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PATENT SPECIFICATION



Convention Date (United States): Oct. 26, 1937.

504,471

Application Date (In United Kingdom): Nov. 3, 1937.

No. 30176/37.

Complete Specification Accepted: April 26, 1939.

COMPLETE SPECIFICATION

Improvements in or relating to Catalytic Lighters

We, PLATINUM PRODUCTS CORPORATION, a Corporation organised under the laws of the State of New Jersey, United States of America, of 521, Fifth Avenue, New York City, United States of America, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to catalytic lighters by which ignition of a cigarette or the like may be accomplished by applying the tip thereof to or adjacent a catalyst which becomes incandescent by contact with a vaporizable fuel in the presence of atmospheric air, when the cigarette is drawn upon.

In order that the lighter of the character contemplated by the invention may function efficiently, it is essential that a proper mixture of the fuel vapour and air be obtained, that a free and uninterrupted passage be provided from the air inlet to the catalyst, and that evaporation of the fuel be prevented during inactive periods of the lighter.

It is customary to employ an absorbable material to hold the fuel. This material may have the tendency to contact with or pack against the walls of the container, thereby blocking or interrupting free passage for the air to be sucked in and mixed with the fuel upon drawing of the cigarette for ignition purposes.

According to the invention a catalytic lighter in which a catalyst becomes incandescent by contact with a vaporizable fuel in the presence of atmospheric air and in which absorbent material to be saturated with vaporizable fuel is placed in a compartment of a casing, is characterised in that the top wall of the casing is provided with openings adjacent each other, one of which forms an air inlet, and the other of which forms an entrance of a compartment for a catalyst unit, said compartment having side and bottom walls projecting into said casing, and said bottom wall providing a sealing surface for the catalyst unit when the latter is in its inoperative position.

Preferably the inner faces of the walls

of the compartment for the absorbent material are formed with ribs which form channels providing a free and uninterrupted passage from the air inlet at the top of the compartment for the absorbent material to an inlet leading into the lower part of the compartment for the catalyst unit.

By these means the absorbent material is localised, and the vaporizable fuel is brought under control so that the catalyst unit can be more readily safeguarded against attack by the fuel when the lighter is not in operation.

A catalytic lighter in accordance with one form of the invention is illustrated by the accompanying drawings, of which:

Figure 1 is a front elevational view of a lighter incorporating the features of this invention in closed position;

Figure 2 is a sectional elevational view of the lighter in open or operative position;

Figure 3 is a top plan view of Figure 2, with the cover removed;

Figure 4 is an enlarged partial sectional view of the upper part of the lighter in closed or inoperative position;

Figure 5 is a cross-sectional view of the housing on the line 5—5 of Figure 2, the absorbent material being omitted;

Figure 6 is a top view of the bottom of the lighter; and

Figure 7 is an enlarged sectional view of the catalyst unit.

The drawings, which illustrate an example realising the invention, disclose a housing 25, a bottom 26, and a hinged cover 27, all of which members are preferably made of moldable or plastic composition. The bottom 26 is hermetically secured to housing 25 by any suitable means, as for example cement. At the top of housing 25 is an air inlet 30 communicating with the inside of the housing.

The casing which includes the housing 25 and bottom 26, comprises a chamber 28 holding the vaporizable liquid carrying absorbent material 29, the compartment 65 holding the catalyst unit (later described), and an air and fuel vapour culvert or passage way 33 communicating

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with the air inlet 30, and the outlet 31, connecting the chamber 28 with the compartment 65. Except at the inlet 30 and outlet 31, the passageway 33 and fuel chamber 28 form a completely enclosed compartment separated from the catalyst compartment, by the walls 67, 68, 69. The passage 33 commences at air inlet 30 and terminates at the outlet 31 substantially surrounding material 29 on three sides, namely, its two narrow sides and its bottom.

The passages or channels 33 are formed by and between the plurality of ribs 34 which are preferably integral extensions of the narrow walls and bottom 26 of the casing. This ribs 34 localize the material 29 providing the passageway for the air and fuel mixture from the air inlet to the catalyst. The arrowheads 32 indicate the travel of the mixture when suction is applied at the cigarette C. It is preferable to have the material 29 close up against the portion 35 of vertical wall 67, but spaced from the inlet 30 providing the chamber or pocket 66.

The cover 27 which is preferably made of the same material as the casing 25, is hingedly secured to the latter by means of pin 36. Tension spring 37 will force the cover open when the latch 38 is pressed in, thereby releasing the grip of the latch 38 at the hole 39 against the narrow neck portion 40 of pin 41. The latch 38 is secured on the bottom 26 by means of the bent-down portion 38¹ fitting into the groove 60 of the said bottom 26. This bottom when cemented or otherwise sealed into position within the shell 25 will securely grip the latch 38 at that point. To add to the "spring" effect, of the latch 38, a leaf spring 38¹¹ may be soldered or otherwise secured to the latch.

The cover 27 has two recesses 42, 43, which contain resilient or cushion-cover sealing means 44, 45, respectively. When the cover is closed, cushion 44 seals the air vent, 30, while the cushion 45 seals the top of the catalyst unit, as shown in Fig. 4. These seals will prevent chemical action taking place within the lighter and evaporation of the fuel when the lighter is not in use.

The catalyst unit see Fig. 7, comprises the shell 50 preferably provided with a flared top to facilitate guidance of the cigarette therewithin for ignition purposes. Shell 50 has a tubular reduced portion producing a shoulder 51 and a further tubular reduced portion 53 forming a flange or shoulder 52 and communicating with the previous-mentioned portion. Tubular portion 53 is flared at its bottom as indicated by the

numeral 57. The catalyst pill P made of suitable catalytic material, is preferably secured in holder or shell 50 between screens S.

The lower screen seats on the inturned ridge or flange 51; and the screens S and catalytic material P are clamped together and wedged in the holder by means of the retainer R. The shoulder 51 provides an abutment for one end of a coil spring 56, the other end of spring 56 forceably bearing against the closing gasket 54 resting on the washer 55, the latter stopping in the open position against the flared portion 57 of the tube section 53. Thus the preferably rubber gasket 54 and washer 55 are continuously forced downward towards said flared portion 57.

It is preferable that the gasket 54 projects slightly beyond the washer 55, thereby to completely form a seal-tight joint with the flange or shoulder 62 in compartment 65 (which holds the catalyst unit), when the cover 27 is closed. The flared portion 57 of the catalyst holder presses against gasket 59 (preferably rubber) when the cover is closed, as shown in Fig. 4. Gasket 59 is supported by the wall 68, the latter being spaced from the absorbent material 29 to provide the mixture chamber 70.

Referring particularly to Fig. 2, when cover 27 is opened the catalyst holder 50 is urged upward slightly by the coil spring 56 causing separation of its flared bottom 57 from gasket 59. As cigarette C is drawn upon by the smoker, air is sucked in through inlet 30, which air mixes with the fuel vapor in chamber 66 and during its circuitous passage through the channels 33. The fuel mixture flows in the direction of arrows 32 through opening or outlet 31 and into the tubular portions of holder 50 for coaction with catalyst P, causing incandescence of the latter and ignition of the applied cigarette as the latter is being drawn upon or puffed.

After the cigarette has been lit, the cover is closed (Fig. 4) and sealing of the air inlet 30 and top and bottom openings of catalyst holder 50 is thus effected.

It is understood that although it is preferable that the casing be made of any suitable moldable or plastic material, it can be made of metal or any other suitable material.

Although the drawing, and the above specification discloses the best mode in which we have contemplated embodying our invention, we desire in no way to be limited to the details of such disclosure, for many changes in the forms and proportions may be made as circumstances

require or experience suggests without departing from the spirit of the invention within the scope of the appended claims.

5 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

10 1. A catalytic lighter in which a catalyst becomes incandescent by contact with a vaporizable fuel in the presence of atmospheric air and in which absorbent material to be saturated with vaporizable fuel is placed in a compartment of a casing, characterised in that the top wall
15 of the casing is provided with openings adjacent each other, one of which forms an air inlet, and the other of which forms an entrance of a compartment for a catalyst unit, said compartment having
20 side and bottom walls projecting into said casing, and said bottom wall providing a sealing surface for the catalyst unit when the latter is in its inoperative position.

25 2. A catalytic lighter according to Claim 1, wherein the bottom wall and the inner side wall of the compartment for the catalyst unit also form part of the outer boundary of the compartment for
30 the absorbent material.

3. A catalytic lighter according to Claim 1 or 2, wherein the inner faces of the walls of the compartment for the

absorbent material are formed with ribs providing a free and uninterrupted passage communicating between the air inlet at the upper end of the absorbent material compartment and an inlet leading into the lower part of the compartment for the catalyst unit. 35

4. A catalytic lighter according to Claim 3, wherein the ribs are integral extensions of the corresponding walls. 40

5. A catalytic lighter according to any preceding claim, wherein the catalyst unit is spring-urged to assume a position in which its lower inlet end is clear of the bottom of its compartment, and wherein the closing of a cover presses and holds the catalyst unit against the upper face of the bottom to prevent air and fuel from reaching the catalyst. 45 50

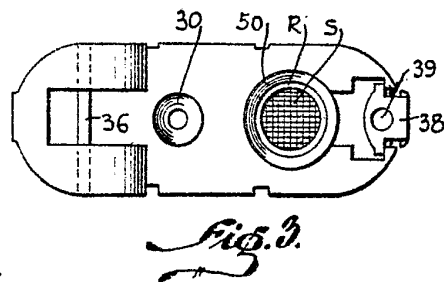
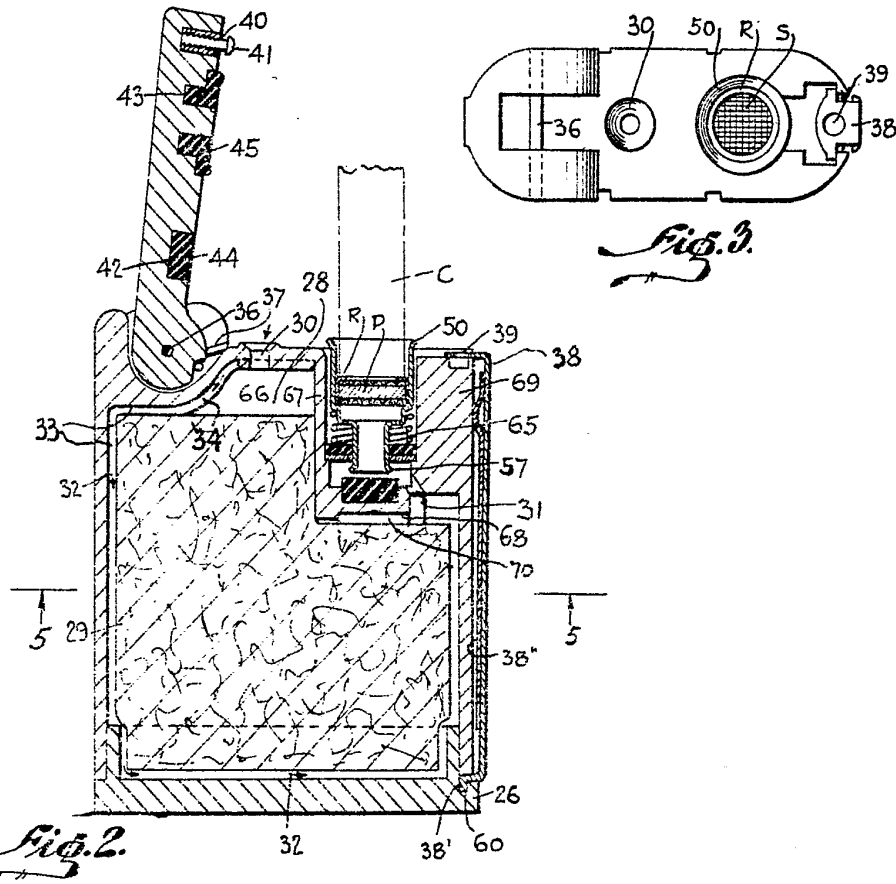
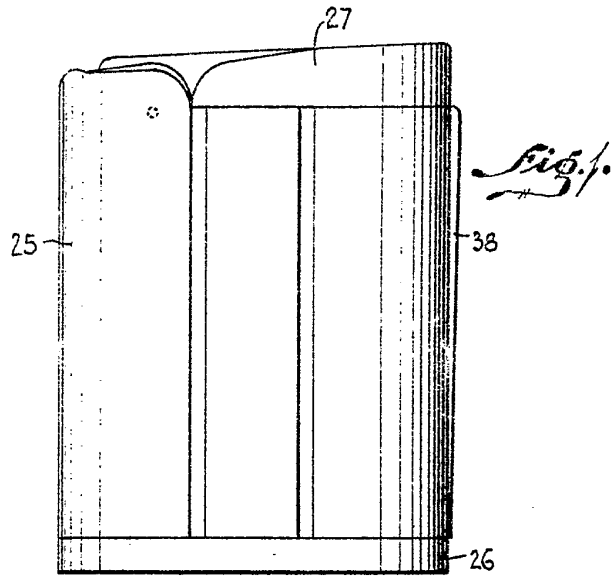
6. A catalytic lighter according to Claim 5, wherein the bottom of the compartment for the catalyst unit is provided with a resilient sealing surface. 55

7. A catalytic lighter substantially as shown in the accompanying drawings and described with reference thereto.

Dated this 3rd day of November, 1937.

For the Applicants,
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29, Southampton Buildings,
Chancery Lane, London, W.C.2.

[This Drawing is a reproduction of the Original on a reduced scale.]



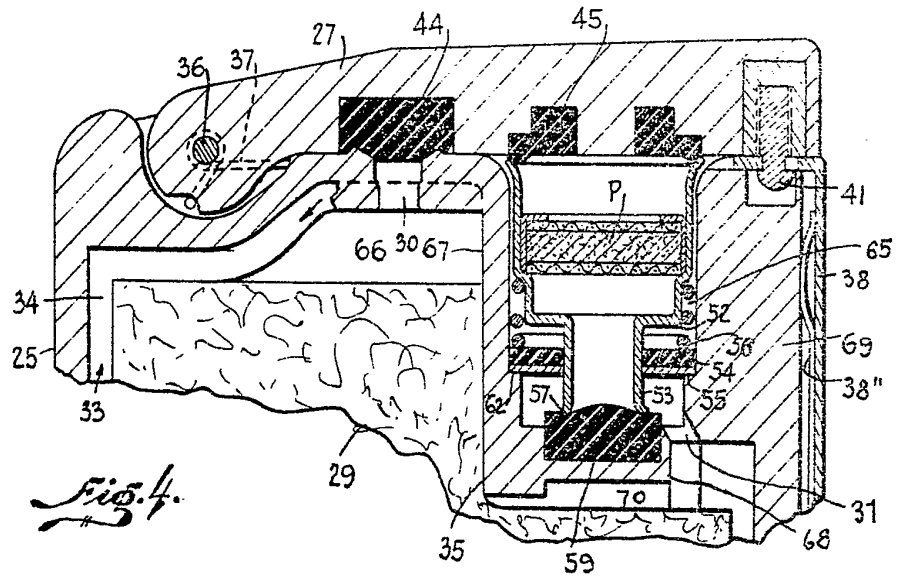


Fig. 4.

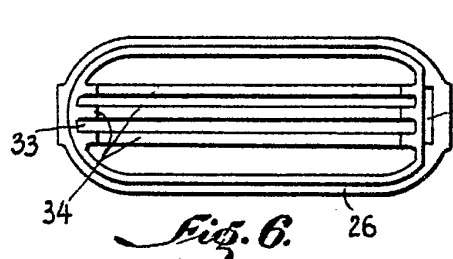


Fig. 6.

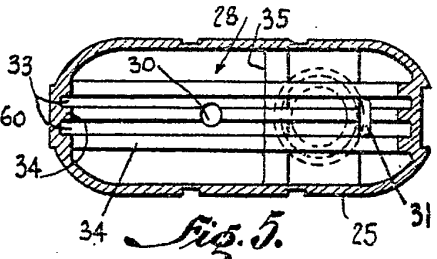


Fig. 5.

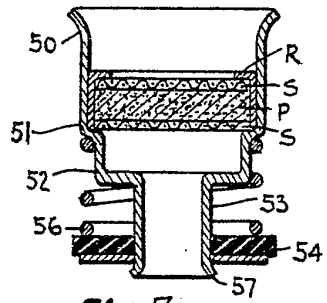
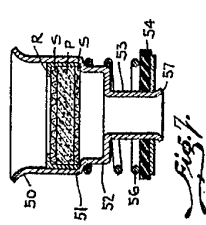
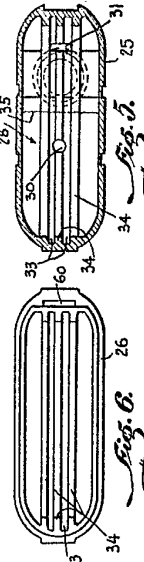
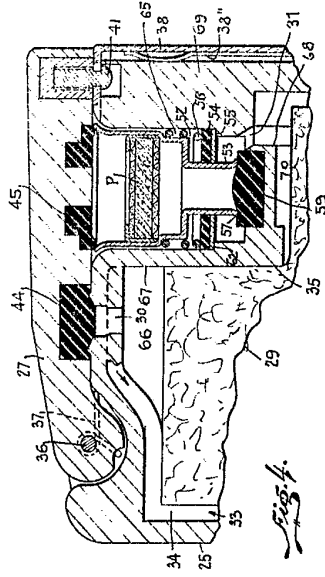
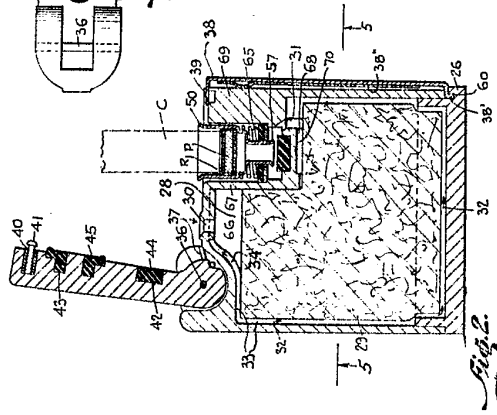
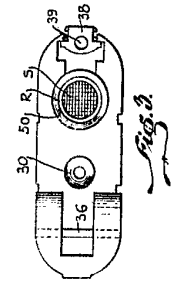
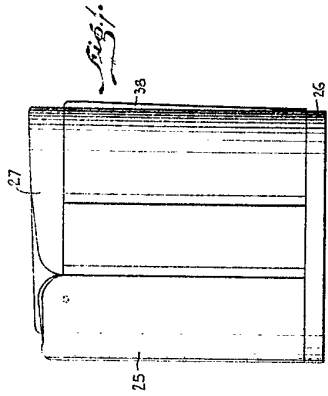


Fig. 7.



[This drawing is a reproduction of the Original on a reduced scale.]