

PATENT SPECIFICATION

Convention Date (United States): Dec. 13, 1928.

340,735

Application Date (in United Kingdom): Dec. 6, 1929. No. 37,474/29.

Complete Accepted: Jan. 8, 1931.

COMPLETE SPECIFICATION.

Automatic Lighter Construction.



We, EVANS CASE COMPANY, a corporation of Massachusetts, United States of America, having a place of business at North Attleboro, Massachusetts, United States of America, 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:—

10 This invention relates to lighting devices and more particularly to those in which a wick is ignited by sparks from pyrophoric metal or other suitable sparking material.

15 One of the objects thereof is to provide a practical device of the above type of simple and durable construction and which is efficient and dependable in action. Further objects are to facilitate the actuation of the spark producing mechanism, to eliminate gearing, to prevent discoloration of the snuffer, to provide convenient access to the burner when the snuffer is raised, to reduce the number of parts, and in general to provide an improved lighter of this type. Other objects will be in part obvious and in part pointed out hereinafter.

20 The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts which will be exemplified in the apparatus hereinafter described and the scope of application of which will be indicated in the following claims.

25 In the accompanying drawing, in which is shown one of the various possible embodiments of this invention:—

30 Fig. 1 is a side elevation with portions broken away to expose the parts concealed thereby;

35 Fig. 2 is an enlarged detail view of portions of the device;

40 Fig. 3 is an enlarged plan view and

45 Fig. 4 is a vertical sectional view on the line 4—4 of Fig. 2.

Similar reference characters refer to similar views throughout the several figures of the drawing.

50 Referring now to the drawing in detail, there is shown a fuel tank 5 provided with the customary filling of absorbent material and openings through which liquid fuel

may be poured when the tank is inverted. A burner 6 is provided on the elongated top wall 7 of the tank and this contains an absorbent wick 8 which extends into the tank in the usual manner.

Formed upon the upper surface of the top wall 7 are a pair of webs 9 and 10. Extending between these webs is a shaft 11 which may be a screw, on which is loosely mounted a suitable sparking wheel 12 and a pressed metal actuating member 13. Pressing against the lower surface of the wheel 12 is a short cylindrical piece of pyrophoric metal 14 resting within a tube 15 extending downwardly into the fuel tank and this pyrophoric metal is urged toward the wheel by means of a long spiral spring (not shown) within the tube 15 as is customary in such devices. A ratchet 16 is likewise loosely mounted upon the shaft 11 and fixed to the wheel 12.

Likewise extending between the webs 9 and 10 on the top wall 7 and preferably about midway between the ends of the top wall is a second shaft 17 which may likewise be a screw, and on this shaft is loosely mounted a pressed metal snuffer member 18 which is a lever and which carries on its free outer end a snuffer 19. This snuffer is in the form of a cap which in closed position fits closely over the reduced upper end 20 of the burner and its edge presses tightly against the beveled shoulder 21 thereon to seal in the exposed wick end and prevent evaporation or waste of fuel therefrom. A ratchet arm 22 is pivotally mounted on a cross pin 23 set in the snuffer arm 18 and this ratchet arm is yieldingly held in contact with the ratchet 16 by means of a suitable spring as 24.

The actuating member 13 consists of a broad finger actuated lever 25 from the opposite side walls of which extend a pair of arms 26, one being disposed on each side of the snuffer arm 18. The forward extremity of each of these arms 26 is pivotally mounted on the shaft 11. Each of these arms 26 is cut away as at 27 to admit the shaft 17 when the actuating member is in its depressed position, as indicated in Fig. 2. Thus the actuating member 13 extends over the axis of the

55

60

65

70

75

80

85

90

95

100

105

[Price 1/-]

snuffer member 18. A tubular shaft or sleeve 28 extends between the arms 26 of the actuating member and this shaft is supported by a pin 29 which extends through the arms and fits within the bore of the shaft so that the shaft is revoluble thereon.

The snuffer member 18 is channel shaped and forms a housing for the friction wheel and other parts in the vicinity thereof when this arm is in closed position. Depending ears 30 are provided on the side walls 31 of this arm and these are journaled on the shaft 17. Each of the side walls 31 of this arm is provided with an elongated slot as at 32 and the shaft 28 extends through these slots. Flanges as 33 may be provided along the longitudinal edges of the slots 32 to reinforce such edges and provide wider faces in contact with the shaft 28. Such flanges may be formed by striking up the metal of the side walls in the formation of the slots 32. The shaft 28 and the slots 32 form a pin and slot connection by means of which the snuffer arm is actuated by the member 13. The ability of the shaft 28 to revolve provides a roller action within the slots 32 which insures smooth and easy operation of the parts. A spring 34 acting against the snuffer arm normally retains the actuating member in raised position and causes the snuffer to press firmly on burner 6 in the manner described. An end web as 35 between the webs 9 and 10 may be provided and this will act as shield for the burner.

The eccentric action produced by the spacing of the axes 11 and 17 provides a variable speed of rotation of the wheel 12, or in other words a snap action. The wheel rotates slowly as the cap is being raised clear of the wick then rapidly to provide the shower of sparks, and then more slowly as the finger piece approaches its lowest position. As no stop is present to limit the upward movement of the member 13, pressing contact of the snuffer and the burner is insured when the actuating member is released.

In the operation of the device the finger piece 25 is depressed from the normal position indicated in Fig. 1 to that shown in Fig. 2. The downward movement of the shaft 28 in this finger piece acting in the slots 32 causes the snuffer arm 18 to swing about the axis of the shaft 17 into its raised position or substantially that shown in Fig. 2. At the same time the ratchet arm 22 rotates the ratchet 16 one tooth distance or approximately 90° and carries with it the friction or sparking wheel 12, causing the teeth on the periphery of this wheel to act against the upper extremity of the pyrophoric metal 14. This pro-

jects a shower of sparks upon the wick 8 of the burner and lights the same. The parts will remain in this position and the lighter will continue to burn as long as the finger piece is held in its depressed position. As soon as the finger piece is released the spring 34 causes the snuffer arm to return to its normal or lowered position, over the burner, extinguishing the flame thereon. This movement of the snuffer arm acts through the pin and slot connection to cause the actuating member to swing upwardly to its raised position. At the same time the ratchet arm 22 is advanced on the ratchet 16 to engagement with the next tooth. The friction or sparking wheel 12 remains stationary during this return movement of the parts. This completes the cycle of operations and the parts are now in position to repeat the same when desired.

It is obvious from the foregoing description that the lighter is simple and durable in construction and efficient and dependable in action. The long leverage provided by the member 13 greatly facilitates the operation of the device. The mounting of the snuffer arm on an axis further removed from the burner than the axis of the friction or sparking wheel makes it possible to swing the snuffer a considerable distance from the burner and thus not only prevents the snuffer from becoming tarnished by the flame but provides more available space about the burner which is advantageous particularly when a pipe is to be lighted. The pin and slot connection enables the snuffer to be readily lifted by the actuating member without the use of racks and pinions or other gearing which are always liable to cause trouble and are generally the first parts of the lighter to wear out. Furthermore this connection permits the replacement of the snuffer on the burner as soon as the finger piece is released. Firm pressure of the snuffer on the burner is always insured when the finger piece is not depressed.

It will thus be seen that there is provided a device in which the various objects of this invention are achieved and that the same is well adapted to meet the hardest conditions of practical use.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiment above set forth, it is to be understood all matter hereinbefore set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to

70

75

80

85

90

95

100

105

110

115

120

125

130

be performed, we declare that what we claim is:—

1. In a construction for lighters, a sparking wheel mounted for rotation on a casing in contact with pyrophoric metal, the sparking wheel having associated with it means operated by a toothed member to throw sparks on a wick, a snuffer member and a separate finger piece member both pivotally mounted on the casing in overlapping relationship, the finger piece member being operable at an end thereof more remote from the wick than the axis of the snuffer member, the sparking wheel and the snuffer being actuated by the finger piece member and returned to position by spring means.

2. Lighter construction as claimed in Claim 1 in which one of the members is in the form of a fork having arms extending on either side of the other member.

3. Lighter construction as claimed in either of the preceding claims in which the toothed member is carried by the snuffer and a gear operated thereby is directly fastened to the sparking wheel.

4. Lighter construction as claimed in any of the preceding claims in which the finger piece member has a positive connection with the snuffer member close to the axis of the snuffer member so as to lift the snuffer well clear of the wick by a limited motion of the finger piece member, the parts being returned to original position simultaneously.

5. Lighter construction as claimed in any of the preceding claims in which the means associated with the sparking wheel is a ratchet gear and the toothed member is urged into engagement with it by a spring, thereby giving a ratcheting action to move the sparking wheel in one direction only.

6. Lighter construction as claimed in any of the preceding claims in which the finger piece member has operative connection with the snuffer member at a point more remote from the wick than is the axis of said snuffer.

7. Lighter construction according to any of the preceding claims, in which the operating connection between the snuffer and the actuating member comprises a pin and slot.

8. Lighter construction according to any

of the preceding claims, characterized by the fact that depressing an end of the actuating member serves to lift the snuffer from the wick and rotate the sparking wheel.

9. Lighter construction according to any of the preceding claims, in which the snuffer is a lever journaled on the top wall of the casing substantially mid-way between the ends thereof, and the actuating member is a lever fulcrummed at the axis of the sparking wheel, whence it extends over the axis of said snuffer substantially to the opposite end of said top wall from said wick.

10. Lighter construction according to any of the preceding claims, in which the snuffer has a sliding connection with the actuating member at such a point therein that the axis of said snuffer will lie between said point and the axis of said actuating member.

11. Lighter construction according to any of the preceding claims, in which the actuating member comprises a pair of arms pivotally mounted on the axis of the sparking wheel and extending substantially longitudinally of the top wall of the casing toward the end opposite the wick, one of said arms being disposed on each side of said snuffer, and a finger piece on the free outer end portions of said arms.

12. Lighter construction as in Claim 11, in which there is a pin and slot connection between said arms and said snuffer whereby said snuffer is lifted when said finger piece is depressed.

13. Lighter construction as in Claim 11, in which there is a pin and slot connection between said arms and said snuffer and a ratchet arm and ratchet connection between said snuffer and said wheel whereby said snuffer is lifted from said wick and said wheel is rotated when said finger piece is depressed.

14. Lighter construction, constructed substantially as described with reference to the accompanying drawing.

Dated this 6th day of December, 1929.

HYDE & HEIDE,
2, Broad Street Buildings,
Liverpool Street, London, E.C. 2,
Patent Agents for the Applicants.

[This Drawing is a reproduction of the Original on a reduced scale.]

