The present invention relates to lighting of cigarettes. More particularly, it relates to a novel device for lighting cigarettes and the combination of the device and the cigarette.

Hereinafter, various proposals have been made to provide in association with cigarettes, lighting means more convenient to use than the conventional match or mechanical "cigarette lighter," and the present invention is directed to providing an alternative to these conventional lighting means.

More particularly, the invention is concerned with a lighting means employing the principle disclosed in Peterson Patent 2,029,186, issued January 28, 1936. Thus, for lighting the cigarette one element of a two element lighting device is disposed in the end of the cigarette to be lit and the other element is secured to the pack or otherwise disposed for contacting the first mentioned element when the cigarette is to be lit. The first element can consist essentially of an oxidizing agent and the second element can consist essentially of a reducing agent, these agents being such that they react on contact to provide heat for lighting the cigarette. In said Peterson patent the oxidizing agent is potassium permanganate and the reducing agent is glycerol and the oxidizing agent is mounted on the cigarette. Such materials and such an arrangement can be used in the present invention.

The principal objects of the invention include the providing of a cigarette lighting means of the oxidizing agent-reducing agent type which is more convenient to use; can be used for cigarettes packaged in either a "crush-proof" box (cardboard box) of a "soft pack" (paper container), or can be used or provided with cigarettes contained in a cardboard box different from the container in which the cigarettes are contained for sale in commerce; can be provided in association with individual cigarettes as distinct from in association with the cigarettes and the container in which the cigarettes are kept; and which can be constructed and arranged so that the chemicals are less susceptible to deterioration during storage and are clean to handle in that they do not migrate so as to soil the person of the user or the packaging wall from the cigarette paper.

The invention is described in reference to the accompanying drawing which shows preferred embodiments of the invention. In the drawing,

FIG. 1 is a view of a cigarette provided with a device for use in lighting the cigarette according to the invention, parts being shown in cross-section.

FIG. 2 is a view showing the device for use in lighting a cigarette, removed from the cigarette, turned around from the position shown in FIG. 1 and having the cigarette partially inserted therein.

FIG. 3 is a view taken on line 3—3 in FIG. 2; and

FIG. 4 shows a modified form of a device for use in lighting a cigarette according to the invention.

In the various views, like reference characters refer to corresponding parts.

The invention provides a combination of a cigarette 5 and a device 6 for lighting the cigarette. The device comprises a tube 7 open at both its ends and having a partition wall 8 intermediate its ends. In the ready position, which is shown in FIG. 1, an end portion 9 of the cigarette 5 is slidably received in end portion 11 of the tube 7. A first lighting aid 12 is disposed within the tube and across the partition wall 8 from the cigarette, and a second lighting aid 13 is disposed within the tube and on the cigarette side of the partition wall, and means are provided so that the second lighting aid is mounted on the end of the cigarette received in the tube upon slidably removing the tube from the cigarette. The first and second lighting aids are reactive on contacting to provide heat for lighting the cigarette, and further the tube portion 14 containing the first lighting aid 12 is of diameter sufficient to coaxially receive a cigarette end to permit contacting of the cigarette end and the first lighting aid. Thus, a cigarette provided with a device 6 in the ready position, as is shown in FIG. 1, can be lit by sliding the device 6 off the cigarette, turning the device around to present it to the cigarette as is shown in FIG. 2, and then inserting the cigarette end 9 having the second lighting aid 13 mounted thereon into the tube portion 14 containing the first lighting aid 12, to contact the lighting aids and thereby effecting the lighting reaction.

Tube end portion 11 which receives the cigarette when in the ready position shown in FIG. 1 is preferably in close fitting relation with the cigarette end portion 9 so that if cigarettes with devices 6 in the ready position are contained in a package, the cigarettes can be removed from the pack without dislodging the lighting devices 6. On the other hand, the end portion 14 of the device preferably of such diameter that when the cigarette is inserted into this end portion of the tube it fits therein in loose fitting relation. See FIG. 2. This facilitates easy entrance and exit of the cigarette from tube end portion 14.

The tube end portion 11 can be of about % of diameter and of course should not engage the cigarette end portion so tightly as to make manual removal difficult. The tube end portion 14 can be about % in diameter.

The first lighting aid can be an absorbent material having absorbed therein a normally liquid material for the lighting reaction. The absorbent material can be a fiber batting, such as cotton and the normally liquid material can be glycerol. The absorbent material is preferably spaced from the inside walls of the tube end portion 14. This will preclude the absorbent material from contacting the cigarette paper when the cigarette end 9 is inserted in the tube for contacting the lighting aids 12 and 13, and hence wetting of the paper will be prevented.

Further, it is desirable that an annular ring 15 of compressible material be disposed about the first lighting aid 12, the annular ring serving to fill the space between the first lighting aid 12 and the walls of the tube portion 14. Provision of the annular ring 15 is to assure that the cigarette paper does not contact the liquid material of the first lighting aid 12, and to reduce the amount of liquid taken up by the second lighting aid 13 during the lighting step. Advantageously, the annular ring 15 extends axially beyond the first lighting aid 12 so that the cigarette periphery will engage the annular ring 15 just before the lighting aids are contacted. The annular ring can be of compressible material, such as fiber batting, so that it will yield to slight pressure when the cigarette is forced against it. The width of the annular ring 15 can be about % of diameter.

The absorbent material of first lighting aid 12 and the annular ring are advantageously each of fiber batting such as cotton, and the fiber batting of each of these elements is discontinuous as to their fibers, i.e., fibers of the one are not entangled with fibers of the other. This construction can be obtained by milling the fibers separately and thereafter assembling them. Surprisingly, the liquid, for example, glycerol or a polyhydric alcohol, does not migrate from the first lighting aid 12 to the annular ring 15, when these elements are made discontinuous as described.

The tube 7 can be formed of plastic or cardboard and should be sufficiently rigid to withstand pressure from
the fingers. The partition wall 8 serves to separate the lighting aids 12 and 13 and can be secured in the tube 7 in any suitable way. The partition can be about \( \frac{3}{4} \) inch thick and can be of aluminum foil or of cardboard coated to render it impermeable to liquids. It should not be inflammable so that the cigarette be held with the lighting aids in contact for too long a time, the device 6 will not burn. Preferably, the lighting aid 13 is of disc form having convex surfaces 17 and 18 and the partition wall 8 is dished to provide concave surface 19 for receiving the convex surface 17 of the lighting aid 13 in close fitting relation, as is shown in FIG. 1. This will seal the lighting aid 13 from the air and thereby aid in the prevention of deterioration of the lighting aid 13.

The lighting aid 13 can be a potassium permanganate capsule consisting essentially of potassium permanganate enclosed in a porous paper covering retained in place in the end 9 of the cigarette by intumescence of portions 21 of the cigarette paper. The capsule is suitably isolated from the tobacco 22 of the cigarette to prevent undesirable interaction between tobacco ingredients and the potassium permanganate.

The first lighting aid 12 is recessed in the tube end portion 14 about \( \frac{1}{4} \) inch so that it is not exposed to contact by the fingers, and can be secured in place by glue or other suitable means. It can be about \( \frac{3}{16} \) inch in axial length. The annular ring 16 can be similarly secured in place. A heat resistant film such as aluminum foil 23, lines the inner wall of the tube end portion 14 and this serves to prevent damage to the device 6 due to the lighting heat. Further, it serves to prevent seepage of the liquid absorbed by the first lighting aid 12.

The amount of liquid absorbed by the absorbent material of first lighting aid 12, can be an amount suitable for lighting about three cigarettes.

In using the device of the invention, upon insertion of the cigarette into the device to effect contacting of the lighting aids, the lighting aids should be held in contact for just a brief moment to permit some liquid to pass to the capsule 13. The cigarette is then withdrawn and the reaction which provides the lighting heat is allowed to occur after the withdrawal.

An alternative embodiment of the lighting device is shown in FIG. 4. Here, the device 24 is a cup 25 containing elements corresponding to the elements contained in end portion 14 of the device 6 of FIG. 1. The device of FIG. 4 is not to be mounted on the cigarette prior to use, but is used in a manner in which the device of FIG. 1 is used, when it is desired to light the cigarette. While the glycerol capacity of this embodiment can be the same as that of the embodiment shown in FIG. 1, it also can be greater. For example, it can have a glycerol capacity such that it can be used to light twenty or more cigarettes. One device would then be sufficient for lighting all the cigarettes of a pack of cigarettes, the cigarettes of which are provided with a lighting aid as is the cigarette shown in FIG. 1. The device of FIG. 4 could then be dispensed along with the pack of cigarettes, either attached to the package or separate from the package.

With respect to construction of the second lighting aid 13 and the mounting thereof in the cigarette, reference is made to copending application Serial No. 123,333 filed May 23, 1961, of the applicant herein and Paul E. Spoor.

While various specific embodiments of the invention have been described, it is intended to secure by these Letters Patent all embodiments as are within the scope of the appended claims.

What is claimed is:

1. A device for use in lighting a cigarette, said device comprising a tube open at both its ends and having a partition wall intermediate its ends, each end portion being adapted to axially movably receive the end of the cigarette, one end of said tube having disposed therein a first lighting aid for contacting a second lighting aid mounted on the cigarette when the cigarette is inserted into the tube end portion containing the first lighting aid, the first lighting aid being an absorbent having absorbed therein a normally liquid material for the lighting reaction, said absorbent material being spaced from the tube walls to preclude the absorbent material from contacting the cigarette paper when the cigarette end is inserted in the tube for contacting the lighting aids.

2. A device according to claim 1, wherein an annular ring of compressible material is disposed about said absorbent material having the normally liquid lighting aid absorbed therein, and filling the space between the absorbent material and the walls of the tube.

3. A device according to claim 2, wherein the absorbent material and the compressible material are each fiber batting and are discontinuous as to their fibers, and the first lighting aid is a polyhydric alcohol.

4. A device according to claim 3, wherein the first lighting aid is glycerol and the absorbent and compressible material are cotton.

5. A device for use in lighting a cigarette, said device comprising a tube open at both its ends and having a partition wall intermediate its ends, each end portion being adapted to axially movably receive the end of a cigarette, one end portion having disposed therein a first lighting aid for contacting a second lighting aid mounted on the cigarette when the cigarette is inserted into the tube end portion containing the first lighting aid, the other end portion being adapted to receive in close fitting relationship a cigarette end portion having the second lighting aid mounted thereon whereby to reduce deterioration of the second lighting aid the walls of the end portion of the tube containing the first lighting aid disposed to be exposed to the heat of the lighting reaction are heat resistant.

6. A device for use in lighting a cigarette, said device comprising a tube having a closed end and an open end and being adapted to axially movably receive the end of a cigarette inserted into the tube through its open end, a first lighting aid disposed within the tube for contacting a second lighting aid mounted on the cigarette when the cigarette is inserted into the tube, the first lighting aid is an absorbent having absorbed therein a normally liquid material for the lighting reaction, said absorbent material being spaced from the tube walls to preclude the absorbent material from contacting the cigarette paper when the cigarette end is inserted in the tube for contacting the lighting aids.

7. The combination of claim 1, the other end portion being adapted to receive in close fitting relationship a cigarette end portion having the second lighting aid mounted thereon, whereby to reduce deterioration of the second lighting aid.

References Cited in the file of this patent

UNITED STATES PATENTS

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