

March 11, 1952

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2,588,479

LIGHTER LOCKING MECHANISM

Filed Feb. 26, 1949

Fig. 1.

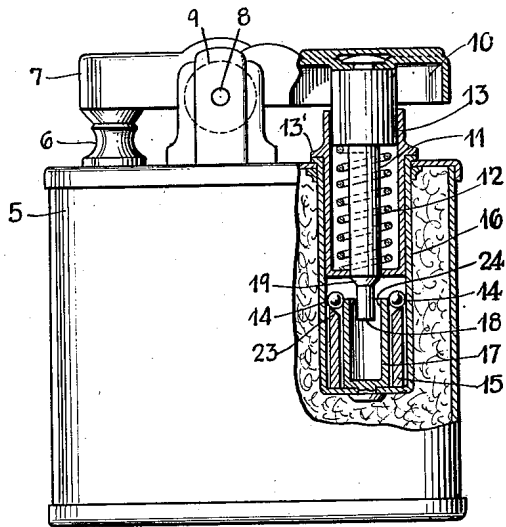


Fig. 2.

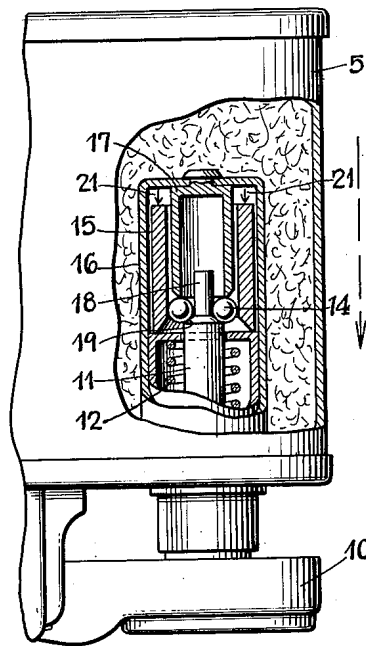


Fig. 3.

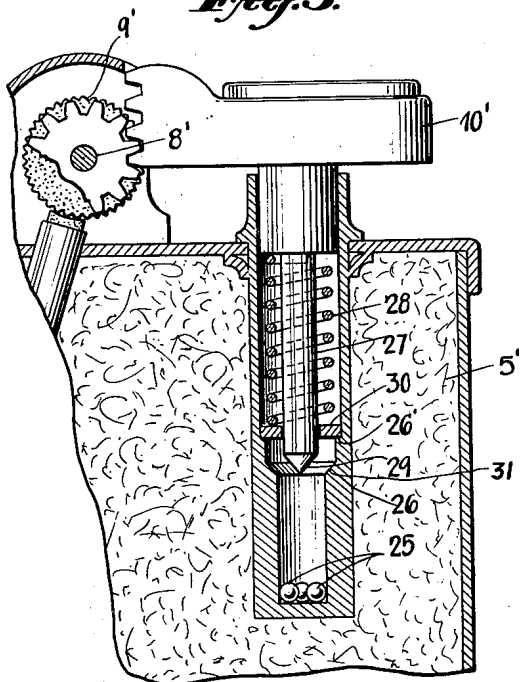
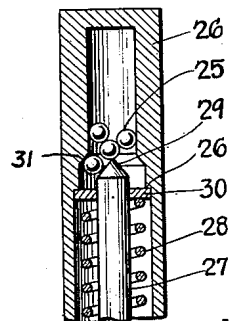


Fig. 4.



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2,588,479

LIGHTER LOCKING MECHANISM

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Application February 26, 1949, Serial No. 78,488

3 Claims. (Cl. 67—7.1)

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This invention relates to cigar lighters of the pyrophoric type wherein the sparking wheel is actuated by a fingerpiece to project sparks toward a wick or burner, and aims primarily to provide a lighter of the above character wherein the actuating mechanism is operable in the usual manner when the lighter is approximately in a position in which it is normally held during use, but will be effectively locked against the production of sparks or a flame, when the lighter is held in other positions deviating substantially from those in which the lighter usually will be held when a light is to be intentionally produced.

Further objects, features and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained, which, taken in conjunction with the accompanying drawing, discloses preferred forms of a lighter constructed to operate in accordance with the invention, the disclosure, however, should be considered merely illustrative of the principles of the invention in its broader aspects.

Fig. 1 is a side elevation, with certain parts cut away, of a cigar lighter having a locking mechanism constructed to operate in accordance with one form of the invention;

Fig. 2 is a fragmentary view showing the lighter of Fig. 1 in an inverted position wherein the locking mechanism is in its active locking position;

Fig. 3 is a side elevation, with certain parts cut away, of a cigar lighter having a locking mechanism of modified form, constructed to operate in accordance with the invention; and

Fig. 4 is a fragmentary view showing the locking mechanism of Fig. 3 in its active locking position.

In accordance with the invention, locking means are so positioned when the lighter is in its normal upright position as to allow the lighter to be freely operated in the normal manner, but as the lighter is inverted from its normal position, the locking means are automatically caused to shift, under the influence of gravity, into an active position wherein the fingerpiece is prevented from moving through its wheel actuation stroke.

In Figs. 1 and 2, one form of the invention is illustrated as applied to a lighter of well known general construction, having a fuel casing 5 from which protrudes a wick tube 6, which also serves as a seat for a snuffer 7 rotatably mounted on an axle 8, the latter also carrying a sparking wheel 9. A reciprocable fingerpiece 10 having a

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plunger 11 fixed thereto is normally urged toward its upper idle position shown in Fig. 1 by a compression spring 12 disposed within a suitable guide shell 13 extending upwardly through the top wall of the casing 5 and provided with an annular lip 13' to hold it in position. When the fingerpiece 10 is depressed, sparking wheel 9 is rotated (by mechanism well known in the art and therefore not shown or described in detail) to project sparks onto a wick carried by the wick tube 6 and simultaneously therewith, the snuffer 7 is caused to swing upwardly to expose the wick to the projected sparks. Upon the release of pressure on the fingerpiece 10, the spring 12 restores it to the idle position shown in Fig. 1, the sparking wheel 9 usually being freed from connection with the fingerpiece during this stage of movement. Since various forms of lighters of the construction and mode of operation as thus far described are well known in the art to which the invention pertains, the same will not be described in greater detail herein.

In the form of the invention illustrated in Figs. 1 and 2, the locking mechanism above referred to comprises a plurality of balls 14 and a movably mounted sleeve 15, on which the balls rest when in non-locking position, the sleeve 15 being interposed between an enclosing barrel 16 and a central guide 17 within which the reduced portion 18 of the plunger is received. As can be seen from Fig. 1, when the lighter is disposed in an upright position with the burner member or wick tube 6 upwardly directed, as will usually be the case when a light is desired, the fingerpiece 10 may be depressed to produce a light in the usual way, the balls 14 being, under such conditions, clear of the path of movement of plunger 11. However, if the lighter be tilted substantially toward an inverted position, as shown in Fig. 2 the balls 14 will shift under the influence of gravity to a position wherein they are aligned with a shoulder 19 on the plunger 11 formed by the reduced portion 18 thereof. Further, as the lighter approaches an inverted position, the sleeve 15 is also moved by gravity in the direction of arrows 21, Fig. 2, to engage the guide shell 13. In this position, sleeve 15, together with guide 17, serves to hold the balls 14 in line with shoulder 19 and thereby lock the fingerpiece against movement through its spark producing stroke. If the lighter be restored from the position shown in Fig. 2 to that shown in Fig. 1, the sleeve 15 will move under the influence of gravity back to the position shown in Fig. 1, and the balls 14 will also move under the influence of

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gravity out of line with the shoulder 19 on the plunger and back into the position shown in Fig. 1, thereby releasing the locking mechanism so that the lighter may be actuated in the usual way.

As shown in Fig. 1, the upper edge of sleeve 15 is preferably beveled as at 23 and the upper edge of guide 17 is beveled as at 24, to facilitate the above-described movements of balls 14.

In Figs. 3 and 4, another form of the invention is illustrated as applied to a lighter of well known general construction, having a fuel casing 5' on which is mounted a reciprocable fingerpiece 10' adapted upon depression thereof to actuate a sparking wheel 9' rotatably mounted upon an axle 8' as heretofore described. In this form of the invention, the locking means comprises a plurality of balls 25 freely disposed within a pocket in the bottom of the plunger guide 26, Fig. 3. Thus, when the lighter is in the normal position for use, as shown in Fig. 3, the fingerpiece and plunger 27 fixed thereto may be depressed against the action of spring 28 to actuate the sparking wheel 9', the fingerpiece thereafter being restored to its idle position by spring 28, supported at its lower extremity by a washer 30 which in turn is supported on an annular shoulder 26' on the inside of the plunger guide 26. As the lighter is moved toward the inverted position shown in Fig. 4, one or more of the balls 25 will fall under the influence of gravity into position between the reduced end 29 of plunger 27 and a shoulder 31 on the inner surface of the plunger guide 26, the space between the reduced end 29 of the plunger and the shoulder 31 being of such a size that the balls 14 may not be forced out of plunger locking position when inward pressure is applied to the fingerpiece. Thus, the actuating mechanism of the lighter is locked against spark or flame producing movement, so long as the lighter is in a position approaching the fully inverted position shown in Fig. 4. If the lighter be moved from the position shown in Fig. 4 toward that shown in Fig. 3, the balls 25 will fall under the influence of gravity of locking position between the end of the plunger and shoulder 31 into the position shown in Fig. 3, thus releasing the actuating mechanism of the lighter for operation in the usual way.

Thus the locking mechanism is set automatically to prevent the production of sparks and ignition of the fuel, whenever the lighter assumes a position deviating substantially from a normal operating position in which it will usually be held for lighting purposes.

While the invention has been disclosed as carried out by lighters of the above-described specific constructions, it should be understood that changes may be made therein without departing from the invention in its broader aspects, within the scope of the appended claims.

We claim:

1. A cigar lighter of the class described having a fuel casing, a sparking wheel mounted thereon, a burner member adjacent said sparking wheel, a manually operable fingerpiece mounted on said casing, means mounting said fingerpiece to move between idle and active positions, mechanism coupling said fingerpiece and sparking wheel to rotate the latter when said fingerpiece is manually operated to move from

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idle toward active position, a locking member freely carried by said casing for movement between positions wherein the fingerpiece is freed for movement from idle toward active position when said burner member is upwardly directed and wherein said fingerpiece is locked against movement from idle toward active position when said burner member is downwardly directed, and a gravity controlled member mounted to move between positions wherein it respectively maintains said locking member in its locking position when said burner member is downwardly directed and wherein it releases said locking member from its locking position when said burner member is upwardly directed.

2. A cigar lighter of the class described having a fuel casing, a sparking wheel mounted thereon, a burner member adjacent said sparking wheel, a manually depressible fingerpiece carried on said casing and having a guide plunger, means for mounting said fingerpiece including said plunger to move between idle and active positions, mechanism interconnecting said fingerpiece with said sparking wheel to actuate the latter upon movement of said fingerpiece and plunger from idle toward active position, a plurality of balls movably carried within said casing and mounted to move into a position clear of said plunger when said burner member is upwardly directed, and into the path of movement of said plunger when said burner member is downwardly directed thereby to prevent movement of said fingerpiece toward active position, and a gravity controlled member mounted to move between positions wherein it respectively maintains said plurality of balls in the path of movement of said plunger when said burner member is downwardly directed and wherein it releases said plurality of balls for movement into a position clear of the plunger when the burner member is upwardly directed.

3. A cigar lighter of the class described having a fuel casing, a sparking wheel mounted thereon, a burner member adjacent said sparking wheel, a manually operable finger piece, carried on said casing and having a guide plunger, means for mounting said finger piece including said plunger to move between idle and active positions, mechanism interconnecting said finger piece with said sparking wheel to actuate the latter upon movement of said finger piece and plunger from idle toward active position, a stop member, and a locking member movable by gravity into a position clear of said plunger when said burner member is upwardly directed and being movable by gravity into the path of movement of said plunger and between said plunger and said stop member when said burner member is downwardly directed thereby to prevent movement of said finger piece toward active position.

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