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M. M. SPITALNY
PYROPHORIC LIGHTER
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2,665,572



FIG. 2.

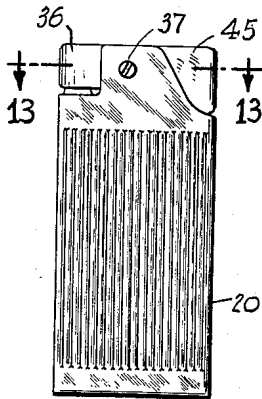


FIG. 1.

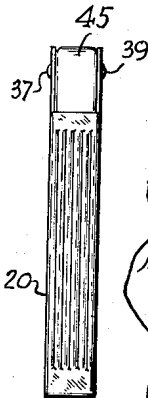


FIG. 3.

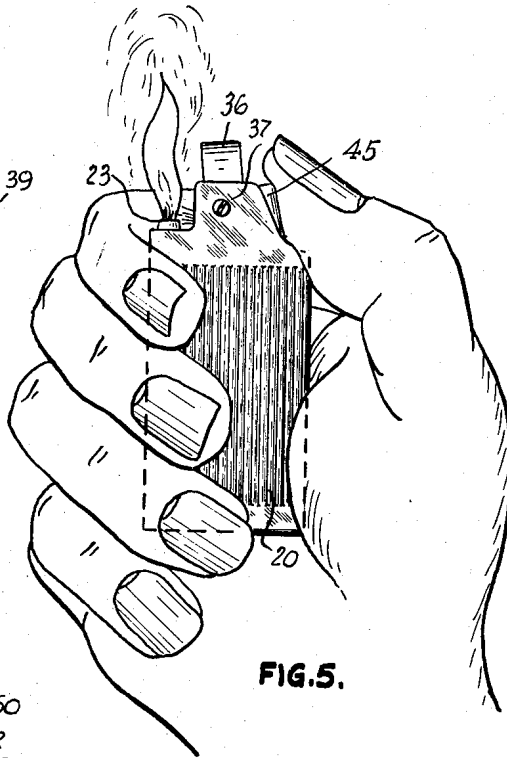


FIG. 5.

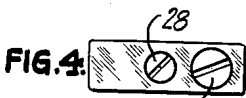


FIG. 4.

FIG. 12.

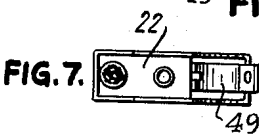


FIG. 7.

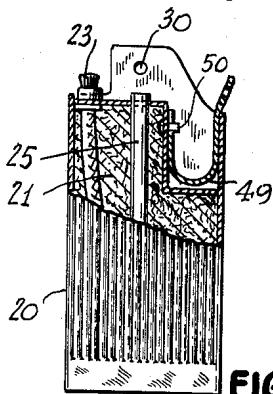
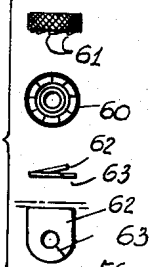


FIG. 6.

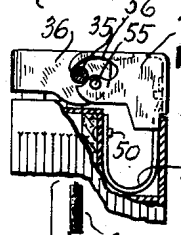


FIG. 8.

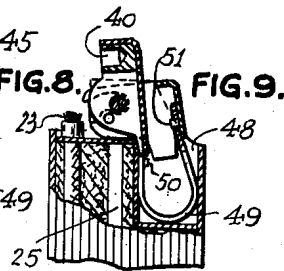


FIG. 9.

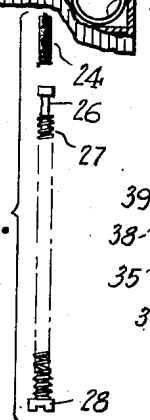


FIG. 10.

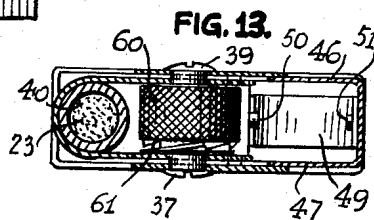


FIG. 13.

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PYROPHORIC LIGHTER

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1 Claim. (Cl. 67—7.1)

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This invention relates to pyrophoric cigarette and cigar lighters.

The principal object of this invention is the provision of a pyrophoric cigarette and cigar lighter whose component operating parts are relatively few in number, relatively simple in design and construction and well adapted for manufacture and assembly in accordance with technically sound mass production methods.

Another important object of this invention is the provision of a pyrophoric cigarette and cigar lighter of the character described, wherein the striking and snuffing mechanisms are interrelated in such manner that a single, forward pushing movement of the thumb of the person operating the same actuates both said mechanisms in predetermined spaced time relationship, the snuffing mechanism being first actuated to disengage the snuffing bar from the wick and the striking mechanism being then actuated to send sparks in the direction of said wick. A single thumb-piece is provided for this operation, and it is movable on a straight line which is normal to the axis of the sparking wheel as well as to the longitudinal axis of the wick holder, and to the longitudinal axis of the flint.

A further object of this invention is the provision of a pyrophoric cigarette and cigar lighter of the character described, wherein a U-shaped leaf spring is provided to resist the forward movement of the thumb-piece and to return said thumb-piece to its inoperative position upon its release by the thumb. Since the thumb-piece is connected to the striking and snuffing mechanisms, actuation of said mechanisms is resiliently resisted by said U-shaped leaf spring. By the same token, said U-shaped leaf spring acts upon the thumb-piece to return the snuffing bar to snuffing engagement with the wick immediately upon release of said thumb-piece by the thumb. The thumb-piece acts upon the sparking wheel through a ratchet mechanism, and it has no operative effect upon said sparking wheel when it is retracted to its inoperative position. The flint serves as a brake with respect to the sparking wheel to prevent it from rotating at all times except when the thumb-piece is pushed forwardly to operate the sparking mechanism.

A preferred form of this invention is shown in the accompanying drawing, in which:

Fig. 1 is a side view of the lighter showing the snuffing bar in closed position and the thumb-piece in retracted position.

Fig. 2 is a top view of said lighter.

Fig. 3 is a rear or edge view thereof.

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Fig. 4 is a bottom view of said lighter.

Fig. 5 is a side view of the lighter, showing it held in the hand and showing its thumb-piece in forward position and its snuffing bar in disengagement with the wick.

Fig. 6 is a side view of the lighter with its casing partly broken away to show, in vertical section, the U-shaped spring and the chamber in which it rests.

Fig. 7 is a horizontal section on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary view, partly broken away in section, showing the thumb-piece and snuffing bar installed in the casing, the thumb-piece being in engagement with the U-shaped spring.

Fig. 9 is a vertical section through the upper part of the lighter, showing the thumb-piece and snuffing bar in the same positions which they occupy in Fig. 5.

Fig. 10 is an exploded view of the pin on which the snuffing bar pivots.

Fig. 11 is an exploded view of the flint and flint holding means, including the spring which urges the flint into operative engagement with the sparking wheel.

Fig. 12 is an exploded view of the sparking wheel and ratchet mechanism, showing both top and side views of the sparking wheel and the pawl which engages the ratchet teeth formed on the side of the sparking wheel.

Fig. 13 is a horizontal section looking downwardly on the line 13—13 of Fig. 1.

The pyrophoric cigarette and cigar lighter shown in the drawing has a casing 20 which encloses lighter fluid-impregnated or saturated cotton 21. The casing has a top wall 22 through which the wick 23 and the flint 24 project. A tube 25 extends through the casing, and it will be understood that flint 24 is mounted at the upper end of said tube. A flint pusher 26 is slidably disposed in said tube, immediately below flint 24 and a spring 27 urges said pusher upwardly against said flint. The lower end of the spring bears against a screw 28 which is in screw-threaded engagement with the lower end of the tube. A screw-threaded plug 29 is provided at the bottom end of the casing to close off a hole through which fluid may be introduced into the casing. Thus far the construction of the lighter is conventional.

The two side walls of the casing are narrowed in width at their upper ends and said upper ends project upwardly above top wall 22 of the casing. Registering holes 30 are provided in

said upwardly projecting side walls to accommodate pin 35 on which snuffing bar 36 pivots. This pin has a slotted head 37 at one end and a tapped hole 38 at its opposite end. The tapped hole accommodates a screw 39 and it will be noted that it is this screw which prevents dislodgment of the pin from said registering holes 30. Snuffing bar 36 has a hole 40 formed therein to accommodate the upwardly projecting end of the wick. The snuffing bar is free to pivot on said pin 35 between its two extreme positions shown in Figs. 8 and 9.

Thumb-piece 45 is a shell having two spaced walls 46 and 47, respectively, which accommodate the snuffing bar between them. This thumb-piece is slidably mounted for substantially horizontal movement both forwardly and backwardly between the two upwardly projecting portions of the side walls of the casing. There is a well 48 in the top of the casing which accommodates a U-shaped leaf spring 49. One end of the leaf spring is held in place in said well by means of pin 53. The opposite end of the leaf spring projects upwardly and into the shell which has been designated as thumb-piece 45. A pin 51 affixes said opposite end of the leaf spring to the inside of the thumb-piece. It will thus be seen that the leaf spring is positioned to resiliently resist forward movement of the thumb-piece and that when the thumb-piece is released by the thumb, said leaf spring acts upon the thumb-piece to push it back to its retracted position shown in Fig. 8.

Pins 55 affix the side walls of the thumb-piece to the side walls of the snuffing bar in such manner that the snuffing bar is free to pivot on the axis of said pins 55 relative to the thumb-piece. It will be seen in Fig. 8 that arcuate slots 56 are formed in the side walls of the thumb-piece to accommodate pivot pin 35 on which the snuffing bar swings. Hence when the thumb-piece is pushed forwardly, pins 55 act upon the snuffing bar to cause it to pivot about pin 35. Said pin 35 rides in slots 56 as the thumb-piece is pushed forwardly and hence there is no conflict between the thumb-piece and said pin 35 during such forward movement of the thumb-piece. The action of spring 49 on snuffing bar 36 through thumb-piece 45 is apparent: the spring acts upon the thumb-piece to resist forward movement thereof and to return it to its retracted position and by the same token the spring resists clockwise movement of the snuffing bar (as viewed in Figs. 8 and 9) and it tends to effect a counterclockwise movement of the snuffing bar when the thumb-piece is released by the thumb.

Sparking wheel 60 having ratchet teeth 61 formed on one side thereof is mounted for rotation on pin 35. A pawl 62 is also mounted for rotary movement on said pin 35 and for engagement with said ratchet teeth. This pawl is struck out from a plate 63 and the top edge of said plate is a straight edge which rests against the underside of the snuffing bar. The pawl is thus free to pivot on pin 35 but it is not free to pivot relative to the snuffing bar. Hence when the snuffing bar is caused to swing in clockwise direction from its position in Fig. 8 to its position in Fig. 9, the pawl is caused to swing with it and thereby to turn the sparking wheel with whose teeth it is always in engagement. When the snuffing bar swings in counter-clockwise direction from its position in Fig. 9 to its position in Fig. 8, the pawl slides over the ratchet teeth with-

out affecting the angular position of the sparking wheel. The spring-urged fling which engages the sparking wheel in conventional manner tends to prevent the sparking wheel from turning when the snuffing bar and pawl turn in counter-clockwise direction.

It will be understood that the foregoing is merely illustrative of the present invention and it may be modified in many respects within the broad scope and spirit of the invention.

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

A pyrophoric lighter of the character described, having a casing, a snuffing bar mounted for pivotal movement about a fixed pivot, a thumb-piece which is mounted for slidable movement on a substantially straight line toward and away from said fixed pivot, said snuffing bar being pivotally connected to said thumb-piece along an axial line which is parallel to and spaced from said fixed pivot, said thumb-piece being provided with an arcuate slot which accommodates said fixed pivot and which allows the thumb-piece to be moved toward and away from said fixed pivot, whereby the snuffing bar is caused to swing in one direction upon said fixed pivot when the thumb-piece is moved toward said fixed pivot and whereby the snuffing bar is caused to swing in the opposite direction upon said fixed pivot when the thumb-piece is moved away from said fixed pivot, a sparking wheel rotatably mounted on said fixed pivot, ratchet teeth on one side of said sparking wheel, and a pawl connected to said snuffing bar, said pawl being positioned for engagement with said ratchet teeth to cause said sparking wheel to turn in one direction when the snuffing bar swings in one direction on said fixed pivot, said pawl being adapted to slip across said ratchet teeth when the snuffing bar swings in the opposite direction on said fixed pivot, said casing having a well extending vertically downwardly therein from the top of said casing, said well having a front wall, a rear wall and a bottom wall, and an open top, said thumb-piece having two side walls, a top wall and a rear wall, and overlying the top opening of the well to constitute a cover therefor, a first pin extending rearwardly from said front wall near the top thereof, and a second pin extending forwardly from the rear wall of said thumb-piece near the bottom thereof, a U-shaped leaf spring having its bight lying in said well against the bottom thereof, said leaf spring having a hole punched near the end of each arm, said first pin extending through the hole in one of the arms to anchor the U-shaped spring in the well and said second pin extending into the hole of the other end of the leaf spring to maintain the thumb-piece and the case in assembled relation.

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