Sept. 29, 1964 J. D. SMITH 3,150,508

PYROPHORIC LIGHTER ACTUATING MECHANISM

Filed Dec. 24, 1962 3 Sheets-Sheet 1

Fig. 1.

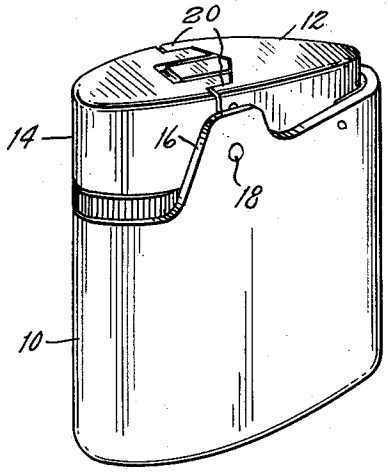


Fig. 2.

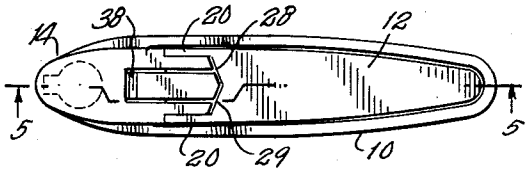


Fig. 6.

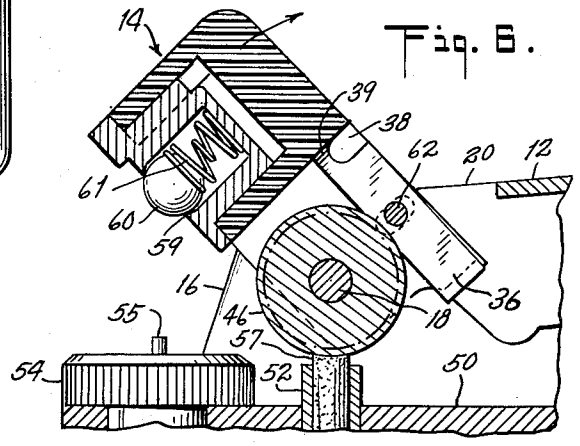


Fig. 5.

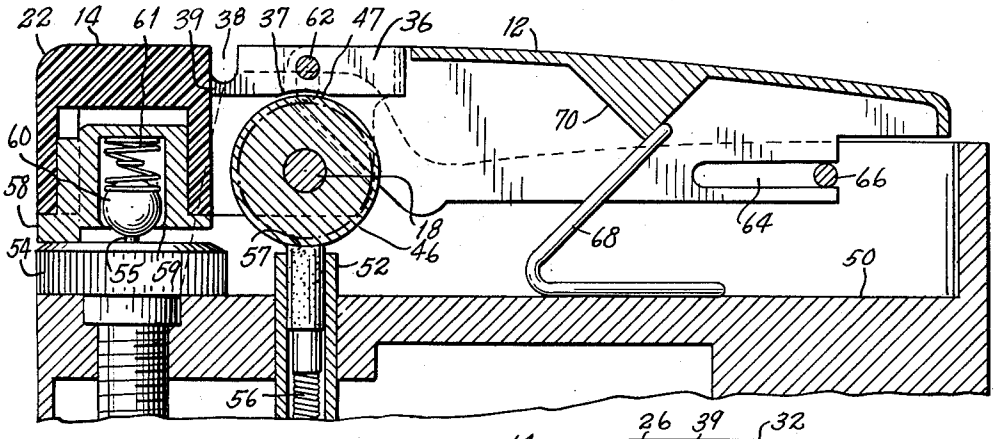
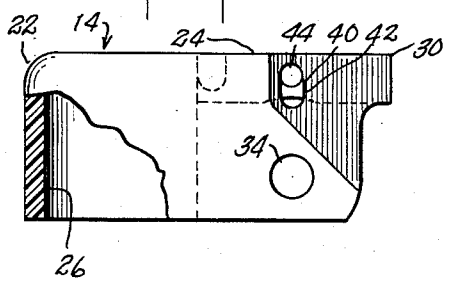


Fig. 3.



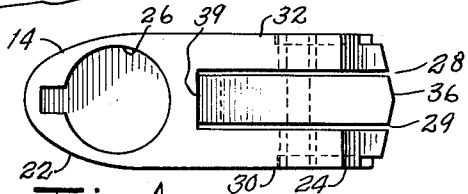


Fig. 4.

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Fig. 7.

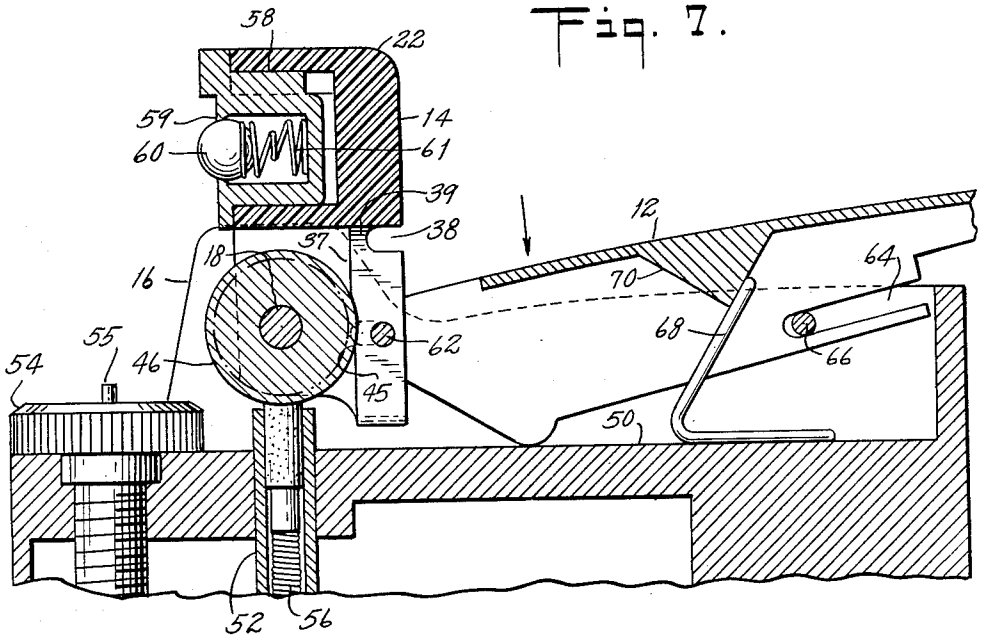


Fig. 8.

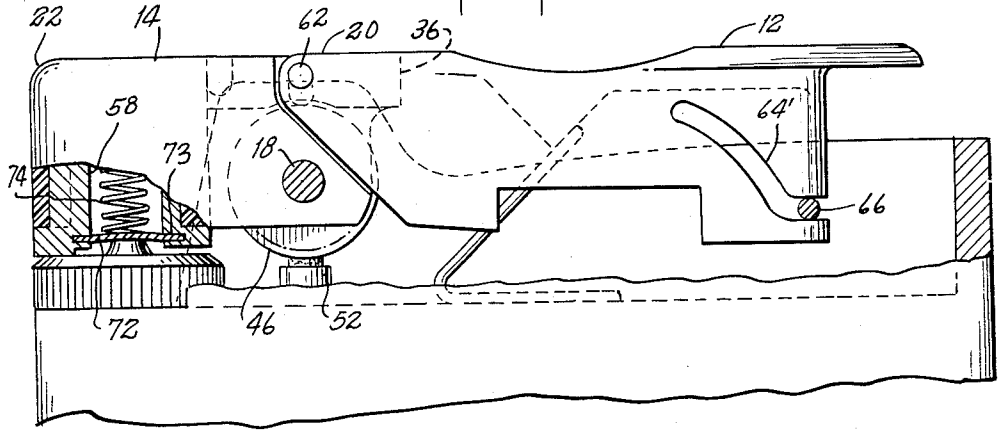
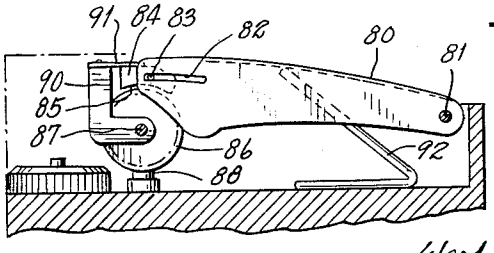


Fig. 9.



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Fig. 10.

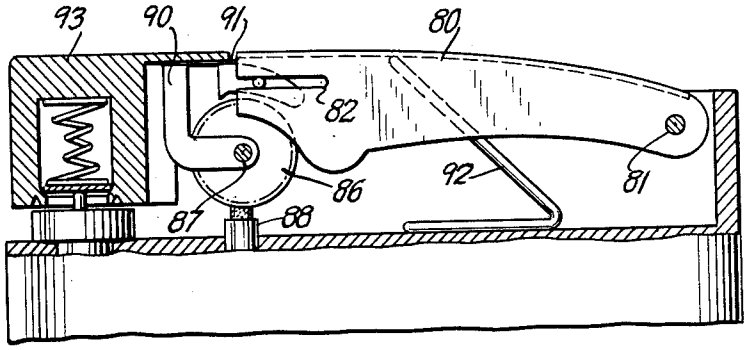


Fig. 11.

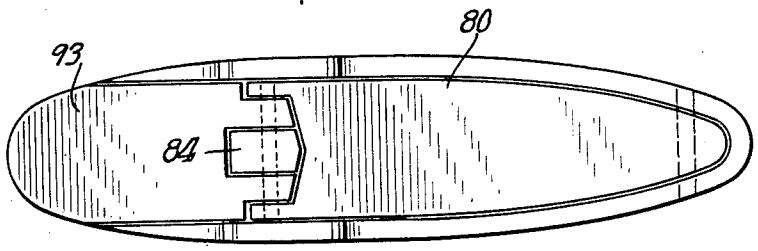
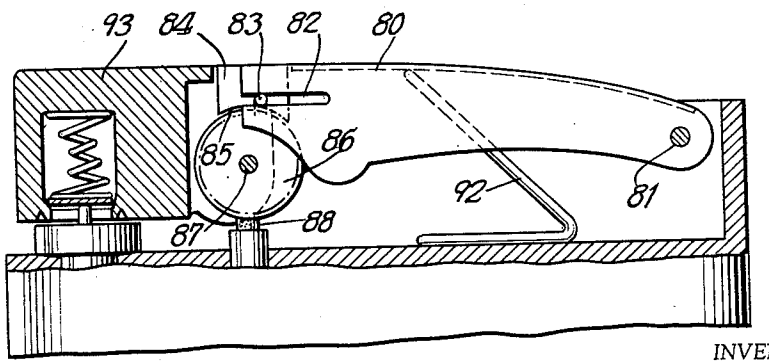


Fig. 12.



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3,150,508

PYROPHORIC LIGHTER ACTUATING MECHANISM

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Filed Dec. 24, 1962, Ser. No. 246,700
7 Claims. (Cl. 67—7.1)

This invention relates to actuating mechanisms for igniting devices such as cigar lighters and the like, and more particularly it concerns improved apparatus for operating the sparking wheel and associated components of an automatic cigar lighter.

Conventional automatic lighters of the class described are generally provided with a toothed rack and pinion arrangement to convert the essentially linear or translatory motion of the depressible fingerpiece into rotational motion for turning the sparking wheel and for swinging open a closure cap or snuffer element. Such lighters are further provided either with a pair of spring biased mating rachet wheels or with a rachet and pawl arrangement in order to prevent reverse rotation of the sparking wheel upon release of the fingerpiece. These items, along with their means of support, must be of precision manufacture in order to function properly. Also, their interaction during operation involves considerable sliding friction and wear. Furthermore, because of the complexity of conventional automatic lighter assemblies, parts replacement involves special tools and very tedious and time consuming techniques.

According to the present invention, the number of these parts, their dimensional and related tolerances and the amount of sliding friction involved in their operative interaction are all considerably reduced. This has been accomplished by exploiting in a novel manner, various properties already present in certain of the basic lighter components. More specifically, the present invention relies upon the utilization of the serrated outer surface of the lighter sparking wheel as a friction clutch element. By connecting a second clutch element to a depressible fingerpiece and by mounting the fingerpiece and the second clutch element in a particular relationship to each other and to the sparking wheel, the initial forces of fingerpiece depression are directed to engage the second clutch element with the sparking wheel so that further downward movement of the fingerpiece acts through the second clutch element to rotate the sparking wheel against a flint for generation of sparks. Release of the fingerpiece, according to the present invention, permits immediate disengagement of the second clutch element from the sparking wheel so that the fingerpiece and second clutch element may return to their undepressed positions without reversibly rotating the sparking wheel and without producing any sliding friction therewith.

The second clutch element is preferably mounted on a frame member which maintains it in peripheral alignment with, but permits it to rotate about the outer serrated surface of the sparking wheel. The frame member also maintains a constant resilient bias on the second clutch element in an outward direction relative to the axis of the sparking wheel so that it is normally disengaged from the sparking wheel peripheral surface.

In a preferred embodiment the second clutch element may be supported by or formed integral with a closure cap which is then swung open by the action of the fingerpiece. Further, the closure cap may be integrally constructed of a plastic material. Most such materials have a natural strength and resiliency sufficient to control the orientation and bias of the second clutch element, and further have natural pliant surface texture which permits sufficient static friction to be developed between the clutch and the surface of the sparking wheel to insure positive operation without play or slippage.

It is to be noted that while the invention does comprehend the use of static friction, this results in negligible wear on the respective parts. On the other hand, sliding friction, the greatest source of wear, has been virtually eliminated. Also, because of the simplicity of construction and reduction of parts, replacement of items such as the sparking wheel may be accomplished with a minimum of effort.

There has thus been outlined rather broadly the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based may readily be utilized in a variety of ways for carrying out the several purposes of the invention. It is important, therefore, that the claims be regarded as including such equivalent ways as do not depart from the spirit and scope of the invention.

Certain specific embodiments of the invention have been chosen for purposes of illustration and description, and are shown in the accompanying drawings, forming a part of the specification wherein:

FIG. 1 is a perspective view showing the external configuration of a lighter embodying the principles of the present invention;

FIG. 2 is a top plan view of the lighter shown in FIG. 1;

FIG. 3 is a side elevation of the closure cap portion of the lighter shown in FIGS. 1 and 2;

FIG. 4 is a bottom view of the closure cap portion shown in FIG. 3;

FIG. 5 is a partial section view taken along lines 5—5 of FIG. 2, illustrating the relative position of the various elements in the unactivated condition;

FIG. 6 is a view similar to a portion of FIG. 5, illustrating the relative position of the various elements in the partially activated condition of the lighter;

FIG. 7 is a view similar to FIGS. 5 and 6 illustrating the relative position of the various elements when its fingerpiece is fully depressed;

FIG. 8 is a side view, partially in section illustrating a modified version of the embodiment of FIG. 1;

FIG. 9 is a side view partially in section showing a further modified version of the embodiment of FIG. 1;

FIG. 10 is similar to FIG. 9 and illustrates a possible modification to that embodiment;

FIGS. 11 and 12 show top plan and side elevation views respectively of a lighter embodying a still further modification of the invention.

FIGS. 1 and 2 illustrate the external configuration of a lighter embodying the principles of the present invention. The lighter is seen to include an outer casing **10** on the top of which is supported a depressible fingerpiece **12** and a closure cap **14**. The outer casing **10** contains a fuel tank and other operative elements of the lighter to be described more fully herein. A pair of standards **16** extend upwardly from the upper portion of the sides of the outer casing **10** and provide support for a main pivot pin **18** which extends transversely between the standards **16** and upon which the closure cap **14** is mounted for rotational movement.

The depressible fingerpiece **12** fits within the upper portion of the lighter casing **10** and is connected to the rear portion of the casing in a pin and slot arrangement which permits both rotational and translatory motion of the fingerpiece with respect to the casing. This pin and slot arrangement is shown and explained in connection with FIG. 5. The front portion of the depressible

fingerpiece is partially cut away, leaving a pair of tabular protrusions 20 (best shown in FIG. 2), which dovetail with the rear portion of the closure cap 14. These tabular protrusions enable the fingerpiece to be pinned to the closure cap.

The closure cap 14, as shown in FIGS. 3 and 4 is preferably molded of a single piece of resilient material, such as nylon or Delrin. As will become apparent from the following discussion however, it can be made of other materials, and if desired, may even be of composite construction. The cap includes a front or snuffer portion 22 to which is integrally attached a rear or clutch portion 24. The snuffer portion 22 contains a cylindrical recess 26 which fits down over and envelops the burner portion of the lighter when the cap is rotated to its deactivated or inoperative condition. The clutch portion is divided by virtue of a pair of parallel vertical slots, 28 and 29 (FIG. 4) into two outer skirted frame members 30 and 32, and a central clutch element 36. The frame members are each provided with a transverse hole 34 for mounting the closure cap on the main pivot pin 18. The upper section of each of these frame members is also provided with a recess 31 which permits the tabular protrusions 20 of the depressible fingerpiece 12 to fit freely yet snugly between clutch portion 24 of the closure cap and the standards 16 on the casing.

The central clutch element 36 may take the form of a cantilever extending rearwardly between the two frame members 30 and 32. The clutch element has a lower friction surface 37 of relatively soft or pliant texture such as is provided by nylon or Derlin. In cases where the material comprising the clutch element is relatively hard, a liner having such surface texture may be bonded to its underside to form the friction surface. A transverse groove 38 is provided across the upper portion of the clutch element 36 near its point of attachment to the frame members 30 and 32. This groove relieves the stiffness in a localized region, so that the portion of the clutch element under the groove acts in the capacity of a spring biased hinged connection 39 for the remainder of the clutch element. A force applied to the clutch element and directed toward the transverse hole 34 will then cause the clutch element to pivot about its hinged connection 39; while a force directed toward or away from the hinged connection will cause the entire closure cap to rotate about the transverse hole 34. It is to be understood of course, that composite constructional arrangements incorporating hinges, springs and limit stops may be substituted for the integrated structure shown. However, it is preferred to utilize the inherent strength, resilience and wear resistant properties found in most plastic and resinous materials so that a simple, inexpensive and efficient structure may be achieved.

The upper portions of the frame members and the clutch element 36 are provided with transverse holes 40, 42 and 44 respectively, to permit the closure cap to be pinned to the tabular protrusions 20 of the depressible fingerpiece. The frame member holes 40 and 42 are slotted toward the center of the main pivot pin hole 34 while the clutch element hole 44 is circular. With this arrangement, pin movements in a radial direction toward the center of rotation of the closure cap will bend the clutch element down relative to the frame members but will cause no other movements, whereas tangential pin movements will cause rotation of the entire closure cap about the main pivot pin.

The assembled elements of the lighter are shown in relation to each other in FIG. 5. A conventional sparking wheel 46 of hardened steel or similar metal and having a peripherally serrated surface is mounted centrally of the main pivot pin 18 between the frame members of the closure cap. The wheel diameter is such that a small clearance 47 remains between the lower friction surface 37 of the clutch element 36 and the peripherally serrated wheel surface when the clutch element is undepressed.

The outer casing 10 includes a horizontal top wall 50 below which is mounted a fuel container (not shown), and through which protrudes a tubular flint guiding element 52 and a burner valve assembly 54. The flint guiding element is provided with a spring 56 which urges a flint 57 against the serrated surface of the sparking wheel, preferably in a radial direction thereto. The burner valve assembly connects the fuel container with a burner element 55 located near the sparking wheel. Fuel from the container is emitted through the burner element when the valve is opened and is ignited by sparks which are generated by rotation of the sparking wheel against the flint.

The valve is opened and closed by upward and downward movement, respectively, of the burner element. This element is preferably spring biased to a normally upward or valve opened condition.

The snuffer portion of the closure cap 14 is provided with an insert 58 of metal or similar heat resistant material. This insert serves to protect the plastic cap from the direct heating which occurs during operation of the lighter. The metallic insert further serves as a means for effecting depression of the burner element 55 and closure of the valve assembly 54. As shown in FIG. 5, the insert has inwardly extending circumferential lip 59 at its lower portion. A spherical valve closure element 60 is biased by means of a coil spring 61 against the circumferential lip 59 so that a portion of the surface of the sphere protrudes below the bottom of the closure cap. When the cap 14 is closed the valve closure element 60, under force of the coil spring 61, bears down upon the burner element 55 causing it to depress and close the valve assembly. In order to insure that the burner element is fully depressed by closure of the cap 14, the diameters of the valve closure element 60 and the circumferential lip 59 are chosen such that in the closing of the cap the closure element is urged off the circumferential lip by the burner element 55 in its fully depressed position.

A clutch actuating pin 62 extends transversely through holes in the tabular protrusions 20 of the fingerpiece and the slotted and circular holes 40, 42 and 44 respectively, of the various elements comprising the rear portion of the closure cap thus operatively to connect the fingerpiece to the closure cap in clutch engaging and cap rotating manner.

The rear portion of the fingerpiece 12 contains longitudinally extending slots 64 which receive a rear pivot pin 66 mounted transversely across the rear portion of the lighter casing. This pin and slot arrangement permits arcuate movement of the depressible fingerpiece so that the clutch actuating pin 62 may move in an arc as the fingerpiece is depressed.

A spring element 68 is provided between the horizontal wall on the lighter casing and an abutment 70 projecting from the underside of the fingerpiece. The spring element is preferably of the leaf type bent into the shape of an acute angle and is arranged to urge the fingerpiece and closure cap to relative positions such that the pin connection between these two items is substantially directly above the main pivot pin 18. At this position, it will be noted, the snuffer portion of the closure cap covers the burner element 55.

The manner in which the lighter operates may be seen most readily from a comparison of FIGS. 5, 6 and 7 which show, respectively, the various lighter elements in their relative positional relationships for the undepressed, partially depressed and fully depressed positions of the fingerpiece. In the undepressed position, as shown in FIG. 5, the snuffer portion 22 of the closure cap 14 covers the burner element 55 of the fuel valve assembly while the spherical valve closure element 60 maintains the valve in its closed condition so that no fuel escapes from the lighter. Also, the inherent resilience of the hinged connection 39 as well as the spring element 68 via the fingerpiece 12 and pin 62 maintains the friction surface 37 of the

clutch element 36 away from the abraded surface of the sparking wheel 46.

The lighter is operated by depressing the fingerpiece 12. The initial forces of this depression are applied to the clutch element 36 through the clutch actuating pin 62 in a direction which causes the clutch element to bend so that its friction surface 37 becomes forced down upon the peripherally serrated surface of the sparking wheel 46, thus rotationally locking the closure cap to the sparking wheel. It should be noted that the locking thus obtained is essentially a friction type lock and should exceed the frictional resistance between the flint element and the sparking wheel, so that rotation of the closure cap will cause the sparking wheel to turn in spite of the frictional resistance offered by the flint element 57. By providing a relatively pliant material such as nylon or Delrin at the under surface of the clutch element, the sparking wheel serrations partially penetrate into the clutch element and a very high degree of friction is produced without wearing or corroding the clutch element to any significant extent.

When the clutch element engages the peripheral surface of the sparking wheel further downward movement of the fingerpiece causes the closure cap to rotate and swing upwardly. Because the sparking wheel is rotationally locked to the closure cap it too rotates against the flint element.

FIG. 6 shows the fingerpiece in its partially depressed position with the closure cap and sparking wheel partially rotated from their original inactive position. The spherical valve actuating member 60 has been pulled away from the burner element 55 which accordingly has extended to its normal valve-open position, thus permitting the escape of fuel through the burner element. The front portion of the fingerpiece meanwhile follows an arc around the sparking wheel while the slotted rear portion of the fingerpiece is guided by the pin 66 so as to move along the slot 64.

It can be seen in FIG. 6 that during the downward movement of the fingerpiece the force components impressed upon the closure cap maintain engagement of the clutch element 36 with the sparking wheel 46 and also cause rotation of the cap and sparking wheel.

The fingerpiece 12 in its fully depressed position, as shown in FIG. 7, abuts against the horizontal top wall 50 of the lighter casing. In this position, the front portion of the fingerpiece is seen to have moved the closure cap 14, and sparking wheel 46 through a sector of approximately 90°. Thus, during the fingerpiece depression a shower of sparks is continuously projected toward the gases emitted from the burner element 55, causing a flame to become ignited in the space cleared by opening of the cap.

Also, in the fully depressed position of the fingerpiece 12 the forces of depression acting thereon become directed primarily tangentially of the sparking wheel 46 and those force components in the direction of its axis are insufficient to overcome the oppositely directed resilient forces originating at the hinged connection 39. Consequently, the clutch element 36 becomes disengaged from the sparking wheel.

When the fingerpiece is released, the spring element 68 urges it back to the undepressed position shown in FIG. 5. The upwardly directed spring force, acting upon the fingerpiece does not produce force components on the clutch element 36 in a direction to cause re-engagement of the clutch element. Consequently, during rotation of the closure cap 14 to its closed position, the clutch element remains disengaged from the sparking wheel. In this manner a rachet wheel effect is produced whereby the sparking wheel is rotated only during depression and not during release of the fingerpiece. Furthermore, during the release portion of the operating sequence of the lighter, the finite clearance 47 is maintained between the friction surface 37 of the clutch element and the peripherally serrated surface of the sparking wheel 46, thereby virtually eliminating any sliding friction between these relatively moving elements.

Referring now to FIG. 8, a modified version of the lighter construction, shown in the embodiment of the preceding figures, may be seen. According to the modified version of FIG. 8, the rear slot 64' in the fingerpiece 12 is curved upwardly such that the rear pivot pin 66 is provided with a curved bearing surface which defines a path similar to and co-operating with the path followed by the clutch actuating pin 62. This curved slot arrangement permits the fingerpiece to be depressed without any appreciable degree of tilting and yet produces the clutch action described in connection with the preceding embodiment. It is to be noted however, that the slot 64' in the modified fingerpiece terminates in a small longitudinally extending portion 65 so that initial application of thumb or finger pressure will cause the modified fingerpiece to direct radial force components against the clutch element 36 in a manner identical to that in the first embodiment. When this initial clutch engagement is achieved however, further pressure upon the fingerpiece causes it to follow the sparking wheel as it rotates while yet remaining in an essentially horizontal position.

The modified lighter configuration of FIG. 8 also utilizes a closure cap configuration which eliminates the spherical valve closure element 60 and coil spring 61 of the preceding embodiment. According to the modified closure cap arrangement, a piece of resilient, pliable, heat resistant material 72 is provided across the metal insert 58 and held in place by means of a circumferential groove 73. A snuffer spring 74 is confined within the snuffer insert 58 and acts against the heat resistant material 72 to hold it tightly against the burner 55 when the closure cap 14 is closed. The material 72 is thereby made to conform to the top opening of the burner element 55 so as effectively to seal this element from any gases which may be emitted. It will be appreciated that with this arrangement no spring biased valve assembly, such as the valve assembly 54 of the first embodiment is required. The closure cap itself is capable of providing both the snuffer and valve closure functions.

A still further modification of the present invention is illustrated in the embodiment of FIG. 9. According to this modification a fingerpiece 80 is pivotally mounted at the rear of a lighter casing to rotate about a fixed point 81. The front portion of the fingerpiece is provided with a longitudinal slot 82 which is engaged by a clutch actuating pin 83 which extends from a movable clutch element 84. This clutch element has a friction surface 85 which, as in the preceding embodiments, is engageable with a sparking wheel 86. The sparking wheel 86 is pivotally mounted to rotate about a main pivot pin 87 and to strike a flint element 88 which protrudes from the lighter casing. A yoke shaped frame member 90 is also mounted on the main pivot pin 87, straddling the wheel 86, and is free to rotate independently of the sparking wheel. This frame member is connected through a spring biased hinge 91 to the movable clutch element 84. The frame member thus supports the movable clutch element in such a manner that the clutch element is restricted to movement in a path around the outer surface of the sparking wheel. A spring biased hinge 91 connects the movable clutch element 84 to the frame member 90. The hinge 91 allows freedom of movement in such a direction that a friction surface 85 on the clutch element may move into or out of engagement with the sparking wheel surface and is always in perfect alignment therewith no matter how far the member 90 and clutch element 84 have been rotated about the sparking wheel. The spring bias of the hinge element 91 is such that the clutch element is urged away from or out of engagement with the sparking wheel 86. If desired the hinge and spring action may both be provided by means of a simple leaf type spring interconnecting the frame member 90 and the clutch element 84. A further spring 92 is provided between the lighter casing and the

fingerpiece and serves to urge the fingerpiece upwardly to the normal undepressed position.

It will be noted in connection with this last described embodiment, that the movable clutch element and frame member are separate and distinct items and therefore may be made of different materials. Also the frame member 90 may be adapted to have attached to it any of several different closure cap or snuffer configurations (as shown in dotted outline) or may be integrally formed with a snuffer, or the snuffer may be mounted for rotation about the pin 87 by a pivotal connection with the pin 83 while being completely separate from the clutch elements 84, 90, 91.

It will also become apparent that in certain instances the fingerpiece itself may provide the entire support and guidance required for the friction clutch element, thus eliminating the need for any direct connection between that element and the snuffer.

Another feature of the last described embodiment is the purely rotational movement of the fingerpiece rather than the somewhat complex arcuate movement described in the preceding embodiments. This is made possible by the arcuate slot 82 in the front portion of the fingerpiece which receives the clutch actuating pin 83. Upon depression of the fingerpiece the upper surface of the slot 82 initially forces the pin 83 downwardly until the movable clutch element 84 engages the sparking wheel 86. Further depression of the fingerpiece 80 then produces rotation of the sparking wheel while the pin 83 moves toward the rear of the slot 82. When the fingerpiece becomes fully depressed, the upper surface of the slot 82 exerts no influence upon the pin 83 in the direction of clutch engagement. Consequently, the spring biased hinge element 91 is permitted to move the clutch element 84 so that its friction surface 85 goes out of engagement with the sparking wheel 86. This permits the fingerpiece to return to its undepressed position without producing reverse rotation of the sparking wheel.

FIG. 10 shows an adaptation of the embodiment of FIG. 9 wherein a snuffer 93 is attached to the frame member 90 so that upon depression of the fingerpiece the snuffer will be swung away from the burner valve while the sparking wheel is rotated. This arrangement permits the snuffer to be made of a completely different material than the frame member 90 or the clutch element 84. Therefore, even though the clutch element 84 is made of a rather pliant plastic type material, the snuffer 93 may be of a flame resistant material such as metal.

If desired, the clutch element 84 may be completely detached from the snuffer such as shown in FIGS. 11 and 12. Here the snuffer will be seen to pivot about the sparking wheel mounting pin 87 under the influence of the clutch actuating pin 83. This pin is further connected to the clutch actuating element 84 and controls clutch engagement and disengagement in the manner previously described.

Although particular embodiments of the invention have been herein disclosed for purposes of explanation, further modifications thereof, after study of this specification, will be apparent to those skilled in the art to which the invention pertains. Reference should accordingly be had to the appended claims in determining the scope of the invention. What is claimed and desired to be secured by Letters Patent is:

1. A lighter actuating apparatus comprising a lighter casing, a peripherally serrated sparking wheel mounted for rotation on said casing, a depressible fingerpiece moveable on said lighter casing between a first undepressed position and a second depressed position, a friction clutch element having a friction surface engageable with the peripherally serrated surface of said sparking wheel, means maintaining a resilient biasing force on said friction clutch element in a direction radially outward from the peripheral surface of said sparking wheel and first and second interconnecting means coupling said depressible fingerpiece between said friction clutch element and said lighter casing respectively, said first interconnecting means permitting pivotal movement between its respective interconnected members and at least one of said interconnecting means being constituted to permit relative sliding movement between its respective interconnected members in a direction generally transverse to a line between the rotational axes of said sparking wheel and said first interconnecting means in said first undepressed position of said fingerpiece.

2. A lighter actuating apparatus comprising a lighter casing, a peripherally serrated sparking wheel mounted for rotation on said casing, a depressible fingerpiece moveable on said lighter casing between a first undepressed position and a second depressed position, a frame member straddling and rotatable coaxially about said sparking wheel, said frame member supporting a friction clutch element over the peripheral surface of said sparking wheel and maintaining a resilient outward bias urging said friction clutch element in a radial direction away from said sparking wheel, and first and second interconnecting means coupling said depressible fingerpiece between said friction clutch element and said lighter casing, respectively, said first interconnecting means permitting pivotal movement between its respective interconnected members and at least one of said interconnecting means being constructed to permit relative sliding movement between its respective interconnected members in a direction generally transverse to a line between the rotational axis of said sparking wheel and said first interconnecting means in said first undepressed position of said fingerpiece.

3. A lighter actuating apparatus as described in claim 2 wherein said frame member is shaped to form a closure cap which swings open with depression of said fingerpiece.

4. A lighter actuating apparatus comprising a lighter casing, a peripherally serrated sparking wheel mounted for rotation on said casing, a depressible fingerpiece moveable on said lighter casing between a first undepressed position and a second depressed position, means resiliently biasing said fingerpiece to said first undepressed position, a friction clutch element having a friction surface engageable with the peripherally serrated surface of said sparking wheel, means maintaining a resilient biasing force on said friction clutch element in a direction radially outward from the peripheral surface of said sparking wheel, first interconnecting means pivotally connecting one end of said depressible fingerpiece to said friction clutch element, second interconnecting means connecting the opposite end of said depressible fingerpiece to said lighter casing, said second interconnecting means including a pin fixed to one of the respective interconnected members, which pin extends into a slot in the other interconnected member, said slot extending in a direction generally transverse to a line between the rotational axis of said sparking and said first interconnecting means in said first undepressed position of said fingerpiece.

5. A lighter actuating apparatus as described in claim 4, wherein said slot is curved to permit said opposite end of said fingerpiece to follow a path substantially parallel to its said one end during depression thereof.

6. A lighter actuating apparatus comprising a lighter casing, a peripherally serrated sparking wheel mounted for rotation on said casing, a depressible fingerpiece moveable on said lighter casing between a first undepressed position and a second depressed position, means resiliently biasing said fingerpiece to said first undepressed position, a friction clutch element having a friction surface engageable with the peripherally serrated surface of said sparking wheel, means maintaining a resilient biasing force on said friction clutch element in a direction radially outward from the peripheral surface of said sparking wheel, first interconnecting means between one end of said fingerpiece and said clutch element, said first interconnecting means including a pin fixed to one of its respective

members which pin engages a slot in the other respective member, said slot extending in a direction generally transverse to a line between the rotational axis of said sparking wheel and said first interconnecting means in said first undepressed position of said fingerpiece, and second interconnecting means pivotally fastening the opposite end of said fingerpiece to said lighter casing.

7. A lighter actuating apparatus comprising a lighter casing, a peripherally serrated sparking wheel mounted for rotation above a top wall of said casing, a depressible fingerpiece extending horizontally above, and depressible downwardly toward, the top wall of said lighter casing, means resiliently biasing said depressible fingerpiece to an uppermost undepressed position, a frame member straddling and rotatable coaxially about said sparking wheel, a friction clutch element extending in cantilever fashion from said frame member and having a friction surface extending over the peripheral surface of said sparking wheel and, by means of its said cantilever connection, maintained at a position radially displaced from

said peripheral surface of said sparking wheel, means pinning one end of said depressible fingerpiece to said friction clutch element and a pin and slot type interconnecting means fastening the opposite end of said depressible fingerpiece to said lighter casing in a manner permitting longitudinal sliding movement of said opposite end of said fingerpiece in a direction generally transverse to a line between the rotational axis of said sparking wheel and said friction clutch element corresponding to the undepressed position of said fingerpiece.

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