July 27, 1948. G. P. SCHMITT 2,445,890

LIGHTER

Filed March 23, 1944

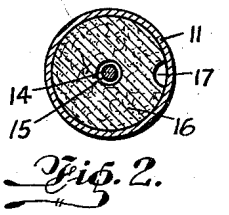


Fig. 2.

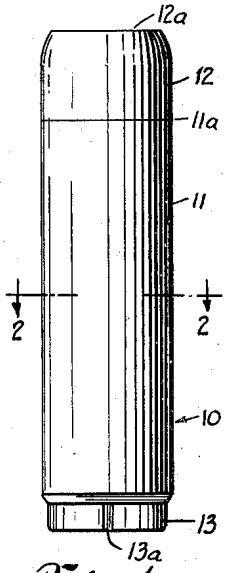


Fig. 1.

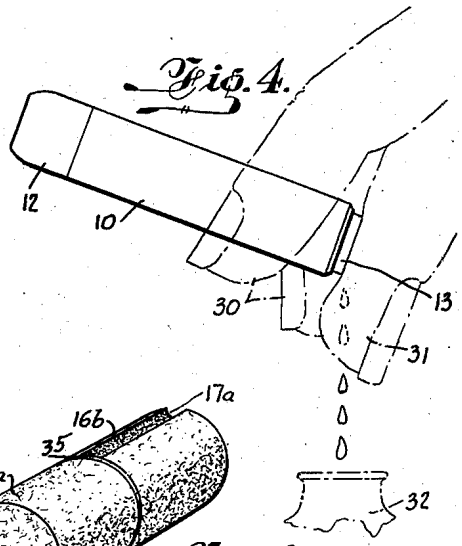


Fig. 4.

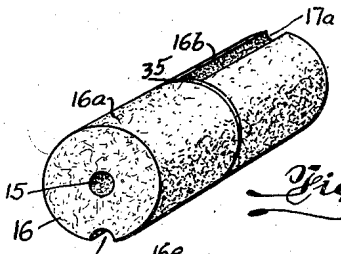


Fig. 3.

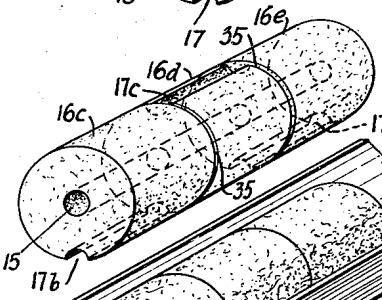


Fig. 3a.

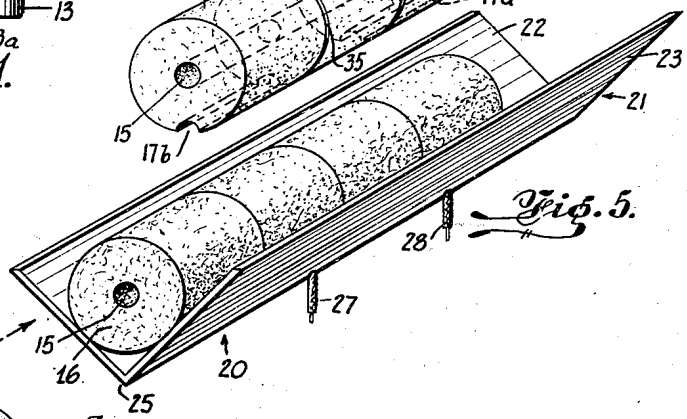


Fig. 5.

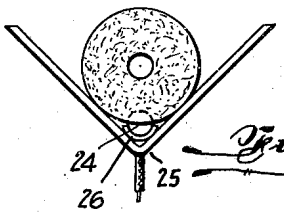


Fig. 6.

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Patented July 27, 1948 2,445,890

# UNITED STATES PATENT OFFICE

2,445,890

## LIGHTER

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Application March 23, 1944, Serial No. 527,687

3 Claims. (Cl. 67—7)

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This invention relates to improvements in lighters or burners and more particularly to improvement in lighters which employ a catalyst for igniting cigarettes and the like, wherein the vapor of alcohol or other vaporizable liquid carried by absorbent or fuel-holding material is employed for effecting such action upon the catalyst, in the presence of atmospheric air, as will render such catalyst incandescent, so that the cigarette or the like applied thereto and drawn upon, may be ignited.

In catalytic lighters it has been found that if the fuel reservoir contains an excessive amount of fluid, then in an attempt to operate the lighter, the catalyst may become flooded and may not function. In catalytic lighters, the fuel reservoir is usually filled either by pouring the liquid fuel from a bottle into the reservoir or by employing a dropper. In either event, it is difficult to exactly determine the quantity necessary to just saturate the absorbent mass in the reservoir, particularly by unskilled users of the lighter, with the result that in the desire of the user to fill the lighter to capacity, which normally, would be the maximum amount absorbed by the absorbent mass, he would not only put in sufficient fluid to saturate the absorbent mass but also to completely fill the reservoir casing. Thus, after the lighter has been carried around by the user or upon the user applying his cigarette to the lighter and drawing upon the same, the catalyst would become flooded or saturated with the liquid fuel and would not function; and in the case where the cigarette has been applied to the lighter, the top of the former would also be saturated with the liquid fuel.

Furthermore, if the absorbent mass becomes supersaturated with the liquid fuel, then the slightest drawing upon the cigarette when applied to the lighter will cause the catalyst to become flooded.

An experienced user of a catalytic lighter of the type wherein the catalyst unit is removable from the fuel reservoir for filling purposes, would, after filling the fuel reservoir, drain the excess fluid fuel through the open end of the reservoir by shaking or jerking the latter; but, would by the force of such movement, also shake out some of the fuel liquid which had been absorbed by the absorbent mass, and thus require the lighter to be again filled with fuel in a shorter time, than if the absorbent mass was left saturated with the liquid fuel.

Thus, heretofore, difficulty has been experienced in drawing off excess liquid fuel which

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when allowed to remain in the lighter, floods the catalyst causing the same to become inoperative until it is dried out.

It is, therefore, an object of the present invention to provide a catalytic lighter from which the excess fluid fuel in the reservoir of the lighter may be readily drawn off, without diminishing the amount of fluid fuel with which the absorbent mass in the reservoir has been saturated.

It is another object of the present invention to provide a catalytic lighter in which the excess fluid fuel therein may be drained therefrom through the means employed for admitting atmospheric air into the lighter for admixture with the fuel.

Another object of the present invention is to provide the fuel storage reservoir which is usually compressed cotton, with longitudinal grooves, canals or recesses in the sections thereof, in which the excess fluid will collect and from which it may be drained, preferably through an end of the lighter.

A further object of the present invention resides in offsetting or staggering the relative positions of the grooves in the afore-mentioned sections, and spacing the sections whereby circumferential channels are provided for the passage of the excess fuel and for the further purpose of providing channels which are filled with vapor to mix with the air flowing through the channels.

It is a further object of the present invention to provide method and means by which the aforementioned grooves, canals or recesses may be formed in a practical, economical and simple manner.

Yet another object of the present invention resides in the provision of a device for forming the aforementioned canals or recesses in the absorbent mass.

A still further object of the present invention resides in providing an electrically heated groove-burning device which by virtue of its construction will cut the grooves always in the same relative position and depth in each section of the fuel absorbent mass.

And another object of the present invention is to construct the groove-forming device in such a manner that only a minimum amount of air will be admitted during the operation, thus preventing the danger of the absorbent cotton mass from scorching or burning more than that required to form the canal or recess.

Further objects and advantages of the invention will appear from the following disclosure

thereof together with the attached drawing which illustrates certain forms of embodiment thereof, and in which:

Fig. 1 is a side elevational view of a typical lighter embodying the invention;

Fig. 2 is a cross-sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a fuel storage absorbent reservoir embodying the invention and employable in the lighter illustrated in Figs. 1 and 2;

Fig. 3*a* is a perspective view of a fuel storage absorbent reservoir embodying the invention in another form and employable in the lighter illustrated in Figs. 1 and 2.

Fig. 4 is a view illustrating how the excess fluid may be drained off;

Fig. 5 is a perspective view of a device which may be employed to cut, burn or scorch the recess or canal in the absorbent mass; and

Fig. 6 is an end view of Fig. 5 looking in the direction of the arrow 6.

Referring now more particularly to the drawing there is shown for the purpose of illustration a practical example in which the invention may be realized; a catalytic lighter 10 having an outer shell or casing 11 upon which is mounted a removable head 12 containing the catalyst unit (not seen) to be acted upon by the vaporizable fuel coming from the fuel reservoir comprising the absorbent mass 16 contained within casing 11. Within lighter 10 there is mounted the mechanism for operating the valve (not seen) controlling the passage of the fuel and air mixture from the fuel reservoir to the catalyst for incandescing the latter. This mechanism includes the plunger knob 13 and rod 14 operated thereby and passing through the opening 15 in the absorbent mass 16. The foregoing parts, (other than the particular construction of the absorbent mass) are well-known in this type of lighter, reference being made to my Patent No. 2,243,924, dated June 3, 1941, for a further understanding of the operation of such a device.

The head 12 is open at its top 12*a* for receiving therein the tip of a cigarette, the catalyst (not seen) being fixed in this head. The plunger 13 is adapted to be pushed inwardly of the housing 11 to open the valve for admitting the fuel from the reservoir together with air entering through the grooves 13*a*, to the catalyst. The grooves 13*a* form air admission passages to the fuel reservoir. The lighter is filled with the liquid fuel by removing head 12 which joins casing 11 at 11*a*.

The absorbent mass 15 in the lighter may comprise one or more cylindrical units or sections 16*a*, 16*b* (Fig. 3); 16*c*, 16*d*, 16*e* (Fig. 3*a*).

The longitudinal grooves, canals or recesses 17, 17*a*, 17*b*, 17*c*, 17*d*, for collecting and draining the excess liquid fuel are provided in the surfaces of the respective units.

As indicated in Figs. 3 and 3*a*, the units or sections are spaced from each other as by spacers which may be of the same material as the units and which are smaller in diameter than the units, thereby providing circumferential grooves or channels 35 communicating with the longitudinal channels or grooves in the units.

In Fig. 3 the units 16*a* and 16*b* are so disposed that the groove 17 is offset with relation to the groove 17*a*. In Fig. 3*a*, the units 16*c*, 16*d*, 16*e* are so relatively disposed that the grooves 17*b* and 17*d* are in substantial alinement while groove 17*c* is offset with relation thereto.

Let it be assumed that the lighter is to be filled with the vaporizable liquid fuel. The head 12 of the lighter is removed and the liquid fuel poured or otherwise fed into the fuel reservoir within casing 11 from the top 11*a* thereof. A certain amount of the liquid fuel will be absorbed by the absorbent mass 16 (which in Fig. 3 comprises units 16*a*, 16*b* and in Fig. 3*a* comprises units 16*c*, 16*d*, 16*e*). The liquid which is in excess of that required to saturate, the mass 16, will collect in the grooves 17, 17*a*, 35 (Fig. 3); or 17*b*, 17*c*, 17*d* and 35 (Fig. 3*a*), as the case may be. Now, by depressing the plunger 13, say, with the thumb 31 of the hand (gripping the lighter between fingers 30) this excess fuel may be drained through the channels 13*a* in the plunger, since channels 13*a* communicate with the fuel reservoir. If desired this excess fuel may be drained into the fuel containing bottle 32.

By staggering the longitudinal grooves and providing the circumferential grooves, the fluid fuel flowing in the grooves is made to travel a circuitous path and will be absorbed by the absorbent mass, until the latter becomes saturated and the excess will then flow out of the channels 13*a* in plunger 13.

For exemplification purposes, there is illustrated in Figs. 5 and 6, a simple device for forming the groove or canal 17. This device comprises a substantially V-shaped trough 21 of any convenient length formed by two angularly disposed walls 22, 23 which may have their meeting edges joined together as indicated at 25. Disposed intermediate the ends of trough 21 and at the juncture 25, there is provided an electric heater 24. The heating element 24 may be heat insulated as indicated at 26 to prevent conductance of its heat to walls 22, 23. Electric wires 27, 28 provide means to conduct the electric current to heating element 24 from an electric source of power (not shown).

The grooves or canals 17, 17*a*, 17*b*, 17*c*, 17*d*, are formed by placing a section of the absorbent mass 16 in trough 21 and moving the same along the latter across the heating element 24. It can be readily seen that one groove after another may be formed in the absorbent mass sections by continuously feeding or sliding the latter along the trough 21.

It is understood that each groove 17, 17*a*, etc., may be made in other ways than that shown herein. The groove may be formed by compressing the material at the surface or by employing a means pressing up against the surface of the material and causing a longitudinal dent to be formed therein.

Although the drawing, and the above specification disclose the best modes in which I have contemplated embodying my invention, I desire in no way to be limited to the details of such disclosure, for in the further practical application of my invention 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.

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:

1. A fuel reservoir for a lighter comprising a body of substantially cylindrical shape, said body being divided into longitudinal sections each made of a mass adapted to hold a liquid fuel and formed with a channel which is offset from the cylinder axis while extending substantially par-

allel thereto, the channels of adjacent sections being angularly displaced with respect to each other and being interconnected by a generally transverse channel provided on said body whereby fuel introduced at one end of the cylinder may be caused to permeate said mass and the excess fuel removed at the other end of the cylinder.

2. A fuel reservoir according to claim 1 wherein both said axial and transverse channels are grooves extending along the surface of said body.

3. A fuel reservoir for a lighter comprising a plurality of substantially cylindrical bodies each formed with a longitudinal surface groove and made of a mass adapted to hold a liquid fuel, said bodies being mounted in coaxial alignment with one another and in such a manner that the grooves provided on adjacent bodies are relatively displaced by susbtantially 180 degrees, and spacing means between adjacent bodies, said spacing means forming a peripheral groove between respective bodies which interconnects the ends of respective longitudinal grooves provided on said respective bodies, whereby fuel introduced at one end of the reservoir may be caused to permeate the mass of each of said bodies and the excess fuel removed at the other end of the reservoir.



GEORGE PHILIP SCHMITT.


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