PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION

An Improved Cigarette or like Lighter

We, B. PEARLMAN AND COMPANY LIMITED, of 9—13, Redchurch Street, London, E.2, a British Company, do hereby declare the nature of this invention to be as follows:—

This invention relates to cigarette or like lighters of the kind in which rotation of an abradant wheel mounted on a fuel reservoir against a spring-pressed pyrophoric element produces sparks whereby combustible vapour from a wick leading to the fuel reservoir is ignited. The invention is more particularly directed to an improved construction of such lighters of the type in which a snuffer arm mounted on the reservoir is removed from its normal position covering the wick when the abradant wheel is rotated, the rotation of such wheel being effected by manual operation of an actuating member mounted on the reservoir, and wherein the release of the actuating member permits a spring stressed by its striking operation to return the snuffer arm and the actuating member to their normal positions.

According to the present invention, the improved cigarette or like lighter comprises an actuating member, an abradant wheel and a snuffer arm, all mounted on a fuel reservoir, a part of the actuating member engaging a part of the snuffer arm to rotate the latter upon a pivotal mounting therefor, and one or more spring pawls carried by the snuffer arm whereby rotation of the latter causes the abradant wheel to be rotated in one direction upon an axis parallel to the pivotal axis of the snuffer arm. The actuating member and the snuffer arm are returned to their initial or normal positions when the actuating member is released by spring pressure, such spring pressure being that of the spring pawls, with or without the pressure of one or more springs provided in association with the snuffer arm and/or the actuating member.

The actuating member may comprise a lever pivotally mounted on the reservoir but is preferably in the form of a plunger sliding in a recess provided therefor in the fuel reservoir, a thumb-piece or the like mounted on the outer end of the plunger engaging a part of the snuffer arm.

The invention may be carried into practice as hereinafter described with reference to one convenient embodiment thereof.

In this embodiment the improved lighter comprises a fuel reservoir of any desired convenient shape and having a flat plate at one end thereof upon which the operating parts are mounted. The fuel reservoir may be filled with an absorbent material such as cotton wool, a wick within the reservoir passing through such absorbent material to a wick tube provided in the end plate in the known manner. Similarly a flint tube extends through the reservoir and is adapted to contain a helical compression spring whereby a pyrophoric element is pressed through the open end of the tube in the end plate against an abradant wheel rotatably mounted between two ears or lugs extending at right angles to the end plate.

An actuating member is provided, comprising a plunger slidably movable within a recess extending downwardly into the reservoir from the end plate, at right angles to such plate, the outer end of the plunger having a thumb-piece or the like secured thereto.

Pivotally mounted between the two ears or lugs on the end plate is a snuffer arm carrying a snuffer cap adapted to enclose the end of the wick tube in its closed position in the known manner, the pivotal axis of such snuffer arm being parallel to and spaced apart from the axis upon which the abradant wheel rotates, and

spaced from the end plate by a greater distance than the axis of the abradant wheel.

The thumb-piece upon the actuating member has an extension thereon which overlaps an extension upon the snuffer arm, such last-mentioned extension projecting from the end of the snuffer arm remote from the snuffer cap and beyond the point at which the snuffer arm is pivoted.

One or more pawls are mounted upon the end of the extension of the snuffer arm, and extended into engagement with a ratchet-toothed wheel or wheels secured on one or both sides of the abradant wheel, against which the pawls are pressed either by a spring coiled around a pivot on which the pawl or pawls are supported, or by means of the resiliency of the metal from which such pawl or pawls are made.

In the normal positions of the operating members, the thumb-piece of the actuating member and the upper surface of the snuffer arm extend substantially in the same plane, parallel to the plane of the end plate of the reservoir, the pawls carried by the extension of the snuffer arm engaging points on the ratchet-toothed wheels secured to the abradant wheel approximately level with its axis of rotation. When the thumb-piece is depressed to move the plunger downwardly within its recess, the extension of the thumb-piece presses downwardly on the extension of the snuffer arm, causing the ends of the pawls to move towards the wick tube 4, thus rotating the abradant wheel to produce a spark from the pyrophoric element.

On release of the thumb-piece by the user, the spring whereby the pawls are pressed against the abradant wheel returns the snuffer arm to its initial position, the ends of the pawls slipping backwardly over the teeth of the ratchet wheels secured to the abradant wheel. At the same time, the extension of the snuffer arm, acting against the extension on the thumb-piece, returns the latter to its normal position. The thumb-piece and the plunger on which it is secured are prevented from unintentional removal by a lip or projection upon the extension of the snuffer arm, which lip or projection extends over the end of the extension of the thumb-piece.

While it has been found in practice that the pressure of the spring whereby the pawls are pressed against the ratchet wheels is normally sufficient to return the snuffer arm and actuating member to their initial positions after operation of the lighter, further springs may be provided for this purpose, if desired, for example, a helical spring may be provided within the recess in which the plunger of the actuating member slides, such spring being compressed when the thumb-piece is depressed.

Dated this 13th day of May, 1947.

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Agents for the Applicants.

COMPLETE SPECIFICATION

An Improved Cigarette or like Lighter

We, B. PEARLMAN AND COMPANY LIMITED, of 9—13, Redchurch Street, London, E.2, a British Company, 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:—

This invention relates to cigarette or like lighters of the kind in which rotation of an abradant wheel mounted on a fuel reservoir against a spring-pressed pyrophoric element produces sparks whereby combustible vapour from a wick leading to the fuel reservoir is ignited. The invention is directed to such lighters of the type in which a snuffer arm mounted on the reservoir is removed from its normal position covering the wick when the abradant wheel is rotated, the rotation of such wheel being effected by manual operation of an actuating member mounted on the reservoir, and wherein the release of the actuating member permits a spring stressed by its striking operation to return the snuffer arm and the actuating member to their normal positions.

Cigarette and like lighters of this type are known in which a ratchet arm is employed pivotally connected at one end to the snuffer arm so that, on rotation by the actuating member, the snuffer arm moves away from its normal position covering the wick, and the other end of the ratchet arm, which is provided with a hooked portion adapted to engage with a tooth on a ratchet secured to the abradant wheel, pulls said tooth towards the snuffer arm, thus rotating the ratchet and abradant wheel.

The present invention is directed

towards providing an improved form of operation and accordingly it comprises an improved pyrophoric lighter comprising a fuel reservoir having mounted thereon an actuating member, an abradant wheel, ratchet teeth provided at at least one side of the abradant wheel, a rotatable snuffer arm, a pawl or pawls mounted on the snuffer arm, such pawl or pawls being urged against said ratchet teeth, and a part of the actuating member engaging a part of the snuffer arm to rotate the latter and thereby to cause the part of the snuffer arm bearing the pawl or pawls to move towards the abradant wheel, thus pushing against the ratchet teeth, so that the abradant wheel is rotated in one direction about a second pivotal axis parallel to the pivotal axis of the snuffer arm. The actuating member and the snuffer arm are returned to their initial or normal positions when the actuating member is released by spring pressure exerted against the actuating member, which may comprise a lever pivotally mounted on the reservoir but is preferably in the form of a plunger sliding in a recess provided therefor in the fuel reservoir, a thumb-piece or the like mounted on the outer end of the plunger engaging a part of the snuffer arm.

The invention may be carried into practice as hereinafter described with reference to one convenient embodiment thereof, illustrated in the accompanying drawing, in which

Figure 1 is a side view of a pyrophoric lighter comprising the said embodiment of the invention,

Figure 2 is a sectional view of the lighter shown in Figure 1, with the spark-making mechanism in its operative position, and Figure 3 is a detail view in perspective showing the various parts of the operating mechanism prior to assembly thereof.

As shown in the said drawing, the improved lighter comprises a fuel reservoir 1 of any desired convenient shape and having a flat plate 2 at one end thereof upon which the operating parts are mounted. The fuel reservoir may be filled with an absorbent material such as cotton wool, a wick 3 within the reservoir passing through such absorbent material to a wick tube 4 provided in the end plate 2 in the known manner. Similarly, a flint tube 5 extends through the reservoir and is adapted to contain a helical compression spring 6 whereby a pyrophoric element 7 is pressed through the open end of the tube in the end plate 2 against an abradant wheel 8 rotatably mounted between two ears or lugs 9 extending at right angles to the end plate.

An actuating member is provided, comprising a plunger 10 slidably movable within a recess 11 extending downwardly into the reservoir from the end plate 2 at right angles to such plate, the outer end of the plunger having a thumb-piece or the like 12 secured thereto.

Pivotally mounted between the two ears or lugs 9 on the end plate is a snuffer arm 22 carrying a snuffer cap adapted to enclose the end of the wick tube in its closed position in the known manner, the pivotal axis 13 of such snuffer arm being parallel to and spaced apart from the axis 14 upon which the abradant wheel 8 rotates, and space from the end plate by a greater distance than the axis of the abradant wheel.

The thumb-piece 12 upon the actuating member has an extension 15 thereon (see Figure 3), which overlaps an extension 16 of the snuffer arm 22, such last-mentioned extension projecting from the end of the snuffer arm remote from the snuffer cap and beyond the point 13 at which the snuffer arm is pivoted.

A sheet metal member shaped so as to form two pawls 17 is mounted upon the end of the extension 16 so that said pawls extend into engagement with ratchet-toothed wheels 18 secured on either side of the abradant wheel 8, against which the pawls are pressed either by a spring 19 coiled around a pivot 20 on which the member is supported and/or by means of the resiliency of the metal from which such member is made, in this latter case the pawl member being rigidly attached to the extension 16.

In the normal positions of the operating members, the thumb-piece 12 of the actuating member and the upper surface of the snuffer arm 22 extend substantially in the same plane, parallel to the plane of the end plate 2 of the reservoir. When the thumb-piece 12 is depressed to move the plunger 10 downwardly within its recess 11, the extension 15 of the thumb-piece presses downwardly on the extension 16 of the snuffer arm, causing the ends of the pawls 17 to move towards the wick tube 4, thus rotating the abradant wheel 8 to produce a spark from the pyrophoric element.

On release of the thumb-piece by the user a helical spring provided within the recess in which the plunger of the actuating member slides, returns said actuating member to its initial position, the ends of the pawls 17 slipping backwardly over the teeth of the ratchet wheels secured to the abradant wheel. At the same time, the extension 16 of the snuffer arm, acting against the extension 15 on the thumb-piece 12, returns the latter to

its normal position. The thumb-piece and the plunger on which it is secured are prevented from unintentional removal by a lip or projection 21 upon the extension 16 of the snuffer arm, which lip or projection extends over the end of the extension 15 of the thumb-piece.

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

1. An improved pyrophoric lighter comprising a fuel reservoir having mounted thereon an actuating member, an abradant wheel, ratchet teeth provided at at least one side of the abradant wheel, a rotatable snuffer arm, a pawl or pawls mounted on the snuffer arm, such pawl or pawls being urged against said ratchet teeth, and a part of the actuating member engaging a part of the snuffer arm to rotate the latter and thereby cause the part of the snuffer arm bearing the pawl or pawls to move towards the abradant wheel, thus pushing against the ratchet teeth, so that the abradant wheel is rotated in one direction about a second pivotal axis parallel to the pivotal axis of the snuffer arm.

2. A lighter according to Claim 1, wherein the pawl or pawls are formed from a single sheet metal pawl member.

3. A lighter according to Claim 1 or Claim 2, wherein two pawls are provided to engage ratchet toothed wheels secured to each side of the abradant wheel.

4. A lighter according to Claim 3 as appendant to Claim 2, wherein the two pawls are symmetrically disposed, smoothly curved pawls.

5. A lighter according to Claim 4, wherein the member comprising the pawls is made of spring metal and is rigidly attached to the snuffer arm.

6. A lighter according to Claim 4, wherein the member comprising the pawls is acted upon by a spring in order to urge the pawls against the ratchet toothed wheels.

7. A lighter according to Claim 6, wherein the spring is a coiled helical spring mounted on the pivotal axis of the pawl-forming member.

8. A lighter according to any of Claims 3 to 7, wherein the member comprising the pawls is mounted on a rearward extension of the snuffer arm, the pivotal axis of the latter being situated at a point intermediate of the free end of such arm and the mountain of the pawl member.

9. A lighter according to any of the preceding claims, wherein the actuating member comprises a plunger slidably movable in a guideway extending downwardly within the fuel reservoir.

10. A lighter according to Claim 9, wherein the actuating member has a thumb piece on its outer end, an extension of the thumb piece engaging in a slot in a rearward extension of the snuffer arm.

11. A lighter according to Claim 9 or 10, wherein a spring is provided within the guideway to urge the plunger to its normal position.

12. A lighter according to any of the preceding claims, wherein the pivotal axis of the snuffer arm is spaced from the fuel reservoir by a greater distance than the axis of the abradant wheel.

13. The improved pyrophoric lighter substantially as hereinabove described with reference to the accompanying drawing.

Dated this 26th day of April, 1948.

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Fig. 1.

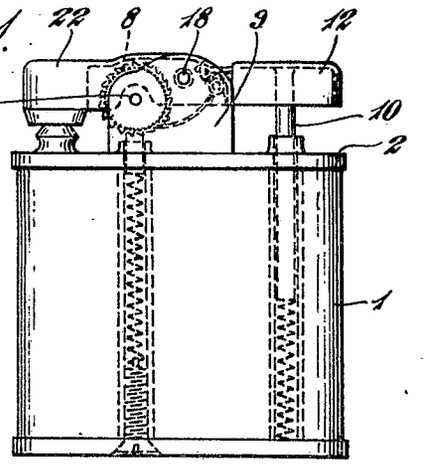

Fig. 2.

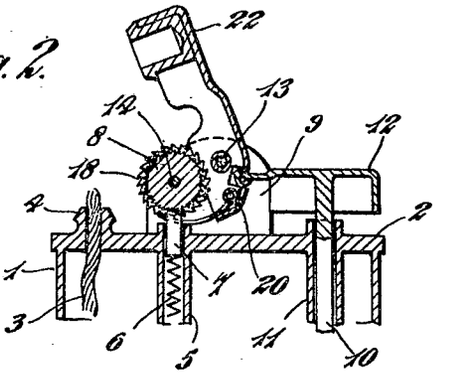

Fig. 3.