

Dec. 29, 1953

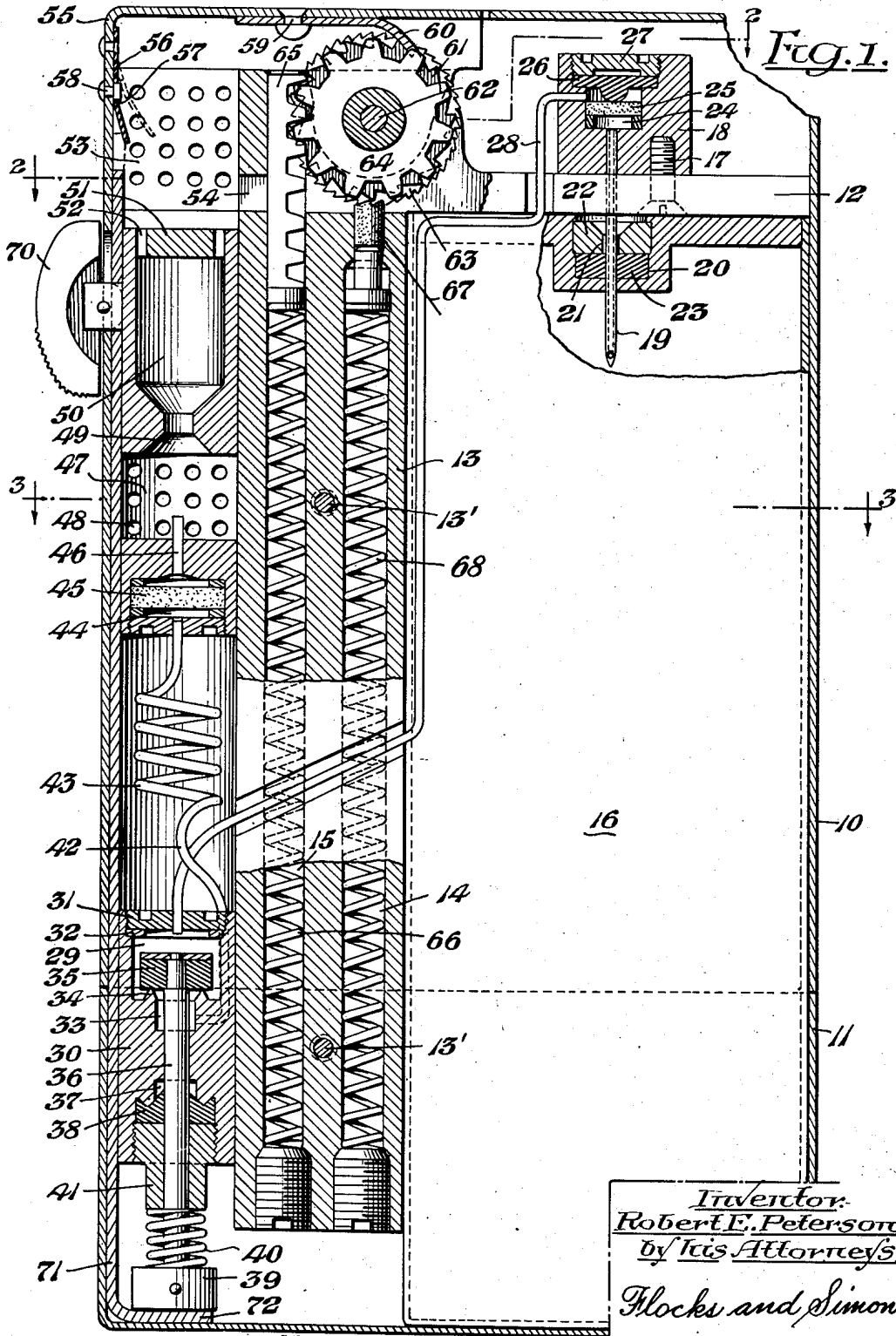
R. E. PETERSON

2,664,007

LIGHTER

Filed Sept. 26, 1949

2 Sheets-Sheet 1



Inventor:
Robert E. Peterson
by His Attorneys,
Hocks and Simon

Dec. 29, 1953

R. E. PETERSON

2,664,007

LIGHTER

Filed Sept. 26, 1949

2 Sheets-Sheet 2

Fig. 2.

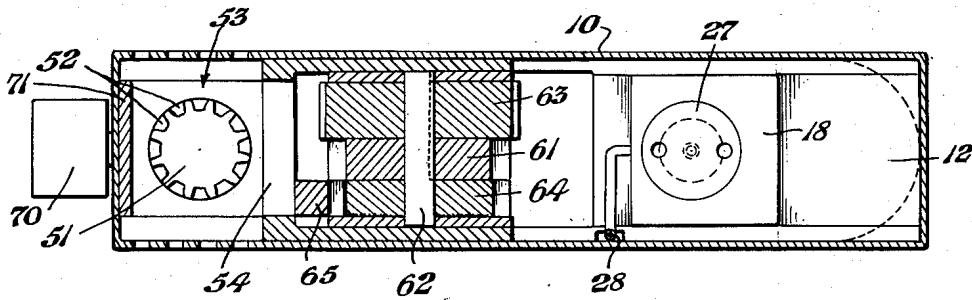


Fig. 3.

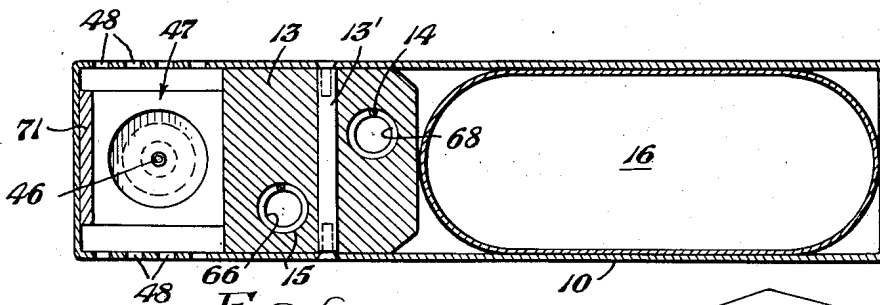


Fig. 4.

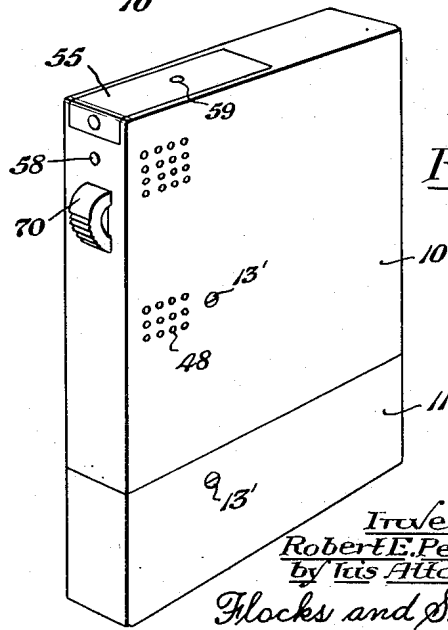
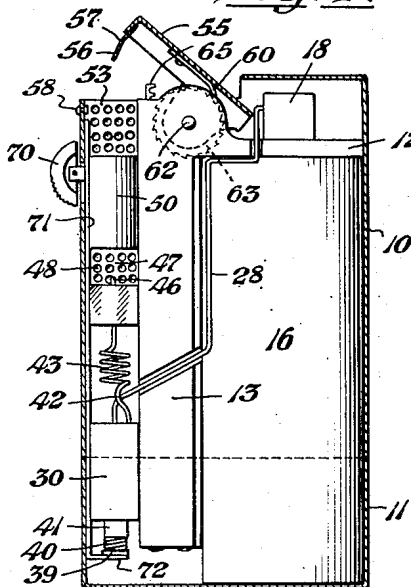


Fig. 5.

Inventor:
Robert E. Peterson
by his Attorneys,
Flocks and Simon

UNITED STATES PATENT OFFICE

2,664,007

LIGHTER

Robert E. Peterson, New York, N. Y., assignor to
Repeater Products, Inc., New York, N. Y., a cor-
poration of New York

Application September 26, 1949, Serial No. 117,843

6 Claims. (Cl. 67-7.1)

1

2

The present invention relates to a lighter. More particularly the present invention relates to a portable lighter of a type especially suitable for the proper and efficient combustion of a gaseous fuel.

In co-pending application Serial No. 553,701, filed September 12, 1944, to Robert E. Peterson, which application has matured into Patent No. 2,482,739, there is disclosed a lighter capable of efficiently burning a gaseous fuel such as liquid propane, butane or suitable mixtures thereof. The lighter disclosed in the aforementioned application includes as one of its features a carbureting device for intimately admixing the gaseous fuel with air to form a combustible mixture, a mixing chamber and a combustion chamber, together with a suitable igniting mechanism.

It is one of the objects of the present invention to provide an improved form of operating mechanism for a lighter of the type referred to which will insure proper coordination between the flow and combustion of gaseous fuel and operation of an igniting mechanism.

A second object of the present invention is to provide in a lighter of the character described a gas release mechanism properly timed with relation to the action of a snap-up cover and igniting mechanism.

A third general object of the present invention is to provide in a gas lighter, including a combustion chamber, a rotatable closure for the combustion chamber together with a manually actuated means for initiating rotation of the closure member upon the supply to the combustion chamber of a proper combustible mixture of gas and air.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a vertical section of the lighter of the present invention;

Fig. 2 is a transverse section taken generally along the line 2-2 of Fig. 1;

Fig. 3 is a section taken generally along the line 3-3 of Fig. 1;

Fig. 4 is a side elevation of the lighter in operating position with the casing and cover in section; and

Fig. 5 is a perspective view of the lighter.

Referring to the figures of the drawings, and particularly Fig. 1 thereof, an upper casing member is indicated at 10 and a lower casing member or bottom cover at 11. Within the casing member 10 and suitably supported thereby is a head block 12. Depending from the head block 12 is

a block 13 provided with a pair of bores 14 and 15. The block 13 is fastened as by the members 13' to the casing member 10.

The portion of the lighter casing between the downwardly depending block 13 and the edge of the casing provides a space for receiving a cartridge 16 for liquefied gas such as propane, butane and/or mixtures thereof. Fastened to the head block 12 as by a screw 17 is a filter casing 18 which is provided with a hollow needle 19 depending therefrom. When the cartridge 16 is assembled with the casing member 10 the needle 19 is so positioned that it will enter the central portion of a well 20 within the top of the cartridge and extend through a hole 21 in a bushing 22 to pierce a sealing disc 23 which is retained in the well 20 by the bushing 22. The interior of the upper end of the needle 19 communicates with a filter chamber 24 in the casing 18. This chamber 24 is provided with a filter 25 held in position by a sealing gasket 26. The sealing gasket 26 is retained in sealing position by a threaded plug 27 fitted into the top of the casing 18.

Extending from the side of the casing and supported thereby is a gas conveying tube 28 which connects the chamber 24 above the filter 25 with a valve chamber 29. The valve chamber is formed in the casing adjacent the block 13 as by a plug 30 fixed to the casing. The upper end of the valve chamber 29 is provided with a cover 31 threaded into the plug 30 and provided with a gasket 32. The lower end of the valve chamber communicates with a counterbore 33 provided at its upper periphery with a valve seat 34. Seated on the seat 34 is a suitable valve member 35 as of rubber or other compressible material carried by the valve rod 36.

The valve rod 36 extends through a sealing gland 37 and is suitably sealed by the gasket 38. The lower end of the valve rod 36 is provided with a head 39 and the valve rod is normally urged to a downward or sealing position by a spring 40 bearing against the head 39 and against the plug 41.

Communicating with the counterbore 33 is a gas tube 42 which connects the bore 33 to a capillary coil 43 connecting the tube 42 to a filter chamber 44 provided with a filter plug 45.

The upper end of the filter chamber communicates with a jet 46 feeding into a chamber 47 provided with air ports 48. The jet 46 is directed toward a constricted opening 49 and the force of the gas flowing through the jet toward the opening 49 promotes a flow of air through the openings 48 and into the opening 49 along with the gas to produce an initial carburetion or mixing

3

of gas and air. This initial mixture is then fed through the opening 49 into a mixing chamber 50 closed at its upper end by a plug 51 provided with openings 52 therein.

The combustible mixture fed through the openings 52 enters a combustion chamber 53 normally covered by a pivoted cover member 55 and provided with an ignition opening 54.

The cover member 55 is provided with a resilient latch member 56 provided with an opening 57 normally cooperating with a rivet 58 on the casing member 10 to retain the cover in closed position, as shown in Fig. 1. Riveted to the top cover 55, as by a rivet 59, is a spring pawl 60.

The pawl 60 cooperates with a ratchet 61 mounted for rotation on a shaft 62. Also mounted on the shaft 62 for rotation with the ratchet 61 is a flint wheel 63. The cover member 55 is mounted on the shaft 62 and is suitably connected as by solder or by other means to a pinion 64 for rotation therewith (see Fig. 2). The pinion 64 meshes with a rack 65 slidably mounted within the bore 15 and normally urged upwardly by a spring 66. The flint wheel 63 cooperates with a conventional flint 67 urged into engagement with the flint wheel by a conventional flint spring 68 within the bore 14.

OPERATION

As shown in Fig. 1, the cover 55 is in its extreme counter-clockwise position and is held in this position by the engagement of the rivet 58 and the latch 56. At this time the spring 66 is under compression and the valve member 35 is in seating or closed position and maintained in this position by the spring 40.

To operate the lighter a push button 70 is slid upwardly carrying with it an operating member 71 having a tail 72 bearing against the head 39. The movement of the operating member 71 upwardly moves the head 39 upwardly and the valve rod 36 to permit gas to flow from the chamber 29 to the counter bore 33 and thence through the tube 42, capillary 43, filter chamber 44 to the jet 46. This action promotes a flow of air through the holes 48 and the gas and air initial mixture flows through the opening 49 into the mixing chamber 50. The thoroughly mixed and combustible mixture of gas and air is fed out of the mixing chamber 50 through the holes 52 into the combustion chamber 53. In the meantime, further movement of the actuating member 71 causes the top thereof to come into contact with the end of the latch 56 and spring the latch outwardly into the dotted-line position of Fig. 1.

The movement of the latch outwardly releases the cover for clockwise movement as well as the pinion 64 and the rack 65, the rack 65 moving upwardly under the influence of the spring 66 to rotate the cover to the position of Fig. 4. This action causes a movement of the pawl 60 and the ratchet 61 to rotate the flint wheel 63 to abrade the flint 67. The spark thus produced enters the combustion chamber through the opening 54 to ignite the combustible mixture of gas and air.

To return the lighter to operative condition, the button 70 is released, closing the gas valve and the cover 55 is forced downwardly to similarly move the rack 65 downwardly and tension the spring 66.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the

4

specification but only as indicated in the appended claims.

I claim:

1. A portable gas lighter comprising a casing, a combustion chamber in said casing, a cover for said combustion chamber movable to and from open and closed positions, means urging said cover to open position, latch means for retaining said cover in closed position, a supply means for gaseous fuel in said casing, means to supply air to said combustion chamber for mixture with the fuel, connecting means including valve means for connecting said fuel supply means and said combustion chamber, ignition means adjacent said combustion chamber, means extending from said cover for operating said ignition means upon movement of said cover to open position and manually operative means movable to initially open said valve to effect an air-fuel mixture and further movable to thereafter release said latch means and effect operation of said ignition means to ignite said air-fuel mixture.

2. In a portable gas fuel lighter, the combination of, a receptacle for a low boiling point liquefied fuel which is maintained in its liquid form by reason of its own vapor pressure, means providing a fuel passage from said receptacle and terminating in a combustion outlet, valve means comprising a pair of separable valve members controlling fluid flow through said passage, a stem connected to one of said valve members to control its movement relative to the other member and being axially movable only to effect rapid and substantial opening of said valve means to permit gas to flow therpast in said passage, an ignition device adjacent said combustion outlet including a rotatable flint wheel, mechanical means for effecting rotation of said flint wheel to effect ignition of gaseous fuel at the combustion outlet, and manually operable means operatively associated with and controlling said mechanical means and said stem first to effect sliding of said stem to open said valve means and then in timed sequence to operate said flint wheel rotating means to assure a flow of fuel to the outlet at the time of effective rotation of said flint wheel.

3. In a portable gas fuel lighter, the combination of, a receptacle for a low boiling point liquefied fuel which is maintained in its liquid form by reason of its own vapor pressure, means providing a fuel passage in said receptacle and terminating in a combustion outlet, valve means comprising a pair of separable valve members controlling fluid flow through said passage, a stem connected to one of said valve members to control its movement relative to the other member, mechanical means for sliding said stem axially to effect rapid and substantial opening of said valve means permitting gas flow therpast in said passage, an ignition device adjacent said combustion outlet including a rotatable flint wheel, other mechanical means for effecting rotation of said flint wheel to effect ignition of gaseous fuel at the combustion outlet, and manually operable means associated with and controlling said two mechanical means first to effect operation of said stem sliding means and then in timed sequence to operate said flint wheel rotating means to assure a flow of fuel to the combustion outlet at the time of effective rotation of said flint wheel.

4. In a portable gas fuel lighter, the combination of, a receptacle for a low boiling liquefied fuel which is maintained in its liquid form by

5

reason of its own vapor pressure, means forming a fuel outlet, a conduit connecting said receptacle and said outlet, separable valve and seat members in said conduit, an axially slidable non-rotative stem connected to one of said members, an ignition device adjacent said outlet including a rotatable flint wheel, means to rotate said flint wheel to effect ignition of the fuel at said outlet, a first manually movable means for effecting rotation of said flint wheel rotating means, a second manually movable means for sliding said stem axially to lift said valve off its seat, and a movable fingerpiece operably associated with both of said manually movable means for effecting operation thereof in timed sequence whereby operation of said second manually operable means is first effected and thereafter operation of said flint wheel rotating means is effected to assure a flow of fuel at the time of rotation of said flint wheel.

5. A portable gas lighter comprising a casing; a combustion outlet for the casing; a cover for the combustion outlet, said cover being movable to and from open and closed positions; means urging said cover to open position; latch means for retaining the cover in closed position; a supply means for gaseous fuel in said casing; connecting means, including valve means, for connecting the fuel supply means and the combustion outlet; means to supply air for mixture with the fuel on the passage of the fuel from the fuel supply means to the combustion outlet; ignition means adjacent said combustion outlet; means extending from said cover for operating said ignition means upon movement of the cover to open position; and manually operative means movable initially to open said valve to effect an air-fuel mixture and further movable thereafter to release said latch means and effect operation

6

of the ignition means to ignite the air-fuel mixture at said combustion outlet.

6. In a portable gas fuel lighter, the combination of a receptacle for a low-boiling-point liquefied fuel which is maintained in its liquid form by reason of its own vapor pressure; a combustion chamber having an ignition opening; an ignition device adjacent said ignition opening; conduit means connecting said receptacle and said combustion chamber, said conduit means including sequentially a valve having a stem which is movable axially only, an air inlet chamber, and a mixing chamber connected to said combustion chamber whereby, upon opening of said valve, gas and air will flow to said mixing chamber wherein they are mixed, the mixture thence flowing to the said combustion chamber, a member in said conduit for reducing the pressure of the gas flowing therethrough; mechanical means for effecting operation of said ignition device; and manually operable means operatively associated with and controlling said mechanical means and said valve stem, first to effect sliding of said stem to open said valve and then in timed sequence to operate said ignition device to assure a flow of fuel to the said combustion chamber at the time of operation of the ignition device.

ROBERT E. PETERSON.

References Cited in the file of this patent
UNITED STATES PATENTS

Number	Name	Date
1,762,123	Aronson	June 3, 1930
1,845,340	Ritzwoller	Feb. 16, 1932
1,895,032	Fisher	Jan. 24, 1933
2,153,432	Reich	Apr. 4, 1939
2,477,917	Wilson	Aug. 2, 1949
2,489,620	Cartwright	Nov. 29, 1949