

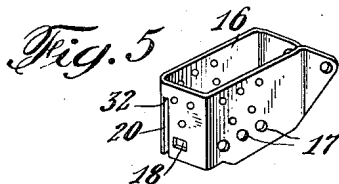
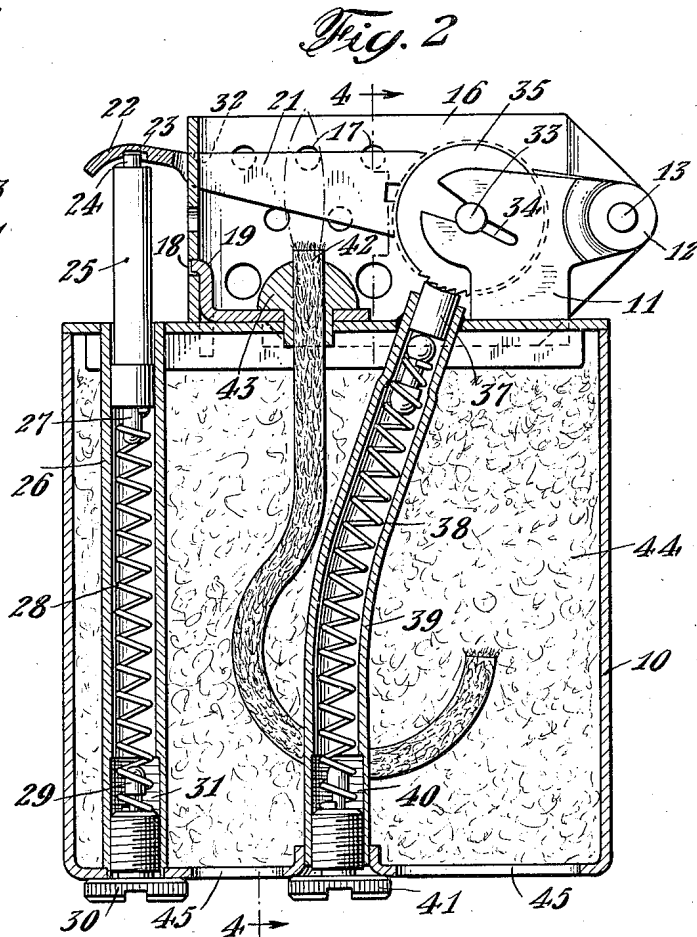
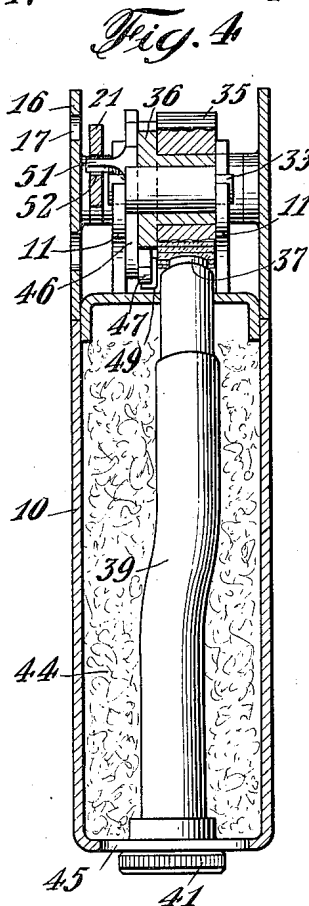
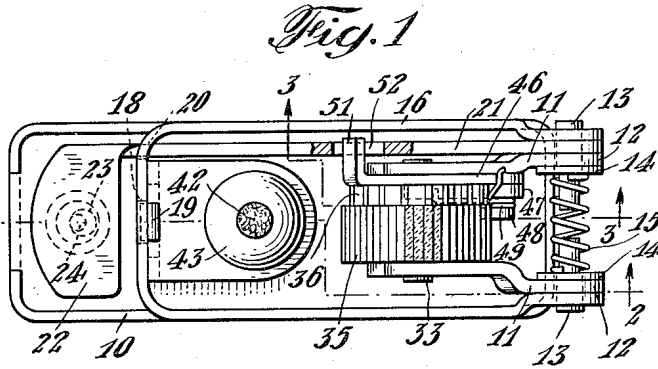
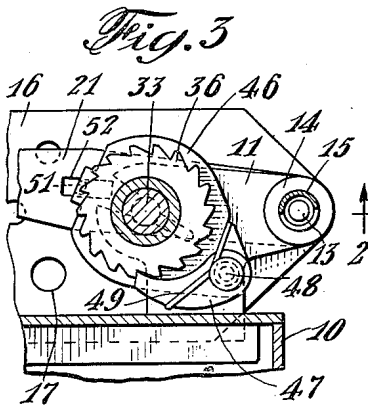
June 7, 1949.

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2,472,282

PYROPHORIC LIGHTER CONSTRUCTION

Filed May 4, 1945



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2,472,282

PYROPHORIC LIGHTER CONSTRUCTION

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Application May 4, 1945, Serial No. 591,926

3 Claims. (Cl. 67-7.1)

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This invention relates to improved cigar or cigarette lighter constructions and the like.

The invention is particularly adapted for use with pyrophoric lighters of the type having a fuel receptacle and wick accompanied by abradant wheel means, the abradant wheel being actuated by an operating lever. According to one aspect of the invention, the operating lever is manually depressed to thereby compress a spring which is operatively associated therewith. Upon release of the operating lever from such depressed position, by allowing the thumb or finger to slip therefrom, the compressed spring forcibly urges the operating arm by snap action upwardly into contact with a stop provided upon a suitable part of the lighter. This upward stroke of the operating arm causes actuation of the aforesaid abradant wheel means to thereby operate the lighter. I have found that this type of action is unusually convenient and rapid and also effective in insuring that the wick will be lighted. Preferably the operating arm may be connected to the abradant wheel by a pawl and ratchet, for example, to prevent operation of the abradant wheel during the manual downward stroke of the operating arm. According to this aspect of the invention, the spring applies a uniform upwardly-directed pressure to the operating arm each time the lighter is operated, which is entirely independent of the rapidity of the manual downward movement of the operating arm or of the pressure applied by the user during such downward movement.

According to a preferred example of the invention, one end of the operating arm may be pivoted to the lighter fuel container, and a finger piece may be provided at the other end of the operating arm. The spring for actuating the lighter may be disposed beneath the finger piece and, if desired, may extend from the top to the bottom of the lighter housing. In this manner such a spring may be utilized as will apply the desired pressure to actuate the operating arm by snap action throughout a fairly long stroke. Also the spring may be removed and replaced readily at the bottom of the fuel receptacle, whereby a spring may be chosen and installed of such strength as will best suit the user's desires, or the spring originally installed may be taken out and adjusted to provide the desired normal pressure on the finger piece. Furthermore, when the spring is located beneath the finger piece, a very advantageous leverage is obtained upon the operating arm which makes the lighter very dependable in operation.

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Various other objects, features and advantages of the invention will clearly appear from the detailed description given below taken in connection with the accompanying drawings forming a part of the specification and illustrating, by way of example, one form of device embodying the invention. The invention resides in such novel features, arrangements, and combination of parts as may be shown and described in connection with the device herein disclosed.

In the drawings,

Fig. 1 is a plan view of a preferred form of lighter embodying the invention;

Figs. 2 and 3 are, respectively, sectional views taken substantially along the lines 2-2 and 3-3 of Fig. 1;

Fig. 4 is a sectional view taken substantially along the line 4-4 of Fig. 2; and

Fig. 5 is a perspective view of the windshield used with the lighter shown in Fig. 1.

Referring to the drawings in detail, the lighter as shown comprises a fuel chamber 10 which is adapted to fit within various suitable types of casings or housings, not shown, which may, if desired, be provided with suitable hinged covers. A pair of brackets 11, 11 are mounted on the fuel chamber 10, each bracket including an ear 12. Each ear 12 has a fulcrum shaft 13 extending therethrough which is provided with a flanged portion as at 14 in contact with the adjacent ear 12. A spring 15 is mounted on the fulcrum shafts 13, 13 to thereby urge the respective flanged portions 14, 14 against the adjacent ears 12, 12.

A suitable windshield 16, which may be perforated as at 17, is mounted at one end upon the fulcrum shafts 13, 13. As shown, the windshield 16 is provided with a slot 18 to receive a resilient locking member 19 which may be secured to the fuel chamber 10 in any suitable manner. The windshield construction is such that the locking member 19 may be readily urged from its normal position in the slot 18 and the windshield swung back on fulcrum shafts 13, 13 to provide access to the lighter mechanism. The windshield 16 may also be provided with a narrow, vertical slot 20 through which extends an operating arm 21 which is pivotally mounted upon one of the fulcrum shafts 13. The portion of the operating arm 21 which extends outside of the windshield 16 may be provided with a finger piece as at 22 so that the operating arm 21 may be readily depressed by the user. The finger piece 22 may be recessed as at 23 to receive a pin 24 mounted at the upper end of a vertically-extending rod 25. The lower portion of rod 25 is slidably mounted

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within a metal tube 26 extending vertically through the fuel chamber 10. A compression spring 28 is disposed between a pin 27 and a pin 29 extending from a screw 30 which engages a tapped portion 31 at the bottom of the tube 26. As shown, the spring 28 extends substantially from the top to the bottom of the fuel receptacle and may be readily removed or replaced through the bottom of the fuel receptacle. It will be apparent that the spring 28 urges the operating arm 21 into engagement with a surface 32 of the windshield 16 at the top of the vertical slot 20 and that the surface 32 may be considered as a stop for limiting the upward motion of operating arm 21.

A shaft 33 is rotatably mounted in suitable slots 34 provided in the brackets 11, 11. An abradant wheel 35 and a ratchet wheel 36 are mounted on the shaft 33 between the brackets 11, 11. A piece of sparking metal 37 may be held in engagement with the abradant wheel 35 by a spring 38 extending through a metal tube 39 which is tapped as at 40 to receive a screw 41 at the bottom of the fuel chamber 10. As the abradant wheel 35 is rotated in a clockwise direction, Fig. 2, a shower of sparks is directed toward a wick 42 which extends through a leak-proof sealing member 43 to the interior of the fuel chamber 10. The fuel chamber may be filled with cotton or other absorbent material, as indicated at 44, in order to retain fuel which may be inserted into the chamber 10 through suitable apertures as at 45. It will be understood that the apertures 45 may be covered and substantially sealed as by the aforementioned casing or housing structures which are adapted to enclose the described lighter mechanism.

A suitable metal plate 46, Fig. 3, is rotatably mounted upon the shaft 33 and a pawl 47 is rotatably mounted on a shaft 48 secured to the plate 46. Pawl 47 is urged into engagement with the ratchet 36 by a suitable spring 49. A projection 51, Fig. 1, which is integral with the plate 46, extends into a slot 52 in the operating arm 21.

When the operating arm 21 is manually depressed, the spring 28 is compressed and the projection 51 is forced downwardly thereby rotating the plate 46 and pawl 47 in a counter-clockwise direction, Fig. 3. During such rotation of the plate 46, the pawl 47 slips over the teeth of ratchet wheel 36. Accordingly, the shaft 33 together with the abradant wheel 35 remains stationary. When the operating arm 21 is released from its depressed position, the spring 28 forces the operating arm by snap action upwardly into engagement with the stop 32. It will be seen that the operating arm may be readily operated by a single downward stroke of the user's finger or thumb which depresses the finger piece 22 and compresses the spring 28, the user's thumb slipping off the finger piece as the operating arm reaches its lowermost position to thereby release said operating arm and allow it to move upwardly by snap action into engagement with the stop 32. Responsive to this snapping movement of the operating arm 21, the plate 46 together with the pawl 47 rotates in a clockwise direction, Fig. 3, the pawl 47 engaging one of the teeth of ratchet wheel 36 to thereby cause rotation of the shaft 33 and the abradant wheel 35 in a clockwise direction, Fig. 2. Accordingly, the wheel 35 abrades the sparking metal 37 to thereby direct a shower of sparks against the wick 42 an cause operation of the lighter. Thus, the force for actuating the lighter is provided

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by spring 28 during the upward stroke of the operating arm 21 and is entirely independent of the rapidity or force with which the operating arm 21 is manually depressed. Accordingly, the lighter is very dependable in operation since a uniform pressure is applied to turn the abradant wheel 35 by spring 28 at each actuation of the lighter.

Furthermore, access may be readily had to the sparking mechanism and wick by disengaging the locking member 19 from the slot 18 and swinging the windshield 16 back upon the fulcrum shafts 13, 13. The operating arm 21 may be sufficiently resilient that the projection 51 may be easily disengaged from the slot 52 and the operating arm swung back upon its fulcrum shaft to thereby permit removal of rod 25. In this manner the operating arm 21 is also moved away from the wick and the lighter mechanism so as to allow access thereto.

It will be further appreciated that the operating arm 21 is pivoted at one side of the lighter while the finger piece 22 is located at a remote point at the other side. Accordingly, a very advantageous leverage is obtained when the spring 28 moves the arm 21 by snap action upwardly into engagement with the stop 32. Moreover, the spring 28 may be made longer than the springs heretofore generally used for actuating lighter mechanisms, since said spring 28 may extend all the way from the top to the bottom of the lighter, if desired. Accordingly, the actuating stroke of the mechanism is relatively long, insuring dependable lighting action.

While the invention has been described with respect to a present preferred embodiment which has given satisfactory results and certain modifications have been referred to, it will be understood by those skilled in the art, after understanding the invention, that various other changes and modifications may be made without departing from the spirit and scope of the invention and it is intended, therefore, in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. A lighter comprising, in combination, a fuel container having a top surface, an abradant wheel mounted adjacent one extremity of said surface, a wick member mounted adjacent said abradant wheel, said container having a passage extending therethrough with an outlet adjacent the opposite extremity of said surface, an angularly shiftable operating arm for said abradant wheel, said arm being pivotally mounted adjacent said abradant wheel and extending substantially the full length of said top surface and being provided with a finger piece adjacent said opposite extremity of the top surface, a limit stop for limiting the angular motion of said arm away from said container, a helical spring mounted in said passage and extending substantially the full length thereof, a plunger axially shiftable in said passage and operatively associated with said helical spring, said plunger being adapted for engaging said finger piece of said arm to urge same away from said top surface and against said limit stop, said operating arm being substantially parallel to the top surface of the container when the arm is urged against said limit stop, said helical spring thus being adapted for moving said finger piece by snap action from a position adjacent said top surface to a position remote therefrom to actuate said abradant wheel, and a

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closure member detachably secured to said container for closing that extremity of said passage remote from said finger piece.

2. A lighter, comprising in combination, a fuel container having a top surface, an abradant wheel mounted adjacent one extremity of said surface, an operating arm pivotally mounted at one extremity thereof adjacent said abradant wheel, said operating arm extending substantially the full length of said top surface and being provided with a finger piece adjacent the opposite extremity thereof, a limit stop mounted upon said container and above the top surface thereof for limiting the angular motion of said operating arm, said container having a passage extending therethrough adjacent and beneath said finger piece, a helical spring mounted in said passage for operatively interconnecting the spring and said finger piece, said spring being adapted normally for urging said arm against said limit stop whereby the spring is normally in an extended condition and said operating arm is in a substantially horizontal position relative to the top surface of said container, and means for operatively interconnecting said operating arm with said abradant wheel so constructed and arranged that when said finger piece is depressed and suddenly released said operating arm will actuate said abradant wheel.

3. A lighter comprising in combination, a fuel container having a top surface, an abradant wheel mounted adjacent one extremity of said surface, mechanism for urging a pyrophoric element against said wheel, a wick member mounted adjacent said abradant wheel, said container having a passage member extending therethrough with an outlet adjacent the opposite extremity of said top surface, an angularly shiftable operating arm for said abradant wheel, said arm being

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pivotally mounted at one extremity thereof adjacent said wheel and extending substantially the full length of said top surface and being provided with a finger piece at the opposite extremity thereof, a limit stop mounted upon said container for limiting the extent of angular motion of said operating arm between said container and stop to approximately thirty degrees, said arm being substantially parallel to the top surface of the container when resting against said limit stop, a helical spring mounted in said passage member, and a plunger axially shiftable in said passage and urged by said helical spring against said finger piece whereby said arm is urged against said limit stop, said helical spring being adapted through the intermediary of said plunger for moving said finger piece by snap action from a position adjacent the top container surface to a position approximately 30° removed therefrom to actuate said abradant wheel.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|-----------|----------|---------------|
| 1,753,835 | Projahn | Apr. 8, 1930 |
| 1,754,319 | Holtzman | Apr. 15, 1930 |
| 1,755,951 | Dubsky | Apr. 22, 1930 |
| 2,086,412 | Florman | July 6, 1937 |

FOREIGN PATENTS

| Number | Country | Date |
|---------|---------------|---------------|
| 327,034 | Germany | Oct. 12, 1920 |
| 349,765 | Germany | Mar. 7, 1922 |
| 321,323 | Great Britain | Nov. 7, 1929 |
| 367,165 | Great Britain | Feb. 18, 1932 |