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AMENDED SPECIFICATION

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PATENT SPECIFICATION



Application Date: Jan. 28, 1942. No. 1164/42.

552,941

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Complete Specification Accepted: April 30, 1943.

PROVISIONAL SPECIFICATION

Improvements in and relating to Friction Igniters for Cigarettes and the like

We, GEORGE GARDINER REES and ALBERT MAURICE KEDMAN, both of 19, Progress Way, Croydon, Surrey, and both of British Nationality, do hereby declare the nature of this invention to be as follows:—

The present invention relates to an improved friction igniter for cigarettes, cigars and the like.

10 The invention is concerned more particularly with a pocket lighter of the kind in which the back of a generally rectangular container is constituted by an actuating lever which is pivoted at the bottom of the container and the top of which is formed as a rack meshing with a similar rack on the pivoted lid, actuation of the pivoted lever serving simultaneously to open the lid and to rotate a flint wheel against a suitably disposed flint so as to ignite a wick.

In order to keep the size of the lighter to a minimum it has already been proposed to form the second mentioned rack on one edge of the lid itself, but it has been found that, with such an arrangement, side thrust is introduced as the lid is opened which causes inordinate wear and gives unsatisfactory operation. As an improvement on such construction it has been proposed to form racks on both sides of the lid to co-operate with a pair of racks on the actuating lever. Whilst this construction avoids the introduction of side thrust it is still not satisfactory because the material of the lid is very thin in order to keep the size of the lighter down and hence the teeth of the rack on the lid break off very easily. It will be appreciated that this disadvantage also applies to the first mentioned known construction.

The next step of improvement already

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proposed for such lighters was to form the rack not on the lid but on a separate wheel which was secured to the lid and which was of stronger material than the lid. When a single such wheel was used side thrusts were introduced, and when a pair of symmetrically disposed wheels were secured one to each inside face of the lid, the manufacturing trouble arose of having to weld or solder the wheels on to the lid.

According to the present invention the lid racks are formed on a U-shaped member the ends of the arms of which are formed as wheels and on each of which is formed one rack. The U-member is loosely pivoted upon a spindle, mounted in the lid, which carries the flint-wheel and a dog or pawl for driving the flint-wheel. Although loosely mounted on its spindle about an axis passing through the centre of the wheel-like members formed on the ends of the arms of the U, the U-shaped member is prevented from rotating relatively to the lid by suitable indentations formed in the lid which secure the U-member in a fixed position with respect to the lid, whilst the dog or pawl is also secured from rotating with respect to the lid by virtue of the fact that a portion of it is held within a slot formed in the bridge portion of the U-member.

The device is operated as follows: when the actuating lever is pressed it rotates about its pivotal joint, which is at the lower end of the container, thus moving the pair of racks formed at its upper bifurcated end. The pair of racks on the actuating lever mesh with and consequently drive a pair of racks formed on the U-member so as to rotate the latter. The U-member, being secured from rotation with respect to the lid and the pawl,

rotates both of these members so as to open the lid and simultaneously to cause the pawl to rotate the flint-wheel which on one side face is formed with notches engaging the pawl during the opening motion of the lid. When the actuating lever is released the motion of the racks is reversed and the lid is positively closed whilst the notches on the flint-wheel ride over the pawl.

The usual wick and fuel box are held within the container, and a snuffing cap in the lid, in appropriate positions.

It will be appreciated that such an actuating mechanism for the lid and flint-wheel has the advantage of being balanced so that no side thrusts upon the lid are introduced, no soldering or welding operation is required in the manufacturing process, whilst no substantial increase in the size of the lighter is involved.

Dated this 28th day of January, 1942.

Agent for the Applicants,
R. G. C. JENKINS,
Chartered Patent Agent,
77, Chancery Lane, London, W.C.2.

COMPLETE SPECIFICATION

Improvements in and relating to Friction Igniters for Cigarettes and the like

We, GEORGE GARDINER REES and ALBERT MAURICE REDMAN, both of 19, Progress Way, Croydon, Surrey, and both of British Nationality, 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:—

The present invention relates to an improved friction igniter for cigarettes, cigars and the like.

The invention is more particularly, although not exclusively, concerned with a pocket lighter of the kind in which the back of a generally rectangular container is constituted by an actuating lever which is pivoted at the bottom of the container and the top of which is formed as a rack meshing with a similar rack on the pivoted lid, actuation of the pivoted lever serving simultaneously to open the lid and to rotate a flint wheel against a suitably disposed flint so as to ignite a wick.

In order to keep the size of the lighter to a minimum it has already been proposed to form the second mentioned rack on one edge of the lid itself, but it has been found that, with such an arrangement, side thrust is introduced as the lid is opened which causes inordinate wear and gives unsatisfactory operation. As an improvement on such construction it has been proposed to form racks on both sides of the lid to co-operate with a pair of racks on the actuating lever. Whilst this construction avoids the introduction of side thrust it is still not satisfactory because the material of the lid is very thin in order to keep the size of the lighter down and hence the teeth of the rack on the lid break off very easily. It will be appreciated that this disadvantage also applies to the first mentioned known construction.

A next step of improvement already proposed for such lighters was to form the racks not on the lid but on separate wheels which were secured symmetrically to the outer sides of the lid. Such an arrangement necessitates, however, securing the wheels to the lid in such a manner that they are free from movement relatively to the lid and are in the correct angular relationship one with the other.

According to the present invention there is provided a friction igniter comprising a container for a flint and an ignitable wick, a lid pivoted on the container, a manually operable lever also pivoted on said container and mechanically linked with the lid in such manner that by movement of the lever the lid can be opened and closed, and a flint wheel movable with the lid to strike against said flint when the lid is opened, wherein the said linkage between the manually operable lever and the lid comprises a U-shaped member located within and separated from the lid but restrained from movement with respect thereto, the ends of the arms of which U-shaped member are formed with racks meshing with a similar pair of racks formed on the end of said manually operable lever.

A preferred form of the invention will now be described with reference to the accompanying diagrammatic drawings, in which:

Figures 1 and 2 are side elevations, partly broken away, of a pocket lighter in its closed and opened positions respectively,

Figure 3 is a view on the line 3—3 of Figure 2, and

Figure 4 is a perspective view of a U-shaped member forming a part of the lighter.

Referring to the figures, the lighter comprises a container 10 for an ignitable

wick (not shown) and the usual other components of such lighters, and a lid 11 hinged to the container 10 about a spindle 12. Secured within the lid 11 is a snuffer 5 13 which when the lid is closed descends upon the end of the wick which protrudes in the usual way from a box-like holder 14 for inflammable liquid. Pivoted at 15 within the back of the container is a lever 10 16 which is of U-section and the upper end of which is bifurcated to form two arms 17 and 18 formed at their ends with racks 19 and 20 meshing with racks 21 and 22 formed on a U-shaped member 23. The 15 U-member is shown in detail in Figure 4; it comprises two arms 24 and 25 at the ends of which are formed the racks 21 and 22, the pivot spindle 12 passing freely through holes 26 and 27 formed at the 20 centre of circular enlargements of the ends of the arms of U-member. The cross of the U is formed with a slot 28 within which is secured the end of a dog or pawl 29 formed with teeth 30 driving a disc-shaped flint-wheel 31 formed with teeth 25 32. The pawl 29 and the flint-wheel 31 are mounted freely on the spindle 12, the flint-wheel bearing against the end of a flint 33 spring-urged upwardly, in any 30 known or suitable manner, against the wheel 31.

Angular motion of the lever 16 is limited, at one end of its travel, by a stop 34 bridging the container and serving also 35 as a strengthening member. The lever 16 is urged to its backward position i.e. to a position such that the lid is closed by a spring (not shown).

The U-member 23 is held in a fixed position with respect to the lid 11 by means of a lug 35 formed as an indentation in one side of the lid.

The operation of the device is as follows:

45 As the lever 16 is pressed manually towards and into the position shown in Figure 2, against its spring, the racks 19 and 20 drive the racks 21 and 22 so as to rotate the U-member 23, and the U-member 50 23 being fixed with respect to the lid, the latter is rotated, about the spindle 12, into the open position. The pawl 29 is fixed to the U-member so that it rotates with it, its teeth 30 meanwhile engaging and driving teeth 32 on the flint-wheel so 55 that the latter is rotated against, and produces a spark from, the flint 33. The spark is thus produced as the lid opens. When the lever 16 is released it spring 60 functions to move it in the opposite angu-

lar direction so as to close the lid. During this motion the U-member and the pawl are rotated with the lid, but the teeth of the pawl ride over the teeth of the flint-wheel which is held stationary by frictional contact with the flint. 65

It will be appreciated that such driving mechanism being symmetrical, introduces no side thrusts, and that the U-member does not require to be soldered or 70 welded to the lid, whilst it is easy and cheap to manufacture and assemble.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be 75 performed, we declare that what we claim is:—

1. A friction igniter comprising a container for a flint and an ignitable wick, a lid pivoted on the container, a manually operable lever also pivoted on said 80 container and mechanically linked with the lid in such manner that by movement of the lever the lid can be opened and closed, and a flint wheel movable with the lid to strike against said flint when the lid is opened, wherein the said linkage 85 between the manually operable lever and the lid comprises a U-shaped member located within and separate from the lid but restrained from movement with respect thereto, the ends of the arm of which U-shaped member are formed with rack 90 meshing with a similar pair of racks formed on the end of said manually operable lever. 95

2. A friction igniter as claimed in Claim 1, wherein there is secured to said U-shaped member a pawl serving to drive said flint wheel in one direction only, 100 namely that occurring when the lid is opened.

3. A friction igniter as claimed in either of the preceding Claims, wherein the said lid and U-shaped member are 105 pivoted upon a common spindle mounted in said container.

4. A friction igniter as claimed in Claim 3, wherein said U-shaped member is held within the lid by a lug formed as 110 an indentation in the lid.

5. A friction igniter substantially as described herein or as shown in the accompanying figures.

Dated this 1st day of March, 1943.

Agent for the Applicants,

R. G. C. JENKINS,

Chartered Patent Agent,

77, Chancery Lane, London, W.C.2.

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

FIG. 1.

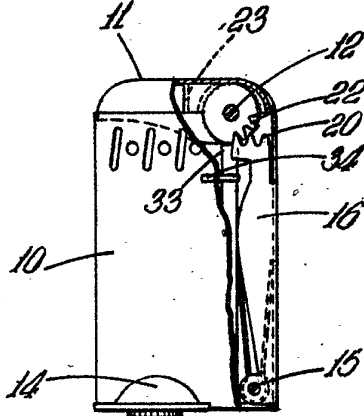


FIG. 2.

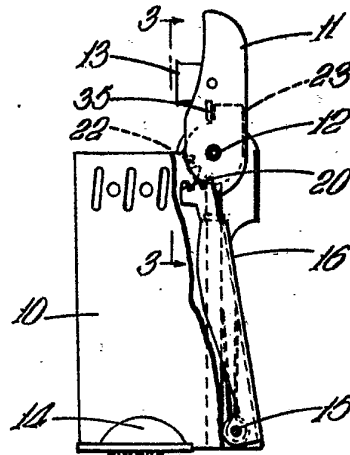


FIG. 4.

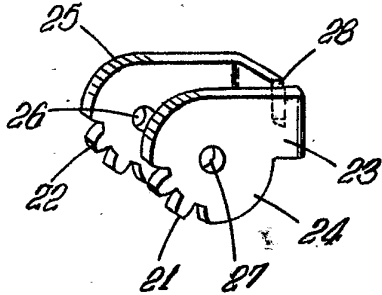


FIG. 3.

