageable with a stop 94 on the lighter body 16 to limit valve opening movement of the handle. Similarly, the handle 90 is provided with a stop 96 engageable with a stop 98 on the lighter body 16 to limit valve closing movement of the handle.

An important feature of the invention is that the handle 90 is provided with a curved outer surface 100 conforming to and located in close proximity to a curved inner surface 102 of the cap 20 when the cap is in place with the handle 90 in its valve closing position. This condition is best shown in FIG. 3 of the drawing. Consequently, the cap 20 and the handle 90 provide cooperating means thereon for maintaining the handle in a position corresponding to the closed position of the valve means 82 when the cap 20 is in place. With this construction, it is impossible for the valve means 82 to be opened inadvertently or accidentally, so long as the cap 20 is on the housing 12, which is an important feature of the invention since it positively precludes any possibility of the unintentional discharge of gaseous fuel.

Although an exemplary embodiment of the invention has been disclosed herein for purposes of illustration, it will be understood that various changes, modifications and substitutions may be incorporated in such embodiment without departing from the spirit of the invention as defined by the claims appearing hereinafter.

We claim as our invention:

1. In a gas fueled lighter, the combination of:

- (a) a housing provided with a reservoir for gaseous fuel of the liquefied petroleum type under pressure;
- (b) said housing being provided with an outlet passage for the gaseous fuel;
- (c) burner means communicating with said outlet passage and threadedly connected to said housing;
- (d) valve means connected to and responsive to rotation of said burner means for opening and closing said outlet passage upon rotation of said burner means in opposite directions;
- (e) igniting means carried by said housing adjacent said burner means;

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(f) a wind guard connected to said burner means and having a spark aperture which registers with said igniting means upon rotation of said burner means into a position to open said valve means; and

(g) handle means for rotating said burner means to open and close said valve means and to move said spark aperture in said wind guard into and out of register with said igniting means.

2. A gas fueled lighter according to claim 1 wherein said housing has longitudinally spaced ends and wherein said burner means and said igniting means project longitudinally from one end of said housing in side-by-side relation.

3. A gas fueled lighter as defined in claim 2, including:

(a) a removable cover for said burner means and said igniting means telescoped over said one end of said housing; and

(b) cooperating means on said cover and said handle means for maintaining said handle means in a position corresponding to the closed positions of said valve means when said cover is connected to said housing.

4. A gas fueled lighter as set forth in claim 2 wherein said igniting means is removably disposed in a socket in said one end of said housing, and wherein said lighter includes retaining means removably securing said igniting means in said socket.

5. In a gas fueled lighter, the combination of:

(a) a housing provided with a reservoir for gaseous fuel of the liquefied petroleum type under pressure;

(b) said housing being provided with an outlet passage for gaseous fuel;

(c) burner means communicating with said outlet passage and threadedly connected to said housing;

(d) valve means connected to said burner means for opening and closing said outlet passage upon rotation of said burner means;

(e) igniting means carried by said housing adjacent said burner means;

(f) handle means for rotating said burner means to open and close said valve means;

(g) a removable cover for said burner means and said igniting means connected to said housing; and

(h) cooperating means on said cover and said handle means for maintaining said handle means in a position corresponding to the closed position of said valve means when said cover is connected to said housing.

6. A gas fueled lighter according to claim 5 wherein said housing has longitudinally spaced ends and wherein said burner means and said igniting means project longitudinally from one end of said housing in side-by-side relation, said cover being telescoped over said one end of said housing.

7. In a gas fueled lighter, the combination of:

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(a) a housing provided with a reservoir for gaseous fuel of the liquefied petroleum type under pressure;

(b) said housing being provided with an outlet passage for gaseous fuel;

(c) burner means carried by said housing in communication with said outlet passage;

(d) valve means carried by said housing for opening and closing said outlet passage;

(e) a socket in said housing adjacent said burner means;

(f) igniting means removably disposed in said socket for igniting gaseous fuel discharged from said burner means;

(g) retaining means removably securing said igniting means in said socket;

(h) said retaining means including a U-shaped spring clip insertable into said socket and embracing said igniting means; and

(i) cooperating means on said housing and said spring clip for releasably securing said igniting means in said socket and for orienting said igniting means toward said burner means.

8. A gas fueled lighter according to claim 7 including check valve means carried by said housing at the inner end of said socket for passing gaseous fuel of the liquefied petroleum type into said reservoir upon removal of said igniting means from said socket.

9. In a gas fueled lighter, the combination of:

(a) a housing provided with a reservoir for gaseous fuel of the liquefied petroleum type under pressure;

(b) said housing being provided with an outlet passage for the gaseous fuel;

(c) burner means communicating with said outlet passage and rotatable relative to said housing;

(d) valve means connected to and responsive to rotation of said burner means for opening and closing said outlet passage upon rotation of said burner means in opposite directions;

(e) igniting means carried by said housing adjacent said burner means; and

(f) a wind guard connected to said burner means and having a spark aperture which registers with said igniting means upon rotation of said burner means into a position to open said valve means.

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