

Feb. 21, 1950

G. J. NICHOLS

2,498,178

LIGHTER

Filed Feb. 16, 1946

3 Sheets-Sheet 1

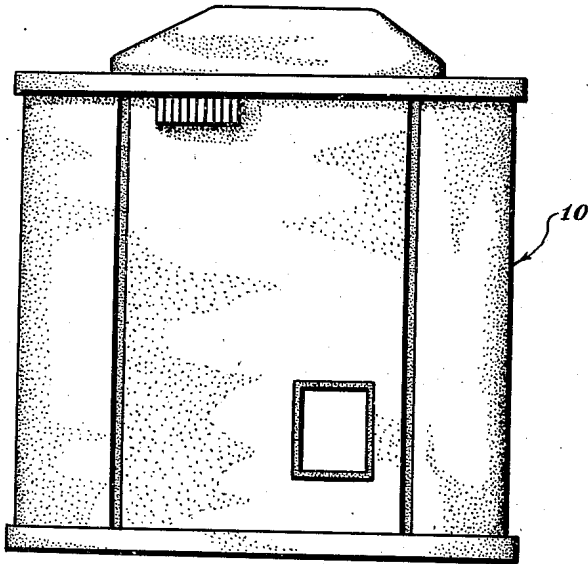


Fig. 1

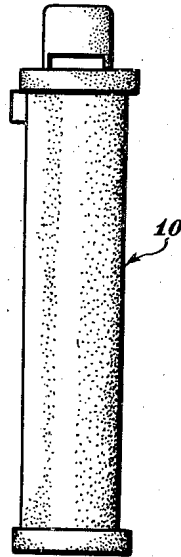


Fig. 2

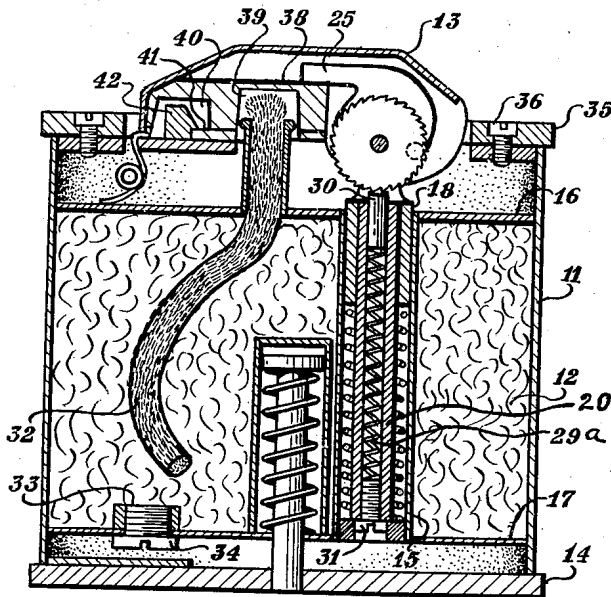


Fig. 3

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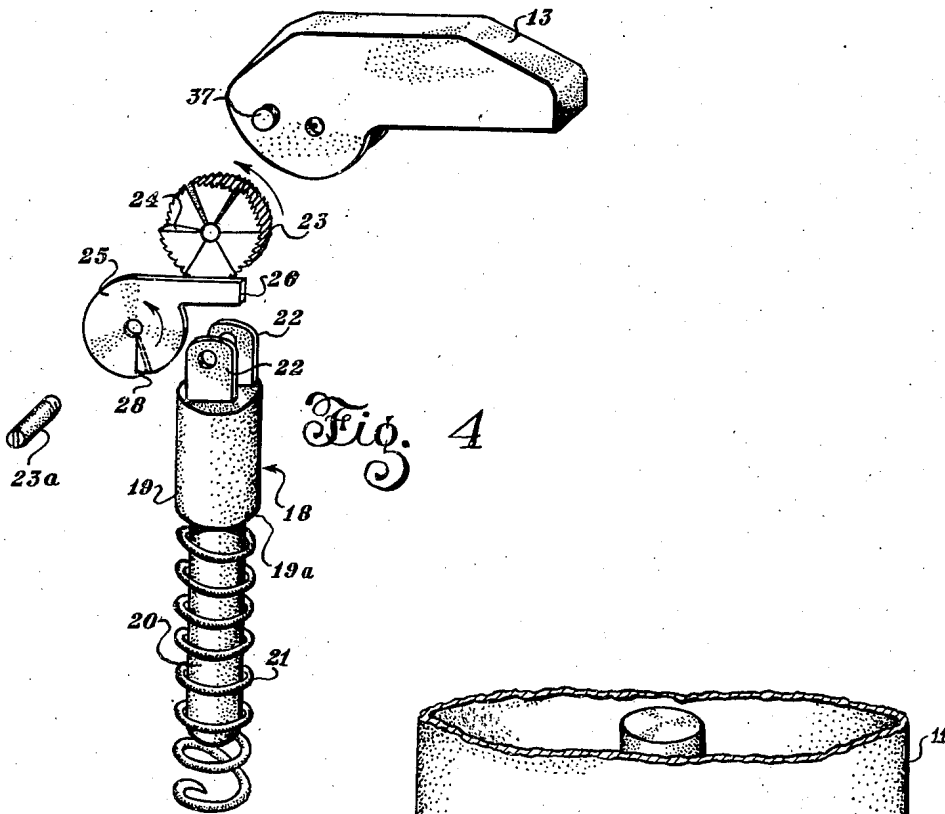


Fig. 4

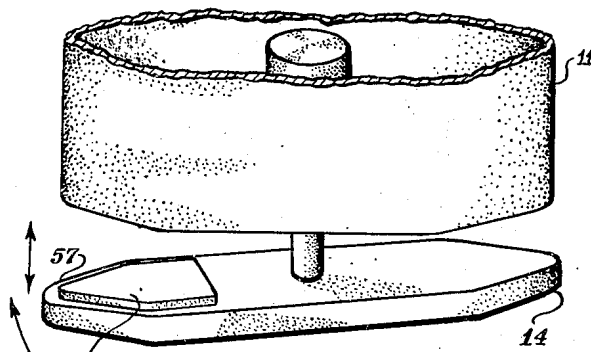


Fig. 5

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3 Sheets-Sheet 3

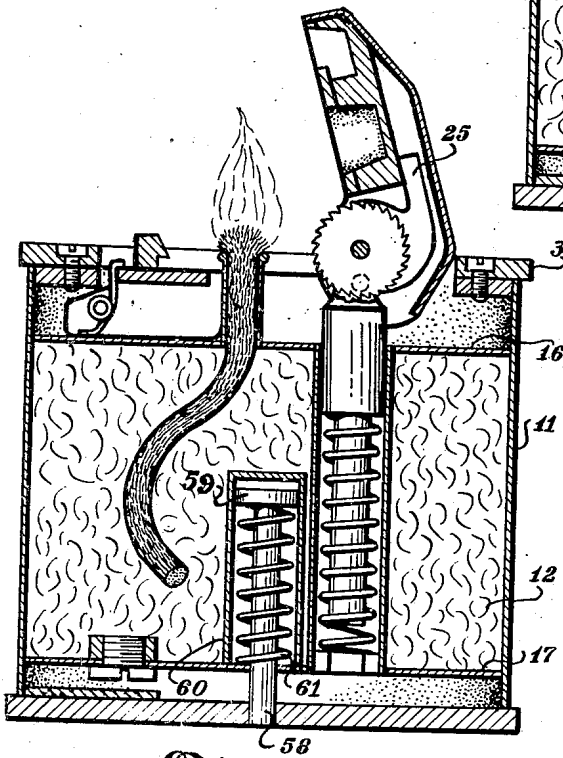
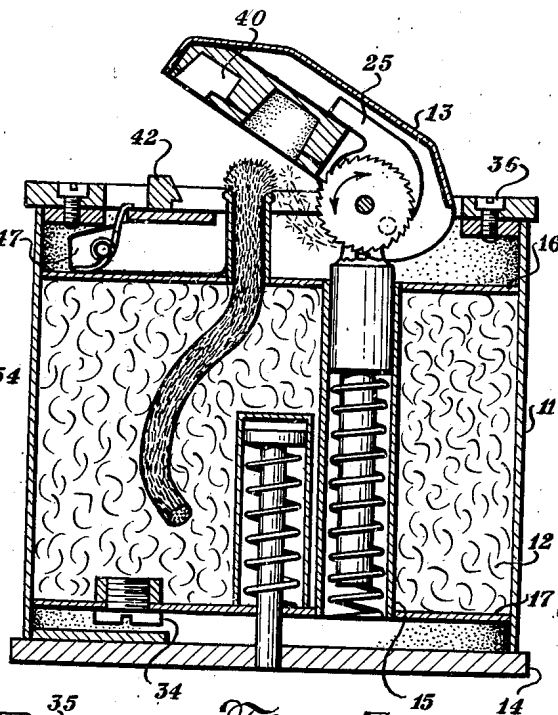
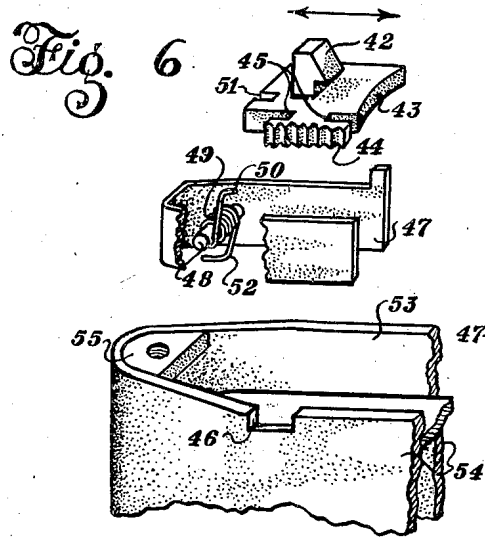


Fig. 8

Fig. 7

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5 Claims. (Cl. 67-7.1)

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This invention relates to lighters; for example, cigarette and cigar lighters.

One of the objects of this invention is to provide a cigarette lighter that will light a light automatically on opening the lighter.

Another object of the invention is the provision of a lighter having a novel arrangement in the bottom plate.

According to the principle of my invention, I have provided a lighter whereby, when a catch is thumbed, the cover of the lighter will fly open and the usual wick will be lit, without further operation or manipulation.

Also, according to the principle of my invention, I have provided a lighter whereby it is not necessary to unscrew screws to open the lighter from the bottom, but, instead, I have provided a spring-held bottom which may be pulled down and swung around in a turn-table manner, as will appear more fully hereinafter.

Another object is the provision of such a device which will be relatively simple in manufacture and inexpensive in cost.

Further objects and advantages will appear and be brought out more fully in the following specifications, reference being had to the accompanying drawings, in which:

Fig. 1 is a side elevation of the lighter of this invention.

Fig. 2 is an end view of the same.

Fig. 3 is a longitudinal vertical section through the lighter.

Fig. 4 is a detail perspective of parts of the actuating mechanism in exploded relation.

Fig. 5 is a perspective view of the revolving base.

Fig. 6 is an exploded perspective view of the cover catch mechanism in exploded relation.

Fig. 7 is a vertical section, showing the cover half open and showing the emission of sparks.

Fig. 8 is a longitudinal vertical section through the lighter, showing the cover completely open, with the wick lighted.

Referring to the drawings in detail, in which I have shown the preferred form for the purpose of illustrating the principle of my invention, I have shown a lighter 10, having a casing 11.

The casing may be filled with cotton 12.

The lighter is shown having a cover 13, and revolving bottom 14.

Inside the casing, there is shown a cylinder 15, which may be soldered, or otherwise secured, to the inside top wall 16 and the inside bottom wall 17.

I have shown a cover opener and flint holder 18, located in the cylinder 15.

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The cover opener is shown having an enlarged portion 19 and a reduced portion 20 secured thereto.

Coiled around the reduced portion 20, I have shown a spring 21, for pushing the cover opener upward.

This spring 21 bears against a shoulder 19a on the enlarged portion 19 at one end, and against a ring enclosing the head of a screw 31 at the other end.

I have also provided ears 22 on the cover opener 18, and a flint wheel 23 may be mounted on a pin 23a, as will be readily understood by those skilled in the art.

The wheel 23 is shown having ratchet teeth 24.

The flint wheel 23 is adapted to be actuated by an actuating disc 25, having an arm 26 inside the cover 13.

The actuating disc may have an off-set 28, as shown in Fig. 4, adapted to successively engage the teeth on the ratchet wheel. Spring 29a located within stem 20 holds the pyrophoric alloy 30 against the serrated periphery of the abrading wheel 23.

The adjustable screw 31 is provided to position the reduced extension 20 relative to the cylinder 15. A ring is fitted within the end of the cylinder 15 and encloses the head of the screw 31.

I have also provided a wick 32, as will be manifest from Fig. 3, etc.

Also provided is a fluid inlet opening 33, adapted to be closed by a screw plug 34.

A lid 35 is provided, and secured to the casing by screws 36, which extend into lugs, soldered or brazed in place, as will be readily understood by those skilled in the art.

Pivot pins 37 are mounted in the sides of the cover 13, and extend in opposite directions; and, are adapted to be freely held under the lid 35.

Also adapted to be mounted in the cover, is plate 38, as clearly shown in Fig. 3.

Instead of the plate, a cap or other means may be used.

This plate, in the form shown, has a cut-out 39 for the top end of the wick, and another cut-out 40 for a catch.

The cut-out 40 is arranged to leave a lip 41 for the catch 42 to catch upon.

The catch may be soldered or welded to a guide plate 43, having a thumb extension 44.

Also provided are cut-outs 45 in the guide plate 43, to permit it to reciprocate in the casing.

The thumb extension 44 is adapted to extend through a cut-out 46.

Also provided is a spring support plate 47,

as clearly shown in Fig. 6, having a pin 48 mounted therein.

Around the pin is adapted to be wound a torsional spring 49.

The upper bent portion 50 of the spring is adapted to engage a cut-out 51 in the guide plate 43, to normally press the guide plate one way.

The spring is also provided with a lower bend 52 which engages the top plate 16, for anchoring the spring to prevent its revolving.

As shown in Figs. 7 and 8, the spring support plate 47 is laid on the inside top wall 16, between walls 53 and 54, and is held in place by finger plate 43, which, in turn, is held down by the lid 35.

The revolving bottom plate 14 is shown having a key or step 56, to prevent revolution.

Mounted in the bottom plate is a post 58, having a head 59, adapted to be located in a cylinder 60 in the casing.

A spring 61 is adapted to keep the cover normally pulled tight on the casing. After inserting post 58 and spring 61 in cylinder 60, this cylinder is suitably secured to the bottom 17, as by soldering, and the stem may be secured to plate 57, as by a pressed fit.

With regard to the operation, when the guide plate 43 is thumbed on its finger extension 44, the catch 42, as clearly seen in Fig. 3, is moved from the lip 41 in the cover.

The spring 21 bears against the enlarged portion 19, which pushes the pin 23a upwardly, forcing the cover 13 to pivot on pins 37.

As the pin 23a moves vertically upward, the pin 37 retains the cover on the casing.

The offset 28 engages the ratchet teeth successively on the ratchet wheel at the rate of six teeth per revolution, and forces the flint wheel to revolve against the flint, and send sparks to the wick, which automatically lights the lighter.

It will be manifest that the lighting is accomplished by the means whereby the actuating disc with its off-set actuates the flint wheel, in a clockwise manner, to throw sparks from the flint.

It will be understood that the arm 25 on the actuating disc is located in the top of the cover, as shown in Fig. 7.

The actuating disc is actuated by the cover, in which the arm 25 is positioned.

As has been indicated, when the cover is forced up, the arm 25 is forced up with it, and the actuating disc revolves on the flint wheel, with the off-set 28 on the actuating disc 25 engaging an off-set 24 in the flint wheel 23.

As has also been shown, the cover is automatically opened when the catch 42 is thumbed off the lip 41, permitting the spring 21 to force the enlargement 18 upward, forcing the ears to bear against the pin 23a, to open the cover.

The pins 37 have been freely mounted, as stated, in view of the fact that the movement of the spring and its associated parts is vertically upward, which is compensated by the freely mounted pins 37.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variation and modifications as come within the scope of the appended claims.

Having thus described my invention, what I

claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described, the combination of a casing having a cover, a wick, a clevis in said casing, an abrading wheel journaled in said clevis, said abrading wheel having lateral ratchet teeth thereon, a rod of pyrophoric material in said clevis resiliently urged into contact with the abrading wheel periphery, a wick cover journaled in said clevis and having a trunnion engaging said cover, a pawl member journaled in said clevis and having an arm engaging said wick cover, spring means urging said clevis upward, and a manually releasable lock holding said wick cover over the wick.

2. In a device of the kind described, the combination of a casing having a cover, a wick, a clevis in said casing, an abrading wheel journaled in said clevis, said abrading wheel having lateral ratchet teeth thereon, a rod of pyrophoric material in said clevis resiliently urged into contact with the abrading wheel periphery, a wick cover journaled in said clevis and having a trunnion engaging said cover, a pawl member journaled in said clevis and having an arm engaging said wick cover, spring means urging said clevis upward, a latch plate slideable in said casing and having an operating extension, and a member on said wick cover coacting with said latch plate.

3. A device of the kind described, the combination of a casing having a cover, a wick, a clevis in said casing, an abrading wheel journaled in said clevis, said abrading wheel having lateral ratchet teeth thereon, a rod of pyrophoric material in said clevis resiliently urged into contact with the abrading wheel periphery, a wick cover journaled in said clevis and having a trunnion engaging said cover, a pawl member journaled in said clevis and having an arm engaging said wick cover, spring means urging said clevis upward, a latch plate slideable in said casing and having a latch member located to be enclosed in said wick cover, an operating extension for said latch plate, and a cooperating latch member carried by said wick cover.

4. In a lighter including a noncircular casing having an inner bottom wall spaced from the bottom edge thereof providing a fuel receiving chamber, said wall being formed with a fluid inlet opening, a screw plug closing said opening, a tubular cylinder anchored at one end and extending upwardly from said bottom wall, a tubular cover actuator within said cylinder, a flint mounted in said actuator, a spring biasing said flint, and a screw threaded into said tubular actuator through a hole in said bottom casing wall and adjustable to adjust the tension of said spring, the improvement consisting of a bottom plate normally engaging the bottom edge of the casing, a key carried by said plate engaging said casing to prevent relative rotation between said bottom plate and casing, said bottom plate carrying a stud shaft which is received in a socket carried by said inner wall, and a spring enclosing said shaft and biasing the shaft to normally maintain said bottom plate against said edge with the key interlocking with the casing.

5. In a lighter including a noncircular casing having an inner bottom wall spaced from the bottom edge thereof providing a fuel receiving chamber, said wall being formed with a fluid inlet opening, a screw plug closing said opening, a tubular cylinder anchored at one end and extending upwardly from said bottom wall, a tubular cover actuator within said cylinder, a flint

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mounted in said actuator, a spring biasing said flint, and a screw threaded into said tubular actuator through a hole in said bottom casing wall and adjustable to adjust the tension of said spring, the improvement consisting of a cylinder 5 upstanding from said inner bottom wall substantially at the center thereof, a piston slideable in said cylinder, a shaft anchored at one end to said piston and extending through a hole in said inner bottom wall, an expansion coil spring dis- 10 posed about said shaft and engaging the inner bottom wall at one end and said piston at the other end, a bottom plate carried at the free end of said shaft and engaging the bottom edge of said casing in spaced relation to said inner wall, 15 and a key mounted on the inner face of said bottom plate and engaging said casing to prevent relative rotation of said bottom plate and casing.

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