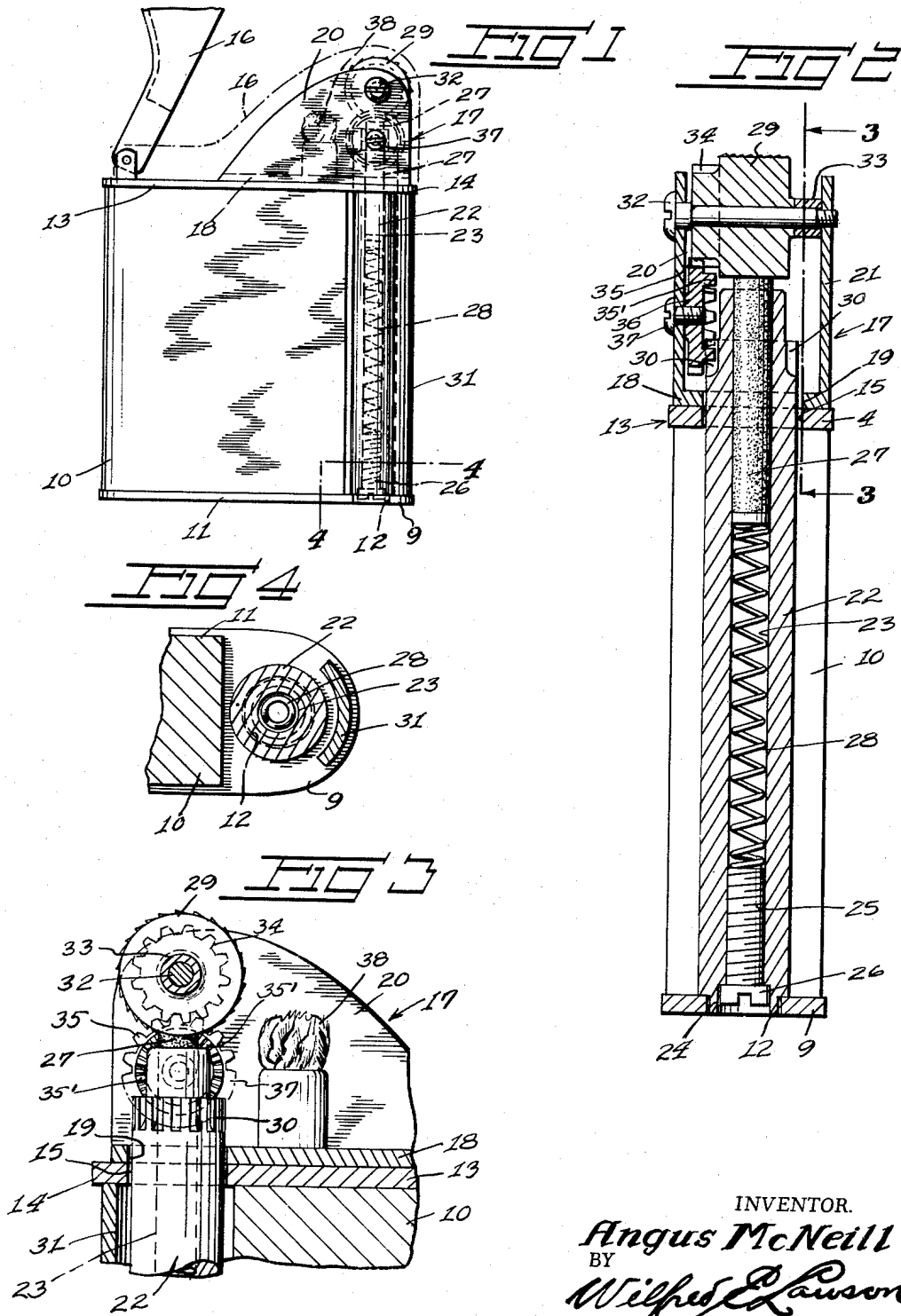


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CIGARETTE LIGHTER

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CIGARETTE LIGHTER

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This invention relates to a lighter for cigarettes, cigars and the like.

In the present forms of lighters the flint is maintained in a fixed or stationary position, causing after the first few operations, a concave surface on the top of the flint, causing the friction wheel to be in contact with the flint top for its entire diameter, plus the amount of concavity, this broad smooth surface causes the spark production to be uncertain, and the great contact area exerts a braking effort upon the free rotation of the friction wheel.

It is, therefore, the object of this invention to provide a lighter in which the flint is carried in a sleeve that is caused to rotate with each operation of the friction wheel, thus maintaining a constantly flat flint top, giving the friction wheel a "point contact" with said flint at all times. This greatly facilitates the sparking ability of the lighter, also this reduced contact area reduces the braking effect on the free turning of the friction wheel, causing it to turn with much less effort.

Another object of the invention is to produce a cigarette lighter in which the flint is caused to rotate so that even if a "point of low volatility" is encountered in the flint, the flint will be readily rotated past the point, whereby the friction wheel and flint will coact to produce the spark.

A further object of the invention is to provide a lighter for cigarettes and the like which is extremely simple in construction and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, and in which like numerals are employed to designate like parts throughout the same:

Figure 1 is a side elevational view of the lighter according to the present invention;

Figure 2 is an enlarged vertical sectional view through the lighter mechanism;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a sectional view taken on the line 4—4 of Figure 1.

Referring in detail to the drawings, the numeral 10 designates a body, and secured to the lower end of the body 10 is a bottom plate 11 which has a portion 9 projecting beyond the body 10. The projecting portion is provided with an aperture 12 for a purpose to be later described. Arranged in the upper end of the body 10 and secured thereto is a top plate 13 which also has a portion 14 projecting beyond the body 10, there being an opening 15 arranged in the top plate 13. A suitable cover 16, Figure 1, is pivotally connected to the top plate 13.

Supported on the top plate 13 and secured thereto, as by welding, is a superstructure or frame 17 which includes a bottom member 18 provided with an opening 19 which registers with the opening 15 in the top plate 13. A pair of spaced, parallel side members 20 and 21 project from the bottom member 18 and are secured thereto.

A sleeve 22 is provided with a longitudinally-extending bore 23, and the lower exterior portion of the sleeve 22

is cut away, as at 24, and projects through the aperture 12 to define a bearing shoulder for rotatably supporting the sleeve 22 on the projecting portion of the lower plate 11. The bore 23 is threaded, as at 25, for a portion of its length, and a headed screw 26 is arranged in engagement with the threaded portion 25. A flint 27 is slidably arranged in the bore 23 and is adapted to project out of the upper open end thereof, there being a coil spring 28 arranged in the bore 23 for normally urging the flint into engagement with a striking or friction wheel 29. The sleeve slidably projects through the registering openings 15 and 19, and a plurality of spaced, circumferentially-extending teeth 30 forming abutments are arranged around the upper end of the sleeve 22 for a purpose to be subsequently described. An arcuate shield or guard 31 extends between the projecting portions of the bottom and top plates and is secured thereto for preventing the user's fingers from contacting the rotating sleeve 22.

The friction wheel 29 is rotatably supported on a shaft or pin 32 which projects through a spacer block 33 and the shaft extends between the side members 20 and 21, the pin 32 being threaded into the side members whereby the friction wheel 29 can be removed and replaced as desired. Formed integrally with the wheel 29 or secured thereto is a plurality of spaced gear teeth 34 forming abutments which mesh with the teeth 35 or abutments on the gear 36. The gear 36 is rotatably supported by a pin 37 which is releasably threaded into the side member 20 and the face teeth 35' of the gear 36 mesh with the teeth 30 on the sleeve 22.

The teeth 34 on the wheel 29, the gear 36, having the teeth 35 and 35', and the teeth 30 on the sleeve 22, form a gear mechanism or train whereof the teeth 30 constitute a driven element, the gear 36 a driving element, and the teeth 34 a driving connection between the friction wheel and the gear 36.

In use, the user's thumb rotates the friction wheel 29 causing the gear 36 to rotate to thereby rotate the sleeve 22 which carries and rotates the flint 27. The flint 27 is maintained in engagement with the friction wheel by the spring 28 and rotation of the wheel 29 causes a spark to be emitted for igniting the wick 38. The end of the flint 27 will thus wear evenly to prolong its life and there will be a minimum of braking action on the friction wheel 29. In the event that a point of low volatility on the flint 27 is in engagement with the friction wheel 29, then continued movement of the friction wheel 29 will move the flint past this low point so that a spark will be readily produced. The movable sleeve and flint permit the friction wheel 29 to turn more freely, with less effort, and production of sparks is ensured.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

This application discloses and claims subject matter also disclosed in my Patent No. 2,624,188 granted January 6, 1953 on application Serial No. 154,237, filed April 6, 1950, which latter application was a continuation of application Serial No. 709,459 filed November 13, 1946, now forfeited.

I claim:

1. In a lighter, a body, a sleeve provided with a longitudinally-extending bore, means carried by said body mounting said sleeve for rotation about its longitudinal axis, a friction wheel rotatably supported on said body, a flint slidably supported in the bore in said sleeve for rotation on its longitudinal axis with the sleeve, means for feeding said flint into contact with said friction wheel

independently of the rotation of said sleeve, and a gear train operatively connecting said friction wheel to said sleeve for causing rotation of the sleeve and the flint carried thereby as said friction wheel is rotated.

2. In a lighter, a body, a sleeve provided with a longitudinally-extending bore, means carried by said body mounting said sleeve for rotation about its longitudinal axis, a friction wheel rotatably supported on said body, a flint slidably supported in the bore in said sleeve for rotation on its longitudinal axis with the sleeve, spring means for feeding said flint into contact with said friction wheel independently of the rotation of said sleeve, and a gear train operatively connecting said friction wheel to said sleeve for causing rotation of the sleeve and the flint carried thereby as said friction wheel is rotated.

3. A lighter comprising a body, a bottom plate secured to the lower end of said body and having a portion projecting beyond the latter, a top plate secured to the upper end of said body and having a portion projecting beyond the latter, there being an opening in the projecting portion of said top plate, a frame supported on said top plate and secured thereto, said frame embodying a bottom member provided with an opening arranged in registry with the opening in said top plate and a pair of spaced parallel side members projecting from said bottom member, a sleeve provided with a longitudinally-extending open-ended bore supported on the projecting portion of said bottom plate and projecting through the registering openings in said top plate and frame bottom member, a friction wheel positioned between said side members and rotatably supported by the latter, a flint slidably positioned in the bore in said sleeve and having one end in contact with said friction wheel, resilient means normally urging said flint into contact with said friction wheel, and gear means operatively connecting said friction wheel to said sleeve for causing rotation of said sleeve and the flint as said friction wheel is rotated.

4. A lighter comprising a body, a bottom plate secured to the lower end of said body and having a portion projecting beyond the latter, a top plate secured to the upper end of said body and having a portion projecting beyond the latter, there being an opening in the projecting portion of said top plate, a frame supported on said top plate and secured thereto, said frame embodying a bottom member provided with an opening arranged in registry with the opening in said top plate and a pair of spaced parallel side members projecting from said bottom member, a sleeve provided with a longitudinally-extending open-ended bore supported on the projecting portion of said bottom plate and projecting through the registering openings in said top plate and frame bottom member, an arcuate guard extending between said projecting portions and secured thereto, a friction wheel positioned between said side members and rotatably supported by the latter, a flint slidably positioned in the bore in said sleeve and having one end in contact with said friction wheel, resilient means in the bore embodying a coil spring normally urging said flint into contact with said friction wheel, and gear means operatively connecting said friction wheel to said sleeve for causing rotation of said sleeve and the flint as said friction wheel is rotated.

5. In a lighter of the type having a fuel reservoir, means for conducting fuel out of said reservoir, a flint, a friction element, means mounting said friction element for movement across and in contact with said flint in a direction to strike and throw a spark into the fuel at said fuel-conducting means, and means for feeding the flint into position for contact with said friction element, the combination of means slidably carrying said flint and rotatable therewith about the axis of the flint, and a gear mechanism connected between said friction element and said flint carrying means and actuated by movement of said friction element for rotating said flint and flint-carrying means about the axis of the flint to present said

flint to said friction element in progressively different rotational positions.

6. In a lighter of the type having a fuel reservoir, means for conducting fuel out of said reservoir, a flint, a friction element, means mounting said friction element for movement across and in contact with said flint in a direction to strike and throw a spark into the fuel at said fuel-conducting means, and means for feeding the flint into position for contact with said friction element, the combination of means slidably carrying said flint and rotatable therewith about the axis of the flint, and a gear mechanism connected between said friction element and said flint-carrying means for rotating said flint and flint-carrying means about the axis of the flint upon movement of said friction element, to present said flint to said friction element in progressively different rotational positions.

7. In a lighter of the type having a casing member, a fuel reservoir, means for conducting fuel out of said reservoir, a flint, a friction element, means mounting said friction element for movement across and in contact with said flint in a direction to strike and throw a spark into the fuel at said fuel-conducting means, and means for feeding the flint into position for contact with said friction element, the combination of a guide for said flint carried by said casing member for rotation about the axis of said flint and guiding said flint for sliding feed movement by said feed means, said guide holding said flint for rotation therewith, a driven element rotatable as a unit with said guide, and driving means including a driving element carried by said casing member in positive and continuous driving engagement with said driven element for turning the latter and thereby said guide and flint and a continuously engaged driving connection between said friction element and said driving element.

8. In a lighter of the type having a casing member, a fuel reservoir, means for conducting fuel out of said reservoir, a flint, a friction element, means mounting said friction element for movement across and in contact with said flint in a direction to strike and throw a spark into the fuel at said fuel-conducting means, and means for feeding the flint into position for contact with said friction element, the combination of a guide for said flint carried by said casing member for rotation about the longitudinal axis of said flint and guiding said flint for longitudinal sliding feed movement by said feed means, said guide holding said flint for rotation therewith, a driven element unitary with said guide and rotatable about said axis and having a series of abutments thereon, and means including a driving element continuously in positive driving engagement with the abutments of said driven element for turning the latter about its axis and thereby said guide and flint to an extent corresponding to the movement of said driving element and a continuously engaged driving connection between said friction element and said driving element.

9. In a lighter of the type having a casing member, a fuel reservoir, means for conducting fuel out of said reservoir, a flint, a friction element, means mounting said friction element for movement across and in contact with said flint in a direction to strike and throw a spark into the fuel at said fuel-conducting means, and means for feeding the flint into position for contact with said friction element, the combination of a guide element rotatably carried on said support and carrying said feed means and said flint, said guide engaging said flint for sliding feed movement of the latter on said guide and for rotation therewith, a circular series of abutments on said guide member, and a driving element movably carried on said casing member and having a circular series of abutments meshing with the abutments on said guide member engageable with said abutments for rotating said guide member and thereby said flint and means drivingly connecting said friction element and said driving element.

10. In a lighter of the type having a casing member, a fuel reservoir, means for conducting fuel out of said reservoir, a flint, a friction wheel, means mounting said friction wheel for rotation across and in contact with said flint in a direction to strike and throw a spark into the fuel at said fuel-conducting means, and means for feeding the flint into position for contact with said friction element, the combination of a tubular guide member rotatably carried on said casing member and enclosing said feed means and said flint except a portion of the latter which projects into abutment with said friction wheel, said guide member engaging said flint for sliding feed movement of the latter therein and rotation with said guide member, a driven element rotatable with said guide as a unit, and gear means connected to and actuated by said friction wheel and including a driving element continuously in positive driving engagement with said driven

element for rotating the latter and thereby said guide and flint, when said wheel is rotated.

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