

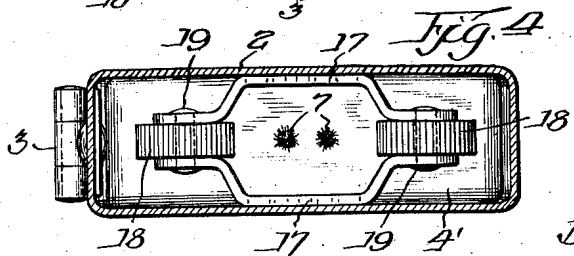
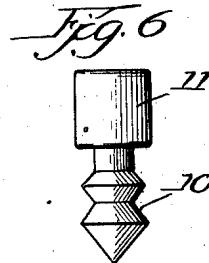
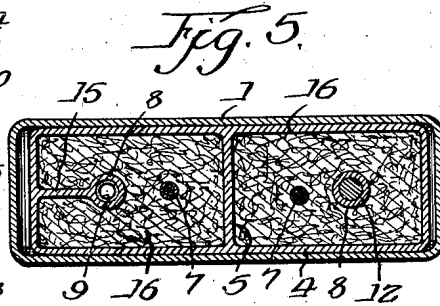
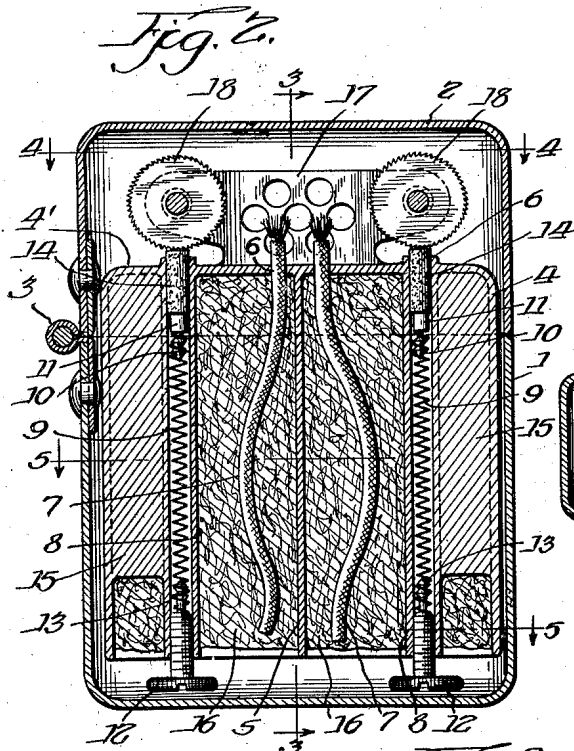
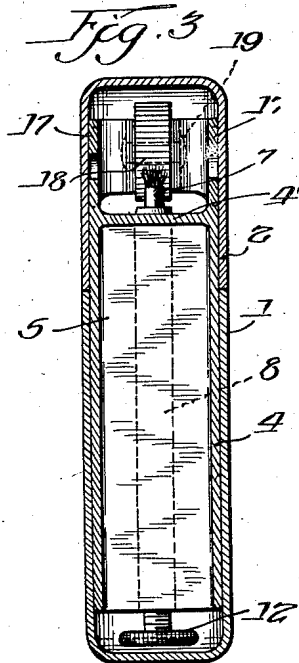
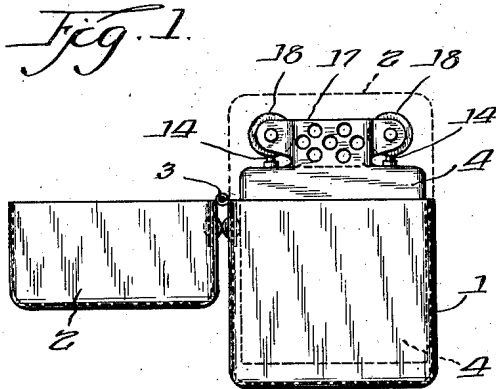
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2,430,323

POCKET PYROPHORIC LIGHTER

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# UNITED STATES PATENT OFFICE

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## POCKET PYROPHORIC LIGHTER

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1 Claim. (Cl. 67—7.1)

1

This invention relates to improvements in pocket pyrophoric igniting or lighting devices. It has for an object to provide a device of the stated character so constructed and parts assembled as to be most advantageous for optional dextral or sinistral igniting or lighting usage, i. e., ignition, by pyrophoric action, of the gaseous charged wick, etc., of the lighter through operation of either rightward or leftward positioned abrasive devices thereon, hence, rendering said lighter advantageous and satisfactory for use by either right or left handed persons.

It is also an object of the invention to provide a lighter wherein the gaseous fuel reservoir thereof will maintain a comparatively constant and effective gaseous charge for a prolonged period of time, thus, rendering the same operable for extended periods, plus avoiding, to a great extent, those annoyances and inconveniences incident to an early depletion or exhaustion of lighter fuel in or from the lighter reservoir and its resultant operational failure when desired for use.

A further and most advantageous feature of the invention resides in providing a lighter which, in addition to affording a comparatively constant combustively responsive burner or wick, as above pointed out, will be capable of constant and dependable spark production through operation of its abrasive devices in conjunction with their companionate pyrophoric bodies or so-called "flints." That is, should, for any reason, unsatisfactory operation of one of its abrasive devices be experienced by a user of the lighter, as through failure of said device, or its companionate pyrophoric body, or the lack thereof, the other and effectual spark producing assembly may be employed, merely by reversing the position of the lighter in his hand to bring said other and effectual assembly (the abrasive device thereof) adjacent the thumb or finger normally used for operating the same. Thus, when opportune, the cause of failure of the first mentioned spark producing assembly may be corrected or remedied, but at no time will a user of the improved lighter be unable to satisfactorily use the same for its intended purposes.

Other and equally important objects of the invention are to provide a pocket pyrophoric lighter wherein the fuel reservoir or reservoirs thereof are so constructed, designed and arranged in assembled relationship as to effect a maximum of product compactness and usage efficiency, all without need of increasing the size of the lighter, its conventional shape and/or detracting from its convenience of operation; also, provide for

2

easy and quick removal and replacement of said reservoirs from and in the lighter for purposes of fuel replenishment, operation failure correction, etc.

Moreover, the invention provides a novel form of mounting for the abrasive devices of the lighter, permitting satisfactory dextral and sinistral rotatable mounting thereof in operative relationship to the lighter wick, and also, affording an effectual wind guard for preventing inopportune flame extinguishing.

The foregoing, as well as other objects, advantages and meritorious teachings of my invention, will be in part obvious and in part pointed out in the following detailed disclosure thereof, when taken in conjunction with the accompanying drawings, it being understood that the particular form of the invention presented herein is a precise and what is now considered to be the best mode of embodying its principles, but that modifications and changes may be made in specific embodiments without departing from its essential features.

In the drawings:

Figure 1 is a side elevation of my improved lighter with the casing thereof opened (the casing cover being shown in dotted lines in closed position).

Figure 2 is an enlarged vertical section through the improved lighter, wherein its casing is illustrated in closed position.

Figure 3 is a vertical section taken at substantially right angles to Figure 2 along the line 3—3 thereof, looking in the direction in which the arrows point.

Figure 4 is a horizontal section taken on the line 4—4 of Figure 2, looking in the direction in which the arrows point.

Figure 5 is a similar section taken on the line 5—5 of Figure 2, looking in the direction in which the arrows point, and

Figure 6 is an enlarged detail in side elevation of a type of follower device used in connection with the elongated expansible springs of the spark producing assemblies.

Referring in detail to the accompanying drawings, the improved lighter consists of a casing 1, preferably of rectangular formation or shape, having a closed bottom and an open top, the latter being adapted to normally be closed by a cover 2, also rectangularly shaped, hinged, as at 3, to the upper portion of one end wall of the casing (see Figure 2 of the drawings). As will be noted upon reference to Figure 1 of the accompanying drawings, the hingedly mounted cover

3

2, with opening of the lighter casing, is adapted to be swung into position at substantially right angles to the casing 1, thus fully exposing the upper end portion of the lighter and the sparking assemblies received thereby.

A container 4, of shape and size to be snugly received within the casing 1, is removably engaged therein. The upper end of the container is closed or substantially closed by a top wall 4', while its lower end is open, for a purpose hereinafter more fully described. A longitudinal medial partition 5 is fixedly mounted or arranged within the container 4 and, obviously, divides it into a pair of reservoir compartments having their upper ends substantially closed by adjacent portions of the top wall 4' and their lower ends open.

The top wall 4' of the container 4 is formed with a pair of aligned wick outlet ways 6 and, as shown in Figure 2, these ways individually communicate with the container compartments or reservoirs. Wicks 7 are received within the container compartments or reservoirs and have their upper end portions passed through the particularly adjacent and communicating ways 6 and extended for suitable distances beyond the top wall 4' in juxtaposed relation.

Guide tubes 8 are disposed longitudinally of and through the container compartments and have their respective upper ends secured to and opening onto appropriate portions of its top wall 4' in proximity to the wick outlet ways 6.

Elongated expansible coiled springs 9 are received within the guide tubes 8 and have their opposite ends engaged with the irregularly formed adjacent portions 10 of follower engaging devices 11 (see Figures 2 and 6). The lower ends of each of the guide tubes 8 are internally threaded and have the shanks of adjusting screws turned into engagement therewith. The heads of each of these adjusting screws, as will be seen upon reference to Figures 2 and 3 of the drawings, are arranged beyond and/or below the open lower end of the container 4 and are normally housed within the lower and closed portion of the casing 1. By turning of the screws 12 in predetermined directions within the engaged ends of their respective tubes 8, their extents or characters of bearing upon the adjacent ends of the elongated coiled springs 9 may be varied, whereby to impart desired tension to the same, it being noted in this connection, that the inner ends of the shanks of each of said screws 12 are provided with fixed follower devices 13, similar in formation to the follower devices illustrated in Figure 6 of the drawings.

Pyrophoric bodies, collectively indicated by the numeral 14, are slidably engaged or received in the upper end portions of each of the guide tubes 8 in bearing or seating engagement upon adjacent portions of the spring supported follower devices 11.

To effect rigid mounting and/or supporting of the above described guide tubes 8 within their respective compartments of the container 4, I may and preferably do form or otherwise fixedly secure to the inner sides of the opposite end walls of said container, longitudinally disposed and inwardly extending webs 15, the inner marginal portions of which are suitably fixedly secured to adjacent portions or sides of said guide tubes 8, as indicated in Figures 2 and 5 of the drawings. Thus, it will be understood that the guide tubes 8 will be rigidly supported throughout their respective lengths with relation to the side and end walls of the container 4, and in consequence, will

4

be prevented from having movement relative thereto, especially with turning adjustment of the screws 12 whereby to regulate tension of the elongated expansible coiled springs 9.

The compartments of the container 4 are adapted to receive suitable quantities of absorbent material, indicated by the numeral 16, such, for example, as absorbent cotton or any other material which will absorb and retain within the compartments or reservoirs a liquid gaseous fuel, and at the same time, permit saturation of the wicks 7 throughout their respective lengths.

Wing-like perforate walls 17 are provided upon and fixedly secured to the intermediate portion and outer side of the top wall 4' of the container 4, as will be noted upon reference to Figures 2, 3 and 4. Fixed mounting of the perforate walls 17 on the outer side of the container top wall 4' is effected directly adjacent and parallel to adjacent portions of the side walls of said container, while the opposite ends of the walls are inwardly disposed or offset (see Figure 4) and reduced to provide bearings between which the abrasive wheels 18 are rotatably supported, as at 19. The abrasive wheels 18 are arranged in relatively opposed relationship longitudinally of the container top wall 4' and, as is usual in such devices, have transverse rasp teeth provided on and about their peripheral portions. The referred to rotatable mounting of the abrasive wheels or devices 18 on and between the reduced opposite ends of the perforate wing-like walls 17 is so effected that said wheels are individually arranged directly adjacent though somewhat beyond the open upper ends of adjacent guide tubes 8. Consequently, the pyrophoric material bodies 14 are thrust into and maintained in resultant bearing engagement with their rasp tooth provided peripheries. Hence, with spinning of either of the rotatable abrasive wheels or devices 18, by engagement of the thumb or finger of a user's hand therewith, an igniting inwardly directed spark will be produced and will cause the liquid gaseous saturated wicks 7 to be ignited and burn.

The relative arrangement of the perforate wing-like walls 17, above described, is such that they will provide an effectual sleeve-like wind guard about the extended upper ends of the wicks 7, and so, will prevent extinguishing of flame produced thereby, subsequent to ignition from the abrasively contacted pyrophoric bodies 14.

Obviously, the expansible coiled springs 9 will maintain their respective pyrophoric bodies 14 in constant engagement with the rasp tooth provided peripheral portions of the adjacent abrasive wheels 18.

To extinguish a flame produced from the wicks 7, it is, of course, only necessary that the hinged mounted cover 2 be swung to a closed position over the spark producing assemblies of the lighter, thereby discontinuing the supply of combustion supporting oxygen and effecting a comparative snuffing action.

In using a lighter constructed in accordance with my invention and to render it operative for such use, the hinged cover 2 of the casing 1 is swung to open position, as shown in Figure 1, whereupon the container 4 is removed from the casing and held in such a position as to permit the discharge of liquid gaseous fuel onto the absorbent material 16 received within the container reservoir compartments. When a desired quantity of liquid gaseous fuel has been thus supplied to the container's reservoirs, the container is replaced in the casing 1, as shown in Figure 2 of

5

the drawings. At such time, the wicks 7 will have been saturated with the gaseous charge and consequently, with production of an igniting spark by either of the spark producing assemblies (pyrophoric bodies 14 and abrasive wheels 18) they will be ignited and will produce a flame.

The improved lighting device is capable of either dextral or sinistral usage, by reason of the relatively longitudinally opposed abrasive wheels 18 and their respective pyrophoric material bodies 14. Moreover, should, for any reason whatsoever, one or either of the thus constituted spark producing assemblies fail in operation, the other or remaining of the same could be operated to produce an inwardly directed spark for igniting the gaseous fuel saturated wicks 7. Hence, at no time will a user of the improved lighter be unable to satisfactorily use the same for its intended purposes. Moreover, because of the fact that the liquid gaseous saturated absorbent material 16 within the compartments of the container 4, are separated one from the other, it will be understood that their respective gaseous charges will be effectively maintained for relatively different periods of time. Thus, with depletion of the gaseous charge of one of said compartments, the residual gaseous charge of the remaining compartment will be sufficient to saturate its particular wick so that the same will be combustively responsive to a spark directed thereonto from either of the particularly operated spark producing assemblies, hereinabove described.

I claim:

A pocket pyrophoric lighter, comprising a cas-

6

ing, a container of size and shape to be snugly received within said casing, a transverse partition integral with an intermediate portion of said container and extending longitudinally thereof from its top to its bottom and dividing said container into separate compartments, each of said container compartments having wick outlet ways therein opening onto the top side of said container, longitudinally disposed webs integral with intermediate portions of the inner faces of each of the end walls of said container and extending inwardly into their respective adjacent compartments, tubes integral with the inner and free marginal portions of each of said webs disposed longitudinally of the respective compartments in said container and opening onto its upper and lower ends, the lower end portions of each of said tubes being internally screw-threaded, and a plurality of abrasive means carried on the upper end of said container exteriorly thereof in opposed relation and in cooperative proximity to adjacent open ends of said tubes.

JOSEPH RENE AYOTTE.

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