

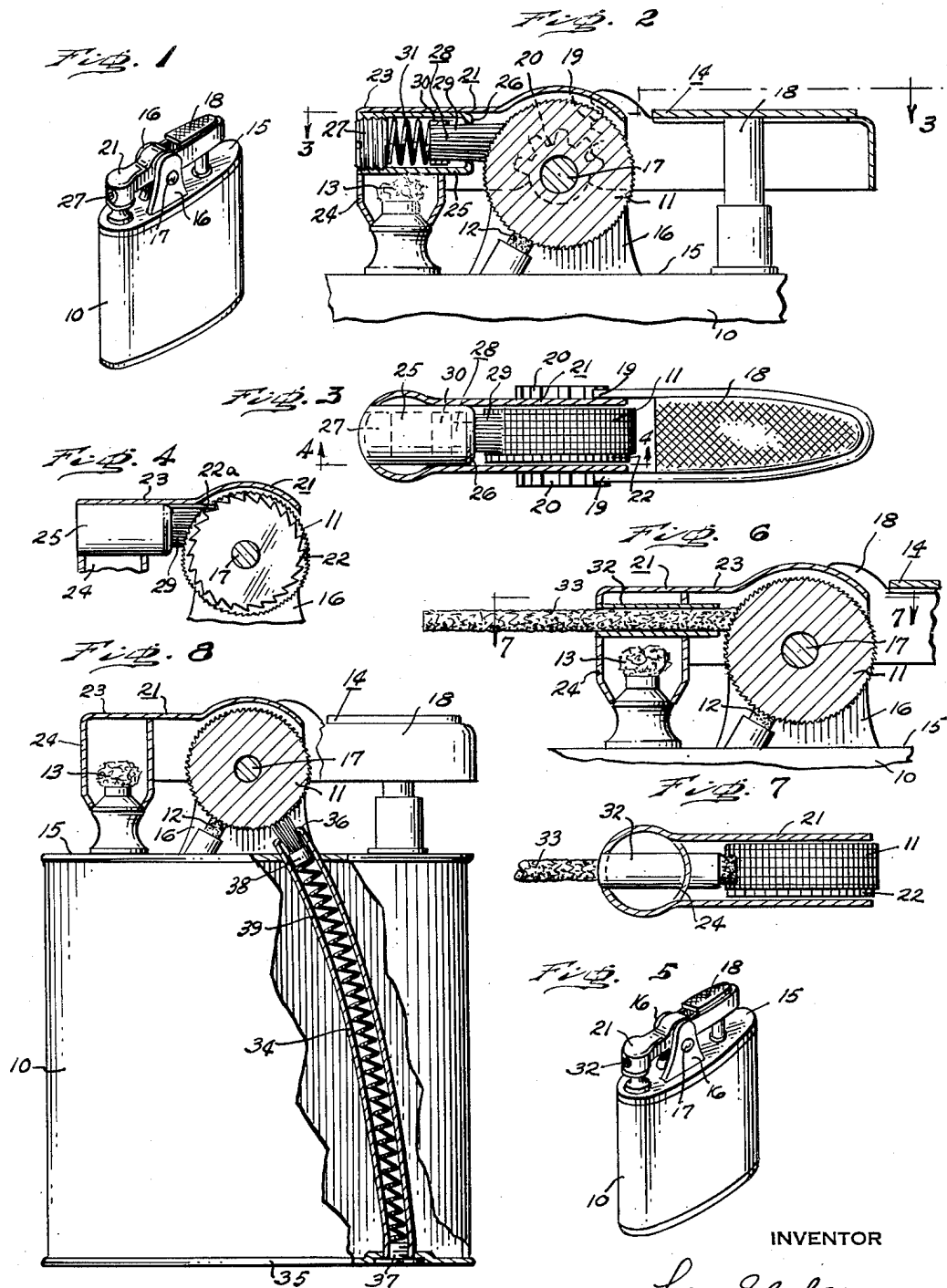
June 9, 1953

L. EDELSON

2,641,118

LIGHTER CONSTRUCTION

Filed July 18, 1952



INVENTOR

Lea Edelson

UNITED STATES PATENT OFFICE

2,641,118

LIGHTER CONSTRUCTION

Leon Edelson, Elkins Park, Pa.

Application July 18, 1952, Serial No. 299,574

10 Claims. (Cl. 67-7.1)

1

This invention relates generally to cigarette lighters or the like and is more particularly concerned with spark-producing means therefor.

A principal object of the present invention is to provide a cigarette lighter of the type having a pyrophoric element and coating abradant wheel with cleaning means for the latter, this cleaning means comprising parts integral with the lighter.

Another object of the present invention is to provide such a cigarette lighter wherein the cleaning means includes brush elements which function automatically each time the lighter is used.

Still another object of the present invention is to provide such a cigarette lighter wherein the cleaning means includes brush elements which are self adjusting for taking up wear.

And another object of the present invention is to provide such a cigarette lighter wherein the cleaning means includes a brush element which is replaceable after use.

Other objects and advantages of the present invention will appear more fully hereinafter, it being understood that the specific embodiments of the invention described herein are illustrative and that modifications thereof falling within the scope of the appended claims will be apparent to persons skilled in the art.

In the drawings;

Figure 1 is a perspective view of a cigarette lighter embodying the present invention.

Figure 2 is an enlarged longitudinal section through the top of the cigarette lighter shown in Figure 1.

Figure 3 is a partial plan section taken generally on line 3-3 of Figure 2, parts being omitted for the sake of clarity.

Figure 4 is a section on line 4-4 of Figure 3.

Figure 5 is a perspective view of a modified form of the cigarette lighter embodying the present invention.

Figure 6 is an enlarged longitudinal section through the top of the cigarette lighter shown in Figure 5;

Figure 7 is a partial plan section taken generally on line 7-7 of Figure 6, parts being omitted for the sake of clarity; and

Figure 8 is an elevational view of still another modified form of the cigarette lighter embodying the present invention, parts being broken away and other parts being shown in section for the sake of clarity.

Referring to the drawing and particularly to Figures 1-4, inclusive, thereof, it will be observed that the present invention is shown embodied in a cigarette lighter. The fuel receptacle of the lighter is designated by the numeral 10, and mounted in suitable relation to one another on the top of the latter is an abradant wheel 11 and a pyrophoric element 12, a wick 13 and means for turning said wheel 11, said means being designated generally by the numeral 14.

2

It will be observed that extending upwardly from the top wall 15 of the fuel receptacle 10 are a pair of standards 16-16 which nonrotatably support a pin 17, the latter having rotatably mounted thereon the wheel 11. The means 14 for turning the wheel 11 comprises a member 18 which is spring pressed upwardly to the position thereof shown in Figure 2 and which is provided with a rack 19. A pinion 20 is rotatably mounted on the pin 17, and the teeth thereof mesh with those of the rack 19. Suitably secured to the pinion 20 for movement therewith is a snuffer member 21 which extends therefrom and has an end portion positioned over the wick 13.

Referring particularly to Figure 2, it should be apparent that when the member 18 is pressed downwardly, the rack 19 turns the pinion 20 clockwise, and the snuffer member 21 is thus swung upwardly. When the member 18 is released, it returns to its original position, and the rack 19 turns the pinion 20 counterclockwise, the snuffer member 21 being thus swung downwardly to its original position.

Now referring particularly to Figures 3 and 4, it will be observed that integral with the wheel 11 are a set of ratchet teeth 22 which are disposed to engage a pawl in the form of a leaf spring 22^a carried by the snuffer member 21. When the latter is swung upwardly the pawl 22^a carried thereby engages the ratchet teeth 22 and turns the wheel 11 on the pin 17, but when the snuffer member 21 is swung downwardly, the pawl 22^a is disengaged from the ratchet teeth 22 and rides over them without turning the wheel 11.

Thus far this detailed description has been concerned with features of construction and operation which are conventional in cigarette lighters and the like, and it is believed that insofar as these conventional features are concerned the foregoing description is sufficient for a full understanding of the present invention. Therefore, a description of the cleaning means for the abradant wheel of the present invention will now be undertaken.

Referring again to Figures 1-4, inclusive, it will be observed that the snuffer member 21 comprises a snuffer arm 23 mounting in a conventional manner a snuffer cap 24. Projecting through the latter is a tubular member 25 suitably rigidly secured in place and disposed thereby over the wick 13 and parallel to the snuffer arm 23. The end portion of the member 25 proximate the wheel 11 is turned inwardly slightly as at 26 so as to constrict the opening at that end, and the end portion of the member 25 remote from the wheel 11 is internally threaded to receive an externally threaded adjusting plug 27. A brush 28 comprising bristles 29 secured together by a ferrule 30 is carried by the member 25. The ferrule 30 is disposed within the member 25, the outside diameter thereof being slightly less than the inside diameter of the mem-

3

ber 25 to provide a sliding fit. The bristles 29 are thus disposed to project through the constricted opening defined by the inwardly turned circumferential edge 26 and are further disposed to engage the abrasive surface of the wheel 11. Interposed between the adjusting plug 27 and the ferrule 30 is a compression spring 31 which acts to urge the brush 28 toward the wheel 11 to take up wear. The pressure exerted by the spring 31 may be adjusted by suitably adjusting the axial position of the plug 27. It will be observed that the ferrule 30 is normally disposed in spaced relation to the inwardly turned circumferential edge 26 and that the outside diameter of the ferrule 30 is greater than the diameter of the constricted opening defined by the inwardly turned circumferential edge 26, the latter acting to limit the axial movement of the brush 28 toward the wheel 11.

As mentioned hereinbefore, when the snuffer member 21 is swung upwardly, the wheel 11 is turned on the pin 17. Consequently, during such movement, the brush 28 is not effective to clean the abrasive surface of the wheel 11 because it is carried by the snuffer member 21 for movement therewith, and there is no relative movement between the brush 28 and the wheel 11. However, when the snuffer member 21 is swung downwardly, the wheel 11, as hereinbefore mentioned, does not turn on the pin 17. Consequently, during this latter movement, the brush 28 is effective to clean the abrasive surface of the wheel 11 because in this case there is relative movement between the brush 28 and the wheel 11.

It will be observed that the cleaning means just described is an integral part of the lighter, functions automatically each time the lighter is used and is self-adjusting for taking up wear on the brush 28, the latter being replaceable when worn out.

Referring to Figures 5-7, inclusive, it will be observed that a modified form of the cleaning means of the present invention is shown. In this modified form, a tubular member 32 is projected through the snuffer cap 24 and is suitably rigidly secured in place, being thereby disposed over the wick 13 and parallel to the snuffer arm 23. When it is desired to clean the abrasive surface of the wheel 11, a pipe cleaner 33 or the like is inserted into the tubular member 32, and an end portion thereof is positioned for frictional engagement with the surface to be cleaned. The snuffer member 21 is then swung upwardly and then allowed to return to its original position, the cleaning action being the same as described hereinabove for the form of the cleaning means shown in Figures 1 to 4, inclusive. The snuffer member 21 may be raised and lowered as often as desired, a different portion of the abrasive surface of the wheel 11 being cleaned each time it is lowered. It will be understood that the pipe cleaner 33 is suitably axially adjusted by hand and is removed from the tubular member 32 after the wheel 11 has been cleaned, and that the tubular member 32, on the other hand is an integral part of the lighter.

Referring to Figure 8, it will be observed that another modified form of the cleaning means of the present invention is shown. In this modified form, a slightly bowed tubular member 34 is provided with opposite end portions rigidly suitably secured respectively to the bottom wall 35 and the top wall 15 of the fuel receptacle 10. The end portion of the member 34 proximate

4

the wheel 11 projects upwardly through the top wall 15 and is turned inwardly slightly as at 36 so as to constrict the opening at that end, and the end portion of the member 32 remote from the wheel 11 is internally threaded to receive an externally threaded adjusting plug 31. Carried by the end portion of the member 34 proximate the wheel 11 is a brush 38, the latter being substantially similar to the brush 28 and being mounted in its tubular support generally in the same manner, as hereinbefore described. Positioned between the adjusting plug 37 and the ferrule of the brush 38 is a compression spring 39 which acts to urge the brush 38 toward the wheel 11 to take up wear. The pressure exerted by the spring 39 may be adjusted by suitably adjusting the axial position of the plug 37. In this modified form of the invention, it will be evident that the abrasive surface of the wheel 11 is cleaned when the snuffer member 21 is swung upwardly, at which time the wheel 11 is turned, and there is relative movement between the brush 38 and the wheel 11.

As in the case of the cleaning means shown in Figures 1-4, inclusive, the cleaning means is an integral part of the lighter, functions automatically each time the lighter is used and is self-adjusting for taking up wear on the brush 38, the latter being replaceable when worn out.

Although the present invention has been disclosed herein as embodied in a pocket lighter, it is not intended by applicant to limit the present invention specifically thereto as other applications will readily come to the minds of those skilled in the art. Accordingly, it will be understood that the present invention is susceptible to various changes, modifications and applications which may be made from time to time without departing from the principles thereof and that it is intended to claim the invention broadly, as well as specifically, as indicated in the appended claims.

What is claimed as new and useful is:

1. In a lighter, a fuel receptacle, an abradant wheel rotatably mounted on the top of said receptacle, a pyrophoric element and a wick each carried by said receptacle and each having a portion presenting an exposed surface, means for turning said wheel for frictional engagement between the abrasive surface thereof and said exposed surface of the pyrophoric element to produce sparks, the sparks thus produced being effective to ignite said wick when the latter is saturated with fuel, and a brush assembly for cleaning said abrasive surface of the wheel including a part built in said lighter and brushing means mounted in said part for cleaning said abrasive surface by frictional engagement thereupon upon relative movement of said wheel and said brushing means.

2. In a lighter, a fuel receptacle, an abradant wheel rotatably mounted on the top of said receptacle, a pyrophoric element and a wick each carried by said receptacle and each having a portion presenting an exposed surface, means for turning said wheel for frictional engagement between the abrasive surface thereof and said exposed surface of the pyrophoric element to produce sparks, the sparks thus produced being effective to ignite said wick when the latter is saturated with fuel, and a brush assembly for cleaning said abrasive surface of the wheel including a tubular part built in said lighter and brushing means mounted in said tubular part and having an end portion exposed for cleaning

5

6

said abrasive surface by frictional engagement therewith upon relative movement of said wheel and said brushing means.

3. In a lighter, a fuel receptacle, an abradant wheel rotatably mounted on the top of said receptacle, a pyrophoric element and a wick each carried by said receptacle and each having a portion presenting an exposed surface, a snuffer member mounted on the top of said receptacle for swinging movement about said abradant wheel, said wheel being rotatable in one direction only for frictional engagement between the abrasive surface thereof and said exposed surface of the pyrophoric element to produce sparks, the sparks thus produced being effective to ignite said wick when the latter is saturated with fuel, and means for cleaning said abrasive surface of the wheel including a brushing device mounted on said snuffer member for movement therewith, a portion of said brushing device being exposed for frictional engagement with said abrasive surface as said snuffer member moves about said wheel in the direction opposite to said one direction of rotation of said wheel.

4. In a lighter, a fuel receptacle, an abradant wheel rotatably mounted on the top of said receptacle, a pyrophoric element and a wick each carried by said receptacle and each having a portion presenting an exposed surface, a snuffer member mounted on the top of said receptacle for swinging movement about said abradant wheel, said wheel being rotatable in one direction only for frictional engagement between the abrasive surface thereof and said exposed surface of the pyrophoric element to produce sparks, the sparks thus produced being effective to ignite said wick when the latter is saturated with fuel, and means for cleaning said abrasive surface of the wheel including a brushing device mounted on said snuffer member for movement therewith, and yieldable means for pressing an exposed portion of said brushing device into frictional engagement with said abrasive surface as said snuffer member moves about said wheel in the direction opposite to said one direction of rotation of said wheel.

5. In a lighter, a fuel receptacle, an abradant wheel rotatably mounted on the top of said receptacle, a pyrophoric element and a wick each carried by said receptacle and each having a portion presenting an exposed surface, a snuffer member mounted on the top of said receptacle for swinging movement about said abradant wheel, said wheel being rotatable in one direction only for frictional engagement between the abrasive surface thereof and said exposed surface of the pyrophoric element to produce sparks, the sparks thus produced being effective to ignite said wick when the latter is saturated with fuel, and a brush assembly for cleaning said abrasive surface of the wheel including a tubular part on said snuffer member and brushing means disposed in said tubular part with one end portion of said brushing means exposed for cleaning said abrasive surface by frictional engagement therewith as said snuffer member moves in the direction opposite to said one direction of rotation of said wheel.

6. In a lighter, a fuel receptacle, an abradant wheel rotatably mounted on the top of said receptacle, a pyrophoric element and a wick each carried by said receptacle and each having a portion presenting an exposed surface, means for turning said wheel for frictional engage-

ment between the abrasive surface thereof and said exposed surface of the pyrophoric element to produce sparks, the sparks thus produced being effective to ignite said wick when the latter is saturated with fuel, and a brush assembly for cleaning said abrasive surface of the wheel including a tubular member built in said receptacle and brushing means disposed in said tubular member with its outer end exposed for frictional engagement with said abrasive surface of the wheel as said wheel is turned.

7. In a lighter, a fuel receptacle, an abradant wheel rotatably mounted on the top of said receptacle, a pyrophoric element and wick each carried by said receptacle and each having a portion presenting an exposed surface, means for turning said wheel for frictional engagement between the abrasive surface thereof and said exposed surface of the pyrophoric element to produce sparks, the sparks thus produced being effective to ignite said wick when the latter is saturated with fuel, and a brush assembly for cleaning said abrasive surface of the wheel including spring-pressed brushing means carried by said receptacle and disposed with its end portion in yielding frictional engagement with said abrasive surface of the wheel as said wheel is turned.

8. In a pyrophoric lighter, a fuel-impregnated wick, a pyrophoric spark-producing mechanism adjacent said wick for igniting the latter and including a rotatable flint abradant wheel, and brush means built in said lighter as a component part thereof and operative to engage the flint-engaging surface of said wheel to remove flint particles adhering to said surface upon relative movement between said wheel and brush means, said spring-pressed brush means being confined within an open-ended tube extending toward and having its open end terminating immediately adjacent the peripheral surface of the wheel to present the brush means in operative engagement with the wheel.

9. In a pyrophoric lighter as defined in claim 8 wherein said brush means is spring-pressed against said wheel and removable from said tube for servicing and replacement thereof.

10. In a pyrophoric lighter, a fuel-impregnated wick, a pyrophoric spark-producing mechanism adjacent said wick for igniting the latter and including a rotatable flint abradant wheel, a snuffer cap operative to enclose the wick to extinguish the flame thereof, said snuffer cap having limited oscillatory movement relatively to and about said wheel upon operation of said spark-producing mechanism, and brush means carried by said snuffer cap for brushing engagement with the flint-engaging peripheral surface of the wheel upon movement of the snuffer cap relatively to said wheel.

LEON EDELSON.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,595,726	Pierce	Apr. 10, 1926
1,677,920	Hubbard	July 24, 1928
1,967,885	Holtzman	July 24, 1934
2,589,620	Leffel	Mar. 18, 1952

FOREIGN PATENTS

Number	Country	Date
126,538	Great Britain	May 15, 1919