United States Patent

Lambert

[15] **3,679,346**

[45] **July 25, 1972**

[54] LIGHTERS, ESPECIALLY GAS LIGHTERS

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[22] Filed: **Sept. 10, 1970**

[21] Appl. No.: **71,181**

[30] **Foreign Application Priority Data**

Sept. 22, 1969 France 6932213

[52] **U.S. Cl.** **431/130**, 431/254

[51] **Int. Cl.** **F23q 2/00**

[58] **Field of Search** 431/129–141, 150, 431/254

[56] **References Cited**

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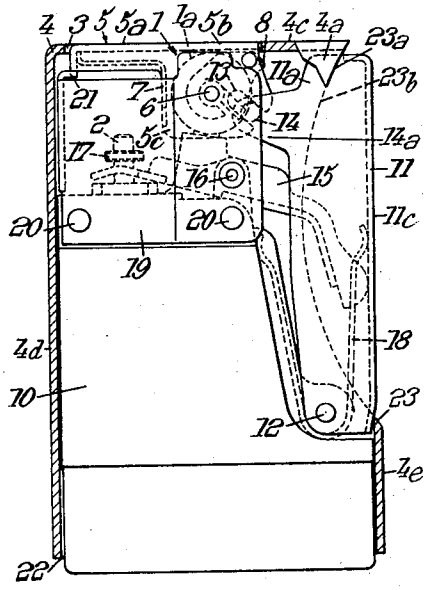
[57] **ABSTRACT**

The lighter comprises a burner, an ignition device and a push member which acts on the ignition device and on the burner fuel supply. The case of the lighter includes a port provided with a pivoting cover and actuated by the push member. In its resting position the push member reestablishes the parallelepipedic shape of the lighter.

10 Claims, 5 Drawing Figures



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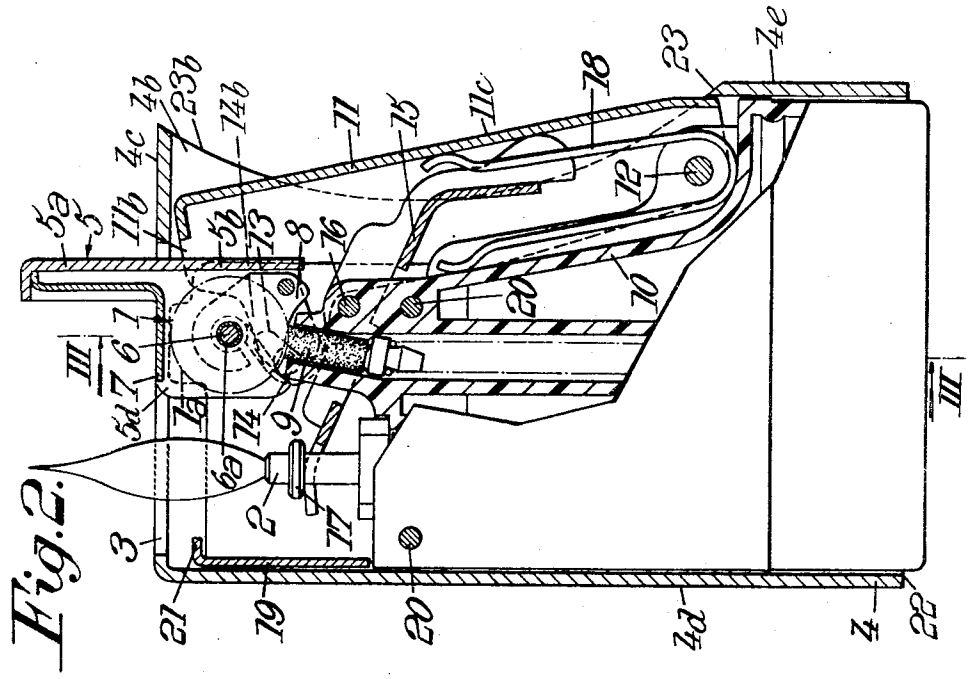

Fig. 2.

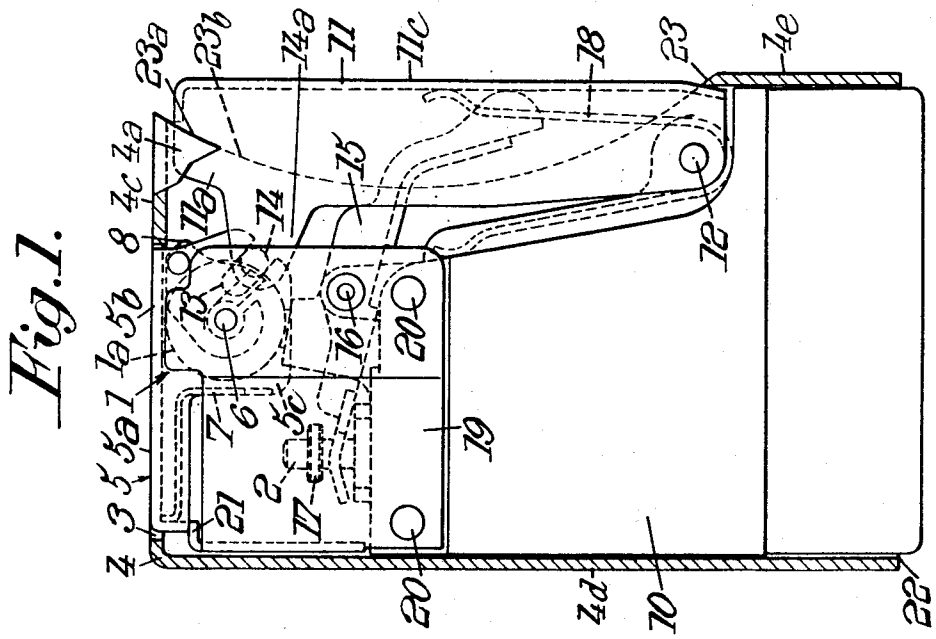

Fig. 1.

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Fig. 3.

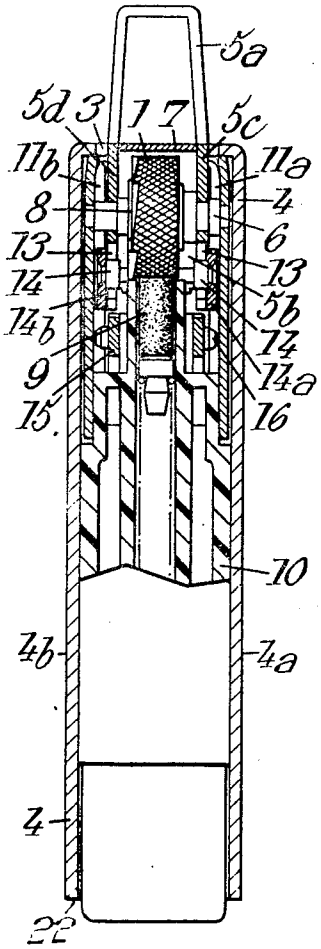


Fig. 4.

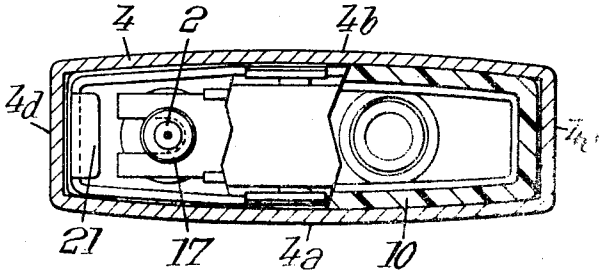
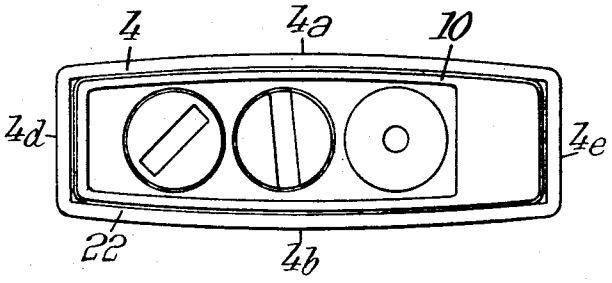


Fig. 5.



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LIGHTERS, ESPECIALLY GAS LIGHTERS

The invention relates to lighters, especially gas lighters comprising a burner, an ignition device and a push member which acts upon the ignition device, and if necessary, upon the fuel supply of the burner.

Amongst these lighters, the invention relates to those whose general shape is parallelepipedic, and it is known that the conception of such lighters always poses problems with regard to their external appearance (which must be devoid of all roughness or protuberance in order to preserve a pure aesthetic appearance) and to their dismantling (which must be simple in order for the user to effect the cleaning operations and maintenance of the mechanism of the lighter).

Furthermore, it is necessary to construct a lighter which is sealed against dust and against small particles.

Until now, a lighter meeting the requirements of the three above-mentioned essentials, mainly pure aesthetics, ease in dismantling and tightness, has not been achieved.

It is an object therefore of the invention to provide an aesthetic lighter, easily dismantled and dustproof, particularly with regard to small particles.

The lighter according to the invention is characterized by the fact, that it comprises a case protecting the different constituent elements of the lighter, this case being formed by two principal parallel or approximately parallel walls, and by three lateral walls connecting these two principal walls, the said case having thus an open side, the above-mentioned constituent elements, especially the reservoir, the burner, the ignition device, and the push member, forming an independent assembly of generally parallelepipedic shape able to slide into the abovesaid case through its open end, that the push member constitutes an essential part of one of the two lateral walls, the lateral wall which ends at the open side of the case, this lateral wall having a cut-out which extends through two notches respectively upon the two principal walls, the depth of these two notches, whose general shape is preferably curved inwards, corresponding to the amplitude of the depressional movement of the push member, and that the push member includes a flat portion, whose length is at least equal to the length of the cut-out and whose width is at least equal to the depth of the two grooves, so that, when the push member is in its position of rest, the parallelepipedic shape of the lighter is reestablished.

It is thus seen that by means of this feature, the lighter is devoid of any roughness or protuberance, and that its dismantling remains easy since it is effected by simple extraction, from the case, of the assembly grouping the elements constituting the lighter, and that finally a lighter is obtained which has a very clean aesthetic appearance and which is dustproof and particularly to small particles.

The invention will in any case be better understood with the aid of the complementary description which follows as well as the annexed drawings, which complement and drawings relates to a preferred embodiment of the invention and, of course, do not comprise any limiting character.

FIGS. 1 and 2, of the drawings show, in elevation with portions in cross-section, one embodiment of a gas lighter constructed according to the invention, these two Figures showing the said lighter respectively in closed resting position and in open ignited position.

FIG. 3 is a section along the line III—III of FIG. 2, with portions hidden.

FIG. 4 is a view from above with portion cut-away of the same lighter.

FIG. 5 is a view from below of the lighter.

The lighter illustrated in FIGS. 1 to 5 is an automatic gas lighter and it comprises,

a burner 2 fed with fuel gas from a reservoir under pressure 10, this burner being constitutable by the hollow stem of an outlet valve for gas (not shown) which can be open, against the action of a return spring, when axial traction is exerted upon the said stem,

an ignition device, designated in a general manner by the reference number 1, constituted by a mill wheel 1a and a lighter flint 9; but this ignition device could be of electrical or any other type,

and a push member 11 which acts upon the ignition device 1 by rotating the mill wheel 1a in the desired direction by means of a blade of a split spring 8, and which acts also upon the burner 2 in order to cause the opening of the gas outlet valve by means of a bent lever 15 mounted, pivotably upon the reservoir 10 around an axis 16, and of which one of the ends has a fork shape engaged underneath a head 17 rigidly fixed to the stem of the gas outlet valve, the abovesaid bent lever 15 being supported by its upper end, against the inner surface of the push member 11.

This lighter comprises also a case 4 for protecting the different constituent elements of the lighter, this case 4 being formed by two principal walls 4*a* and 4*b* an end wall 4*c* and by lateral walls 4*d*, 4*e* connecting these two principal walls 4*a* and 4*b*.

In the embodiment illustrated, the lateral walls are three in number, 4*c*, 4*d* and 4*e*, the abovesaid case 4 thus having an open side 22.

The burner 2 is oriented transversely with respect to the lateral wall 4*c* which has a cut out 3 allowing the passage of the flame, this cut out 3 being provided with a cover 5 pivoting around an axis 6 parallel to the lateral wall 4c concerned.

The opening and the closing of this pivoting cover is controlled by the push member 11.

The pivoting axis 6 of the cover 5 is located inside the case 4 with respect to the lateral wall 4*c* in which is arranged the cut out 3.

The cover 5 has a shape such that, in closed position, its outwardly turned surface is flush with the outer surface of the lateral wall 4*c* surrounding the cut out 3(FIG. 1), and that when the push member 11 is pressed in order to actuate simultaneously the ignition device, the opening of the cover and the supply of the burner with fuel, a portion 5*a* of the cover 5 pivots towards the outside of the case 4 and the other portion 5*b* of the cover 5 pivots towards the inside of the case 4 (FIG. 2).

In the embodiment illustrated, the cover 5 has a section (through a plane perpendicular to its pivoting axis 6) in a shape of a T whose upper bar is longer than the central bar 7 forming the stem of the T and entirely masks the cut 3.

The pivoting axis 6 of the cover 5 is situated on the other side of the burner 2, with respect to the central bar 7, when the cover 5 is in closed position (FIG. 1).

When the cover 5 is in open position, the central bar 7 constitutes a plate occupying a portion of the cut out 3, only the portion of the cut out 3 situated to the right of the burner 2 remaining uncovered (FIG. 2).

In the embodiment illustrated, the ignition device 1 comprises a mill wheel 1a and a flint 9, the cover 5 comprises, on the side of its pivoting axis 6, two wings 5*c* and 5*d*, perpendicular to its pivoting axis 6 and transversed by the said axis, the mill wheel 1*a* of this lighter being mounted upon a hollow axis 6*a*, coaxial with the pivoting axis 6 and whose ends are borne by the two abovesaid wings.

Such a feature allows, when the cover 5 is in open position, the complete masking of the mill wheel 1*a* which is surrounded, laterally, by the two wings 5*c* and 5*d* and covered towards the top by the central bar 7, which contributes to the protection of this mill wheel and improves the aesthetic appearance of the lighter when the latter is lit.

As regards the linkage between the push member 11 and the cover 5, it is advantageous to provide, in each of the two wings 5*c* and 5*d* of this cover, a slot 13, preferably oriented at approximately 45° with respect to the upper bar of the T, the push member 11 including two studs 14 engaged respectively in the two abovesaid slots 13. When the push member 11 is depressed, it then causes very easily the pivoting of the cover 5 and its passage from the closed position to the open position.

The constituent elements of the lighter, especially the reservoir **10**, the burner **2**, the ignition device **1** and the push member **11**, form an independent assembly of general parallelepipedic shape and which can be slipped into the case **4** through its open end **22**.

The push member **11** constitutes an essential part of the lateral wall **4***e* which ends at the open side **22**, this lateral wall **4** having a cut out **23** which is extended by two indentations **23***a* and **23***b* respectively on the two principal walls **4***a* and **4***b*, the depth of these indentations **23***a* and **23***b*, whose general shape is preferably inwardly curved, corresponding to the amplitude of the movement of depression of the push member **11**.

And the push member **11** includes a flat portion **11***c* whose length is at least equal to the length of the cut out **23**, and two wings **11***a* and **11***b* perpendicular to this flat portion **11***c* and whose width is at least equal to the depth of the two intendations **23***a* and **23***b*.

When the push member **11** is in its resting position, the parallelepipedic shape of the lighter is thus reestablished.

The push member **11** is thus articulated upon the reservoir **10** around an articulation axis **12** perpendicular to the two principal walls **4***a* and **4***b* and placed in proximity to the end of the cut out **23** which is towards the open side **22** of the case **4**.

The free end of this push member comprises two extensions **14***a* and **14***b*, situated in extension of the wings **11***a* and **11***b* and operating through the studs **14**, the cover **5**.

A return spring **18**, in the shape of a hairpin, surrounds the articulation axis **12** and is supported, by its ends, on one hand, against the reservoir **10**, and, on the other hand, against the push member **11**, the said return spring **18** tending to separate the push member **11** from the reservoir **10** up to a position of abutment in which the push member **11** is parallel to the lateral side **4***e*.

The push member **11** and the cover **5** being connected by studs **14**, this stop position can be obtained by providing a stop surface **21**, rigidly fixed to the reservoir **10** by means of pins **20**, which support the cover **5** in closed position (FIG. 1).

Due to this stop position, the assembly of the constituent elements of the lighter can be withdrawn from the case **4** through its open end **22** without the push member **11** being urged towards an outer position.

It can be thus be seen that several types of case **4** can be used, having different finishes and/or constituted of different materials, and which can receive the same assembly of constituent elements of the lighter.

It is thus possible to provide cases having different finishes and/or constituted of different materials to "dress" the same assembly formed by the constituent elements of the lighter.

As it goes without saying and as results already from what precedes, the invention is not limited in any way to those of its embodiments, nor to those methods of realization of its various parts, which have been more especially indicated; it includes, on the contrary, all variations and all equivalents.

I claim:

1. A gas lighter having a generally parallelepipedic shape and comprising a case having an open end and being formed by two principal walls, and end wall opposite said open end and two lateral walls connecting said two principal walls, one of said lateral walls having a cut out which is extended by two indentations respectively extending into said two principal walls; and an independent assembly of likewise substantially parallelepipedic shape slidably received through said open end of said case in the latter and comprising a reservoir, a burner, an ignition device and a push member for actuating said ignition device, said push member being mounted at one end thereof on said reservoir for pivotal movement between a rest position and a depressed actuating position, said push member having an end face which in said rest position is substantially flush with the remainder of said one lateral wall of said casing and closes said cut out therein, and two wings substantially normal to said end face and whose width is at least equal to the depth of said indentations, so that when the push member is in said rest position, the lighter will have the parallelepipedic shape.

2. Lighter according to claim **1**, wherein the push member is articulated upon the reservoir around an articulation axis perpendicular to the two principal walls and disposed in the vicinity of the end of the cut out which is adjacent the open end of the case, the free end of said push member comprising two parallel extensions, situated in extension of the wings, and studs actuating the cover.

3. Lighter according to claim **1**, wherein a return spring is supported, through its ends, on one hand, against the reservoir and, on the other hand, against the push member, said return spring having the tendency to separate the push member from the reservoir up to a stop position in which the push member is parallel to the lateral side in which the cut out is arranged.

4. Lighter according to claim **1**, wherein said end wall, opposite said open end, has a port provided with a cover pivoting around a pivoting axis parallel to said second lateral wall, said port allowing, when said cover is in open position, the passage of the flame, the push member actuating simultaneously the ignition device and the opening of said cover, wherein,

the pivoting axis of cover is situated inside the case with respect to said end wall,

and said cover is arranged so that, in closed position, its outer surface is flush with the outer surface of the end wall and so that, when the push member is depressed in order to control simultaneously the ignition device and the opening of the cover, a portion of the cover pivots towards the outside of the case and an other portion of the cover pivots towards the inside of the case.

5. Lighter according to claim **4**, wherein the cover has a section, viewed in a plane perpendicular to its pivoting axis in the shape of a T whose upper bar is longer than the central bar forming the stem of the T and entirely masks the port, the pivoting axis of said cover being situated on the other side of the burner, with respect to said central bar, when the cover is in closed position, the central bar constituting, when the cover is in open position, a plate occupying part of the port.

6. Lighter according to claim **5**, wherein the ignition device is of the mill wheel and flint type, and wherein the cover comprises on the side on its pivoting axis, two wings perpendicular to its pivoting axis and traversed by its said axis, the mill wheel of the lighter being mounted upon a hollow axis coaxial with said pivoting axis and whose ends are carried by the two said wings.

7. Lighter according to claim **6**, wherein the two wings of the cover each include a slot, the push member including two studs engaged respectively in the two said slots so that, when the push member is depressed, it causes the pivoting of the cover and its passage from the closed position to the open position.

8. Lighter according to claim **4**, wherein a stop surface rigidly fixed to the reservoir supports the cover in closed position and predetermines a stop position for the push member.

9. Lighter according to claim **7**, wherein said slot is oriented approximately at 45° to the upper bar of the T.

10. Lighter according to claim **1**, wherein said indentations are curved inwards.

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