

A GAS-LIGHTER COMPRISING A SAFETY IGNITION SYSTEM.

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The present invention concerns a gas-lighter device which includes an ignition-safety system.

10 A gas-lighter generally comprises a vessel for holding gas of liquefied paraffin, a valve mounted on a said vessel, enabling gas concerned to leave a said vessel, a system for opening and closing flow of gas controlled by a lever, a system for regulating gas flow and an ignition system. In a known way, this latter comprises a flint functioning in combination with a knurled wheel and, usually, a protection cover. A knurled wheel concerned is mounted on a shaft running between two
15 carriers. A said knurled wheel is cylindrical in form and carriers concerned are disc-shaped and have a diameter which is markedly greater than that of a said knurled wheel. An edge of said carriers is roughened making it abrasive. A user can easily operate a said knurled wheel with a finger as this finger will not brush over carriers concerned.

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When a knurled wheel concerned, in contact with a flint, is made to rotate by means of carriers and a user's finger, a sheaf of sparks is created and is followed, through action of a same finger on a gas-opening lever, by liberation of a quantity of gas. A said sheaf of sparks then ignites gas, producing a flame which spouts
25 from a cover member.

Such a system therefore requires positive action by a user to produce and maintain a flame and requires two movements which are independent of each other, that is rotation of a knurled wheel and action on a gas-opening lever, to produce a flame.

- 5 However, people are trying to find a way of making it more difficult to use such lighters so that children who are less than five years old cannot produce flames with them.

10 There are already lighters for which an additional problem has to be surmounted to produce a flame, and several patents or patent applications describing such lighters. These include patents US 5 125 829 and US 5 002 482 and international patent applications WO-93/17282 and WO-95/04247.

15 Lighters described in these documents have, in relation to a lighter of preceding state of the art, an additional device making it more difficult to access a knurled wheel or blocking movement of a gas-opening lever.

Because of this, these lighters have a complex structure leading to high production costs. Moreover, use of these lighters is complicated and requires instructions.
20 Even adults can have some difficulties in using such lighters and need prior instruction.

The present invention is aimed at providing a lighter which can be used easily by an adult, yet which is difficult for a child to use, particularly one of less than five
25 years in age, which shows few modifications in relation to a lighter of a type cited above.

Another aim of a present invention is to provide a reliable safety-system, which is 'impregnable' and which is constantly in action without initial action.

5 Another aim is to have functioning of a lighter concerned which is as close as possible to that of a lighter of a type cited above, such that a user needs neither instructions or previous introduction to using a lighter concerned.

To this end, the present invention is a gas-lighter of a type including a vessel to contain gas of liquefied paraffin, a valve mounted on a said vessel and enabling
10 gas to leave a said vessel, a system for opening and closing gas flow, and an ignition system having a flint functioning in co-operation with a knurled wheel set in rotation by means of at least one carrier mounted co-axially in relation to a knurled wheel concerned.

15 In accordance with the present invention, a peripheral surface of each carrier designed to come into contact with a user's finger, is smooth.

So, to move a knurled wheel concerned by means of a carrier, a user must exert on this a force comprising a major radial component and he or she must accompany
20 this carrier in its rotation-movement in order to generate sparks. A movement made by a user to use a lighter concerned is then a same movement as that made to use a lighter in accordance with preceding state of the art, yet he has to better accompany movement of a carrier by exerting a greater, largely radial, force. Because of this, a child can only use such a lighter with difficulty.

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Moreover, in relation to a lighter of preceding state of the art, modifications made are not major ones, as only carriers concerned are modified.

In a lighter in accordance with the present invention, a knurled wheel concerned is preferably cylindrical in shape and mounted on a shaft between carriers which are generally disc-shaped and have a diameter which is markedly greater in diameter than a knurled wheel concerned.

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This arrangement enables good movement of a knurled wheel by carriers.

In an advantageous implementation, each carrier is a circular disc.

10 In another implementation, each carrier is in a general disc-form in which a peripheral surface concerned has undulations. This form of carriers concerned favours their action, without enabling operation of them by a young child.

In any case, a present invention will be clearly understood with aid of a following
15 description with reference to annexed diagrammatic figures, showing, by way of a non-limiting example, a form of implementation of this gas-lighter.

Figure 1 is a perspective view of a lighter in accordance with a present invention,
and

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Figure 2 is a enlarged, partly sectioned side-view of a lighter shown in figure 1.

Figures 1 and 2 show a gas-lighter having, in a known way, a member 1
functioning as a reservoir and aimed at containing gas of liquefied petrol.

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On its upper part, a said reservoir is provided with a valve 2 enabling gas to escape when a said valve 2 is in an open position. A lever 3 controls opening and closure of a said valve 2. A spring 4 acts on a lever 3 such that, when at rest, a valve 2 is

closed. A part of a lever 3 situated opposite a valve 2 is activated by a user, when he wishes gas to escape from a said reservoir, to feed a flame, for example.

5 The lighter concerned also includes an ignition system enabling lighting of gas coming from a valve 2. This system comprises a lighter-flint 5 and a knurled wheel 6. This latter is mounted on a shaft 7 and can turn around it. It is cylindrical in form and its peripheral surface is knurled.

10 A lighter-flint 5 is radially supported on a knurled-wheel 6. A spring 8 supports it. So, when a knurled-wheel 6 turns about its axis 7, sparks are produced. These can ignite gas escaping from a valve 2.

15 Two carriers 9 are mounted, one on either side of a knurled-wheel 6, co-axially in relation to a said knurled-wheel 6. These carriers 9 can form a single part with a said knurled-wheel 6, or they can be separate parts functioning in combination with a knurled-wheel 6.

20 These carriers 9 are circular discs, with a peripheral surface, forming an edge, which is smooth. Thus, a coefficient of friction between a finger of a user and its carriers 9 is relatively low.

25 In order to be able set a said knurled-wheel 6 in rotation, a user places a finger 10 on carriers 9, on a side opposite a stone 5. He presses on these carriers 9 with a force having a high radial component. In order to continue this setting in rotation, a finger 10 must continue to exert a force having a high radial component and, simultaneously, follow movement of said carriers 9. A finger 10 continues its course until coming into contact with a lever 3. In relation to a lighter of preceding state of the art having roughened carriers, a user's finger must accompany rotation

of a knurled-wheel concerned at a relatively high angle of rotation. Setting of a said knurled-wheel is deliberately accentuated in terms of angle of rotation.

If a radial force concerned is insufficient, there is no development of sparks.

- 5 Furthermore, if a finger does not accompany movement of a knurled-wheel 6, when it reaches a lever 3, there are no more sparks and gas concerned is not ignited.

- 10 Because of a relatively high force to be exerted and because it is necessary to follow movement of carriers at an angle of rotation which is relatively high, it is difficult for children to use a lighter as described above.

- 15 Nevertheless, an adult finds a lighter which is used as with similar lighters, yet having carriers with a roughened surface. The only differences in use are that it is necessary to exert a greater force to turn a knurled-wheel concerned and that a user must better accompany movement of this knurled-wheel with his or her finger.

- Clearly, the present invention is not limited to an implementation described above by way of a non-limiting example; on the contrary it embraces all variations.

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For example, there could be just one simple carrier to turn the knurled-wheel concerned.

- 25 The surface of the carrier or carriers concerned is smooth, although it is not necessarily circular. Undulations could be provided on an edge of said carriers.



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REPLACED

CLAIMS

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1. Gas-lighter comprising a vessel to hold liquefied- petrol gas, a valve (2) mounted on a said vessel and enabling gas concerned to escape from a said vessel, a system (3, 4), for enabling opening and closure of gas-flow, having a flint (5) functioning in combination with a knurled-wheel (6) set in rotation by at least one
10 carrier (9) mounted co-axially in relation to a said knurled-wheel (6), characterised in that a peripheral surface of each carrier (9), to come into contact with a user's finger, is smooth.

2. Gas-lighter in accordance with claim 1, characterised in that a knurled-wheel (6)
15 is a cylindrical knurled-wheel mounted on a shaft (7) between two carriers (9) which are generally disc-shaped and have a diameter which is markedly greater than that of a said knurled-wheel (6).

3. Gas-lighter in accordance with either of claims 1 or 2, characterised in that each
20 carrier (9) is in the form of a circular disc.

4. Gas-lighter in accordance with either claim 1 or claim 2, characterised in that each carrier (9) is generally disc-shaped, with an undulating peripheral surface.

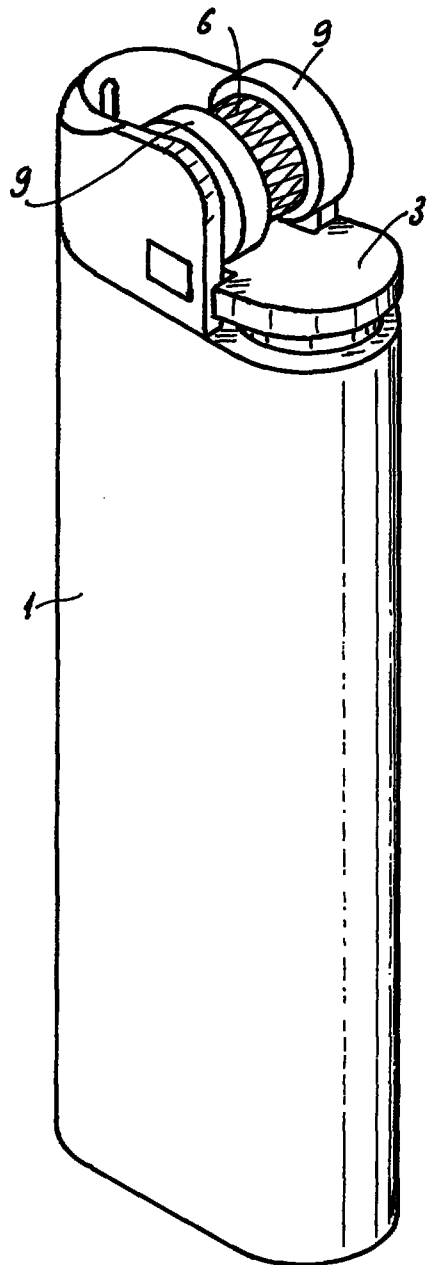
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ABSTRACT

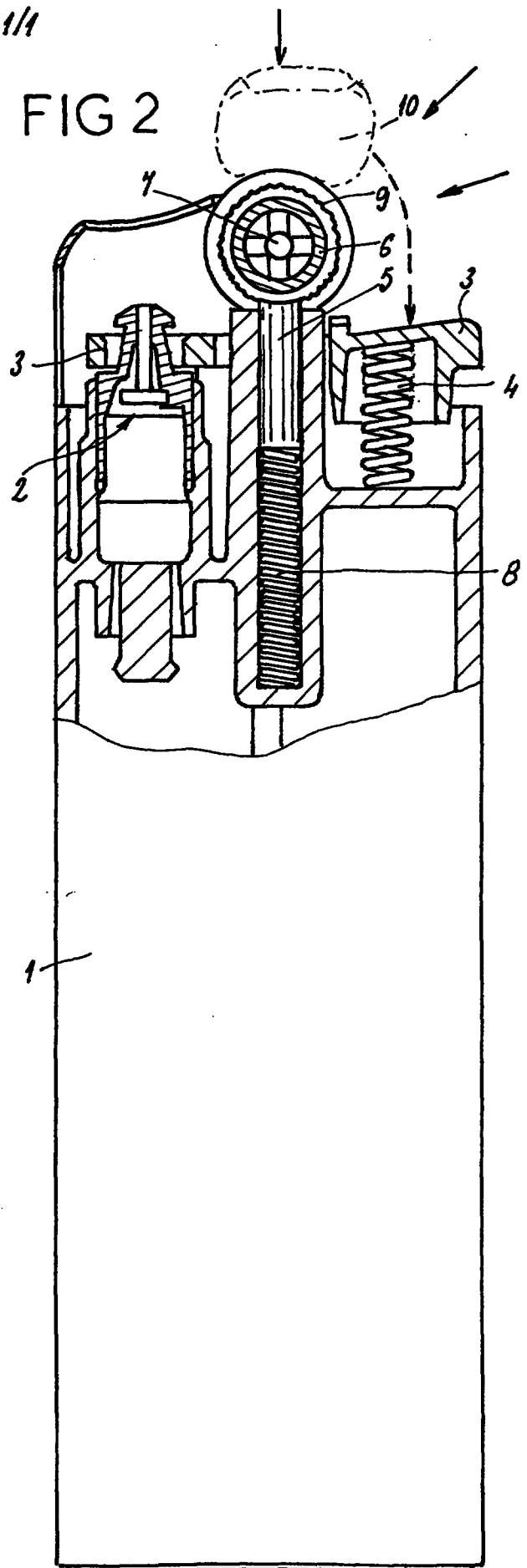
The gas-lighter comprises a vessel to hold liquefied- petrol gas, a valve (2) mounted on a said vessel and enabling gas concerned to escape from a said vessel, 5 a system (3, 4), for enabling opening and closure of gas-flow, having a flint (5) functioning in combination with a knurled-wheel (6) set in rotation by at least one carrier (9) mounted co-axially in relation to a said knurled-wheel (6). According to the invention the peripheral surface of each carrier (9), to come into contact with a user's finger, is smooth. Such a lighter is easily usable by an adult, but 10 difficult to use for a child. In addition it requires only small modifications in relation to a standard lighter.

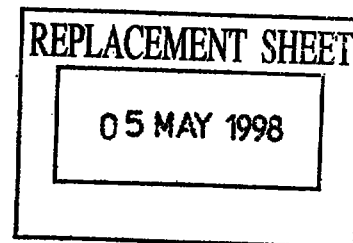
FIG 1



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FIG 2





CLAIMS

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1. Gas-lighter comprising a vessel to hold liquefied- petrol gas, a valve (2) mounted on a said vessel and enabling gas concerned to escape from a said vessel, a system (3, 4), for enabling opening and closure of gas-flow, having a flint (5) functioning in combination with a knurled-wheel (6) set in rotation by at least one
10 carrier (9) mounted co-axially in relation to a said knurled-wheel (6), characterised in that : the whole of a finger engaging portion of the peripheral surface of each carrier (9) intended to come into contact with a user's finger, is smooth.

2. Gas-lighter in accordance with claim 1, characterised in that a knurled-wheel (6)
15 is a cylindrical knurled-wheel mounted on a shaft (7) between two carriers (9) which are generally disc-shaped and have a diameter which is markedly greater than that of a said knurled-wheel (6).

3. Gas-lighter in accordance with either of claims 1 or 2, characterised in that each
20 carrier (9) is in the form of a circular disc.

4. Gas-lighter in accordance with either claim 1 or claim 2, characterised in that each carrier (9) is generally disc-shaped, with an undulating peripheral surface.