

[54] **POCKET LIGHTER ACTUATED BY A PART OF THE HOUSING THEREOF**

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[51] Int. Cl. F23d 13/04
[58] Field of Search 431/129-132, 137-143, 151,
431/152, 254, 255, 274-277

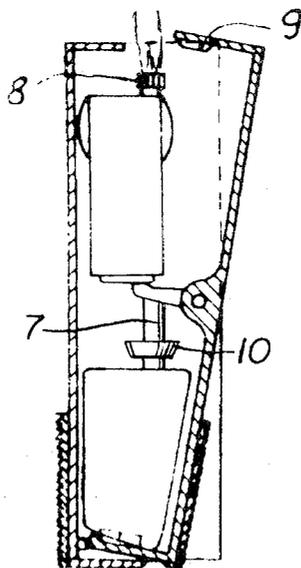
[57] **ABSTRACT**

A lighter comprising a housing having two parts each with at least one narrow and one broad side, and a device to actuate the lighter to produce a lighter flame, the actuating device forming a substantial portion of at least one broad side and being tiltable about an axis extending in a direction substantially transverse to the major extension of such one housing part broad side.

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9 Claims, 15 Drawing Figures



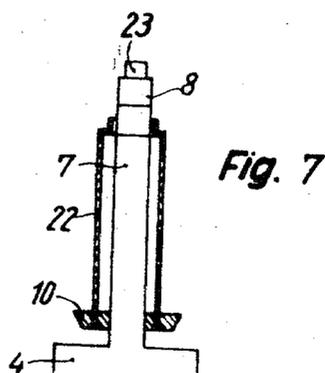
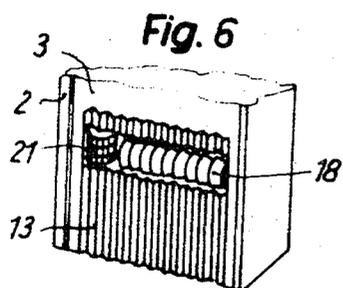
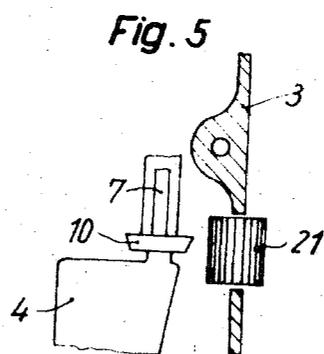
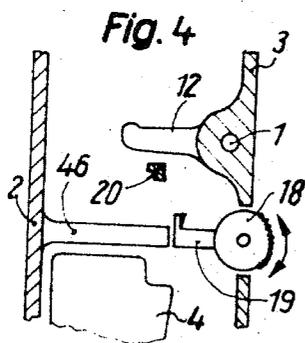
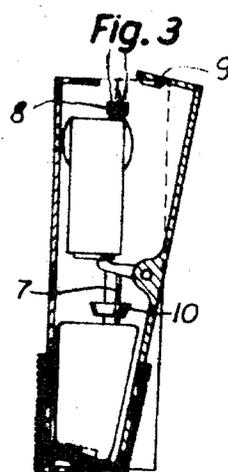
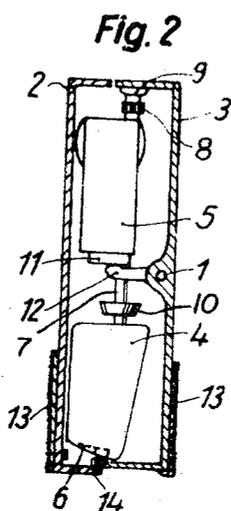
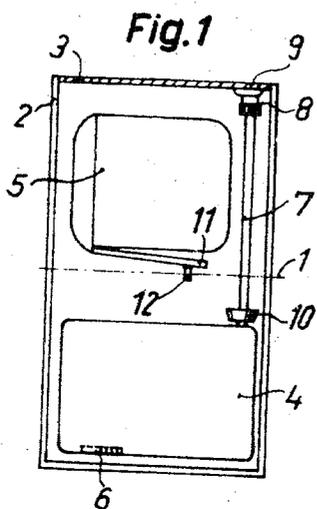


Fig. 8

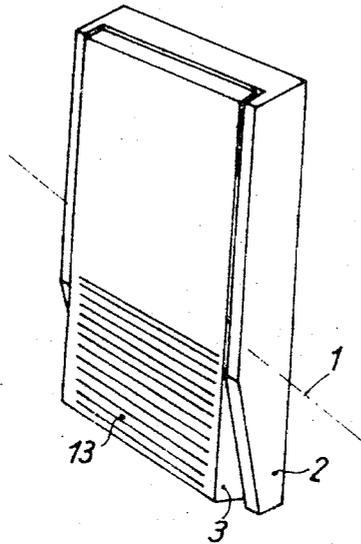


Fig. 9

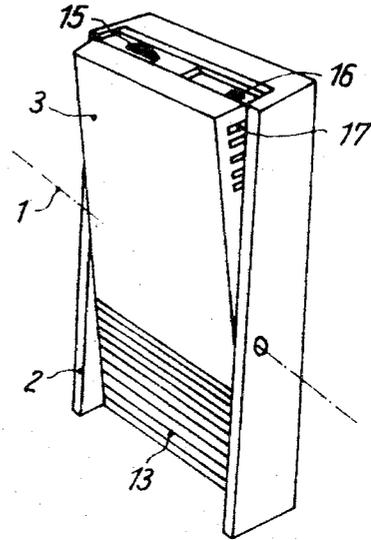


Fig. 10

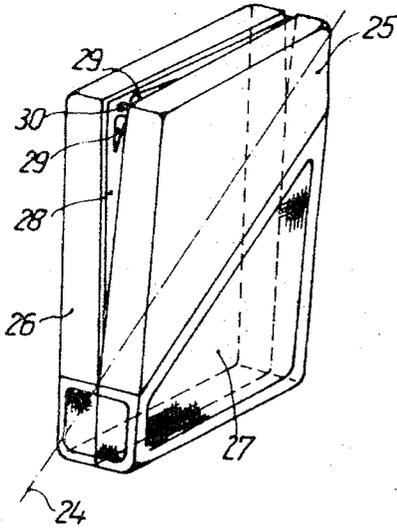


Fig. 11

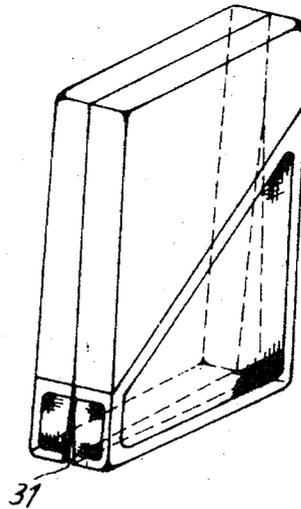


Fig. 12

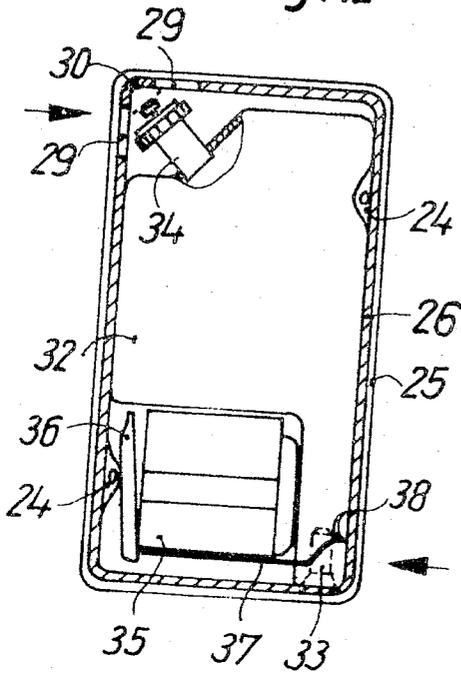


Fig. 13

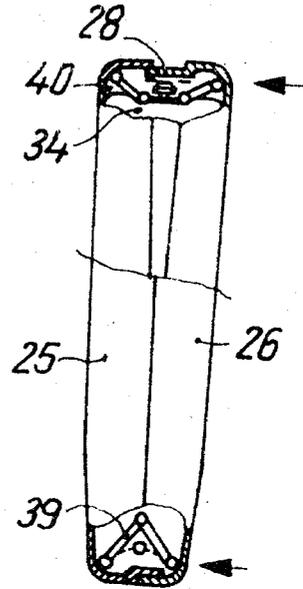


Fig. 14

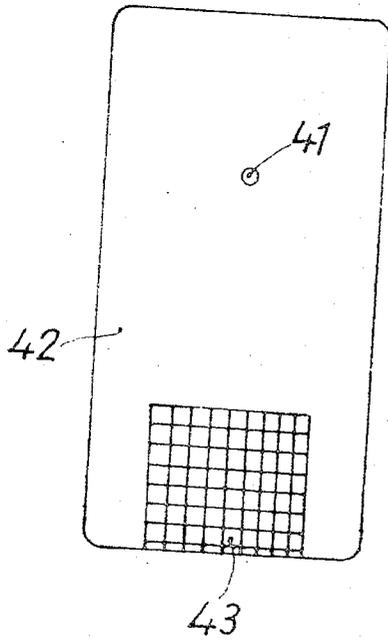
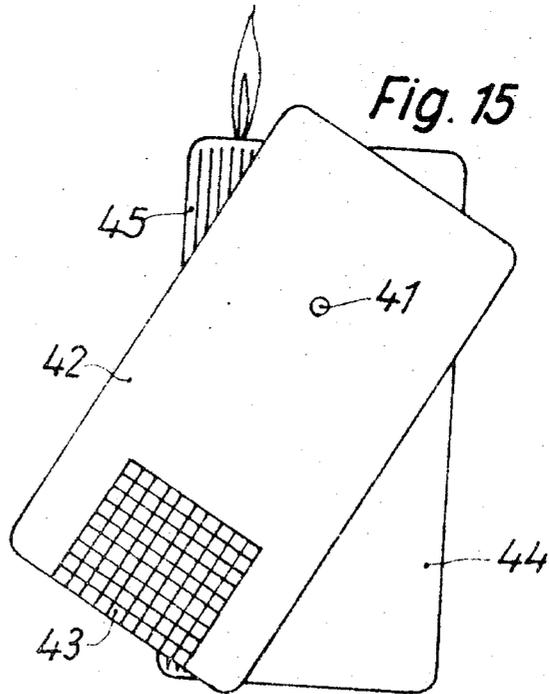


Fig. 15



POCKET LIGHTER ACTUATED BY A PART OF THE HOUSING THEREOF

BACKGROUND OF THE INVENTION

The present invention relates to a pocket lighter with actuating means which forms a part of the housing of the lighter, which in rest position covers the burner valve of the lighter, and which for purposes of opening the burner valve or flame opening and for lighting can be tilted or rotated out of or into the housing.

Pocket lighters of this general type heretofore known have very small actuating means which require a relatively large force for their actuation and which are especially difficult to handle for women's hands or require large lever arms which necessarily protrude or move relatively far beyond the contour of the lighter. Also, they are cumbersome, complicated and unappealing.

Although these conditions have prevailed for a long time and are widely known apparently no efforts have been made to overcome the disadvantages by a basically new design. On the contrary, efforts have been limited to proposing small improvements in details, such as longer lever arms, better bearings, surfaces that can be grasped more easily, and the like.

It is, therefore, an object of the present invention to overcome the above-mentioned drawbacks of the heretofore known pocket lighters with actuating means which forms part of the housing of the lighter.

It is another object of the present invention to provide a pocket lighter of the just mentioned general type which is considerably easier to handle, which does not require long lever arms, and which is simple in structure and appealing in appearance.

SUMMARY OF THE INVENTION

The solution according to the present invention is based on the recognition that these prior art attempts cannot lead to a basically new solution, but that a completely new approach has to be used.

Therefore, in accordance with the present invention, a substantial portion of one broadside of the housing forms the lighter actuating means and is tiltable or rotatable about an axis which extends substantially transversely to the longitudinal extension of this housing portion. In this way, the actuating means can be enlarged without causing the above-outlined disadvantages.

It should be emphasized that "a substantial portion of one broadside of the housing" does not only mean one entire or substantially one entire broadside of the lighter housing, but in accordance with the present invention, it is sufficient if only a portion of one broad side of the housing is designed to form the actuating means so that even under pressure the actuating finger of the person using the lighter is fully supported by this portion.

The size of the grasping surface and the support for the actuating finger is not the only advantage achieved by the present invention, but the use of the broadside of the lighter housing as the actuating means makes it also possible to simplify the mechanism of the lighter considerably. If the actuating means extends over the entire or approximately over the entire height of the housing, while it may be considerably narrower than the broadside of the housing, a rigid and long lever arm becomes available which even with a small path of

movement of the point of attack of the actuating force carries out at the other end a larger movement for freeing the burner or flame opening.

Ease of handling of the lighter housing can be improved by having the outer surfaces of the housing portions register with each other. In accordance with a further feature of the invention, in order to assure that the housing portions form a closed housing in all positions, the burner and air openings as well as the device for adjusting the flame and/or the filling valve are covered by the actuating means within an overlapping zone or at abutting edges of the housing portions.

Still another feature of the invention is particularly favorable for pipe smokers. In this arrangement, the flame or burner opening is provided at an edge formed by the narrow sides of the housing and the flame extends approximately in the direction of the diagonal of the longitudinal extension and parallel to the plane of the broadsides of the lighter. Advantageously the tilting axis extends likewise in diagonal direction and perpendicularly to the direction of the flame of the lighter. Finally, the flame or burner opening may be provided in one of the long, narrow sides of the housing. It is, of course, to be understood that instead of only one broadside, both broadsides of the housing may be rotatable or tiltable and may form the actuating means. In such an arrangement, the actuating means may consist of two parts approximately equal in size and movable relative to each other while each part has associated therewith as actuating member a substantial portion of the broadsides of the housing formed by or consisting in part of these two parts.

In order to prevent unintentional or accidental actuation of the lighter, means for locking and unlocking of the actuating means may be provided.

BRIEF DESCRIPTION OF THE DRAWING

The invention is illustrated by way of example in the attached drawings, in which:

FIGS. 1 and 2 illustrate the lighter according to the present invention in sections through the narrow and broad sides of the lighter, respectively;

FIG. 3 shows the lighter of FIG. 2 in actuated position;

FIGS. 4 and 5 illustrate details of a locking and flame adjusting mechanism, respectively, for the lighter of FIGS. 1 to 3;

FIG. 6 is a front view of the means of FIGS. 4 and 5; FIG. 7 illustrates a flame adjusting means for the lighter, modified over that of FIG. 5;

FIGS. 8 and 9 are front views of the lighter in actuated and rest position respectively, one being slightly modified over the other;

FIGS. 10 and 11 illustrate another embodiment of the invention, in rest and actuated position respectively;

FIGS. 12 and 13 respectively illustrate sections through the narrow and broad sides of the lighter of FIGS. 10 and 11;

FIGS. 14 and 15 are front views of still another lighter according to the present invention, in rest and actuated position, respectively.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

Referring now to the drawing in detail, and the embodiment of FIGS. 1 and 9 thereof in particular, the

lighter shown therein comprises a housing portion 2 and an actuating member 3, both U-shaped and interacting and movable relative to each other about a tilting axis 1 which extends perpendicularly to the longitudinal extension of the broad sides of the housing and parallel to the broader side. A tank 4 with a filling valve 6 and an ignition or lighting system 5 are connected to housing 2. Tank 4 is connected to a burner valve 8 via a conduit 7, the burner valve being adapted to be opened or closed by a nose portion 9 of actuating member 3. The height of the flame can be adjusted by a wheel 10 at the tank exit.

A tilting arm 12 of actuating member 3 the latter being mounted as a double armed lever with respect to housing portion 2, is connected to an actuating arm 11 of the magnetic ignition or lighting system 5 and is arranged at the level of tilting axis 1. Knurled or rippled surfaces 13 are provided at the end of the lighter opposite the burner or flame opening on parts 2 and 3. Tank 4 with its filling valve 6 is so designed that a nose portion 14 of actuating member 3 may pass by its bottom surface in a sealingly closing manner (FIGS. 2 and 3). At this location, housing 2 is provided with an opening which permits filling of filling valve 6 in the non-actuated position of the lighter only. With the exception of this opening, housing 2 and actuating member 3 form a closed contour in non-actuated or rest position of the lighter. In actuated position (FIG. 3) the nose portion 9 frees burner valve 8: gas leaves the opened burner valve 8, the tilting arm 12 actuates the ignition system, and the resulting spark ignites the gas.

FIG. 4 illustrates a locking means for preventing unintentional actuation of the lighter when in rest position, as well as for arresting the lighter in actuated position. A roller 18 is journaled at actuating member 3, which roller is held in the position shown by a torsion spring or the like as long as no rolling forces indicated by a double arrow are effective. Roller 18 is provided with an arm 19 which rests at a nose portion 4 of housing 2 and prevents a tilting movement of actuating member 3 as long as roller 18 is not actuated. With arm 19 tilted out and with the actuating member 3 pressed-in, roller 18 can be turned somewhat further so that the nose portion of arm 19 catches with a nose portion 20 arranged at housing 2 where the actuating member 3 is held in pressed-in position. A movement of roller 18 in opposite direction will release the arresting means.

The means for adjusting the height of the flame of the lighter are illustrated in detail in FIG. 5. A movement of roller 21 will only be transferred to the wheel 10 for the adjustment of the flame in the actuated or pressed-in position of the actuating member 3, thus preventing accidental or unintentional actuation thereof in the inactive condition of the lighter. In especially advantageous arrangement, the means for the adjustment of the flame may be provided in close proximity to the arresting means, illustrated in FIG. 6 showing the rollers 18 and 21.

A modification of the means for the adjustment of the flame is shown in FIG. 7, in which the adjusting wheel 10 acts upon the adjusting mechanism in valve 8 via a cylindrical member 22. A valve knob 23 is pressed into valve 8 when the lighter is closed and thereby closes valve 8. As illustrated in FIG. 8, the lateral housing surfaces of housing 2 may be bevelled.

In a further modification illustrated in FIG. 9, the flame adjusting means 15 may be provided within the

overlapping zone of the housing portions 2 and 3. The flame opening 16 and air openings 17 are clearly visible in FIG. 9. It should be mentioned in this connection that the flame and air openings may be exchanged, i.e., the flame opening could be provided on one side of the lighter and the flame would be directed laterally and parallel to the tilting axis 1.

As is clearly visible in FIGS. 8 and 9, the surfaces 13 of the actuating member 3 are so large that one or more fingers can easily be accommodated thereon. The lighter is actuated by depressing one or both broadsides of the housing where the knurled or rippled gripping surfaces 13 are provided.

FIGS. 10 to 13 illustrate a further modification according to the present invention, in which the lighter has a tilting axis 24 and two housing parts 25 and 26 substantially of the same size and serving as actuating means. The two housing parts form an overlapping zone 28 in which air openings 29 and a flame opening 30 is arranged. The filling valve 33 (see FIG. 12) is accessible from a further overlapping zone 31.

As shown in FIG. 12, housing part 25 is provided with two bores 24 into which during assembly one bearing pin each is tightly inserted and onto which the housing part 26 is slipped at the openings 24. These pins do not only form the connection between the two housing parts but also make possible the tilting movement of the two housing parts when subjected to bending.

The lighter is equipped with a tank 32 with a filling valve 33 and a flame valve 34. A magneto-electric ignition means 35 with interrupter armature 36 and actuating lever 37 may be actuated by a knee-lever mechanism 39 connected to one end of actuating lever 37. Mechanism 39 rests against housing parts 25 and 26, shown in actuated position in FIG. 3, in which it presses the actuating lever 37 upwardly and releases the ignition mechanism 35. The resulting spark ignites the gas leaving the flame valve 34 which was opened by a knee-lever mechanism 40 connected to valve 34 and resting against housing parts 25 and 26.

Still another embodiment of the invention is illustrated in FIGS. 14 and 15. The lighter shown therein has its tilting axis 41 extend perpendicularly to the broadsides of the housing parts 42 and 44 which are respectively provided with a gripping surface 43 and air openings 45.

The pocket lighters designed in conformity with the present invention, independently of their particular shape and technical structure, possess an actuating surface which lets the pressure of the user's hand become effective completely, forcefully and conveniently. The position of the grasping and holding hand does not have to be changed for actuating the lighter. The flame is reassuringly far removed from the hand and the movement of the lighter for instance to the cigarette to be lit is relatively unimpeded. The lighter remains visible during lighting of the user's own cigarette or when being passed on, and is not almost completely hidden by the clutching hand as in most prior art constructions. No parts need protrude beyond the contour of the lighter or need be tilted therebeyond, and no parts interfere with the handling and form or shape of the lighter. Undesirable mechanical features possibly considered "technically too complicated" are missing.

Aside from the above advantages of the lighter according to the present invention, the designer and engineer is free from many limitations. The invention

makes possible simplifications not only in the manufacture of the lighter; the designer is only limited by the required space as specified by the engineer. The actuating means are within the housing and invisible. The required actuating surface for the thumb or a finger calling for only a small specific pressure, is always available, independently of any particular design, on the broadsides of the housing. The designer can fully concentrate his efforts on the handy form of the lighter.

The engineer concerned with the mechanics of the operating mechanism of the lighter can fully concentrate on his task without consideration of appearance. He can arrange this mechanism as favorably and as simply as possible and the selection of the means is almost limitless. Almost any available ignition mechanism can be used.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent, is as follows:

1. A lighter comprising a housing having a plurality of narrow perimetrical sides and two facing broad sides, said housing being divided into two parts in a plane intersecting said narrow perimetrical sides, burner means disposed inside said housing operable for producing a lighter flame when actuated,

one of said two parts being formed as a double armed lever mounted tiltable relative to the other part between an actuating position and a normal rest position, and operating means associated with said one part for actuating said burner means when said one part is tilted into its actuating position and, respectively, to extinguish said flame when it is returned to its normal rest position, said operating means

comprising a projecting means movable with said one part for actuating said burner means.

2. A lighter according to claim 1, wherein said broad sides are provided with a gripping surface arranged at that end thereof which faces away from the lighter flame when produced upon actuation of said lighter.

3. A lighter according to claim 1, wherein said narrow and broad sides of said housing parts are parallel with each other.

4. A lighter according to claim 1, including means defining flame and air openings, said housing parts being arranged overlapping at least at one side of said housing, said last-mentioned means being located within a zone where said two housing parts overlap.

5. A lighter according to claim 1, with means defining flame and air openings, said last-mentioned means being located adjacent abutting edges of said two housing parts.

6. A lighter according to claim 5 with means for adjusting the height of the lighter flame and with a fuel filling valve, said last-mentioned means and valve being located adjacent abutting edges of said two housing parts.

7. A lighter according to claim 1, with means defining a flame opening, said opening being located at one of the edges formed by the narrow sides of said housings and directing the flame upon ignition of the lighter in the direction of the diagonal and parallel to the broadsides of said housings.

8. A lighter according to claim 1, which includes means for locking and unlocking said actuating means to prevent unintentional and accidental actuation thereof.

9. A lighter according to claim 1 wherein said one part is tiltable about an axis extending in a direction substantially parallel to said broad side.

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