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Application Date: June 6, 1933. No. 16211/33.

425,288

Complete Specification not Accepted

COMPLETE SPECIFICATION

Improvements in Lighters

We, CARDINAL PRODUCTS, INC., a corporation of the State of New York, U.S.A., of 389, Fifth Avenue, in the Borough of Manhattan, City, County and State of New York, 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 lighters of a character adapted to the purpose of igniting cigarettes and the like, and the improvements are particularly directed to a device of this nature wherein the vapor from alcohol or other vaporizable fluid, in its absorption by platinum black, or similar catalytic substances, creates incandescence in a body or block thereof, whereby, upon applying a cigarette end to said body, and drawing upon the cigarette, the resulting incandescence enables ignition of the cigarette to be effected.

The lighter consists of a casing containing an absorbent which is charged with a vaporizable fluid (pure methanol alcohol giving excellent results), and a block or body of platinum black, spongy platinum, or the like, is disposed at the outer end of the casing, being suitably supported in position to collect the vapor, means also being provided for creating a current of air that will assist the flow of vapor to the catalytic element.

The casing contains a removable support for absorbent material, said support having the form of a sleeve that is adapted to be fitted snugly within the casing, and to be filled with absorbent material as in the form of a cylindrical wick, said support, when fitted within the casing, having a projecting portion that may be slightly reduced in outside diameter.

Also there is provided a hollow holder that is adapted to fit removably upon the projecting portion of the wick support, the outer end of said holder being reduced in its inside diameter, as by an inturred flange.

The catalytic element, which may be in
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the form of a circular block or disk of platinum black, and may be perforated, is supported by an annular socket that is located within said holder, being retained therein by the end flange, said socket being held in position as by a split ring. Also the wall of said socket is provided with orifices to admit air to the peripheral edge of the element.

Since it is essential that there shall be no contact between the wick, which is saturated with vaporizable fluid, and the catalytic element, which latter would be deteriorated by such contact, the length of the holder is sufficient to allow for the provision of an ample space between said element and wick, when the holder is fitted on the wick support; and the wall of the holder is pierced with orifices for the admission of atmospheric air into said space, it being due to the presence of air that vapor collected in said space from the vaporizable fluid will cause the element to assume the desired incandescence.

A removable cap is provided to fit over the casing, covering the holder, to enclose the catalytic element as well as the air admission means when the lighter is not in use.

It is to be appreciated that the act of drawing upon a cigarette which is applied to the catalytic element moves a current of collected vapor and air from the space in the holder, against said element to create the incandescence therein for ignition purposes, but when air is excluded, as by closing the casing, and hence no heating of the element occurs, it is undesirable that vapor in the holder space shall be allowed to collect upon said element, for its deterioration. Therefore, to guard against such collection of vapor upon the element a disk of fine wire mesh may be placed beneath the element, being spaced therefrom by an annulus that lies against the element holding socket, and means are also provided to retain the disk of wire mesh and annulus in their set positions. Means are also provided for the passage of air between

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the periphery of the annulus and the wall of the holder. Vapor will then collect upon the disk of fine wire mesh, whence it will be in readiness to co-act with the
 5 element when the casing is opened for the admission of air. In practice it has been found desirable to make the catalytic element with a flat upper surface, but with its under surface concave, to
 10 thereby provide a larger surface area for co-action with the vapor.

Other features and advantages of this invention will hereinafter appear.

In the drawing:—

15 Figure 1 is a sectional elevation of the improved lighter.

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

20 Fig. 3 is an exploded view of the respective members of which the lighter is composed.

Fig. 4 is a sectional detail of the holder including some additional members, and

25 Fig. 5 is a plan view of the annular spacer employed in the holder of Fig. 4.

In said Figures let 1 indicate a tubular casing, which, as shown, is provided with an annular shoulder 2 that serves as a stop for a tubular cap 3, that is to be
 30 removably fitted upon said casing for closure purposes.

Removably contained within the casing 1 is a tubular sleeve 4 which is adapted to snugly fit within said casing, the
 35 length of said sleeve exceeding the length of the casing in order that it may project outwardly beyond the open end of said casing, for a purpose to be described hereinafter. Said sleeve 4 is to be
 40 filled with absorbent material that is to be saturated with vaporizable fluid. A cylindrical length of felt 5 that fills the sleeve and has good capillarity, answers
 45 the purpose admirably. The upper edge of the sleeve 4 may be inturned slightly, as at 6, to prevent the absorbent material from protruding beyond said sleeve.

The catalytic element employed in the lighter is here shown, in the form of a
 50 disk 7; as supported in a holder 8 that is of tubular form and adapted to fit removably upon the projecting portion of sleeve 4, said projecting portion being represented at 9, in the example, as reduced
 55 in diameter.

The outer end of the holder 8 is provided with an inturned flange 10 that engages the disk 7 about its edge, said disk being seated in an annular socket
 60 member 11 which has a radial flange 12 that abuts against flange 10, a split ring 13 being positioned within the holder against the under surface of flange 12 to retain the socket member in its set
 65 position.

The disk 7, which may be of platinum black or the like, is shown as provided with an aperture 14 therethrough, for fluid flow, and said disk is concave at its under surface to present a larger area
 70 to the rising vapors. The outer surface of the disk is preferably flat, for more complete contact therewith by a cigarette end in the igniting operation.

The length of the holder member 8 is
 75 sufficient to provide a clearance 15 which separates the catalytic element from the top of the fluid saturated absorbent material, to thereby preclude any possibility of the raw fluid from contacting
 80 with said element, and at the same time providing an intermediate space or chamber within the holder in which vapor from the fluid may collect.

Apertures 16 formed in the wall of holder 8 serve for the admission of air
 85 into chamber 15, thereby providing a proper admixture of vapor and air for the creation of incandescence in the catalytic element. Also the wall of the socket member 11, which is spaced from the wall of holder 8, is provided with apertures
 90 17, to admit vapor and air to contact with the periphery of disk 7.

An important reason for ensheathing
 95 the absorbent material in the removable sleeve 4 is that thereby said sleeve, containing the absorbent material, may be removed from the casing to charge the absorbent material with vaporizable fluid,
 100 and then said sleeve can be inserted in the casing without causing the introduction of an excess of fluid into said casing. Thus there is avoided the liability of flooding the casing with fluid, and the consequent
 105 deleterious effect upon the catalytic element.

In the modification of Figs. 4 and 5 the holder 8 is shown as containing a disk of fine wire mesh 18, disposed beneath the
 110 catalytic element, and spaced therefrom by an annulus 19, and retained in position as by a split ring 20 located beneath said disk.

The purpose of the mesh is to collect
 115 any condensation of vapor that may occur, and to protect the catalytic element from receiving such condensation, the annulus 19 serving to hold the mesh out of contact with said element.
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The annulus 19 may be provided with means, such as the peripheral nicks 21, to permit the passage of vapor and air between it and the wall of holder 8.

Variations within the spirit and scope
 125 of this invention are equally comprehended by the foregoing disclosure.

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

1. A lighter comprising a casing adapted to contain material absorbent of vaporizable fluid, a catalytic element exposed for contact with a cigarette or the like, means for supporting said element upon said casing in the path of vapor from said fluid, said supporting means including an enclosed space distancing said element from said absorbent material, and air admission means for said space.
2. The subject matter of claim 1, characterized by the provision of removable closure means to enclose said element and said air admission means.
3. The subject matter of claim 1, characterized by the catalytic element being perforated.
4. The subject matter of claim 1, characterized by the catalytic element presenting a concaved surface to the flow of vapor and air.
5. The subject matter of claim 1, characterized by the provision of a sleeve, removably fitting said casing, to ensheath the absorbent material, said sleeve projecting beyond the casing.
6. The subject matter of claim 5, characterized by the element supporting means being hollow and engaging the projecting portion of the sleeve.
7. The subject matter of claim 6, characterized by the hollow, element supporting means having an inturned end flange, an annular socket for said catalytic element, said socket having a radial flange to abut against said inturned flange, and means to retain said socket in its set position.
8. The subject matter of claim 5, characterized by the provision of vapor and air admission means, through the wall of the socket, for co-action with the catalytic element.
9. The subject matter of claim 7, characterized by the provision of a disk of fine wire mesh disposed in spaced relation beneath the catalytic element, and supporting means for said disk.
10. The subject matter of claim 9, characterized by the provision of an annulus between the element and disk of fine wire mesh, and supporting means for said annulus and disk.
11. The subject matter of claim 10, characterized by the provision of means for the passage of vapor and air between the periphery of the annulus and the wall of the holder.

Dated this 6th day of June, 1933.
 REGINALD W. BARKER & CO.,
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