

## PATENT SPECIFICATION

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460,115

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Complete Specification Accepted: Jan. 21, 1937.



### COMPLETE SPECIFICATION

#### Improvements in or relating to Cigarette Lighters

I, IRVING FLORMAN, a citizen of the United States of America, of Box 336, Grand Central Annex, New York City, New York, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to improvements in and relating to pyrophoric lighters for lighting cigarettes, cigars and the like and more particularly to pyrophoric lighters having a flint wheel spark producing mechanism including a spring tensionable on the movement of an operating member in the form of a wick cover and subsequently releasable to actuate the flint-wheel to ignite the wick.

20 The principal object of this invention is to provide a pyrophoric lighter which is of simple, yet robust construction and which is entirely efficient and safe in operation.

25 According to this invention, in a pyrophoric lighter of the above kind, one end of the spring is attached to the said wick cover and the other end to a rotatable member having a one-way connection with the flint-wheel, latch mechanism releasable by said wick cover being provided for preventing rotation of the said rotatable member, until the said cover approaches the end of its opening movement.

35 The rotatable member may be formed as a wheel loosely mounted on the flint-wheel shaft and having a projection thereon engageable with ratchet teeth on the flint-wheel. The said wheel also preferably has a second projection thereon for engagement with the said latch mechanism.

45 The latch mechanism is preferably carried by the casing of the lighter substantially beneath the rotatable member and is normally spring-urged into contact therewith.

50 The wick cover, which may also form the complete lid of the lighter, is advantageously pivoted to the flint wheel shaft, which may be carried in brackets upstanding from the top of the casing.

When the wick cover forms the complete lighter lid, the rear side may be foreshortened to allow of the cover being swung to open position, the corresponding side of the casing being extended upwards substantially to meet the said foreshortened portion so as to complete the said rear side when the cover is closed. In this case, the sides of the cover are inset to accommodate the said brackets and one of the said sides is adapted, when the cover is raised, to depress the latch and release the rotatable member to rotate the flint-wheel.

65 In order that the invention may be fully understood, I will now describe one embodiment thereof by way of example, by reference to the accompanying drawings, in which:

Fig. 1 is a side view of the invention with the wick cover partly open.

Fig. 2 is an enlarged end view with the cover fully open.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a partial sectional side view with the cover closed.

Fig. 5 is a horizontal section on the line 5—5 of Fig. 4.

Fig. 6 is a partial end elevation adjacent the hinge with the cover closed.

85 In the construction shown, the lighter consists of a body 2 comprising a fuel chamber which is filled with some absorbent material such as cotton, and which may be filled from the bottom by the removal of a plug 4. In the top wall of the body is an opening through which extends a wick 6, and a second opening having a flint 8 which may be inserted and replaced through a plug 10 in the bottom of the casing 2. A spring of the usual type acts on the flint to push it upwards. On either side of the casing, and at the sides of the flint, are upstanding ears 12.

100 The ears 12 support a shaft or pivot 14 upon which is pivotally mounted a cover having side walls 16, a front wall 18, and a top wall 20. The side walls of the cover are pivoted on the shaft 14, the portions of these walls opposite the ears 12 being set inwardly as at 17 so that the

main portions of the side wall 16 may be flush with the sides of the casing 2. The rear wall 22 of the cover is very short, terminating substantially on a level with the top of the ears 12. The rear wall of the casing extends upwardly as at 24 so as substantially to close the space below the rear wall 22. Between the upwardly extending portion 24 and the ears 12 spaces or slots 26 are provided, in which the inwardly set portions 17 of the cover side walls may move. It is evident that the cover may be moved from the closing position shown in Fig. 4 to the open position shown in Fig. 3.

Upon the shaft 14, and above the flint 8, is rotatably mounted a flint wheel 28 having a serrated or roughened surface for striking sparks from the flint. The inner surface of this flint wheel is provided with ratchet portions 30, these portions being engageable by a shoulder or pawl member 32 on a wheel 34 which is movably mounted on shaft 14. A coil spring 36, another function of which will be described below, is arranged between wheel 34 and the opposite side wall 16 of the cover, and thus presses wheel 34 against flint wheel 28. It is evident that when wheel 34 is rotated in one direction it will cause the wheel 28 to rotate and thus throw sparks against the wick 6, while upon rotation of wheel 34 in the other direction wheel 28 may remain stationary because of the ratchet surfaces 30.

Coil spring 36 has the further function of causing the rotation of wheel 34 and thereby of flint wheel 28. One end of the spring 36 fits into a notch formed by lug 38 and second lug 40 on the periphery of the wheel 34, so that this end of the spring causes movement of the wheel. The other end of the spring is arranged in a hook member 42 rigid with the side wall 16. This arrangement is such that as the cover is raised the end held by hook 42 is moved around shaft 14 so as to tighten or place under tension the spring 36.

In order to impart a sudden motion through the spring 36 to the flint wheel 28, it is necessary to hold the wheel 34 while the cover is being raised, thus putting the spring under tension, and then to release the wheel 34 when the spring is fully tensioned so that it will impart a sudden spin to the flint wheel and thereby produce sparks. This is accomplished by means of a latch member 44 which has a plug or stem 46 fitted in an opening 48 in the body 2, and spring pressed upwardly by a coil spring 50. Latch member 44 has in one side thereof a notch 52 in which can engage

a lug or nose 54 integral with wheel 34. When the cover is closed, as shown in Fig. 4, nose 54 engages in notch 52 and wheel 34 is held against rotation. As the cover is raised, spring 36 will be placed under tension, and will thereby exert a force on wheel 34 tending to turn it.

Latch member 44 also has rearward extension 56 arranged in one of the slots 26. When the cover reaches its open position, one of the inset portions 17 will strike the extension 56 and will thereby depress the latch member 44 against the action of spring 50. This will release nose 54 from notch 52, and wheel 34 will turn suddenly and thereby impart a sudden rotation to the flint wheel 28. This will then cause ignition of the wick.

In order to extinguish the wick, and to seal the same off from the atmosphere, so as to prevent evaporation and waste of the fuel, a tubular member or snuffer 60 is provided within the cover, which is arranged so as to fit down over and cover the wick 6. This member is mounted on the end of a thin resilient member or leaf spring 62, the other end of which is secured to the top wall 20 of the cover. The snuffer is thus resiliently urged into position, and may easily adapt itself to take up any wear which may occur and then insure absolutely sealing of the wick.

The side walls 16 also carry a cross bar or pin 58, which acts as a stop. This bar is arranged in the path of the lug 40, so that, when the wheel has moved a sufficient distance to cause ignition of the wick, lug 40 will engage pin 58 and thus stop the motion of the wheel 34 and the flint wheel 28. By this arrangement, the spring may be permanently partly tensioned at all times, and only some additional tension applied thereto for the operation of the lighter. In this manner, the lighter spring may impart a more effective motion to the flint wheel.

From the above description, it is evident that in order to operate the lighter all that is necessary is to hold the body of the lighter in the hand and raise the cover with the thumb in the manner indicated in Fig. 1. In order to extinguish the lighter the cover is moved back, for example with the forefinger, to closed position. The tension of the spring will hold the lighter closed, until pressure is again exerted by the thumb to open it.

While I have described herein one embodiment of my invention I wish it to be understood that I do not intend to limit myself thereby except within the scope of the appended claims.

Having now particularly described and ascertained the nature of my said inven-

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tion and in what manner the same is to be performed, I declare that what I claim is:—

1. A pyrophoric lighter having a flint-wheel spark producing mechanism including a spring tensionable on the movement of an operating member forming a cover for the wick and subsequently releasable to actuate the flint-wheel to ignite the wick, wherein one end of the spring is attached to the said wick cover and the other end to a rotatable member having a one-way connection with the flint-wheel, latch mechanism releasable by said cover being provided for preventing rotation of said rotatable member until the cover approaches the end of its opening movement.

2. A pyrophoric lighter as claimed in Claim 1, wherein the rotatable member is formed as a wheel loosely mounted on the flint wheel shaft and having a projection thereon engageable with ratchet teeth formed on the said flint-wheel.

3. A pyrophoric lighter as claimed in Claim 2, wherein the said wheel also has a second projection thereon for engagement with the said latch mechanism.

4. A pyrophoric lighter as claimed in any of the preceding Claims, wherein the latch mechanism is carried by the casing of the lighter substantially beneath the said rotatable member and is normally spring-urged into contact therewith.

5. A pyrophoric lighter as claimed in Claim 4, wherein the latch member is formed with a projection adapted to be contacted by the wick cover to release the said latch when the said cover approaches the end of its movement.

6. A pyrophoric lighter as claimed in any of the preceding Claims, wherein the wick cover is pivoted to the flint-wheel shaft.

7. A pyrophoric lighter as claimed in any of the preceding Claims, wherein the flint-wheel shaft is mounted in brackets upstanding from the top of the casing of the lighter.

8. A pyrophoric lighter as claimed in

any of the preceding Claims, wherein the spring is in the form of a coil spring surrounding the flint-wheel shaft.

9. A pyrophoric lighter as claimed in any of the preceding Claims, wherein means are provided whereby the spring is kept in a constant partial state of tension.

10. A pyrophoric lighter as claimed in Claim 9, wherein the means comprises a pin carried by the wick cover and a lug on the rotatable member adapted to engage the said pin after the flint wheel has caused ignition of the wick.

11. A pyrophoric lighter as claimed in any of Claims 1 to 10, wherein the wick cover forms the complete lid of the lighter, and carries a depending snuffer adapted to fit over the said wick when the cover is closed and to extinguish the flame therefrom.

12. A pyrophoric lighter as claimed in Claim 11, wherein the rear side of the wick cover is foreshortened to allow of the cover being swung to open position and the corresponding side of the casing is extended upwardly substantially to meet the said foreshortened portion so as to complete the said rear side when the cover is closed.

13. A pyrophoric lighter as claimed in Claims 7 and 11 or 12, wherein the sides of the cover are partly inset to accommodate the said brackets flush with the casing of the lighter.

14. A pyrophoric lighter as claimed in Claim 13, wherein one of the inset sides of the cover is adapted, when the said cover reaches fully open position, to depress the latch and release the rotatable member.

15. The improved pyrophoric lighter, constructed, arranged and operating substantially as hereinbefore described and illustrated in the accompanying drawings.

Dated the 28th day of May, 1936.

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Fig. 1.

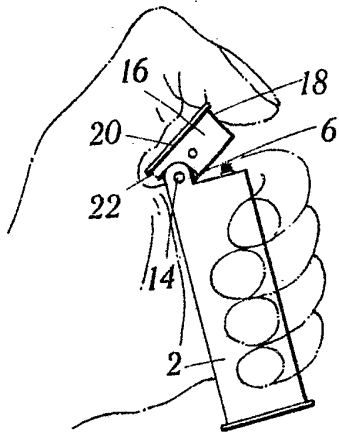


Fig. 4.

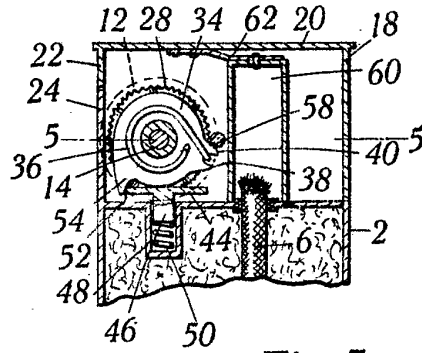


Fig. 5.

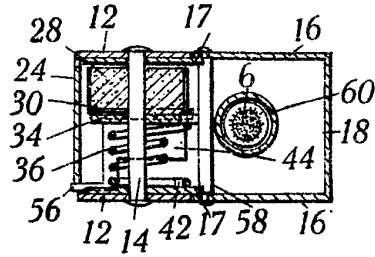


Fig. 2.

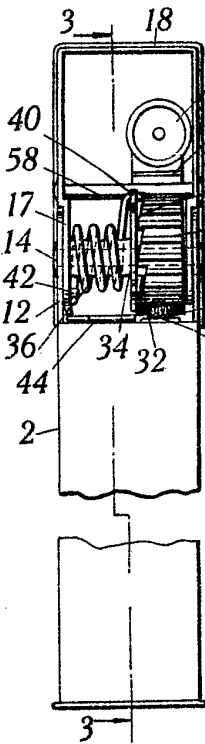


Fig. 3.

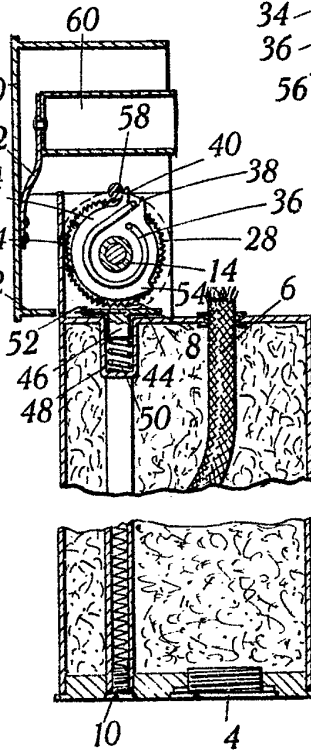
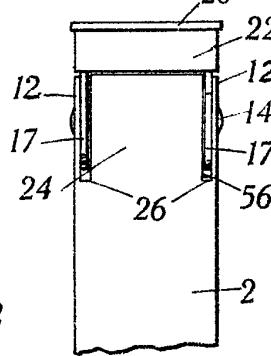


Fig. 6.



[This Drawing is a reproduction of the Original on a reduced scale.]