

Description

This invention relates generally to lighters which consume fuel such as, for example, butane by converting the fuel to a gaseous state and thereafter burning the fuel. More particularly the invention relates to a disposable butane cigarette lighter having a safety mechanism which prevents a valve actuator from being depressed and in turn prevents a valve nozzle from expelling butane thereby rendering operation of the lighter by young children difficult.

Description of the Prior Art

Various prior art lighters, some of them incorporating safety features, are known. Safety features are generally provided to reduce the risk of injury to an operator or bystanders. Some of such safety features relate to mechanisms which prevent ignition of a fuel source unless the lighter is properly oriented, mechanisms which automatically turn off a fuel source supply valve and tamper protection arrangements.

More recently, attention has been directed toward preventing ready actuation of such lighters by persons normally not able to appreciate the potential danger of the flame. Such danger includes the potential to burn the individual directly or to burn surrounding areas or items, thus creating the possibility of spreading to a fully developed fire. Individuals normally contemplated in these efforts are small children, mostly in the age category of five years or younger.

U.S. Patent No. 4,717,335 to Loveless relates to a cigarette lighter in which rotation of a spark-producing wheel is limited. In particular, the spark-producing wheel may be rotated in one direction to deliver a spark toward a nozzle through which gaseous fuel is passed, thereby operating the lighter and causing the fuel to ignite. Rotation of the spark-producing wheel in the other direction may deliver a spark away from the nozzle. The spark-producing wheel has a pin-shaped structure attached thereto which serves to limit the rotation of the wheel to under 360° by contacting the housing structure. Thus, whether a spark indeed is produced depends upon the direction of attempted rotation and the position of the pin-shaped structure relative to the housing structure. In theory, once the lighter is operated and the fuel ignited, and the pin-shaped structure has traversed its entire path of travel, subsequent operation of the lighter is impeded since the pin-shaped structure comes into contact with the housing, preventing a spark from occurring in the vicinity of the fuel nozzle.

In this lighter the pin-shaped structure may not have necessarily traversed its entire path of travel when the lighter is operated, in which case subsequent operation of the lighter may ignite the fuel source, presenting potential for multiple ignitions. Furthermore, even if the pin-shaped structure has traversed its entire path of travel, a young child may still ignite the fuel source by inadvertently first rotating the spark-producing wheel in a direction so as to not produce sparks in the vicinity of the nozzle and then rotating the wheel in an opposite direction so as to produce sparks in the vicinity of the nozzle and igniting the fuel. Additionally, regardless of the position of the wheel, potential exists for releasing fuel from the fuel source with or without rotation of the wheel.

U.S. Patent Nos. 4,028,043 and 4,049,370 each to Neyret relate to presale tamper protection mechanisms which partially surround a spark-producing wheel, fuel nozzle or depressable valve actuation member of a lighter. These presale tamper protection mechanisms are attached to the lighter housing by frangible webs and are removed by a purchaser after sale of the lighter to expose the spark-producing wheel, fuel nozzle and depressable valve actuation member. However, such a presale tamper protection mechanism is of limited value once initially removed by a purchaser.

U.S. patent Nos. 3,547,566 to Tamarin and 3,899,286 to Lockwood et al. relate to lighters having orientation sensing mechanisms which hinder or prevent actuation of the lighter in an inverted position. Unfortunately such mechanisms may not provide a sufficient degree of safety to young children who tamper with the lighter since they merely hinder operation in prescribed orientations.

In addition to the above-mentioned disadvantages and deficiencies, some safety mechanisms are unnecessarily complicated and may therefore suffer from high manufacturing cost as well as high likelihood of mechanical failure during use. Another disadvantage found in some of these devices is that the particular construction employed limits the shape of the lighter housing due to the requirement that the housing be large enough to accommodate the safety mechanism(s).

Although it is known to prevent or hinder actuation of a depressible valve actuation member or actuation of a lighter in a specified orientation, none of the above-described lighters provides a mechanism for preventing actuation of the depressible valve actuation member as the lighter is carried, stored or subjected to tamper. Prevention of the expulsion of fuel through the nozzle under such circumstances is a highly desirable feature since ignition may be provided by other sources in addition to the spark-producing wheel.

United States Patent No. 4,758,152 to Kordecki discloses a safety mechanism for a cigar lighter provided with a bar that may be locked in a position below the valve actuation lever to prevent depression of the lever. The bar is pivoted from the locked position to a position clear of the lever, allowing expulsion of fuel through the nozzle. However, once the bar has been moved from the locked position, either inadvertently or deliberately, the lever may be depressed as normal.

The document WO-A-9000239 published on 11.01.90 has a priority date of 01.07.88 and represents thus a conflicting European Application for the contracting states AT, BE, CH, DE, FR, GB, IT, LU, NL and SE. This document discloses a safety lighter comprising a body which is symmetrical about a midplane and constituting a store for liquified gas, an expander, and a burner, the burner being moveable under the action of a rocking pushbutton whose front end is mechanically linked to the burner head, the lighter including a gas flow adjusting knob, the pushbutton cooperating with a spring, and locking means being provided for locking the motion of the pushbutton, the lighter being characterized in that said locking means constitute a safety catch moveable in a slot in the lighter body in a plane perpendicular to the midplane of the lighter, the catch being capable of being received in a single position in a notch formed in the side wall of the pushbutton in order to enable it to be displaced.

Although current efforts as described herein may sometimes be referred to as "child-proof lighters", "child-resistant lighters" or the like, it should be made clear that such developments are actually directed toward preventing ready flame production on a flame producing lighter by persons normally considered incapable of appreciating the potential danger of a lighter flame.

Consistent with such efforts is the recognition that to develop a "child-proof" lighter per se, would not be viable. At best it can be reasonably sought to create a lighter which is "child-resistant", but how "child-resistant" a lighter will depend upon related factors and circumstances. For example, it is known that lighters are specifically designed to produce a flame. Accordingly, if the lighter were to come into the possession of a person incapable of appreciating the potential danger of the flame a potentially dangerous situation will prevail. This situation would be independent of the operating condition of the lighter and would prevail even if the lighter is in perfect working order. Further, in many instances lighters contain clear written warnings prominently displayed on their surface and without proper supervision, a young child who gains possession of the lighter can cause harm by the fact that the warning will not be appreciated since it

cannot be read and/or understood by the child. Accordingly, "child-resistant" efforts are best directed toward protecting the child from its own acts should the child come into possession of a lighter with or without the parents' knowledge or consent. The potential danger would prevail even if the lighter is a properly functioning lighter and has a clear warning displayed thereon advising the user to keep the lighter out of the reach of children.

Nevertheless, any such "child-resistant" lighter will have its limitations with respect to young children, and no such lighter should provide parents or adults with a false sense of security so that they may become less cautious in their handling or as to permitting ready access by young children. Further, such lighter should not be made so difficult to light as to cause adults to use alternative forms of lighting, i.e., matches, which are generally considered to be potentially more dangerous. At best, the lighter should provide a young child with sufficient deterrent features as to prevent it from readily producing a flame on the lighter or to deter it from readily producing a flame, at least for a time sufficient to permit the normally expected intervention of adult supervision.

The present invention is directed toward a flame producing lighter which is selectively actuable in such a manner as to provide a substantial degree of difficulty for young children - mostly five years or younger - to actuate the lighter and produce a flame, while being capable of actuation by adults.

The invention relates to an improved flame producing lighter of the type having a housing defining a reservoir for containing a combustible gaseous medium under pressure; valve means coupled to said reservoir and arranged for selective actuation between a normally closed position which prevents exit of said gaseous medium from said reservoir, and an open position which permits exit of said gaseous medium from said reservoir through said valve means; means for selectively producing sparks at a location proximate the gaseous medium exit opening of said valve means, thereby selectively causing ignition of said gaseous medium, a depressible valve actuator which, upon depression of a portion thereof, actuates said valve means thereby permitting gaseous medium to flow out from said reservoir; wherein the improvement comprises:

a safety latch mounted on said housing and having at least a portion which is resiliently positioned beneath said depressible valve actuator so as to normally prevent movement thereof, said safety latch being selectively movable to a position out of interference with said valve actuator,

wherein application of a biasing force to said safety latch causes resilient movement of said

safety latch to said position out of interference with said valve actuator thereby permitting depression of said valve actuator, and wherein the resilient positioning of said safety latch causes said safety latch to return to the position in which at least a portion of said safety latch is resiliently positioned beneath said valve actuator once the valve actuator is released, again preventing depression of said depressible actuator and thus preventing the valve means from opening.

The means for selectively producing sparks preferably comprises flint material and a rotatable spark-producing wheel having a toothed surface positioned and arranged to selectively frictionally contact the flint material. Alternatively, the means for selectively producing sparks may comprise electric spark-producing means and more specifically, piezoelectric spark-producing means.

A portion of the safety latch is normally positioned between the valve actuator and a main body housing of the lighter and prevents depression of the valve actuator. Cross-wise movement of the safety latch provides a void between the valve actuator and the main body housing, the void being sufficient in size to enable the valve actuator to be depressed at least partially into the void. Upwards movement, subsequent to the cross-wise movement, of the safety latch towards a position at least partially adjacent to the valve actuator, the position being resiliently maintained by pressure exerted by the safety latch on the valve actuator and the main body housing, provides the lighter in an unlocked position in which the valve actuator is capable of being depressed, thereby permitting fuel to flow.

Advantageously, if the lighter is left unattended a young child or other such person will encounter difficulty in releasing any gaseous material to produce a flame due to the locking action of the safety latch and the effort required to move it cross-wise and upwards towards the unlocked position. Thus, in the event the lighter inadvertently comes into the possession of a young child, the child may be able to turn the spark-producing wheel but will, at best, only be able to produce sparks from the spark-producing wheel by rotating it against the flint. Gaseous material will not be released due to the action of the safety latch which directly prevents the valve actuator from being depressed thereby preventing the valve nozzle from expelling fuel.

Operation of the lighter requires a certain amount of dexterity and the application of concentrated forces as well as the application of a plurality of forces in multiple directions. Advantageously, these factors tend to render the lighter difficult to operate by young children.

Furthermore, the lighter of the present invention is a passive locking lighter. Advantageously, the lighter automatically returns to its locked con-

figuration once the depressed valve actuator is released. Thus, the lighter is maintained in an at-rest configuration which is locked thereby preventing the production of a flame.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects, features, and advantages of the present invention will become more readily apparent from the following detailed description of the invention in which:

FIG. 1 is a perspective view of a preferred embodiment of a selectively actuatable child resistant lighter of the present invention in a locked position;

FIG. 2 is a fragmentary cross-sectional view along line 2-2 of the child resistant lighter of Fig. 1 depicting the lighter in a locked position;

FIG. 3 is an exploded view of a valve actuator and safety latch depicted in Figs. 1 and 2;

FIG. 4 is a bottom view along line 4-4 of the valve actuator depicted in Fig. 3;

FIG. 5 is a top view along line 5-5 of the safety latch depicted in Fig. 4;

FIG. 6 is a schematic diagram depicting a piezoelectric lighter apparatus in which the present invention may be employed and having an optional switch to prevent the production of sparks; FIG. 7 is a perspective view of a preferred embodiment of the child resistant lighter in an unlocked position in which the position of the safety latch is moved from its at-rest position and the valve actuator is depressed allowing a valve to be opened and to release gas through a valve nozzle;

FIG. 8 is a fragmentary cross-sectional view along line 8-8 of Fig. 7 depicting the lighter in an unlocked and depressed position;

FIG. 9 is a frontal view of the safety latch in its locked position thereby preventing depression and actuation of the valve actuator;

FIG. 10 is a frontal view of the safety latch in a partially unlocked position;

FIG. 11 is a frontal view of the safety latch in its unlocked position;

FIG. 12 is a frontal view of the safety latch in its unlocked position and the valve actuator depressed so as to permit the flow of fuel; and

FIG. 13 is a frontal view of the safety latch in its locked position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring initially to Fig. 1, there is depicted, in an at-rest or locked position, the lighter of the present invention comprising a main body portion 12, a depressable valve actuator 14, a safety latch

16 and a spark-producing wheel 18. Depression of valve actuator 14 permits fuel to flow through a fuel nozzle (not shown) and to be ignited by sparks produced by spark-producing wheel 18 frictionally engaging a flint (not shown). Advantageously, unless safety latch 16 is positioned away from its depicted at-rest position and into a notch formed within valve actuator 14, any attempted depression of valve actuator 14 will not result in the flow of fuel and the lighter will be inoperable.

A user typically holds the main body portion of a lighter in his hand, rotates with his thumb the spark-producing wheel in a direction toward the valve actuator to produce a spark, while depressing the valve actuator to allow fuel to pass through the valve nozzle. The spark produced by the wheel ignites the fuel. This is a relatively conventional structure for most lighters, including disposable lighters.

Referring now to Fig. 2, there is depicted a cross-section of the lighter of Fig. 1 in a locked position. More particularly, valve actuator 14 is pivotally mounted between side wall portions 13 which comprise extensions of the side walls of body portion 12. Valve actuator 14 is attached to hollow fuel nozzle 20 slidably supported within valve housing 28. Hollow fuel nozzle 20 is held within a bore in valve actuator 14 by flanges 21,23 having sufficient diameter to prevent slippage through the bore in valve actuator 14. A compressed spring 30 resides partially within a recess 32 in valve actuator 14 and causes fuel nozzle 20 to be urged downward into valve housing 28 and body portion 12. In such an embodiment, valve actuator 14 is employed to lift nozzle 20 in order to expel fuel. Alternatively, actuation of valve actuator 14 may serve to remove the pressure maintaining the valve nozzle in a closed position. A conventional valve assembly (not shown) is located near the recessed end of nozzle 20 and permits fuel flow through nozzle 20 only when valve actuator 14 is depressed.

Lighter 10 further comprises a sparking flint 22 mounted within a bore 24 in main body 12. Flint 22 is urged toward spark-producing wheel 18 by spring 26. Sparking wheel 18, which includes a toothed surface 19 which is preferably suitably hardened and against which flint 22 is urged, is mounted for rotation between side wall extension portions 13 in a conventional manner. The spark-producing wheel includes suitable indentations which define teeth such that when the wheel is rotated the toothed surface cuts against flint 22 causing the generation of ignition sparks.

Main body 12 defines an internal chamber 15 which is filled with a fuel 9 such as butane fuel capable of vaporizing in a conventional manner to produce a gaseous medium which passes through

a fuel nozzle 20 under the control of a valve. Main body 12 is constructed from any suitable structural material and is preferably constructed from a plastic material. Polyacetal is preferred. However, such alternative materials as styrene acrylonitrile, polyester, nylon or the like may also be used. A preferably metallic shield 32 is provided to function as a wind guard around the flame thereby assisting in the ignition of the fuel.

As depicted in Fig. 1 a notched opening 21 is provided in body portion 12 to accommodate valve actuator 14 and safety latch 16 and, in particular, cross-wise movement of safety latch 16. As will be appreciated, the locked configuration of the lighter in Figs. 1 and 2 in which safety latch 16 is positioned directly beneath valve actuator 14 prevents depression of valve actuator 14, thereby preventing operation of the lighter.

Referring now to Fig. 3, there is depicted valve actuator 14 and safety latch 16 in greater detail. Valve actuator 14 comprises a finger depressable surface 34, extensions 36, a bore 38 and a stepped, or guide, notch 40. A user desiring to actuate the lighter depresses finger depressable surface 34. Extensions 36 are provided to matingly engage with bores in side wall portions 13 of body portion 12 to provide pivotal movement of the valve actuator. Bore 38 is adapted for receiving and grasping a portion of fuel nozzle 20. As will be appreciated, stepped notch 40 is provided for engagement with an upper surface of finger actuated portion 11 of safety latch 16 during actuation of the lighter. In the locked or closed configuration depicted in Figs. 1 and 2, an upper surface 42 of portion 11 of safety latch 16 is flush against a lower surface 44 of valve actuator 14, and a lower surface of portion 11 of safety latch 16 is flush against a section of body 12 formed by notch 21, thereby preventing depression of valve actuator 14.

Safety latch 16 is provided with pivoting extensions 46,48 which facilitate deflection and stabilization of safety latch 16 within body portion 12 and assures proper positioning and retention of safety latch 16 in notched opening 21 when the safety latch is compressed. Safety latch 16 is also provided with a limiting stop 50 for engagement against a section of body portion 12 formed by notch 21 (Fig. 1) in order to facilitate, in conjunction with forces provided by pivoting extensions 46 and 48, resilient movement of finger actuated portion 11 with respect to limiting stop 50. Limiting stop 50 is preferably provided with a tip section 51 to facilitate retaining safety latch 16 in the unlocked position. Safety latch 16 may be provided with ridged surface 17 to provide frictional resistance with a user's finger to facilitate movement of finger actuated portion 11 with respect to limiting stop 50.

Referring now to Fig. 4, there is depicted a view of the underside of valve actuator 14 along line 4-4 in Fig. 3. Recess 32 is adapted to receive spring 30 as depicted in Fig. 2 and may take on a variety of forms such as a simple indentation or a bore having a center pin 54, extensions 56 and a chamfered edge 58. Insertion of the fuel nozzle into bore 38 of valve actuator 14 is facilitated by slot 39 which permits expansion of bore 38 to easily receive the fuel nozzle. Valve actuator 14 is constructed from materials having sufficient dimensional stability and rigidity to continuously assure proper relative positioning between lower surface 44 of valve actuator 14 and upper surface 42 of safety latch 16. Actuator 14 is preferably constructed of glass filled polyetherimide. Other illustrative materials from which valve actuator 14 may also be constructed are zinc, brass, aluminum and other glass filled polymers such as polysulfone, polyester or the like.

Referring to Fig. 5, there is illustrated a view of the topside of safety latch 16 taken along line 5-5 in Fig. 3. Safety latch 16 is preferably constructed of polyetherimide. It is necessary that the material from which latch 16 is constructed is a relatively rigid material which is sufficiently resilient to permit movement of finger actuated portion 11 towards limiting stop 50 so as to at least partially close the opening therebetween and provide resilient movement of finger actuated portion 11 with respect to limiting stop 50. Illustrative of alternative materials from which safety latch 16 may be constructed include polysulfone, polyester, or any sufficiently resilient metal or elastomer, as well as a wide variety of other suitable materials.

Fig. 6 schematically depicts a piezoelectric type lighter in which the present invention may be employed. The piezoelectric lighter comprises hammer means 60, spark and fuel providing means 65, electrical cut-off safety switch 70 and locking means 75. The piezoelectric lighter operates in a conventional manner except for depression of hammer means 60 which is prevented by inclusion of locking means 75 operative on the fuel supply in accordance with the present invention. Illustratively, such a locking means comprises a safety latch and a valve actuator which prevents the flow of fuel as previously described, as well as preventing the production of sparks.

In operation of the present invention, and as depicted in Fig. 7, a user must first move safety latch 16 in a direction so as to sufficiently displace finger actuated portion 11 of safety latch 16 toward limiting stop 50 of safety latch 16 to ultimately permit depression of valve actuator 14. However, in order to facilitate retention of safety latch 16 in such a displaced position, safety latch 16 is then displaced in a direction such that a portion of finger

actuated portion 11 of safety latch 16 abuts notch 40 of valve actuator 14, and tip section 51 is displaced to just above body portion 12. Depression of valve actuator 14 at this point combined with rotation of spark-producing wheel 18 will cause the lighter to operate. In particular, the sparks thus produced will ignite the gaseous fuel which is permitted to be expelled from nozzle 20 when valve actuator 14 lifts nozzle 20 thereby actuating the valve. The lifting action of valve actuator 14 in a vicinity near nozzle 20 relieves the pressurized condition in the fuel chamber thereby permitting the flow of fuel as a gaseous medium through nozzle 20 to be burned.

Referring now to Fig. 8, there is depicted a cross-section of the lighter of Fig. 7 in a depressed and actuated configuration. As will be appreciated, movement of finger actuated portion 11 of safety latch 16 toward limiting stop 50 of safety latch 16 will permit unimpeded depression of the valve actuator as depicted in Figs. 7,8.

In particular, such movement of safety latch 16 followed by depression of valve actuator 14 will cause spring 30 to depress and fuel nozzle 20 to be urged upward and partially out of valve housing 28 and body portion 12. Such lifting of fuel nozzle 20 upward will permit fuel to flow from chamber 15 through the valve (not shown) and out of nozzle 20 whereupon it will have been ignited by sparks produced by flint 22 and toothed surface 19 of spark-producing wheel 18. Hollow fuel nozzle 20 is held within bore 38 in valve actuator 14 by flanges 21,23 having sufficient diameter to assure proper movement of the nozzle within valve housing 28.

Figs. 9-13 depict the sequence of operations required for the locking and unlocking of the lighter. In particular, Fig. 9 depicts safety latch 16 and valve actuator 14 in an at-rest locked position. In this position, depression of valve actuator 14 by finger pressure on surface 34 is prevented by contact with surface 42 of finger actuated portion 11 of the safety latch. Finger actuated portion 11 is positioned directly beneath the underside of valve actuator 14.

Fig. 10 depicts safety latch 16 in a partially unlocked position and valve actuator 14 in an un-depressed position. Portion 11 of safety latch 16 has been moved in a direction indicated by the arrow, providing a void 70 into which a portion 72 of valve actuator 14 may be subsequently inserted. As depicted, portion 11 of safety latch 16 is under compressive loading. Absent any holding pressure on portion 11 in the position depicted in Fig. 10, portion 11 will return to its at-rest position depicted in Fig. 9.

Fig. 11 depicts safety latch 16 and valve actuator 14 in an unlocked configuration ready for depression of valve actuator 14. Portion 11 of safe-

ty latch 16 has been moved upwards in a direction indicated by the arrow towards stepped, or guide, notch 40 of valve actuator 14. Limiting stop 50, which also forms part of safety latch 16, has also been moved upwards by applying force to portion 11 as indicated by the arrow. Advantageously, due to the compressive loading which safety latch 16 is under when portion 11 is approximately adjacent to limiting stop 50 (Figs. 10,11), removal of holding pressure from portion 11 once portion 11 has been inserted towards notch 40 (Fig. 11) will not result in portion 11 slipping toward void 70 but will maintain the lighter in the configuration depicted in Fig. 11, until valve actuator 14 is depressed. Retention of safety latch 16 in the unlocked configuration may be facilitated by moving limiting stop 50 upwards a distance sufficient to position tip section 51 of limiting stop 50 just above body portion 12 as indicated in Fig. 11.

Application of finger pressure to valve actuator 14 as depicted in Fig. 11 will yield the configuration depicted in Fig. 12 in which valve actuator 14 has been depressed thereby permitting fuel to flow through the valve and fuel nozzle (not shown). In particular, as valve actuator 14 is depressed, notch 40 of the valve actuator facilitates the urging of safety latch 16 towards its locked position. Provided that spark-producing wheel 18 (Fig. 7) was actuated in combination with valve actuator 14 being depressed, the fuel flowing through the fuel nozzle will be ignited. Such fuel will continue to flow and burn as long a sufficient pressure is maintained on valve actuator 14.

Once pressure is removed from valve actuator 14, the valve actuator will move upward due to the biasing force provided by spring 30 as indicated in Fig. 13, and the flame will be extinguished. Advantageously, as valve actuator 14 moves upward, safety latch 16 remains in the down position in void 70 since frictional forces between portion 11 and actuator 14 are less than the forces required to lift the safety latch and overcome, inter alia, such forces as those required to deflect extensions 46, 48. Once valve actuator 14 moves upward a sufficient amount, portion 11 moves in the direction indicated by the arrow in Fig. 13 towards its at-rest position.

More specifically, the locking mechanism and lighter disclosed and claimed herein are not limited to use in disposable lighters. Additionally, a flame height adjusting mechanism may be provided to selectively adjust the height of the flame. Moreover, the present invention is in no way limited to a locking mechanism in which a safety latch is moved first in a cross-wise direction then in an upwards direction ninety degrees from the cross-wise direction in order to provide a void into which a valve actuator may be depressed. For example,

any of a wide variety of locking mechanisms or actions may be employed, such as mechanisms having right-left, front-rear, over and down, in and over, etc. type actions. Although it has been found that the present embodiment as described may be used by both right and left handed users, the positioning and direction of movement of elements may be reversed.

Claims

**Claims for the following Contracting States :
AT, BE, CH, DE, FR, GB, IT, LU, NL, SE**

1. A flame producing lighter of the type having a housing (12) defining a reservoir (15) for containing a combustible gaseous medium under pressure; valve means coupled to said reservoir and arranged for selective actuation between a normally closed position which prevents exit of said gaseous medium from said reservoir, and an open position which permits exit of said gaseous medium from said reservoir through said valve means; means (18, 22) for selectively producing sparks at a location proximate the gaseous medium exit opening of said valve means, thereby selectively causing ignition of said gaseous medium; and a depressible valve actuator (14) which, upon depression of a portion thereof, actuates said valve means thereby permitting gaseous medium to flow out from said reservoir;

a safety latch (16) having at least a portion which is resiliently positioned beneath said depressible valve actuator so as to normally prevent movement thereof, said safety latch being selectively movable cross-wise and vertically to a position out of interference with said valve actuator,

wherein application of a biasing force to said safety latch causes resilient movement of said safety latch to said position out of interference with said valve actuator thereby permitting depression of said valve actuator, and wherein the resilient positioning of said safety latch causes said safety latch to return to the position in which at least a portion of said safety latch is resiliently positioned beneath said valve actuator once the valve actuator is released, again preventing depression of said depressible actuator and thus preventing the valve means from opening.

2. The flame producing lighter according to claim 1 wherein said depressible valve actuator (14) is pivotally mounted on said housing, and depression of said portion of said valve actuator causes said valve actuator to pivot thereby opening said valve means.

ty latch 16 has been moved upwards in a direction indicated by the arrow towards stepped, or guide, notch 40 of valve actuator 14. Limiting stop 50, which also forms part of safety latch 16, has also been moved upwards by applying force to portion 11 as indicated by the arrow. Advantageously, due to the compressive loading which safety latch 16 is under when portion 11 is approximately adjacent to limiting stop 50 (Figs. 10,11), removal of holding pressure from portion 11 once portion 11 has been inserted towards notch 40 (Fig. 11) will not result in portion 11 slipping toward void 70 but will maintain the lighter in the configuration depicted in Fig. 11, until valve actuator 14 is depressed. Retention of safety latch 16 in the unlocked configuration may be facilitated by moving limiting stop 50 upwards a distance sufficient to position tip section 51 of limiting stop 50 just above body portion 12 as indicated in Fig. 11.

Application of finger pressure to valve actuator 14 as depicted in Fig. 11 will yield the configuration depicted in Fig. 12 in which valve actuator 14 has been depressed thereby permitting fuel to flow through the valve and fuel nozzle (not shown). In particular, as valve actuator 14 is depressed, notch 40 of the valve actuator facilitates the urging of safety latch 16 towards its locked position. Provided that spark-producing wheel 18 (Fig. 7) was actuated in combination with valve actuator 14 being depressed, the fuel flowing through the fuel nozzle will be ignited. Such fuel will continue to flow and burn as long a sufficient pressure is maintained on valve actuator 14.

Once pressure is removed from valve actuator 14, the valve actuator will move upward due to the biasing force provided by spring 30 as indicated in Fig. 13, and the flame will be extinguished. Advantageously, as valve actuator 14 moves upward, safety latch 16 remains in the down position in void 70 since frictional forces between portion 11 and actuator 14 are less than the forces required to lift the safety latch and overcome, inter alia, such forces as those required to deflect extensions 46, 48. Once valve actuator 14 moves upward a sufficient amount, portion 11 moves in the direction indicated by the arrow in Fig. 13 towards its at-rest position.

More specifically, the locking mechanism and lighter disclosed and claimed herein are not limited to use in disposable lighters. Additionally, a flame height adjusting mechanism may be provided to selectively adjust the height of the flame. Moreover, the present invention is in no way limited to a locking mechanism in which a safety latch is moved first in a cross-wise direction then in an upwards direction ninety degrees from the cross-wise direction in order to provide a void into which a valve actuator may be depressed. For example,

any of a wide variety of locking mechanisms or actions may be employed, such as mechanisms having right-left, front-rear, over and down, in and over, etc. type actions. Although it has been found that the present embodiment as described may be used by both right and left handed users, the positioning and direction of movement of elements may be reversed.

Claims

Claims for the following Contracting States :
AT, BE, CH, DE, FR, GB, IT, LU, NL, SE

1. A flame producing lighter of the type having a housing (12) defining a reservoir (15) for containing a combustible gaseous medium under pressure; valve means coupled to said reservoir and arranged for selective actuation between a normally closed position which prevents exit of said gaseous medium from said reservoir, and an open position which permits exit of said gaseous medium from said reservoir through said valve means; means (18, 22) for selectively producing sparks at a location proximate the gaseous medium exit opening of said valve means, thereby selectively causing ignition of said gaseous medium; and a depressible valve actuator (14) which, upon depression of a portion thereof, actuates said valve means thereby permitting gaseous medium to flow out from said reservoir;

a safety latch (16) having at least a portion which is resiliently positioned beneath said depressible valve actuator so as to normally prevent movement thereof, said safety latch being selectively movable cross-wise and vertically to a position out of interference with said valve actuator,

wherein application of a biasing force to said safety latch causes resilient movement of said safety latch to said position out of interference with said valve actuator thereby permitting depression of said valve actuator, and wherein the resilient positioning of said safety latch causes said safety latch to return to the position in which at least a portion of said safety latch is resiliently positioned beneath said valve actuator once the valve actuator is released, again preventing depression of said depressible actuator and thus preventing the valve means from opening.

2. The flame producing lighter according to claim 1 wherein said depressible valve actuator (14) is pivotally mounted on said housing, and depression of said portion of said valve actuator causes said valve actuator to pivot thereby opening said valve means.



3. The flame producing lighter according to claim 2 wherein said safety latch (16) is moveable cross-wise and upwards towards a guide notch (40) in said valve actuator until said valve actuator is depressed, whereby gaseous material exits and the safety latch moves back under the valve actuator when the valve actuator is released. 5
4. The flame producing lighter according to claim 3 wherein said means for selectively producing sparks comprises flint material (22) and a rotatable spark-producing wheel (18) having a toothed surface positioned and arranged to selectively frictionally contact said flint material. 10 15
5. The flame producing lighter according to claim 3 wherein said means for selectively producing sparks comprises electric spark-producing means. 20
6. The flame producing lighter according to claim 3 wherein said means for selectively producing sparks comprises piezoelectric spark-producing means (60,65,70). 25
7. The flame producing lighter according to claim 1 wherein cross-wise movement of said safety latch provides a void (70) between said valve actuator and said housing, said void being sufficient in size to enable said valve actuator to be depressed at least partially into said void. 30
8. The flame producing lighter according to claim 7 wherein upwards movement, subsequent to said cross-wise movement, of said safety latch towards a position at least partially adjacent to said valve actuator, said position being resiliently maintained by pressure exerted by said safety latch on said valve actuator and said housing, provides said lighter in an unlocked position in which said valve actuator is capable of being depressed, thereby permitting the gaseous medium to flow. 35 40 45
9. The flame producing lighter according to claim 2 wherein said safety latch (16) is moveable cross-wise and downwards towards a guide notch in said valve actuator until said valve actuator is depressed, whereby gaseous material exits and the safety latch moves back under the valve actuator when the valve actuator is released. 50 55

Claims for the following Contracting States : ES, GR

1. A flame producing lighter of the type having a housing (12) defining a reservoir (15) for containing a combustible gaseous medium under pressure; valve means coupled to said reservoir and arranged for selective actuation between a normally closed position which prevents exit of said gaseous medium from said reservoir, and an open position which permits exit of said gaseous medium from said reservoir through said valve means; means (18, 22) for selectively producing sparks at a location proximate the gaseous medium exit opening of said valve means, thereby selectively causing ignition of said gaseous medium; and a depressible valve actuator (14) which, upon depression of a portion thereof, actuates said valve means thereby permitting gaseous medium to flow out from said reservoir;

a safety latch (16) mounted so as to normally prevent movement of said valve actuator (14), said safety latch being selectively movable to a position out of interference with said valve actuator, characterized in that said latch (16) has at least a portion which is resiliently positioned beneath said depressible valve actuator,

wherein application of a biasing force to said safety latch causes resilient movement of said safety latch to said position out of interference with said valve actuator thereby permitting depression of said valve actuator, and wherein the resilient positioning of said safety latch causes said safety latch to return to the position in which at least a portion of said safety latch is resiliently positioned beneath said valve actuator once the valve actuator is released, again preventing depression of said depressible actuator and thus preventing the valve means from opening.

2. The flame producing lighter according to claim 1 wherein said depressible valve actuator (14) is pivotally mounted on said housing, and depression of said portion of said valve actuator causes said valve actuator to pivot thereby opening said valve means.
3. The flame producing lighter according to claim 2 wherein said safety latch (16) is moveable cross-wise and upwards towards a guide notch (40) in said valve actuator until said valve actuator is depressed, whereby gaseous material exits and the safety latch moves back under the valve actuator when the valve actuator is released.



4. The flame producing lighter according to claim 3 wherein said means for selectively producing sparks comprises flint material (22) and a rotatable spark-producing wheel (18) having a toothed surface positioned and arranged to selectively frictionally contact said flint material. 5
5. The flame producing lighter according to claim 3 wherein said means for selectively producing sparks comprises electric spark-producing means. 10
6. The flame producing lighter according to claim 3 wherein said means for selectively producing sparks comprises piezoelectric spark-producing means (60,65,70). 15
7. The flame producing lighter according to claim 1 wherein cross-wise movement of said safety latch provides a void (70) between said valve actuator and said housing, said void being sufficient in size to enable said valve actuator to be depressed at least partially into said void. 20
8. The flame producing lighter according to claim 7 wherein upwards movement, subsequent to said cross-wise movement, of said safety latch towards a position at least partially adjacent to said valve actuator, said position being resiliently maintained by pressure exerted by said safety latch on said valve actuator and said housing, provides said lighter in an unlocked position in which said valve actuator is capable of being depressed, thereby permitting the gaseous medium to flow. 25
9. The flame producing lighter according to claim 2 wherein said safety latch (16) is moveable cross-wise and downwards towards a guide notch in said valve actuator until said valve actuator is depressed, whereby gaseous material exits and the safety latch moves back under the valve actuator when the valve actuator is released. 30

Patentansprüche

Patentansprüche für folgende Vertragsstaaten
: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE

1. Flammen erzeugender Feueranzünder mit einem Gehäuse (12), das ein Reservoir (15) zur Aufnahme eines brennbaren, gasartigen Mittels unter Druck aufweist; ein Absperrmittel, das mit besagtem Reservoir gekoppelt und zwecks selektiver Betätigung angebracht ist, und zwar zwischen einer normalerweise geschlossenen Position, die den Austritt des besagten gasarti-

gen Mittels aus besagtem Reservoir verhindert, und einer offenen Position, die den Austritt des besagten gasartigen Mittels aus besagtem Reservoir durch das besagte Absperrmittel gestattet; Mittel (18, 22) zur selektiven Erzeugung von Funken an der Stelle, nahe der Austrittsöffnung von besagtem Absperrmittel für das gasartige Mittel, wobei die Zündung von besagtem gasartigen Mittel selektiv verursacht wird; und eine herunterdrückbare Absperrvorrichtung (14), welche nach dem Herunterdrücken eines Teils derselben das besagte Absperrmittel betätigt, wodurch das Fließen des gasartigen Mittels aus besagtem Reservoir heraus gestattet wird;

ein Sicherheitsriegel (16) mit zumindest einem Teil, der federnd unterhalb der herunterdrückbaren Absperrvorrichtung so angebracht ist, dass normalerweise eine Bewegung derselben verhindert wird, wobei der besagte Sicherheitsriegel selektiv kreuzweise und vertikal bewegbar ist, und zwar in eine Position, in welcher die Absperrvorrichtung nicht behindert wird; wobei die Anwendung einer Sperrkraft auf den besagten Sicherheitsriegel eine federnde Bewegung des besagten Sicherheitsriegels in die besagte Position, in welcher die besagte Absperrvorrichtung nicht behindert wird, verursacht, und dadurch das Herabdrücken der genannten Absperrvorrichtung ermöglicht, und wobei die federnde Position des besagten Sicherheitsriegels den besagten Sicherheitsriegel veranlasst, in die Position zurückzukehren, in der zumindest ein Teil des besagten Sicherheitsriegels federnd unter der besagten Absperrvorrichtung angebracht wird, sobald die Absperrvorrichtung freigelassen wird, wobei wiederum das Niederdrücken der besagten herunterdrückbaren Vorrichtung verhindert wird und folglich das Absperrmittel sich nicht öffnen kann.

2. Flammen erzeugender Feueranzünder nach Anspruch 1, wobei die besagte herunterdrückbare Absperrvorrichtung (14) auf dem besagten Gehäuse drehbar montiert ist, und das Herabdrücken des besagten Teils von besagter Absperrvorrichtung die besagte Absperrvorrichtung zum drehen bringt, wodurch das Absperrmittel geöffnet wird. 45
3. Flammen erzeugender Feueranzünder nach Anspruch 2, wobei der besagte Sicherheitsriegel (16) kreuzweise und aufwärts in Richtung einer Führungsnute (40) in besagter Absperrvorrichtung bewegt werden kann, bis die besagte Absperrvorrichtung heruntergedrückt ist, wobei gasartiges Material austritt und der Si-



cherheitsriegel sich wieder unter die Absperrvorrichtung bewegt, nachdem die Absperrvorrichtung freigelassen wird.

4. Flammen erzeugender Feueranzünder nach Anspruch 3, wobei das besagte Mittel für die selektive Erzeugung von Funken Feuersteinmaterial (22) und ein rotierbares, Funken erzeugendes Rad (18) umfasst, das eine gezahnte Oberfläche aufweist, die so angebracht ist, dass sie einen selektiven Reibungskontakt mit dem besagten Feuersteinmaterial hat. 5 10
5. Flammen erzeugender Feueranzünder nach Anspruch 3, wobei das besagte Mittel zur selektiven Erzeugung von Funken ein elektrisches, Funken erzeugendes Mittel umfasst. 15
6. Flammen erzeugender Feueranzünder nach Anspruch 3, wobei das besagte Mittel zur selektiven Erzeugung von Funken ein piezo-elektrisches, Funken erzeugendes Mittel umfasst (60, 65, 70). 20
7. Flammen erzeugender Feueranzünder nach Anspruch 1, wobei die kreuzweise Bewegung des Sicherheitsriegels eine Lücke (70) zwischen besagter Absperrvorrichtung und besagtem Gehäuse verursacht, wobei die besagte Lücke so ausreichend in der Grösse ist, dass die besagte Absperrvorrichtung zumindest teilweise in die besagte Lücke heruntergedrückt werden kann. 25 30
8. Flammen erzeugender Feueranzünder nach Anspruch 7, wobei die Aufwärtsbewegung nach der besagten kreuzweisen Bewegung des besagten Sicherheitsriegels in eine zumindest teilweise neben der besagten Absperrvorrichtung gelagerte Position, wobei die besagte Position durch federnden Druck seitens des besagten Sicherheitsriegels auf besagte Absperrvorrichtung und besagtes Gehäuse aufrecht erhalten wird, den besagten Feueranzünder in eine ungesicherte Position bringt, in welcher die besagte Absperrvorrichtung heruntergedrückt werden kann, damit das gasartige Mittel fließen kann. 35 40 45
9. Flammen erzeugender Feueranzünder nach Anspruch 2, wobei der besagte Sicherheitsriegel (16) kreuzweise und nach unten beweglich ist, und zwar in Richtung einer Führungsnute in besagter Absperrvorrichtung, bis die besagte Absperrvorrichtung heruntergedrückt ist, wobei gasartiges Material austritt und der Sicherheitsriegel sich unter die Absperrvorrichtung zurück bewegt, wenn die Absperrvorrichtung freigelassen wird. 50 55

sen wird.

Patentansprüche für folgende Vertragsstaaten: ES, GR

1. Flammen erzeugender Feueranzünder mit einem Gehäuse (12), das ein Reservoir (15) zur Aufnahme eines brennbaren, gasartigen Mittels unter Druck aufweist; ein Absperrmittel, das mit besagtem Reservoir gekoppelt und zwecks selektiver Betätigung angebracht ist, und zwar zwischen einer normalerweise geschlossenen Position, die den Austritt des besagten gasartigen Mittels aus besagtem Reservoir verhindert, und einer offenen Position, die den Austritt des besagten gasartigen Mittels aus besagtem Reservoir durch das besagte Absperrmittel gestattet; Mittel (18, 22) zur selektiven Erzeugung von Funken an der Stelle, nahe der Austrittsöffnung von besagtem Absperrmittel für das gasartige Mittel, wobei die Zündung von besagtem gasartigen Mittel selektiv verursacht wird; und eine herunterdrückbare Absperrvorrichtung (14), welche nach dem Herunterdrücken eines Teils derselben das besagte Absperrmittel betätigt, wodurch das Fließen des gasartigen Mittels aus besagtem Reservoir heraus gestattet wird; ein Sicherheitsriegel (16), der so montiert ist, dass er normalerweise die Bewegung der besagten Absperrvorrichtung (14) verhindert, wobei der besagte Sicherheitsriegel selektiv in eine Position gebracht werden kann, in welcher die besagte Absperrvorrichtung nicht behindert wird, dadurch gekennzeichnet, dass der besagte Riegel (16) zumindest einen Teil aufweist, der federnd unterhalb der besagten herunterdrückbaren Absperrvorrichtung angebracht ist; wobei die Anwendung einer Sperrkraft auf den besagten Sicherheitsriegel eine federnde Bewegung des besagten Sicherheitsriegels in die besagte Position, in welcher die besagte Absperrvorrichtung nicht behindert wird, verursacht, und dadurch das Herabdrücken der genannten Absperrvorrichtung ermöglicht, und wobei die federnde Position des besagten Sicherheitsriegels den besagten Sicherheitsriegel veranlasst, in die Position zurückzukehren, in der zumindest ein Teil des besagten Sicherheitsriegels federnd unter der besagten Absperrvorrichtung angebracht wird, sobald die Absperrvorrichtung freigelassen wird, wobei wiederum das Niederdrücken der besagten herunterdrückbaren Vorrichtung verhindert wird und folglich das Absperrmittel sich nicht öffnen kann.



2. Flammen erzeugender Feueranzünder nach Anspruch 1, wobei die besagte herunterdrückbare Absperrvorrichtung (14) auf dem besagten Gehäuse drehbar montiert ist, und das Herabdrücken des besagten Teils von besagter Absperrvorrichtung die besagte Absperrvorrichtung zum drehen bringt, wodurch das Absperrmittel geöffnet wird. 5
3. Flammen erzeugender Feueranzünder nach Anspruch 2, wobei der besagte Sicherheitsriegel (16) kreuzweise und aufwärts in Richtung einer Führungsnute (40) in besagter Absperrvorrichtung bewegt werden kann, bis die besagte Absperrvorrichtung heruntergedrückt ist, wobei gasartiges Material austritt und der Sicherheitsriegel sich wieder unter die Absperrvorrichtung bewegt, nachdem die Absperrvorrichtung freigelassen wird. 10 15
4. Flammen erzeugender Feueranzünder nach Anspruch 3, wobei das besagte Mittel für die selektive Erzeugung von Funken Feuersteinmaterial (22) und ein rotierbares, Funken erzeugendes Rad (18) umfasst, das eine gezahnte Oberfläche aufweist, die so angebracht ist, dass sie einen selektiven Reibungskontakt mit dem besagten Feuersteinmaterial hat. 20
5. Flammen erzeugender Feueranzünder nach Anspruch 3, wobei das besagte Mittel zur selektiven Erzeugung von Funken ein elektrisches, Funken erzeugendes Mittel umfasst. 30
6. Flammen erzeugender Feueranzünder nach Anspruch 3, wobei das besagte Mittel zur selektiven Erzeugung von Funken ein piezo-elektrisches, Funken erzeugendes Mittel umfasst (60, 65, 70). 35
7. Flammen erzeugender Feueranzünder nach Anspruch 1, wobei die kreuzweise Bewegung des Sicherheitsriegels eine Lücke (70) zwischen besagter Absperrvorrichtung und besagtem Gehäuse verursacht, wobei die besagte Lücke so ausreichend in der Grösse ist, dass die besagte Absperrvorrichtung zumindest teilweise in die besagte Lücke heruntergedrückt werden kann. 40 45
8. Flammen erzeugender Feueranzünder nach Anspruch 7, wobei die Aufwärtsbewegung nach der besagten kreuzweisen Bewegung des besagten Sicherheitsriegels in eine zumindest teilweise neben der besagten Absperrvorrichtung gelagerte Position, wobei die besagte Position durch federnden Druck seitens des besagten Sicherheitsriegels auf besagte Absperr-

vorrichtung und besagtes Gehäuse aufrecht erhalten wird, den besagten Feueranzünder in eine ungesicherte Position bringt, in welcher die besagte Absperrvorrichtung heruntergedrückt werden kann, damit das gasartige Mittel fließen kann.

9. Flammen erzeugender Feueranzünder nach Anspruch 2, wobei der besagte Sicherheitsriegel (16) kreuzweise und nach unten beweglich ist, und zwar in Richtung einer Führungsnute in besagter Absperrvorrichtung, bis die besagte Absperrvorrichtung heruntergedrückt ist, wobei gasartiges Material austritt und der Sicherheitsriegel sich unter die Absperrvorrichtung zurück bewegt, wenn die Absperrvorrichtung freigelassen wird.

Revendications

Revendications pour les Etats contractants suivants : AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE

1. Briquet destiné à former une flamme, du type ayant un boîtier (12) délimitant un réservoir (15) destiné à contenir un fluide combustible gazeux sous pression, un dispositif à soupape couplé au réservoir et destiné à être commandé sélectivement entre une position normalement fermée qui empêche la sortie du fluide gazeux du réservoir, et une position d'ouverture qui permet la sortie du fluide gazeux du réservoir par le dispositif à soupape, un dispositif (18, 22) destiné à produire sélectivement des étincelles à un emplacement proche de l'ouverture de sortie du fluide gazeux du dispositif à soupape, afin qu'il provoque sélectivement l'allumage du fluide gazeux, et un organe (14) de manoeuvre de soupape qui peut être enfoncé et qui, lors de l'enfoncement d'une partie de cet organe, manoeuvre le dispositif à soupape et permet ainsi au fluide gazeux de s'échapper du réservoir, et

un verrou (16) de sécurité ayant au moins une partie qui est positionnée élastiquement sous l'organe de manoeuvre de soupape qui peut être enfoncé, le verrou de sécurité étant mobile sélectivement en direction transversale et verticale vers une position dans laquelle il n'est pas au contact de l'organe de manoeuvre de soupape,

si bien que l'application d'une force de rappel au verrou de sûreté provoque un mouvement élastique du verrou de sûreté vers la position dégagée de l'organe de manoeuvre de soupape et permet ainsi l'enfoncement de cet organe de manoeuvre, et dans lequel le positionnement élastique du verrou de sûreté pro-



- voque le retour du verrou de sûreté vers la position dans laquelle une partie au moins du verrou de sûreté est positionnée élastiquement sous l'organe de manoeuvre de soupape lorsque l'organe de manoeuvre de soupape est relâché, si bien qu'il empêche à nouveau l'enfoncement de l'organe de manoeuvre qui peut être enfoncé et empêche ainsi l'ouverture du dispositif à soupape.
2. Briquet destiné à produire une flamme selon la revendication 1, dans lequel l'organe (14) de manoeuvre qui peut être enfoncé est monté afin qu'il puisse pivoter sur le boîtier, et l'enfoncement de ladite partie de l'organe de manoeuvre de soupape provoque un pivotement de l'organe de manoeuvre de soupape et l'ouverture du dispositif à soupape en conséquence.
 3. Briquet destiné à produire une flamme selon la revendication 2, dans lequel le verrou de sûreté (16) est mobile transversalement et vers le haut vers une encoche de guidage (40) formée dans l'organe de manoeuvre de soupape jusqu'à ce que l'organe de manoeuvre de soupape soit enfoncé, si bien que la matière gazeuse s'échappe et le verrou de sûreté revient sous l'organe de manoeuvre de soupape lorsque l'organe de manoeuvre est relâché.
 4. Briquet destiné à produire une flamme selon la revendication 3, dans lequel le dispositif destiné à produire sélectivement des étincelles comprend une matière (22) à base de flint et une roue rotative (18) génératrice d'étincelles ayant une surface dentée disposée et orientée afin qu'elle vienne sélectivement en contact par friction avec la matière à base de flint.
 5. Briquet destiné à produire une flamme selon la revendication 3, dans lequel le dispositif destiné à produire sélectivement des étincelles est un dispositif électrique de production d'étincelles.
 6. Briquet destiné à produire une flamme selon la revendication 3, dans lequel le dispositif destiné à produire sélectivement des étincelles est un dispositif piézoélectrique (60, 65, 70) de production d'étincelles.
 7. Briquet destiné à produire une flamme selon la revendication 1, dans lequel le mouvement transversal du verrou de sûreté forme une cavité (70) entre l'organe de manoeuvre et le boîtier, cette cavité ayant une dimension suffisante pour qu'elle permette l'enfoncement de

l'organe de manoeuvre de soupape au moins partiellement dans la cavité.

8. Briquet destiné à produire une flamme selon la revendication 7, dans lequel un mouvement ascendant, postérieur au mouvement transversal, du verrou de sûreté vers une position au moins partiellement adjacente à l'organe de manoeuvre de soupape, cette position étant maintenue élastiquement par une pression exercée par le verrou de sûreté sur l'organe de manoeuvre et le boîtier, place le briquet en position débloquée dans laquelle l'organe de manoeuvre de soupape peut être enfoncé, si bien que le fluide gazeux peut s'écouler.
9. Briquet destiné à produire une flamme selon la revendication 2, dans lequel le verrou de sûreté (16) est mobile transversalement et vers le bas vers une encoche de guidage formée dans l'organe de manoeuvre de soupape, jusqu'à ce que l'organe de manoeuvre de soupape soit enfoncé, si bien que la matière gazeuse sort et le verrou de sûreté revient sous l'organe de manoeuvre de soupape lorsque cet organe de manoeuvre de soupape est relâché.

Revendications pour les Etats contractants suivants : ES, GR

1. Briquet destiné à former une flamme, du type ayant un boîtier (12) délimitant un réservoir (15) destiné à contenir un fluide combustible gazeux sous pression, un dispositif à soupape couplé au réservoir et destiné à être commandé sélectivement entre une position normalement fermée qui empêche la sortie du fluide gazeux du réservoir, et une position d'ouverture qui permet la sortie du fluide gazeux du réservoir par le dispositif à soupape, un dispositif (18, 22) destiné à produire sélectivement des étincelles à un emplacement proche de l'ouverture de sortie du fluide gazeux du dispositif à soupape, afin qu'il provoque sélectivement l'allumage du fluide gazeux, et un organe (14) de manoeuvre de soupape qui peut être enfoncé et qui, lors de l'enfoncement d'une partie de cet organe, manoeuvre le dispositif à soupape et permet ainsi au fluide gazeux de s'échapper du réservoir, et un verrou (16) de sécurité monté afin qu'il empêche normalement le déplacement de l'organe (14) de manoeuvre de soupape, le verrou de sécurité étant mobile sélectivement vers une position dans laquelle il n'est pas au contact de l'organe de manoeuvre de soupape, caractérisé en ce que le verrou (16) a au moins une partie qui est positionnée élastique-



ment sous l'organe de manoeuvre de soupape qui peut être enfoncé,

si bien que l'application d'une force de rappel au verrou de sûreté provoque un mouvement élastique du verrou de sûreté vers la position dégagée de l'organe de manoeuvre de soupape et permet ainsi l'enfoncement de cet organe de manoeuvre, et dans lequel le positionnement élastique du verrou de sûreté provoque le retour du verrou de sûreté vers la position dans laquelle une partie au moins du verrou de sûreté est positionnée élastiquement sous l'organe de manoeuvre de soupape lorsque l'organe de manoeuvre de soupape est relâché, si bien qu'il empêche à nouveau l'enfoncement de l'organe de manoeuvre qui peut être enfoncé et empêche ainsi l'ouverture du dispositif à soupape.

2. Briquet destiné à produire une flamme selon la revendication 1, dans lequel l'organe (14) de manoeuvre qui peut être enfoncé est monté afin qu'il puisse pivoter sur le boîtier, et l'enfoncement de ladite partie de l'organe de manoeuvre de soupape provoque un pivotement de l'organe de manoeuvre de soupape et l'ouverture du dispositif à soupape en conséquence. 20
3. Briquet destiné à produire une flamme selon la revendication 2, dans lequel le verrou de sûreté (16) est mobile transversalement et vers le haut vers une encoche de guidage (40) formée dans l'organe de manoeuvre de soupape jusqu'à ce que l'organe de manoeuvre de soupape soit enfoncé, si bien que la matière gazeuse s'échappe et le verrou de sûreté revient sous l'organe de manoeuvre de soupape lorsque l'organe de manoeuvre est relâché. 30
4. Briquet destiné à produire une flamme selon la revendication 3, dans lequel le dispositif destiné à produire sélectivement des étincelles comprend une matière (22) à base de flint et une roue rotative (18) génératrice d'étincelles ayant une surface dentée disposée et orientée afin qu'elle vienne sélectivement en contact par friction avec la matière à base de flint. 40
5. Briquet destiné à produire une flamme selon la revendication 3, dans lequel le dispositif destiné à produire sélectivement des étincelles est un dispositif électrique de production d'étincelles. 50
6. Briquet destiné à produire une flamme selon la revendication 3, dans lequel le dispositif destiné à produire sélectivement des étincelles est 55

un dispositif piézoélectrique (60, 65, 70) de production d'étincelles.

7. Briquet destiné à produire une flamme selon la revendication 1, dans lequel le mouvement transversal du verrou de sûreté forme une cavité (70) entre l'organe de manoeuvre et le boîtier, cette cavité ayant une dimension suffisante pour qu'elle permette l'enfoncement de l'organe de manoeuvre de soupape au moins partiellement dans la cavité. 10
8. Briquet destiné à produire une flamme selon la revendication 7, dans lequel un mouvement ascendant, postérieur au mouvement transversal, du verrou de sûreté vers une position au moins partiellement adjacente à l'organe de manoeuvre de soupape, cette position étant maintenue élastiquement par une pression exercée par le verrou de sûreté sur l'organe de manoeuvre et le boîtier, place le briquet en position débloquée dans laquelle l'organe de manoeuvre de soupape peut être enfoncé, si bien que le fluide gazeux peut s'écouler. 15
9. Briquet destiné à produire une flamme selon la revendication 2, dans lequel le verrou de sûreté (16) est mobile transversalement et vers le bas vers une encoche de guidage formée dans l'organe de manoeuvre de soupape, jusqu'à ce que l'organe de manoeuvre de soupape soit enfoncé, si bien que la matière gazeuse sort et le verrou de sûreté revient sous l'organe de manoeuvre de soupape lorsque cet organe de manoeuvre de soupape est relâché. 25

