PATENT SPECIFICATION

Convention Date (United States): Dec. 26, 1933.

434,913

Application Date (in United Kingdom): Dec. 22, 1934. No. 36850/34.

Complete Specification Accepted: Sept. 11, 1935.

COMPLETE SPECIFICATION

Improvements in or relating to Catalytic Lighters

I, EMANUEL HAMMERLING, of 521, Fifth Avenue, Borough of Manhattan, City, County and State of New York, United States of America, and a citizen of the 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 of the type in which a casing is divided by a partition into two parts the lower one of which is adapted to contain vaporisable fuel and the upper one of which is adapted to contain the catalyst, for example platinum, by means of which the vaporisable fuel is ignited, communication between the two parts being effected by means of a wick, and the closure of the upper part of the casing being effected by means of a lid or cover having two walls the inner one of which effects the interruption of the flow of vaporisable fuel to the catalyst when the lid or cover is in the closed position on the casing.

In this type of lighter the upper portion of the casing being open to the atmosphere, vapour from the fuel entrained by the wick reacts upon the catalyst to render it incandescent and thus ignite the vapour, producing a flame that persists while the casing is open.

The catalytic lighter according to one aspect of this invention is of the above type and is provided with a resilient gasket or member in the upper part of the casing, which gasket or member when compressed through the medium of the lid or cover, prevents the leakage of the fuel into this upper part of the casing.

According to a further aspect of this invention there is provided a catalytic lighter of the type hereinbefore referred to, wherein there is provided in the upper part of the casing, a compressible member bearing against the wick and adapted upon compression by a part associated with the lid laterally to expand to interrupt the flow of vaporisable liquid to the part of the wick situated above it.

The cover may be provided with a vent hole for the escape of any vapour that may be trapped when closing the lighter.

Also means may be provided whereby fuel may be forced from the supply upwardly through the absorbent sleeve, and whereby air too may be projected toward the combustion zone.

Other features of my invention will hereinafter appear.

Various forms of lighters constructed in accordance with this invention are shown by way of example in the accompanying drawings in which:—

Fig. 1, is a sectional elevation of one form of my improved lighter, with the cover applied thereto.

Fig. 2, is a section on the line 2—2 of Fig. 1.

Fig. 3, is an elevation, partly in section, of a modification of lighter with the cover removed.

Fig. 4, is an elevation, partly in section, of the cover, and

Fig. 5, is a sectional elevation of a further modified form of the lighter, wherein the fuel is contained in the casing without the use of absorbent material.

In Figs. 1 to 4 a casing 1, here shown as tubular in form is lined interiorly of its wall with a sleeve 2 composed of absorbent material which may extend throughout the length of the casing. Said casing is divided into lower and upper portions by means of a partition 3, which rests upon protuberances 4 indented in the wall of the casing, said partition being here represented in the form of a disk whose peripheral edge, when the lighter is in service, bears lightly against the sleeve 2, and of course being seated on those portions of said sleeve which cover protuberances 4. Above partition 3 the sleeve 2 is held in place against the casing wall by a cylindrical web of wire mesh X that fits closely against said sleeve.

The partition 3 is shown as having a central, upward projection 5, which serves as engaging means for a coil 6 forming the base of a wire frame or standard 7, that has a laterally projecting arm 8 from which some fine platinum strands depend in the form of loops 9, said strands carrying a blob or pill 10 composed of platinum black or like catalytic material.

[Price 1/-]

Price 4s 6d

Placed upon the upper surface of partition 3 is a gasket 11 that has a cushion-like consistency, being composed of rubber or the like, whose peripheral edge lies against the sleeve 2.

The casing, below partition 3, contains absorbent material 12, which is to be saturated with vaporizable fuel, such for example as methanol, and said casing is provided with an opening 13 in its base 14, through which opening fuel may be introduced. A screw cap 15 is adapted to close the lower end of the casing, and said cap may contain a gasket 16 so that a leak-tight joint may be effected.

A cover 17, to close the lighter, is shown as applied in Fig. 1 and has been removed from the casing in Fig. 2. Said cover 17 has fitted and secured therein a thimble-like structure 18, whose top is attached to the top of said cover.

The wall of cover 17 and the wall of casing 1 are shown as provided with intermating elements, such as the inward protuberances 19 on cover 17 and the split threads 20 of the casing, whereby a partial turn of the cover will serve to lock it on the casing when fitted thereover. When so fitted and locked, the thimble 18, which has a peripheral flange 21 at its lower end, will be clamped thereby upon and embedded in the upper surface of gasket 11, creating a leak-tight joint between the lower and upper portions of the casing by expanding the gasket peripherally against the sleeve 2, and securely localizing said gasket in its set position.

Thus, with the cover applied in the manner described, the thimble that encloses the catalyst positively prevents the admission to the thimble interior of any of the fuel vapor, and thereby protects the catalyst during the closed period of the lighter.

A vent hole 22 is formed through the thimble and cap for the escape of any entrapped vapor when the cap is applied to the casing.

If desired a gasket 23 may be fitted in the top of cover 17 to coact with the upper peripheral edge of casing 1 when the cover is fitted thereon to render the casing leak-tight.

The prime advantage of this lighter resides in the inherent characteristic feature wherein the mere act of removing the cover, thus admitting fuel vapor and air to the catalyst, causes it to function and to ignite the vapor, thus providing a flame that rises above the casing wall, and can be used, among other purposes, for lighting pipes, cigars and cigarettes. It will function in the wind as well as in still air, and if blown out, will instantly flame again. In fact, while the casing contains fuel, the only way to put out the flame is to close the casing.

In Fig. 3 it will be noted that the base cap, here indicated at 23, has a barrel of greater length than the barrel of cap 15, it extending up over the greater portion of the length of casing 1 below the partition 3, and having threads 24 for engaging with mating threads on said casing. Also said cap 23 has a vent 25 in its wall near the casing base. Hence, upon unscrewing cap 23 it can be pulled outwardly, in telescopic fashion, vent 25 breaking the partial vacuum to permit this withdrawal, and then, by sliding the cap back again pressure will be exerted upon the fuel in the casing to increase the flow thereof through the absorbent sleeve, also forcing some entrapped air into the combustion zone, which will give a Bunsen burner effect to the flame.

In the example of my invention indicated in Fig. 5 some different features are employed as will now be explained.

In this example the same absorbent sleeve 2 is employed, but the casing, here shown at 26, instead of containing fuel-charged absorbent material, is a receptacle for a liquid fuel container 27, said container having a closed top 28, from which a projection 29 extends for the same purpose as projection 5 in the other figures.

This container 27, whose lower end connects with the base 30 of casing 26, holds the liquid fuel in bulk, the cap 31 covering the filling orifice 32 when applied, and said cap having an extended barrel, with threads 33 and vent 34, for the same purpose as in the corresponding device of Fig. 3.

The container 27 is provided in its wall, near the base, with apertures 35, for saturating the sleeve 2 with the liquid fuel. In this example the top 28 of container 27 serves the same purpose as partition 3 in the other figures, and in all other respects the features and advantages of the elements disclosed in the different figures are alike.

Variations within the spirit and scope of my invention are equally comprehended by the foregoing dislosure.

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

1. A catalytic lighter of the type hereinbefore referred to, wherein a resilient gasket or member is provided in the upper part of the casing, which gasket or member, when compressed through the medium of the lid or cover, prevents the leakage of the fuel into this upper part of the casing.

2. A catalytic lighter of the type hereinbefore referred to, wherein there is provided in the upper part of the casing, a compressible member bearing against the wick and adapted upon compression by a part associated with the lid laterally to expand to interrupt the flow of vaporisable liquid to the part of the wick situated above it.

3. A catalytic lighter according to claim 1 wherein the gasket is adapted to expand laterally and press against the wick when compressed axially, said wick bearing at all points at which it is compressed by the gasket against a rigid wall of the casing.

4. A catalytic lighter according to Claim 3 wherein the inner wall of the lid or cover is provided with a flange adapted in the fully closed position of the lid or cover to bear against the gasket to compress it as and for the purpose described.

5. A catalytic lighter according to Claim 4 wherein the lid or cover and the outer wall of the casing are provided with intermating screw elements adapted to draw the lid and casing together for compressing said gasket as the lid is screwed on to the latter and also adapted to lock the lid or cover upon the casing.

6. A catalytic lighter according to any of the preceding claims wherein a vent is provided at the top of the lid or cover as and for the purpose described.

7. A catalytic lighter according to any of the preceding claims, wherein the wick is retained in position in the upper part of the casing by means of a wall of non-inflammable mesh material.

8. A catalytic lighter according to any of the preceding claims wherein a closure member is provided for the bottom part of the casing, the walls of said closure member extending over a substantial length of said casing and being provided with a vent near to the bottom thereof.

9. A catalytic lighter according to any of the preceding claims wherein the lower part of the casing is provided with an inner wall completely enclosing said lower part, said inner wall being provided with outlets allowing the vaporisable liquid to communicate with the wick.

10. A catalytic lighter according to any of the preceding claims wherein the catalyst is mounted upon a frame in the upper part of said casing, this frame being supported upon a projection on the partition separating the two parts of the casing.

11. A catalytic lighter as hereinbefore described with reference to the accompanying drawings.

Dated this 22nd day of December, 1934.

FORRESTER, KETLEY & Co.,
Chartered Patent Agents,
Jessel Chambers, 88/90, Chancery Lane,
London, W.C.2, and
Central House, 75, New Street,
Birmingham,
Agents for the Applicants.

Leamington Spa: Printed for His Majesty's Stationery Office, by the Courier Press.—1935.

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

Fig. 1.

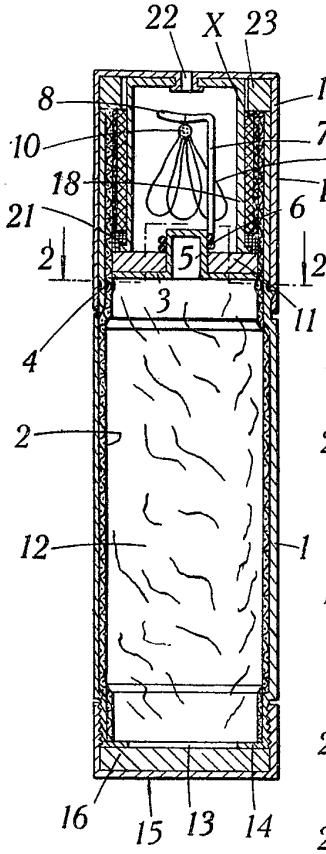


Fig. 3.

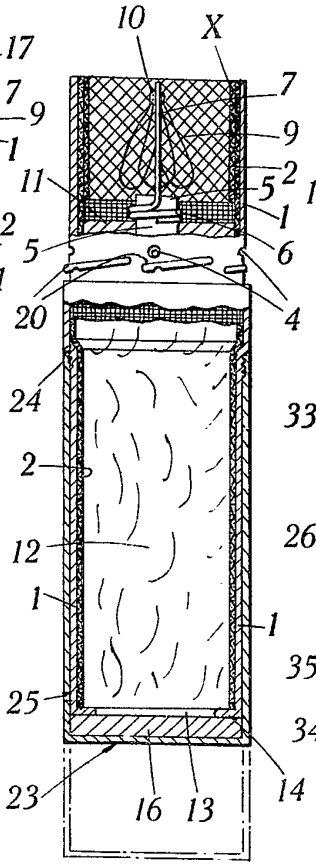


Fig. 5.

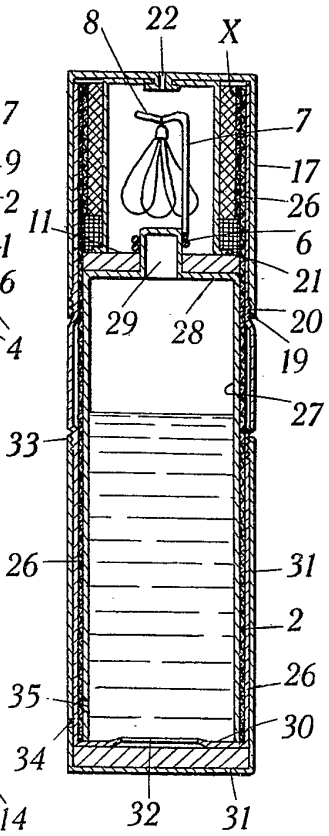


Fig. 2.

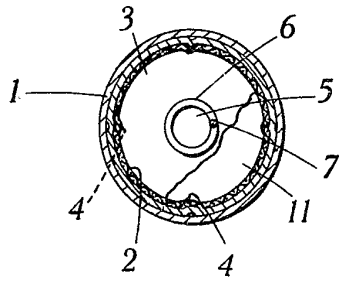
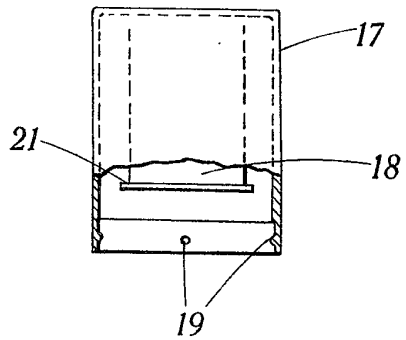


Fig. 4.



Malby & Sons, Photo-Lith.