

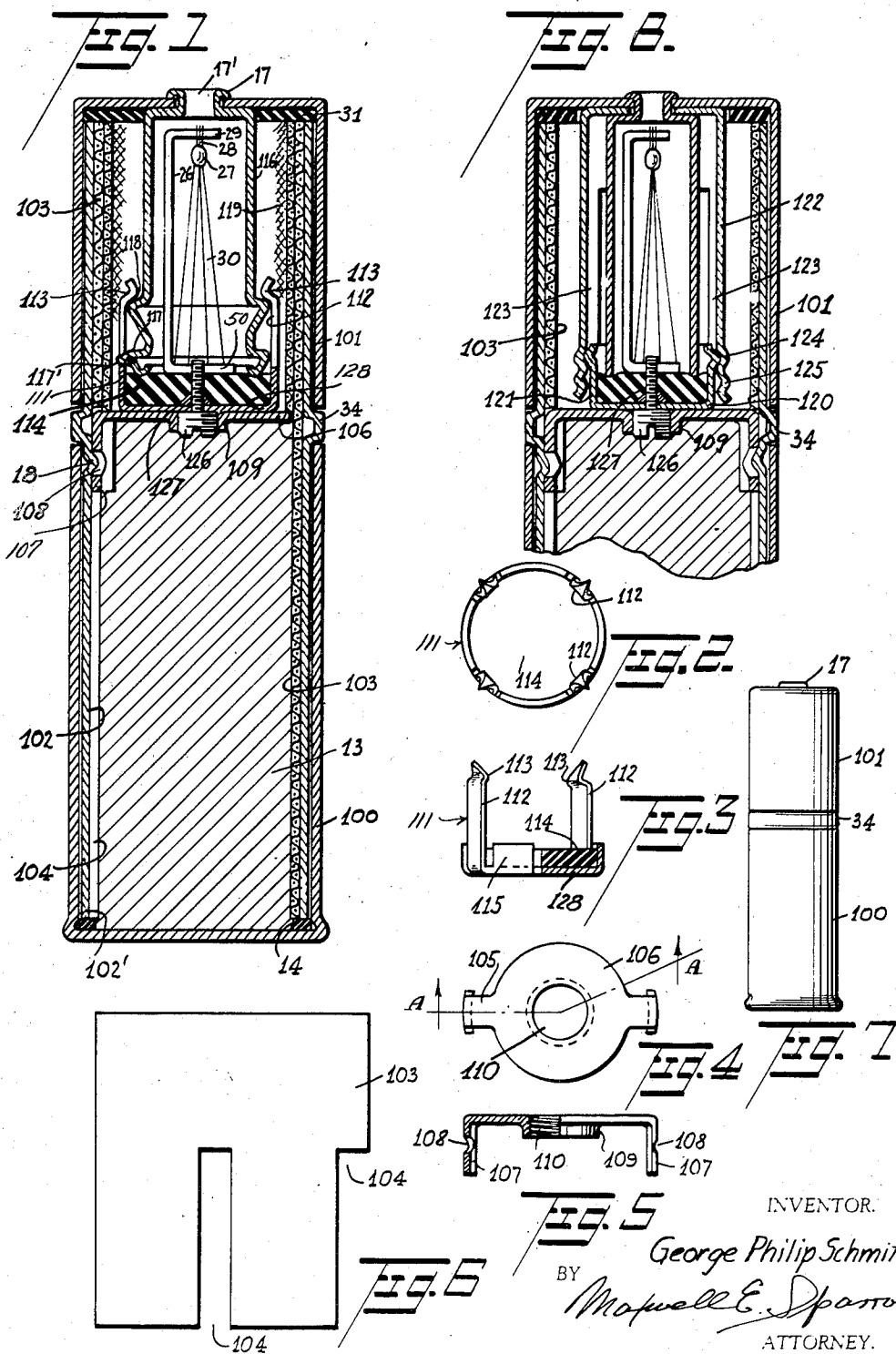
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LIGHTER

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LIGHTER

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This invention relates to improvements in automatic or flaming lighters employing a catalyst as the igniting medium and a wick to carry vaporizable fuel to coact with the catalyst to produce the flame.

One of the disadvantages in present lighters of this type is the difficulty to replace the catalyst unit. This requires usually the return of the whole lighter to the factory for such repairs, as the said unit is too frail to handle without the use of special equipment.

It is known that water results from the chemical action of vaporizable fuel, such as for example, methanol vapor and air in the presence of a platinum catalyst.

In the present types of catalytic lighters, in the event that the catalyst is not completely separated from the fuel and air, there is a tendency for the wick or other fuel absorbent material to become saturated with water due to the catalytic action. Although in some such devices, means have been provided to separate the catalyst from the fuel, such means are not always properly employed by the user, with the result that the water brought about by the above-stated chemical action hinders ignition or flaming of the lighter.

In the event that water has formed in the combustion zone, that is, the zone surrounding the catalyst, it has been found that such water can readily be replaced by the fuel, if the lighter is filled from the top. In order that the lighter can conveniently be filled from the top, means must be provided to remove the catalyst unit before filling, otherwise the fuel while filling, will ignite and create a hazard.

It is an object of this invention to provide a lighter fillable from the top instead of the bottom as now common with lighters employing a catalyst.

It is another object of this invention to produce an automatic lighter employing a catalyst, which catalyst can easily be removed and replaced, as for instance, when impaired due to abuse or mishandling.

A further object of this invention resides in the provision of means associated with said catalyst for shielding or protecting the same against damage while refilling.

A further object of this invention resides in the provision of means in an automatic lighter utilizing a catalyst, whereby the catalyst unit can be removed together with the cover for filling or replacement purposes thereby protecting the user against unforeseen lighting of the vapors.

A further object of this invention resides in the

provision of means whereby the cover and the catalyst unit may be removed separately, if desired, as for example, for the replacement of the catalyst unit, or for refilling.

A further object of this invention resides in the provision of a rigid and preferably removable platform upon which the catalyst unit is mounted.

These advantageous features and further objects are accomplished by the novel and practical construction, combination and arrangement of parts hereinafter disclosed and illustrated in the accompanying drawing, constituting a part of the disclosure, and in which:

Fig. 1 is a vertical sectional view of a lighter embodying the invention.

Fig. 2 is a top plan view of a locking element employable in the invention, but reduced in size.

Fig. 3 is a side elevational view, partly in section, of the locking element shown in Fig. 2, but reduced in size.

Fig. 4 is a top plan view of a platform.

Fig. 5 is a side elevational view, partly in section, of the platform.

Fig. 6 is a development of a wick employed in the device but reduced in size.

Fig. 7 is a side elevational view of a complete lighter embodying the invention.

Fig. 8 is a sectional view of the upper part of a lighter embodying the invention in a modified form.

An example of a lighter embodying the invention has a bottom housing or casing 100 disclosed in tubular form within which and extending thereabove is located a tubular shell 102. The closure or cover 101 slidably fits over the top portion of shell 102. A shell 102 is interiorly lined with an absorbent sleeve or wick 103 which extends to or near the top of the shell and has slots 104 which clear the bridge portion 105 of platform or partition 106.

Wick 103 is preferably made of sheet asbestos, although cloth or blotting paper may be employed, but it will be found that the wick will not char if made of asbestos material or composition. The wick is employed to absorb and carry the vaporizable fuel, such as, for example, methanol to the catalyst chamber. As a protection for wick 103 a tubular metal screen 119 may be used. The catalyst consists of fine platinum strands 30 strung between bottom 50 and top horizontal portion 29 of support 26, and a pill or blob 27 composed of platinum black or like catalytic material carried by said strands near the top 28. The platform or partition 106 has two downward disposed lugs 107 provided

with holes 108 which register with projections 18 provided on shell 102. This arrangement secures the platform or partition 106 within shell 102, and in such a manner, that it will not remove unpremeditatedly or accidentally but only when desired, as for instance, when it is the intention to dismantle the parts for repair. The central portion of platform 106 is provided with a downwardly-extending annular flange 109 having a threaded portion 110 for threaded engagement with the head portion 126 of a screw member having an upwardly-extending threaded shank 127.

Fig. 4 shows the platform 106 with the two bent bridge ends 105, but in Fig. 1 for sake of clarification only the left bridge end 105 is shown in sectional view taken along line A—A of Fig. 4, so that the other bridge end does not appear.

Shank 127 is secured to and projects through the base 128 of a locking member or clamp 111 which normally rests on platform 106. Member 111 is provided with a plurality of spaced resilient prongs, tongues or fingers 112 (four being shown in Fig. 9 of the drawings), projecting upwardly from base 128, the prongs being provided with shoulders or ridges 113 formed by bending the material. Intermediate the prongs 112 the base may be upturned as indicated at 115. Located on the base 128 is a resilient element such as a washer 114, having a central perforation through which the shank 127 extends. Support 26 carrying the catalyst is secured to shank 127 above washer 114. The thimble or cap or tubular element 116 is secured to cover 101 by a rivet or eyelet 17, the fastening being preferably done so as to provide at the same time a vent 17. Element 116 is provided with an annular ridge 118, which lockingly engages prongs 112 at or in the vicinity of their ridges 113 when the cover or closure 101 is positioned on the casing 100. As a precaution against possible failure of the cooperating, interlocking ridges 113, 118, to function in keeping the cover locked, while the lighter is not in use, an auxiliary ridge 117 is provided on cap 116 which is shown as being located below ridge 118. The cap 116 encloses the catalyst unit when the device is not in use, the bottom portion resting against the washer 114. The inside top portion of cover 101 is provided with a resilient gasket 31 to prevent the escape of vapors from that end. Wick 103 may be provided with a plurality of slots 104, the number of which is determined by the number of lugs 107 in platform 106, to facilitate assembly as when the wick is inserted from the top of the device. Within the lower portion of wick 103 is located the packing or absorbent material 13, which may be wool, cotton, felt, or other suitable material, by which the vaporizable fuel is stored to be carried by wick 103 by capillary action for coaction with the catalyst to produce the incandescence and flame. In the lower part of housing 100 a gasket or washer 14 is located, against which shell 102 is made to rest to prevent any vapor fuel escaping between the inner wall of housing 100 and shell 102. The ring projection 34 of shell 102 is for decorative purposes only.

To fill this type of lighter, cover 101 is rotated to unscrew head 126 from platform 106. To prevent possible rotating of cap 116 with relation to prongs 112, during the unscrewing operation, to assure the clamp 111 carrying the catalyst and the cover 101 being removed as a unit for filling purposes, a head, stop or abutment 117', shown located on ridge 117, is provided. When it is

desired to fill the lighter with the vaporizable fuel, the cover 101 is turned relatively to casing 100 by which act the head portion 126 of the screw member threadedly disengages from the flange portion 109 of platform 106. The catalyst unit together with the cover is thus separated from the body of the lighter. The lighter may now be filled through the top opening which has been exposed by the simultaneous removal of the cover and catalyst unit, by inserting the same in a container holding the fuel or the fuel may be poured into the lighter through the said exposed top opening. By reason of the fact that during the filling operation the catalyst is removed from the body of the lighter, a dangerous hazard is eliminated by preventing accidental ignition, of the fuel. After the lighter has been filled, the cover 101 is replaced on the body or casing 100 and turned relatively thereto in a direction opposite to that required to remove the same, whereby head portion 126 will threadedly engage platform 106.

To use the lighter, cover 101 is pulled away from the casing 100, by which act the cooperating locking ridges on the cap and clamp disengage from each other thereby exposing the catalyst for use. Only the cover and its attached thimble 116 is thus removed admitting fuel vapor and air to the catalyst which causes the latter to function and to ignite the vapor to produce a flame to light cigarettes, pipes and cigars. The flame is extinguished by replacing the cover upon the body of the lighter. If it is desired to remove the catalyst unit for repair or for replacement, cover 101 is turned unscrewing head portion 126 from platform 106 as for refilling with fuel; the clamp or member 111 may be held with the fingers of a hand or with a suitable instrument and a lineal pull relatively exerted on the cover and clamp whereby the ridges on the cap and clamp disengage and the catalyst unit separates from the cover.

Since platform 106 is removably secured to shell 102 by engagement of lugs 107 with projections 18, replacement of the parts in the body or casing 100 therebelow may be readily accomplished. It is understood that the parts are so designed that when the cover is pulled from the body of the lighter, the thimble or cap 116 will separate from member 111 only, and not the platform 106 from the shell 102. Platform 106 is made of rigid material to effectively support the parts carried thereby.

In Fig. 15, the cap 122 is shown as being provided with the resilient prongs 123, and the clamp 120 with a solid side wall or rim 121, disengagement between the cap and clamp being made in the same manner as described above, namely, by pulling the cover away from the casing. Cap 122 has at its lower end the ridges 125 adapted for engagement with ridge 124 on rim 121.

In the forms shown in Figs. 1 and 8 a lineal pull of the cover permits removal of same to ignite the wick while rotary movement of the cover permits removal of the catalytic element and supporting member for filling of the fuel chamber.

In the accompanying drawing I have illustrated the invention embodied in some of its practical commercial forms but as these illustrations are primarily for purposes of disclosure it will be understood that the invention is not limited to these particular forms of structure and that it may be modified in many respects without departure from the true spirit and scope of the

invention as herein defined and claimed. I wish it further understood that the terms which I have employed herein are used in a descriptive rather than in a limiting sense, except however, for such limitations that may be imposed by the state of the prior art.

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

10 1. A lighter comprising a casing, absorbent material which may be charged with vaporizable fuel contained in said casing, a cylindrical shell within the casing and extending thereabove, a platform having a threaded center opening, co-
15 operating means on said shell and said platform holding said platform in position, a member having a base and upwardly-extending spring tongues, said base resting on said platform, a catalyst, means to secure said catalyst to said
20 member, said means having a threaded part engageable with the threads in said opening, a cover for the casing, a lining of absorbent material which extends from the lower to the upper part of said shell surrounding said catalyst in
25 spaced relation therewith, and means carried by said cover to enclose said catalyst, said means and said tongues being provided with interlocking ridges for retaining said cover on said casing.

2. A lighter comprising a casing, absorbent material which may be charged with vaporizable fuel contained in said casing, a cylindrical shell within the casing and extending thereabove, a platform attached to said shell and having a threaded opening in its center, a member seated
35 on said platform, a catalyst unit, means securing said unit to said member, said means including a part in threaded engagement with the threaded opening of said platform, a cover for said casing, absorbent material surrounding said unit in
40 spaced relation therewith, a tubular element within said cover for encircling said unit and interposable between said unit and said material, said element and said member arranged for relative slidable engagement, and interlocking ridges
45 associated with said element and said member for retaining said cover on said casing.

3. A lighter comprising a casing, a platform in the casing and having a threaded central opening, a member seatable on said platform, a catalyst unit, means securing said unit to said
50 member, said means including a part in threaded engagement with the threaded opening of said platform, a cover for said casing, absorbent material surrounding said unit in spaced relation therewith, a tubular element within said cover
55 for encircling said unit and interposable between said unit and said material, and cooperating means carried by said element and said member for detachably securing the former to the latter.

60 4. A lighter comprising a casing, a platform in the casing and having a threaded central opening, a member seatable on said platform, a catalyst unit, means securing said unit to said member, said means including a part in threaded
65 engagement with the threaded opening of said platform, a cover for said casing, absorbent material surrounding said unit in spaced relation therewith, a tubular element within and secured to said cover for encircling said unit and inter-
70 posable between said unit and said material, and cooperating ridges on said element and said member for resiliently interlocking said element and said member.

75 5. A lighter comprising a casing, a platform in the casing and having a threaded central

opening, a member seatable on said platform, a catalyst unit, means securing said unit to said member, said means including a part in threaded engagement with the threaded opening of said platform, a cover for said casing, absorbent material surrounding said unit in spaced relation
5 therewith, a tubular element within and secured to said cover for encircling said unit and interposable between said unit and said material, interlocking ridges on said element and said member, for detachably securing the former to the latter, and an auxiliary ridge on said element.

6. A lighter comprising a casing, a platform in the casing and having a threaded central opening, a member seatable on said platform, a catalyst unit, means securing said unit to said member, said means including a part in threaded
15 engagement with the threaded opening of said platform, a cover for said casing, absorbent material surrounding said unit in spaced relation therewith, a tubular element within and secured to said cover for encircling said unit and inter-
20 posable between said unit and said material, cooperating ridges on said element and said member for resiliently interlocking said element and said member, and means to retain said element against rotation with respect to said member.

7. A lighter comprising a casing, a platform in the casing and having a threaded central
30 opening, a member seatable on said platform, a catalyst unit, means securing said unit to said member, said means including a part in threaded engagement with the threaded opening of said platform, a cover for said casing, absorbent material surrounding said unit in spaced relation
35 therewith, a tubular element within and secured to said cover for encircling said unit and interposable between said unit and said material, and interlocking ridges associated with said element and said member for resiliently retaining said cover on said casing.

8. In a lighter a casing, a support in the casing and having a threaded opening, a catalyst element, carrying means for said catalyst, means
45 for removably securing said carrying means to said support, said means being in threaded engagement with the threaded opening of said support, a cover for said casing, a tubular member secured to said cover and encircling said
50 element, and interengaging ridges associated with said member and said element for resiliently retaining said cover on said casing.

9. In a lighter a casing, a support in the casing and having a threaded opening, a catalyst
55 element, carrying means for said catalyst, means for removably securing said carrying means to said support, said means being in threaded engagement with the threaded opening of said support, a cover for said casing, a tubular member secured to said cover and encircling said element, interengaging ridges associated with said member and said element for resiliently retain-
60 ing said cover on said casing, and means to retain said element against rotation with respect to said member.

10. A lighter comprising a casing, a platform in the casing, and having a threaded opening, a member seatable on said platform, a catalyst secured to said member, means removably en-
70 gaging said member with said platform, said means having a part in threaded engagement with the threads of said opening, a cover for said casing, and means removably engaging said cover with said member.

11. A lighter comprising a casing, a platform in the casing, a member seatable on said platform, a catalyst secured to said member, means removably engaging said member with said platform, a cover for said casing, a cap for said catalyst and cooperating ridges on said cap and said member for resiliently interlocking said cap and said member.
12. A lighter comprising a casing, a platform in the casing and having a threaded opening, a member seatable on said platform, a catalyst secured to said member, means removably engaging said member with said platform, said means having a part in threaded engagement with the threads of said opening, a cover for said casing, a cap for said catalyst, and cooperating ridges on said cap and said member for resiliently interlocking said cap and said member.
13. In a cigarette lighter, a cover, a wick, a casing for the wick, a catalytic element adjacent said wick, said element serving to ignite the vapors of fuel with which the wick is supported, and means to shut off ignition between the wick and catalytic element, said means comprising a connection located in the path of vapors between the wick and catalytic element and releasable by a lineal pull between the cover and the catalytic element.
14. In a cigarette lighter, a casing open at one end and having a fuel chamber at its other end, a wick lining the wall of said casing, a catalytic element, a member supporting said element, a base in the casing, a cover, means releasable by a lineal pull for holding said cover in engagement with said member to shut off communication be-

tween said wick and said catalytic element, and means on said member having threaded engagement with said base, and whereby a lineal pull of said cover permits removal of same to ignite the wick while rotary movement of the cover permits removal of the catalytic element and supporting member for filling of the fuel chamber.

15. In a cigarette lighter, a casing having a fuel chamber, a wick, a support, a catalytic ignition element mounted on said support, a cover, a connection releasable by a lineal pull between said support and said cover, and a threaded connection between said support and said casing.

16. In a cigarette lighter, a casing having a fuel chamber therein, a wick receiving fuel from the chamber, a catalytic element for igniting the wick, a cover for said casing, means releasable by lineal movement of the cover connecting said cover and casing, and means releasable by rotation of the cover connecting said catalytic element and casing.

17. In a lighter, a casing having a fuel chamber therein, a support, a wick in said casing receiving fuel from the chamber, a catalytic element for igniting the wick, a cover for said casing, means releasable by lineal movement of said cover connecting said cover and said support, said means including means to prevent rotation of said support with respect to said cover, and means releasable by rotation of said cover connecting said support and said casing.

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