

June 12, 1951

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2,556,735

LIGHTER ACTUATING MECHANISM

Filed Nov. 23, 1948

Fig. 1.

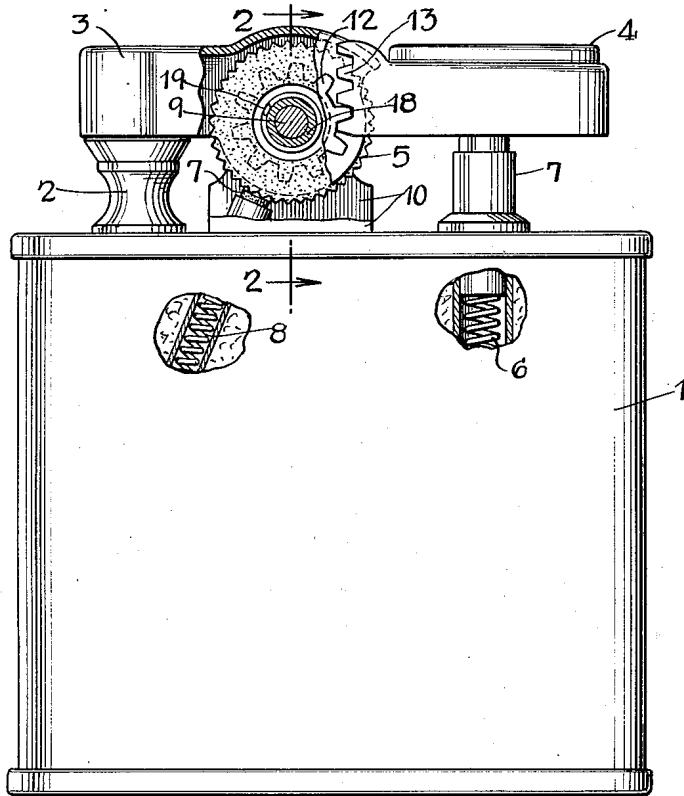
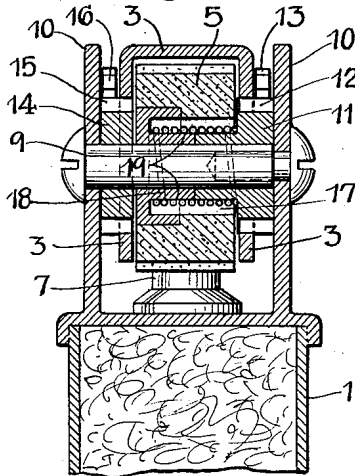


Fig. 2.



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2,556,735

LIGHTER ACTUATING MECHANISM

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Application November 23, 1948, Serial No. 61,621

1 Claim. (Cl. 67-7.1)

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The 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 when the fingerpiece moves in one direction, the sparking wheel being released from driving connection with the fingerpiece when the latter moves in the reverse direction back to its initial position. In lighters of the above type it has been customary to connect the sparking wheel to the fingerpiece through a pawl and ratchet mechanism, various forms of which have been used for such purposes. These mechanisms however are somewhat prone to injury and wear, and it frequently happens that the driving mechanism which turns the sparking wheel angularly during the spark producing movement will rotate through a substantial angle before the pawl and ratchet mechanism starts to turn the wheel to produce sparks, which may result in deficient spark production. The invention aims primarily to provide a lighter actuating mechanism which will largely eliminate the above objections; further objects 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 drawings, shows a preferred form of lighter actuating mechanism constructed to operate in accordance with the invention; the disclosure however should be considered as merely illustrative of the invention in its broader aspects.

In the drawings—

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

Fig. 2 is a section on line 2—2 of Fig. 1, looking in the direction of the arrows.

The invention is illustrated in Figs. 1 and 2 as applied to a pocket lighter of the pyrophoric type having a fuel casing 1, upon which is mounted wick support or burner 2, a snuffer cap 3, fingerpiece 4, and a sparking wheel 5, the fingerpiece being urged toward its idle upper position as shown in Fig. 1, by a spring 6 as indicated in Fig. 1. A flint 7 is shown as pressed into engagement with the surface of sparking wheel 5, by a spring 8. In the illustrated form of lighter the snuffer cap 3 and sparking wheel 5 are mounted for angular movement about an axle 9 which extends between ears 10 extending upwardly from the top of casing 1.

When the fingerpiece 4 is manually depressed, the snuffer cap 3 is tilted upwardly to expose the

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wick support 2, and the sparking wheel 5 is rotated in a clockwise direction as the parts appear in Fig. 1, to project sparks toward the wick support 2 and produce a flame. When pressure on fingerpiece 4 is released while the latter is in depressed position, the spring 6 restores the fingerpiece to its initial idle position shown in Fig. 1, the snuffer cap 3 being simultaneously closed, but the sparking wheel 5 does not partake of this return movement. The above parts as thus far described are to be regarded as merely typical of constructions appropriate for producing and extinguishing the flame by movement of a fingerpiece or similar actuating member back and forth between the opposite limits of its stroke.

To produce the above described movements of the sparking wheel and snuffer, I have shown in Fig. 2 a driving member 11 which is mounted for angular movement in either direction about the axle 9 and located at one side of the sparking wheel 5, this driving member being shown as provided with teeth 12 which mesh with teeth 13 on the fingerpiece 4. The portion of the snuffer cap 3 which encloses the wheel 5 is positively connected to the driving member 11 to turn angularly therewith, and thus the snuffer will be moved between its open and closed positions as the fingerpiece 4 is moved between the opposite limits of its stroke. In the form of the invention under discussion, the portion of the snuffer cap which appears at the left of Fig. 2 is fixed to a collar 14 which is angularly movable about the axle 9 and provided with teeth 15 which engage with teeth 16 on the fingerpiece which are similar to the teeth 13 previously described.

The sparking wheel 5 is shown in Fig. 2 as having a central recess 17 therein, in which is received a hub 18 which is fixed to sparking wheel 5 and rotatable about the axle 9. A helical spring 19 surrounds and frictionally engages the surfaces of the adjacent portions of the driving member 11 and hub 18 as shown in Fig. 2. Looking from the right hand side of Fig. 2, the helix of this spring 19 runs anti-clockwise from driving member 11 toward hub 18, and thus when fingerpiece 4 is depressed to turn the driving member 11 in a clockwise direction, looking from the right hand side of Fig. 2, the turns of spring 19 in engagement therewith, tend to tighten or contract in diameter, causing the spring to move angularly with driving member 11. And since the turns of spring 19 which enclose hub 18 are in frictional contact with its surface, this part of

the spring then immediately tightens or contracts into positive engagement with hub 18, causing the latter and sparking wheel 5 to turn angularly with driving member 11 and project sparks to produce a flame. With a construction of the above character it is found that the lost motion between the driving member 11 and wheel 5 is much less as compared to ratchet mechanisms heretofore customarily used for such purposes, whereby the production of sparks begins earlier and the sparking wheel rotates through a wider angle. Also it should be noted that in a construction of the above character, energy is not stored in the coils of spring 19 by substantially distorting them and subsequently releasing this energy to rotate the sparking wheel; the turns of the spring merely tighten or contract infinitesimally into positive gripping engagement with the driving and driven members, the power being immediately and positively transmitted by torque applied to the spring under conditions where it is positively supported against further distortion by the cylindrical parts it encloses. Thus the mechanism is longlived and not prone to wear or injury during use. After the above described spark-producing movement has been completed and pressure on fingerpiece 4 is released, the driving member 11 turns angularly in a counter-clockwise direction, looking from the right hand side of Fig. 2, under the action of spring 6, and as soon as this movement begins, the turns of spring 19 are immediately released from the gripping engagement above described, in other words, angular movement of the driving member in this direction untwists the spring, so to speak, from gripping engagement with hub 18, or driving member 11, or both, so that hub 18 and sparking wheel 5 are held stationary by the frictional engagement of flint 7 with the wheel.

At either of its end portions, a helical spring of the character above described, can be fastened to one of the driving and driven members served by the spring, as long as the remaining end portion of the spring frictionally engages the other member as previously described when the parts are idle, but if the spring frictionally engages both members as above described and as is preferred, there is no need of fastening it to either member since it will grip both members positively during the flame producing movement, and relative angular movement as between the

spring and either or both of such members can take place during the flame extinguishing movement.

While the invention has been disclosed as carried out by the above described specific construction, 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 claim.

I claim:

A cigar lighter having a fuel casing, a sparking wheel member rotatably mounted thereon, means for pressing a flint against said wheel, a burner adjacent said wheel, a driving member for said wheel, a burner cap connected to said driving member, means for moving said driving member angularly between positions in which said cap is respectively open and closed with respect to said burner, said wheel and driving member having alined hubs respectively fixed thereto, and disposed axially end to end in juxtaposed relation and surrounded by the peripheral portion of said wheel, a helical spring extending along both of said hubs and having turns engageable with each of said hubs, said spring being disposed in the annular space between said hubs and the peripheral portion of the wheel, the turns of said spring running in the direction which causes said turns thereof to positively engage with said hubs to rotate said wheel upon angular movement of the driving member and its hub in the direction which moves the cap from closed to open position and also causes said turns to release from such positive engagement upon angular movement of the driving member and its hub in the reverse direction which moves the cap from open to closed position.

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