Feb. 13, 1934. D. A. RICHARDS 1,946,719

FLAMING LIGHTER

Filed Dec. 26, 1933

Fig. 2

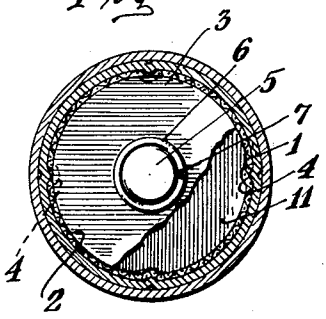


Fig. 4

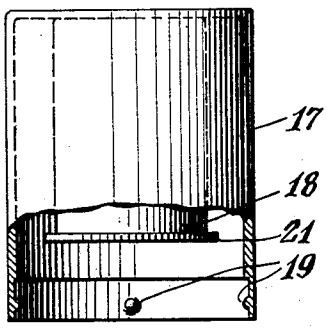


Fig. 1

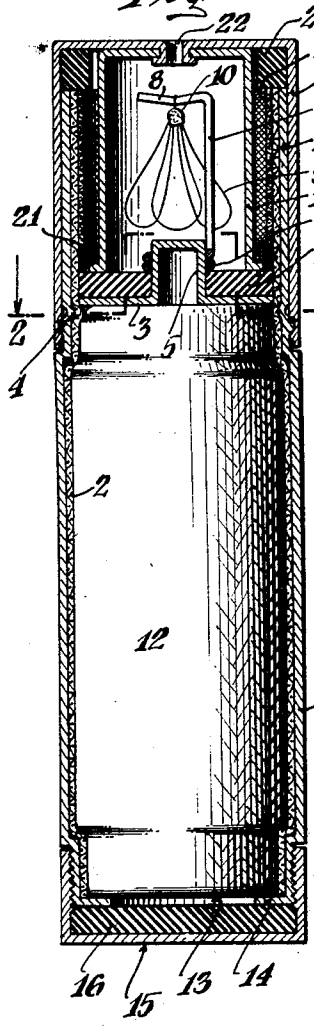


Fig. 3

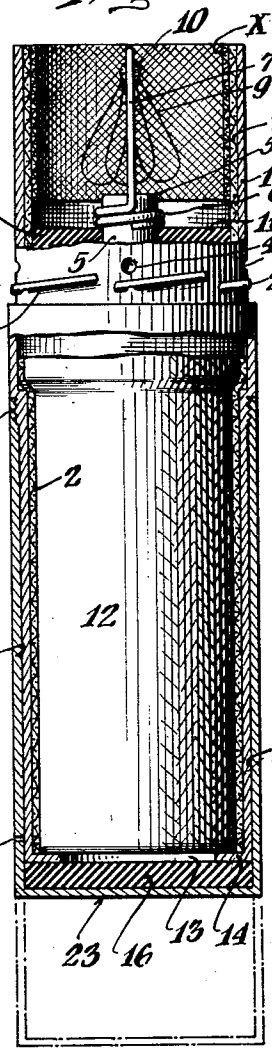
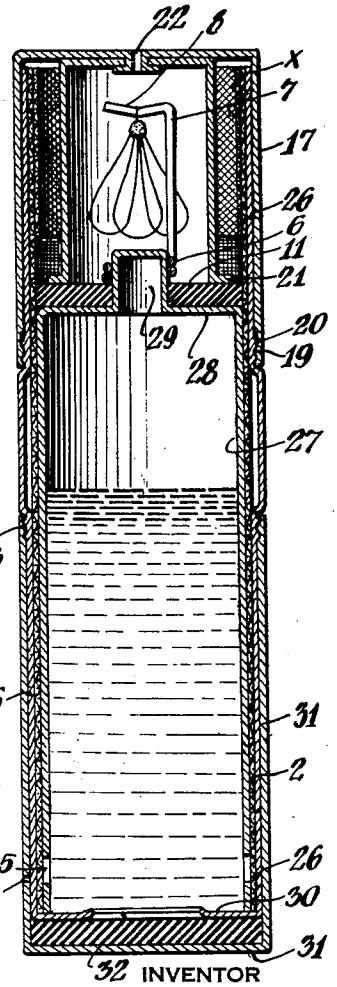


Fig. 5



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FLAMING LIGHTER

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8 Claims. (Cl. 67—7)

This invention relates to flaming lighters employing a catalyst, and my improvements are directed to an apparatus adapted to contain a supply of vaporizable fuel and which is provided with means for supporting the catalyst in a fixed position therein, said catalyst being protected against the attack of vapor from the fuel when the apparatus is closed; also the apparatus containing capillary means for conveying fuel to the vicinity of the catalyst, for co-action therewith, in the presence of air, when the apparatus is open, and thus the vapor is ignited.

To these ends my invention consists of a casing having a lower portion thereof closed off by a partition and a removable bottom cap, said portion serving to contain vaporizable fuel, either with or without absorbent material, a sleeve of absorbent material extending from said lower portion, past the partition, into the upper portion of the casing, where it is held in place by a cylinder of wire mesh, which surrounds and is spaced from the catalyst, said catalyst being mounted on a support that extends up from the partition.

Thus, the casing upper portion being open to the atmosphere, vapor from the fuel entrained by the absorbent sleeve reacts upon the catalyst to render it incandenscent and thus ignite the vapor, producing a flame that persists while the casing is open.

A cover is provided to fit over the casing and close it, said cover carrying an inner closure sleeve or thimble that encloses the catalyst, to shut off the absorbent sleeve therefrom and thus protect the catalyst from the deleterious effects of the fuel vapor while the lighter is out of service.

Also the partition has upon its upper surface a gasket of yielding material with which the closure sleeve makes embedding contact and creates a peripheral bulging effect upon the gasket, causing said gasket to press upon the absorbent sleeve, thereby retarding the entrainment of fuel while the lighter is closed.

The cover is provided with an air hole for the escape of any vapor that may be trapped when closing the lighter.

Also means are 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 and advantages of my invention will hereinafter appear.

In the drawing:—

Figure 1 is a sectional elevation of my improved flaming lighter, with the cover applied thereto.

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

Fig. 3 is a similar view to Fig. 1, partly broken away, with the cover removed.

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

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

In Figs. 1 to 4 let 1 indicate a casing, here shown as tubular in form and 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.

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 co-act 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 engagement 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 disclosure.

I claim:—

1. A lighter comprising a casing, means for dividing said casing into upper and lower parts, said lower part adapted to contain vaporizable fuel, a catalyst, means for fixedly supporting said catalyst in said upper part, a sleeve of absorbent material, which extends from the lower to the upper part of the casing, surrounding said catalyst in spaced relation therewith, to impart vapor thereto, and a retaining cylinder of sieve-like material fitted against said absorbent sleeve in the upper part of the casing.

2. A lighter comprising a casing, means for dividing said casing into upper and lower parts, said lower part adapted to contain vaporizable fuel, a catalyst, means for fixedly supporting said catalyst in said upper part, a sleeve of absorbent material, which extends from the lower to the upper part of the casing, surrounding said catalyst in spaced relation therewith, to impart vapor thereto, said casing having an apertured base, and a cap for said base having an extended barrel that is provided with a vent to permit withdrawal thereof, said cap, when retracted, serving to force fuel and air toward the combustion zone.

3. A lighter comprising a casing having upper and lower parts, a liquid fuel container in said lower part, a catalyst, means for fixedly supporting said catalyst in said upper part, a sleeve of absorbent material lying between said container and casing, said sleeve extending from the lower to the upper part of the casing and surrounding said catalyst in spaced relation therewith, to impart vapor thereto, said container having an apertured base, a cap for said base, and means of communication between said container and sleeve for the saturation of said sleeve by the contents of said container.

4. A lighter comprising a casing, a partition mounted in said casing and dividing the same into upper and lower parts, said partition having an upward projection, a frame borne by said projection, a catalyst supported by said frame, and a sleeve of absorbent material extending from the lower to the upper part of the casing, surrounding said catalyst in spaced relation therewith, to impart vapor thereto.

5. A lighter comprising a casing, means for dividing said casing into upper and lower parts, said lower part adapted to contain vaporizable fuel, a catalyst, means for supporting said catalyst in said upper part, a sleeve of absorbent material, which extends from the lower to the upper part of the casing, surrounding said catalyst in spaced relation therewith, to impart vapor thereto, a cover for said casing, and means carried by said cover to inclose said catalyst to exclude vapor therefrom when the cover is applied, said catalyst inclosing means having vent means to permit the escape of entrapped vapor.

6. A lighter comprising a casing, a partition to divide said casing into upper and lower parts, absorbent material in said lower part adapted to be charged with vaporizable fuel, a catalyst, means for connecting said catalyst to said partition in said upper part, a sleeve of absorbent material extending from the lower to the upper part of the casing surrounding the catalyst in spaced relation therewith to impart vapor thereto, an expansible gasket upon said partition, a cover for said casing, and thimble-like closure means carried by said cover to inclose said cata-

lyst to exclude vapor therefrom in applying said cover, said closure means co-acting with said gasket to expand it against said absorbent sleeve thereby preventing leakage past said partition.

7. A lighter comprising a casing, means for dividing said casing into upper and lower parts, said lower part adapted to contain vaporizable fuel, a catalyst, means for supporting said catalyst in said upper part, a sleeve of absorbent material extending from the lower to the upper part of the casing, surrounding said catalyst in spaced relation therewith, to impart vapor thereto, said casing having an apertured base, and a cap for said base having an extended barrel that is slidable upon said casing, said cap when retracted from an outward position serving to force fuel and air toward the combustion zone.

8. A lighter comprising a casing having upper and lower parts, a liquid fuel container in said lower part directly below said upper part, a catalyst, means for supporting said catalyst in said upper part, a sleeve of absorbent material surrounding said catalyst in spaced relation therewith, means of communication between said container and sleeve for the saturation of said sleeve, whereby vapor may be imparted to said catalyst, said container having an apertured base, and a cap for said base.

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