Nov. 30, 1948. A. HARRIS 2,454,872

FUEL INDICATING LIGHTER

Filed Dec. 5, 1944

Fig. 1.

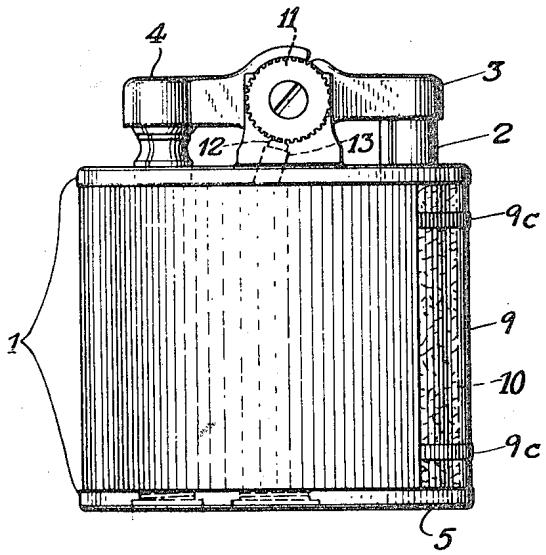


Fig. 2.

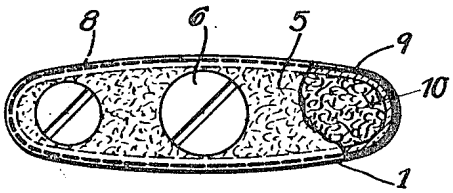


Fig. 4.

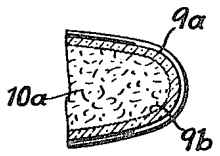
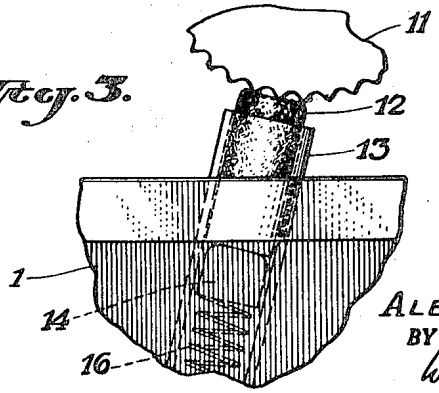


Fig. 3.



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FUEL INDICATING LIGHTER

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1 Claim. (Cl. 67—7.1)

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The invention relates to cigar lighters of known type wherein liquid fuel is charged from time to time into the fuel containing receptacle of the lighter, and aims primarily to provide a lighter of the above type which will afford a plain and reliable visual indication to the user when the lighter is in need of filling, and without requiring him to open the lighter or the fuel casing in making his inspection. In a more specific aspect the invention aims to provide a lighter which will function as above stated when the ordinary colorless liquid lighter fuels are used, i. e. without requiring colored or otherwise especially compounded fuel.

In another aspect, the invention also aims to provide ready and facile indication of the need for renewing the pyrophoric metal piece used in lighters of the above type to ignite the fuel.

Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which discloses one form of lighter constructed to operate in accordance with the invention; the disclosure however should be considered merely as illustrative from the standpoint of the invention in its broader aspects. In the drawings—

Fig. 1 is a side elevation, and

Fig. 2 a bottom plan view of one form of lighter constructed to operate in accordance with the invention.

Fig. 3 is an enlarged fragmentary detail side elevation showing a preferred form of pyrophoric metal supporting tube in operative relation to the fuel receptacle and sparking wheel.

Fig. 4 is a fragmentary detail cross section illustrating a somewhat modified form of the invention.

I have found that it is practical to indicate to the user the condition of the fuel supply in the fuel receptacle, i. e. the presence or absence therein of an adequate fuel supply and thereby indicate the need of replenishing the fuel, by providing in the fuel receptacle a material which changes in appearance according to the amount of fuel in the receptacle, and which may be viewed by the user through an adjacent translucent wall of the receptacle, thus making it possible for the user to observe the need of adding more fuel while the fuel chamber is closed, and without disturbing the operating parts of the lighter. An accurate indication of the need of refilling the fuel is highly important to the user, since if the fuel chamber is permitted to become too dry before adding more fuel, the wick may

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become unduly charred and also an appreciable period of time may elapse before added fuel saturates the wick, during which time the user may be in doubt as to the reason why the lighter fails to function properly, i. e. he may not know whether the trouble is lack of fuel, a faulty wick, faulty sparking wheel or pyrophoric metal, or a combination of such defects. The interior indication of the amount of fuel in the fuel receptacle may be obtained in a variety of ways, and still afford sufficient visual indication through an adjacent translucent wall portion of the receptacle. For example, I have found that a practical and reliable visual indication of the amount of fuel contained within the receptacle and of the need for replenishing the same with fuel, may be obtained by providing within the fuel casing, or at least within a part thereof which is adjacent to the translucent wall portion, a material which changes in appearance according to the amount of fuel contained in the casing. A filling of absorbent cotton dyed with one of the so-called direct aniline dyes may be used, these dyes being insoluble in the naphtha type of fuel customarily used in lighters so that the coloring is not consumed with the fuel, and the desired indication may be obtained without requiring the use of specially colored or otherwise specially compounded fuels. Among the direct dyes suitable for the above purpose may be mentioned sodium salt of diphenyl-disazo-bis-2-amino-8-naphthol-6-sulphonic acid, which is a violet dye, and sodium salt of p-sulphobenzene-azo-benzene-azo - 6 - benzoylamino - 1 - naphthol-3-sulphonic acid, which is a red dye. When impregnated with dyes of the above character the absorbent cotton filling tends to assume a paler shade as the quantity of fuel decreases, the color becoming more accentuated as the filling becomes more saturated. Even the untinted absorbent cotton fillings customarily used heretofore will assume a grayer color as the amount of ordinary naphtha type lighter fluid carried thereby is increased and will assume a whiter color as the filling dries out, sufficient to indicate the need of recharging with fuel as the whiter color predominates, although the accentuation of the color contrast is not so marked as when special dyes are employed as above mentioned. Also if the interior surface of the translucent portion of the receptacle is made of irregular contour, as by sand blasting to produce a frosted effect, different light effects may be obtained as viewed through the translucent wall portion of the receptacle, depending upon the amount of

liquid fuel present in the receptacle, due either to fuel deposited upon the frosted surface or as carried by an absorptive filling adjacent the translucent wall of the receptacle.

The invention is disclosed in Figs. 1–3 as applied to a lighter of the type disclosed in the patent to Louis V. Aronson No. 2,002,845, granted May 28, 1935, having a fuel containing casing 1, a wick tube 2, snuffer 3 and finger piece 4. The bottom wall 5 of the fuel casing is shown as provided with the usual removable threaded metal plug 6, for fuel filling purposes, and a small metal screw 7 for adjusting the pressure on the pyrophoric metal piece 12 which is exerted by a spring 16, to hold it against the sparking wheel 11, as is well known. In the specific form of the invention under discussion all walls of the casing 1 are constructed of translucent plastic material. The side wall of the casing may partially comprise a layer of metal, leather or other reinforcing, decorative or masking material 8, to leave a translucent edge portion 9 which gives somewhat of a gauge-glass effect, through which the color changeable material above mentioned may be viewed. In this form the bottom and top walls of the casing are also translucent.

The fuel absorbent filling 10 may be understood as carrying one of the direct dyes above referred to so that as the fuel supply in the receptacle diminishes, the color of the filling becomes less accentuated, which serves as a warning to the user that the lighter needs more fuel. Only the portion of the filling which is exposed to view need be specially colored as above described.

The fuel casing may be provided with markings appropriately colored or tinted to indicate respectively adequate fuel saturation of the filling, and dryness, for ready comparison by the user with the appearance of the interior material which changes in appearance according to the supply of fuel in the casing. In Fig. 1 I have shown strips 9*a* and 9*b* overlying the translucent edge portion 9, which are appropriately colored for this purpose.

A somewhat modified form of the invention is illustrated in Fig. 4, according to which the translucent portion of the lighter casing has an interior surface 9*b* such as may be obtained by providing a ribbed inner surface, or a matted surface as obtained by sand-blasting to produce less translucency in certain portions of the interior surface. Absorptive filling material 10*a* which may be gray felt, cotton or the like, when well saturated with liquid fuel, will cause the

filling to have a darker color as viewed through the adjacent translucent wall portion, than when the filling is relatively dry. When the filling is well saturated, the lighter fluid appears to enter the depressions 9*b* in the interior surface of the wall 9*a*, with the result that most of the incoming light is absorbed in these depressed areas with little reflection, and as the fuel supply decreases the reflection increases to produce an optical effect of a lighter shade.

In another aspect of the invention, as shown in Fig. 3, the tube 13 which encloses and slidably supports the piece of pyrophoric metal 12 is also constructed in whole or in part of translucent material as above mentioned. Thus as the pyrophoric metal piece 12 shortens in length, in use, its condition may be observed through the translucent tube 13, particularly when the snuffer member 4 is lifted. Such an inspection enables the operator to observe through the translucent wall 13 when a new piece of pyrophoric metal needs to be inserted, without waiting for the lighter to fail in operation, and without removing the sparking metal from operative position for inspection.

While the invention has been disclosed as above specifically described, it should be understood that changes may be made without departing from the invention in its broader aspects, within the scope of the appended claim.

I claim:

A cigar lighter having a fuel receptacle, an absorbent filling of cotton therein which is treated with a direct aniline dye insoluble in fuels of the naphtha type, to render the filling of different color as colorless fuel is added thereto and consumed therefrom, said receptacle having a wall portion of translucent material adjacent said filling to expose the color thereof to view while the receptacle is closed.

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