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GAS FUELED CIGAR LIGHTER

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Fig. 1.

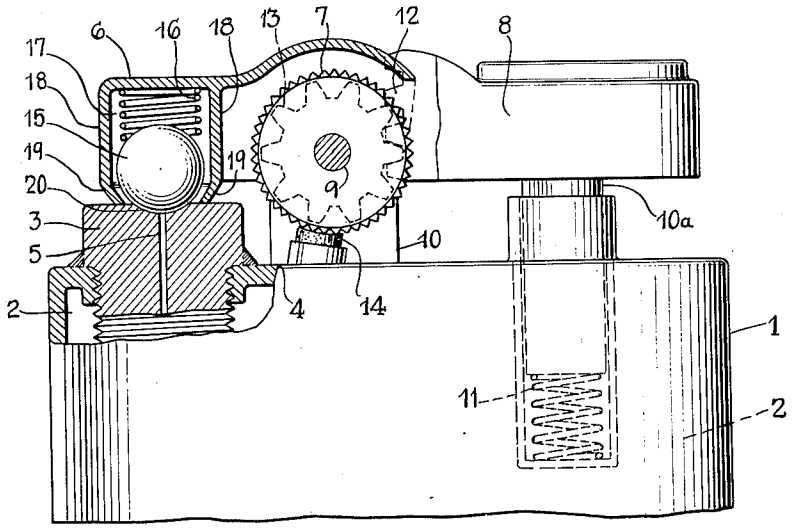
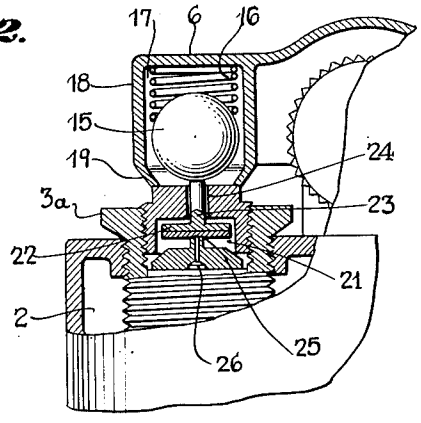


Fig. 2.



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GAS FUELED CIGAR LIGHTER

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3 Claims. (Cl. 67—7.1)

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The invention relates to cigar lighters fueled by combustible gases such as butane or propane, and more particularly to lighters of the above character wherein a cap overlies the burner of the lighter when idle, and is moved to burner exposing position by actuation of a fingerpiece, when a light is desired, the flow of gas to the burner being automatically initiated and cut off, and sparks produced, at the proper times, by actuation and release of the fingerpiece. In one of its aspects the invention relates particularly to the simple and effective sealing of the gas from escape while the lighter is idle, and in another aspect the invention relates to the maintenance of such a seal in case the fingerpiece should be moved slightly from its idle position and remain part way open, so to speak, for an appreciable period without being fully moved to normal active position. Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses certain preferred forms of lighters constructed to operate in accordance with the invention; the disclosure however should be considered as merely illustrative of the principles of the invention, in its broader aspects. In the drawings—

Fig. 1 is a side view, with certain parts appearing in section, of a lighter constructed to operate in accordance with the invention.

Fig. 2 is a view similar to the upper left hand portion of Fig. 1, but showing a somewhat modified form of construction.

Referring first to Fig. 1, the invention is illustrated as applied to a lighter having a casing 1, having a chamber 2 constructed to hold under pressure, a supply of gaseous fuel such as butane or propane. For present purposes it is immaterial whether the chamber 2 be understood as provided directly within the casing 1, or within a separate container (not shown) which may be removed from within casing 1 when the fuel supply therein is exhausted. The form of lighter shown in Fig. 1 is provided with a burner structure comprising a fitting 3 located at the top wall 4 of the casing and provided with a fuel passageway 5 which should be understood as being in communication with the chamber 2 at its inner end, and preferably there are interposed pressure reducing devices (not illustrated) such as are known in the art for the purpose of producing a lower pressure at the mouth of the fuel passageway than exists in chamber 2.

The form of lighter illustrated in Fig. 1 is also

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shown as having a cap 6, sparking wheel 7, and a fingerpiece 8, mounted in a row along the top of wall 4 of casing 1. The cap 6 and sparking wheel 7 may be understood as mounted for angular movement about the spindle 9 supported between ears 10 extending up from the top wall 4 of the casing, in such manner that the cap 6 will swing between the position shown in Fig. 1 in which it covers the mouth of the fuel passageway 5, to an open position displaced about 90° clockwise from the position shown, to expose the fuel passageway. The fingerpiece 8 should be understood as movable between the idle position shown in Fig. 1, to an active, depressed position wherein the cap 6 is moved to fuel passageway exposing position as above described, and during this same movement of the fingerpiece 8, the sparking wheel 7 is rotated to project sparks into a stream of gas issuing from passageway 5. For example the fingerpiece 8 may be provided with a reciprocable plunger 10 against which a compression spring 11 acts to urge the fingerpiece toward the idle position shown in Fig. 1, and teeth 12 on the fingerpiece may be understood as meshing with complementary teeth 13 fixed with respect to the cap 6, in such manner that when the fingerpiece is manually depressed, the cap 6 swings to open position as above described, and when manual pressure on fingerpiece 8 is released, the cap 6 swings to the fuel passageway covering position shown in Fig. 1. An appropriate form of pawl and ratchet construction (not illustrated or described in detail since usable forms thereof are known in the art) will also be understood as interposed between the cap 6 and the sparking wheel 7, in such manner that the sparking wheel rotates to project sparks into the stream of fuel issuing from fuel passageway 5, during the movement of fingerpiece 8 from idle to active position, this pawl and ratchet mechanism allowing the sparking wheel 7 to remain stationary while the fingerpiece is moving from active position back to the idle position shown in Fig. 1. It will be understood that a piece of sparking metal 14 is appropriately pressed against the sparking wheel 7, and the structural features above referred to will not be described in further detail since appropriate forms thereof are known in the art.

In accordance with the present invention I interpose between the cap 6 and the fuel passageway 5, a fuel passageway closure member 15, which is moved into position to seal off the flow of fuel through passageway 5, as the cap 6 moves into the fuel passageway covering position shown

in Fig. 1 and which, when the lighter is idle, is pressed into sealing position by the spring 11, and also by an auxiliary spring 16 which is somewhat weaker than the spring 11, in such manner that when the operating parts of the lighter are in the idle position shown in Fig. 1, the spring 16 is somewhat more compressed, the closure member 15 being thereby pushed inwardly somewhat into the chamber 17 within cap 6 which receives it. Preferably the closure member 15 is in the form of a ball loosely received within the annular wall 18 which encloses chamber 17, the ball 15 being restrained from passing out of chamber 17 by the turned in annular rim 19 of wall 18. Thus when the pressure of spring 11 seats the ball 15 against the complementary spherically curved surface 20 at the mouth of fuel passageway 5, and the ball 15 moves inwardly into chamber 17 as above described, the ball 15 can shift sufficiently in any transverse direction with respect to the wall 18, to allow the ball to accommodate itself accurately to the surface 20 and thereby maintain a tight seal against the escape of gas through passageway 5, when the lighter is idle. In the idle position shown in Fig. 1, the spring 11 pushes the rim 19 of cap 6 downwardly until it engages with the upper surface of fitting 3, and the supplementary pressure of spring 16, holds the ball 15, which is then spaced upwardly within the rim 19, against the mouth of the fuel passageway 5.

Immediately when actuating pressure is applied to the fingerpiece 8, the rim 19 of snuffer 6 lifts from contact with the upper surface of fitting 3, but the closure member 15 remains in sealing contact with the mouth of passageway 5 unless or until the cap 6 moves upwardly far enough to allow the spring 16 to push the ball 15 downwardly into engagement with the rim 19. Therefore if the fingerpiece 8 be depressed only slightly from the position shown in Fig. 1 under circumstances where a light is not immediately desired, as sometimes happens in service, the closure member 15 will still remain sealed and thereby prevent any excess of gaseous fuel from building up around the mouth of the passageway 5, which excess of fuel might otherwise produce a flame of undue size if the fingerpiece 8 be then fully depressed to produce a light.

On the other hand, if the fingerpiece be immediately and fully depressed from idle to active position, the above mentioned delay in the opening of the closure member 15 will not be sufficient to interfere with reliable ignition of the gas, since the cap 6 will swing the closure member 15 clear of the mouth of the burner while the wheel 7 is still being rotated to produce an ample supply of sparks. The flame persists as long as the fingerpiece is manually held in active position, and when released, the cap 6 and closure member 16, swing downwardly under the action of spring 11 to snuff out the flame and seal the mouth of fuel passageway 5 as above described.

In Fig. 2 I have shown a somewhat modified construction wherein the closure member 15, instead of directly sealing off the flow of gas, acts through the medium of an interposed auxiliary valve member. As shown in Fig. 2 the fitting 3a is provided with an internal chamber 21 in which a valve member 22 is loosely received, this valve member having a stem 23 which projects upwardly through the mouth 24 of the fuel passageway to a point where the stem 23 is engageable with the closure member 15. When the parts are in the idle position shown in Fig. 2, the valve member 22 is held by the pressure of spring

16 against the annular seat 25 which surrounds the fuel passageway 26. If the cap 6 lifts only a slight amount, the valve 22 will still be held closed by the pressure of spring 16 acting through the ball 15, but if the fingerpiece 18 is actuated through its full light producing stroke, this pressure on valve 22 will be released fairly early in the stroke, and the gaseous pressure in passageway 26 will be sufficient to lift the valve 22 to open position, and permit the fuel to flow around it through the mouth 24 of the fuel passageway, to be ignited as it issues from the burner.

While the invention has been disclosed as carried out by the above described specific forms of lighter, it should be understood that changes may be made therein without departing from the invention in its broader aspects, within the scope of the appended claims.

I claim:

1. A gas fueled lighter of the character described, including a casing having therein a chamber constructed to hold gaseous fuel under pressure, a burner structure having a fuel passageway leading to a point adjacent the exterior of said casing, said casing also carrying a cap mounted to swing between positions wherein it respectively overlies and exposes said fuel passageway, said burner structure carrying a fuel valve member mounted to move between an inner position in which said passageway is closed and an outer position in which said fuel passageway is open, said cap having a closure member thereon engageable with said fuel valve member when said cap is in burner overlying position to hold the fuel valve member in passageway closing position, spring means urging said closure member away from said cap and in fuel valve member engaging direction, said closure member being limited in its movement in said direction whereby said closure member holds said fuel valve member in passageway closing position during the initial part of the movement of said cap from burner overlying toward burner exposing position and releases said fuel valve member in burner exposing position, said lighter having means activated during movement of said cap from burner overlying to burner exposing position to ignite gaseous fuel issuing from said burner.

2. A gas fueled lighter of the character described, including a casing having therein a chamber constructed to hold gaseous fuel under pressure, a burner structure having a fuel passageway leading to a point adjacent the exterior of said casing, said casing also carrying a cap mounted to swing between positions wherein it respectively overlies and exposes said fuel passageway, spring means urging said cap toward its burner overlying position, said burner structure carrying a fuel valve member mounted to move between an inner position in which said passageway is closed and an outer position in which said fuel passageway is open, the said cap carrying a closure member engageable with said fuel valve member when said cap is in burner overlying position to hold the fuel valve member in passageway closing position, said cap also carrying a further spring acting between said closure member and said cap to urge said closure member toward fuel valve member engaging position and means limiting the movement of said closure member with respect to said cap whereby said closure member holds said fuel valve member in passageway closing position during the initial part of the movement of said cap from burner

overlying toward burner exposing position and is disengaged from said fuel valve member in burner exposing position, said lighter having means activated during movement of said cap from burner overlying to burner exposing position to ignite gaseous fuel issuing from said burner.

3. A gas fueled lighter of the character described, including a casing having therein a chamber constructed to hold gaseous fuel under pressure, a burner structure having a fuel passageway leading to a point adjacent the exterior of said casing, said casing also carrying a cap mounted to swing between positions wherein it respectively overlies and exposes said fuel passageway, said casing also carrying a fingerpiece mounted to move between idle and active positions, means coupling said fingerpiece to said cap to move the latter from fuel passageway overlying to fuel passageway exposing position as the fingerpiece moves from idle to active position, spring means urging said fingerpiece and said cap respectively towards their idle and fuel passageway overlying positions, said burner structure carrying a fuel valve member mounted to move between an inner position in which said passageway is closed and an outer position in which said pasageway is open, said cap carrying a closure member engageable with said fuel valve member

when said cap is in burner overlying position to hold the fuel valve member in passageway closing position, said cap also carrying a spring acting between said closure member and said cap to hold said closure member in fuel valve member closing position until said cap has moved partially from burner overlying toward burner exposing position and means on said cap limiting the movement of said closure member away from said cap to disengage said closure member from said fuel valve member when said cap is in burner exposing position, said lighter having means activated upon movement of said fingerpiece from idle toward active position for igniting gaseous fuel issuing from said burner.

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