Feb. 21, 1950 I. FLORMAN 2,497,937

CATALYTIC LIGHTER

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Fig. 1

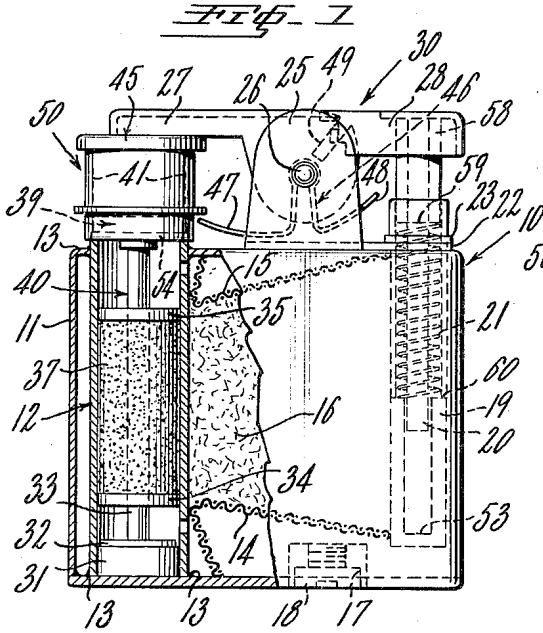


Fig. 3

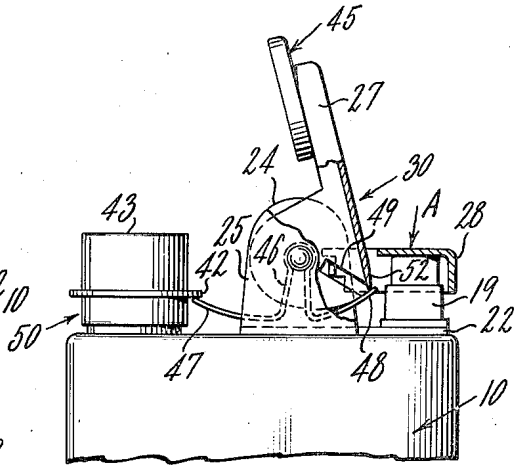


Fig. 2

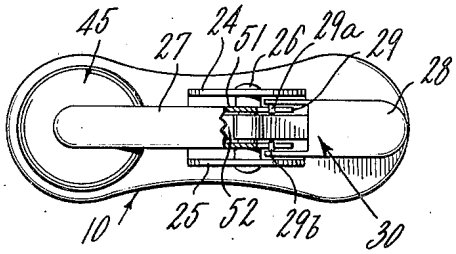
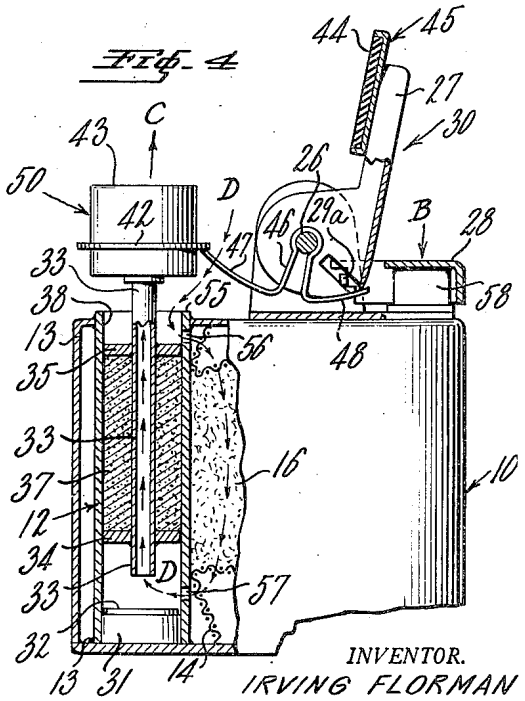


Fig. 4



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CATALYTIC LIGHTER

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3 Claims. (Cl. 67—7)

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This invention relates to catalytic lighters of the flameless or of the flame type.

It is well known to operate a catalytic lighter in a manner similar to automatic pyrophoric lighters by using one hand only for opening and closing the lighter. These known lighter constructions, however, have a number of disadvantages, among which may be mentioned that the catalytic element even in closed position of the lighter is always in contact with or remains exposed to condensation of fuel-air vapors and further that the supply of air is effectuated by the movement of a piston operatively connected with the closure means of the lighter and not commensurate with the actual need of the air supply to the wick retaining the fuel within the lighter.

The present invention overcomes these and other drawbacks and has as one of its objects the provisions of means for permitting access of fresh air to the fuel and its admixture thereto as well as the passage thereof to the catalytic element only after the lighter has been fully opened.

It is a further object of the present invention to provide means for positively guiding the catalytic element from its closed or sealed position to its open position and vice versa.

It is still another object of the present invention to provide means affording ready replacement of the unit carrying the catalytic element either in case of repair or if the lighter is to be changed from a flameless lighter to a flame type catalytic lighter.

Yet another object of the present invention is to provide means facilitating the storage of a large quantity of fuel within the casing or receptacle of the lighter and the release of such fuel for admixture with fresh air in a very economical and effective manner whereby the action of the catalytic element is considerably increased and will continue for an extensive period of time.

It is a further object of the present invention to provide means contributing to an improved outer appearance of the lighter, to simplicity and economy of construction for which only a relatively few parts are needed and to greater adaptability of the lighter to practical needs.

These and other objects will become apparent from the ensuing description of the invention, which accordingly consists in the novel features of construction, combinations and arrangements of its parts and elements as illustrated in the structure hereinafter disclosed; the scope of the invention being pointed out in the appended claims.

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In the drawing:

Fig. 1 is a side elevational view partly in section of a catalytic lighter embodying the invention.

Fig. 2 is a top plan view of the lighter of Fig. 1.

Fig. 3 is a side elevational view of the upper part of the lighter of Fig. 1 with its closure parts in partly open position.

Fig. 4 is a view similar to that of Fig. 3 with its closure parts fully opened, the casing as well as the closure parts of the lighter being shown in vertical section.

Referring now more particularly to the drawing there is shown in Fig. 1 a lighter 10 having a casing 11 in which a cylindrical body 12 is inserted and attached to the lighter in any known manner, such as by soldering as indicated at 13. The interior of casing 11 is partitioned by a screen or wire mesh elements 14 and 15, between which is held in position wick 16 for receiving fuel through opening 17, which is positioned at the bottom of the casing 10 and closeable by a threaded bolt 18.

Into the interior of casing 10 there extends a cylindrical housing 19, which is hollow, to receive a plunger 20 and a spring 21 as will be hereinafter further described. Housing 19 is fixed at 23 on base plate 22 extending on top of the casing 10 and with which bearing lugs 24 and 25 are connected.

Through bearing lugs 24 and 25 extends a pivot pin 26 on which the closure 30 of the lighter is movably supported. This closure consists of hingedly connected parts 27 and 28 which are loosely hinged together at 29.

Within the cylindrical body 12 there is inserted the catalytic element carrying unit 40, which is normally pressed against a base 31 which carries a rubber gasket 32. Unit 40 is provided with a tube 33 which carries guide rings 34 and 35 between which is loosely mounted a mass of felt or similar material 37. Thus the mass 37 together with the guide rings 34 and 35 frictionally and slidably engage the inner wall 38 of cylindrical body 12. Tube 33 carries at its upper and a receptacle 50 which encloses a catalytic elements 39 of known construction.

Receptacle 50 is defined by a circular wall 41 into which a cigarette may be inserted which in contact with incandescent catalytic element 39 will be lighted as will be hereinafter explained. Receptacle 50 which is open on its top end 43 is provided with a flange-like outer rim extension 42. This top end 43 is normally closed by the engagement thereof with rubber gasket 44 carried

by a round cover 45 of closure part or lever 27. Wound around and swingably supported by pivot pin 26 is an operating two-arm lever 46 terminating into a forward arm 47 and rearward arm 48.

Closure part 27 terminates in two lugs 51 and 52 each of which being provided with an oblique radially extending slot 49 into which may be inserted for loose connection with lever 27 projections 29a and 29b of U-shaped closure part 28, whereby an effective hinge connection between closure parts 27 and 28 is achieved.

It will now become apparent that upon pressing lever part 28 in the direction of arrow A together with plunger 20 against the action of spring 21 to a position as shown in Fig. 3, lugs 51 and 52 will come to abut against rearward end 48 of lever 46, whereby the forward end 47 of said lever is brought into engagement position with flange or rim 42.

Upon further downward movement of closure part 28 in the direction of arrow B (Fig. 4) plunger 20 will reach the bottom 53 of plunger housing 19, whereby forward arm 47 of lever 46 abuts against rim 42 and thus moves unit 40 in the direction of arrow C, whereby gasket 54 carried by receptacle 50 becomes unseated from edge 55 of cylindrical body 12.

Cylindrical body 12 is further provided with a plurality of small openings 56 and 57. Openings 56 are sufficiently spaced from openings 57 in order to allow a fresh air stream D, produced by puffing on a cigarette inserted in the hollow receptacle 50, to enter the fuel holding portion 16 of lighter 10. Thus fresh air is streaming in accordance with arrows D from without the casing 10 through openings 56 and screen 15, fuel saturated wick 16 and screen 14 through openings 57, whereby a fuel-air vapor mixture is obtained which, when guided through tube 33, impinges upon catalytic element 39 in a well known manner to make the same incandescent and to thereby facilitate lighting of a cigarette.

It will further become apparent that upon release of the thumb of the hand of the operator from closure part or lever 28 plunger 20 which is operatively connected at 58 to closure part 28, will be retracted to its initial position by means of spring 21 which abuts against a shoulder 59 of plunger 20 and abuts against housing 19 at 60. Thus, the closure 30 with its movable parts 27 and 28 is returned to initial position, whereby lid or cover 45 abuts against the upper edge 43 of the receptacle 50 and forces unit 40 against the seats at 55 and 32, respectively.

It will be gathered from the aforesaid disclosure that the unit 40 which comprises tube 33 with guide rings or plates 34, 35 and intermediate felt layer or layers 37, together with receptacle 50, may be readily withdrawn from within the hollow body 12 and may be replaced by a similar unit or by a lighter unit of the flame type. The remaining parts of the lighter can be easily assembled and disassembled if required and contribute to a positive movement of the catalytic unit from its closed or sealed position to its open position and vice versa.

Although for clarity's sake guide disks or plates 34 and 35 are shown to be affixed to tube 33 it is well understood that these disks may be threadedly displaced lengthwise of tube 33 to thereby close and obstruct in closed position of unit 40 openings 56 and 57. The space between disks 34 and 35 is always to be filled with felt or other wick forming material which is capable of collecting remaining fuel-air vapors and thus

serves as a primer for the catalytic element 39 as soon as the lighter closure 30 is moved to open position.

Although a two-arm lever 46 is shown as a self-adjusting rocker arm, it is well understood that other means may be employed to bring about positive movements of the unit 40 commensurate with the movements of the closure 30 of the lighter.

It can thus be seen that there has been provided in accordance with this invention a catalytic lighter which will accomplish the objects as hereinbefore stated and which is characterized by a housing, a unit including a cigarette receiving receptacle having an open end and a catalytic element disposed within said receptacle, said unit being provided with a tube arranged together with said receptacle for movement in said housing to thereby assume operative and inoperative positions, respectively, closure means pivotally supported by said housing and for movement relatively to said unit, said closure means including a swingable lever, and closure parts hingedly and operatively connected with each other, one of said closure parts being adapted to move said lever and carrying a cover for application to said open end of said receptacle to close the same, the other closure part being spring supported and being displaceable relatively to said one closure part, said lever being positioned for moving said unit to open the same and to withdraw said cover therefrom upon displacement of said other closure part against spring action.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A catalytic lighter comprising a housing, a unit including a receptacle having an open end and carrying a catalytic element, said unit being arranged for movement in said housing to assume operative and inoperative positions, respectively, and closure means pivotally mounted on said housing, said closure means including a movable lever and displaceable closure parts, one of said closure parts carrying a cover for application to said open end of said receptacle in inoperative position of said unit, the other closure part being spring supported and being operatively connected to said cover carrying closure part, said lever being positioned for actuation by said one closure part to move said unit into operative position upon displacement of said other closure part against spring action.

2. A catalytic lighter comprising a housing, a unit including a receptacle having an open end and a catalytic element disposed in said receptacle, said unit being arranged for displacement in said housing to assume operative and inoperative positions, respectively, a pivot mounted on said housing, a lever swingable about said pivot, hinged closure parts, one of said closure parts being supported by said pivot for movement thereabout and carrying a cover for application to said receptacle in inoperative position of said unit, the other closure part being spring supported and being operatively connected to said cover carrying closure part, and an abutment on said receptacle and positioned in the path of swinging movement of said lever, said lever being positioned for actuation by said one closure part to move against said abutment and to displace said unit to operative position upon operation of said other closure part against spring action by the finger of a hand.

3. A catalytic lighter comprising a housing, a unit including a cigarette receiving receptacle

having an open end and a catalytic element disposed within said receptacle, said unit being provided with a tube arranged together with said receptacle for movement in said housing to thereby assume operative and inoperative positions, respectively, closure means pivotally supported by said housing and for movement relatively to said unit, said closure means including a swingable lever, and closure parts hingedly and operatively connected with each other, one of said closure parts being adapted to move said lever and carrying a cover for application to said open end of said receptacle to close the same, the other closure part being spring supported and being displaceable relatively to said one closure part, said lever being positioned for moving said unit to open the same and to withdraw said cover

therefrom upon displacement of said other closure part against spring action.

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