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L. M. WYLIE
CIGARETTE LIGHTER
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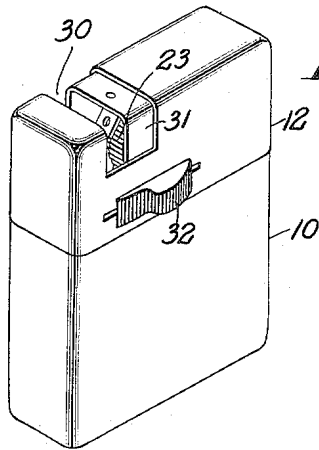


Fig. 1.

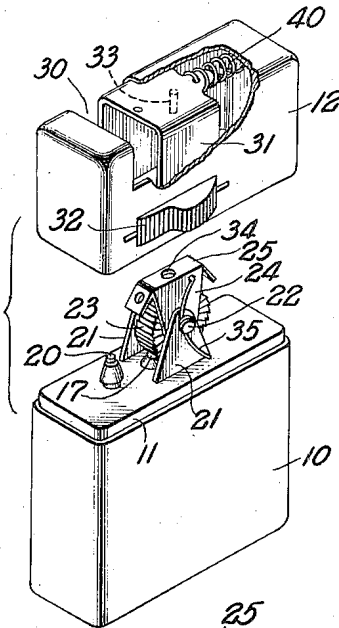


Fig. 2.

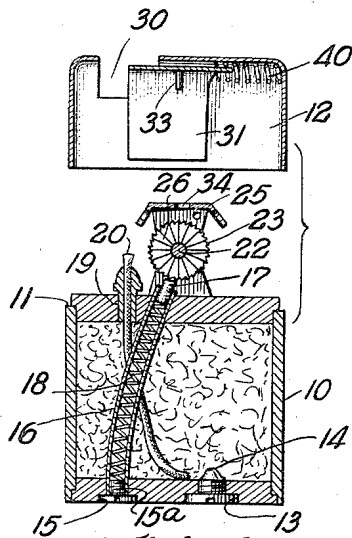


Fig. 3.

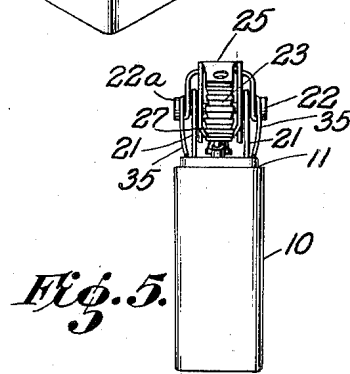


Fig. 4.

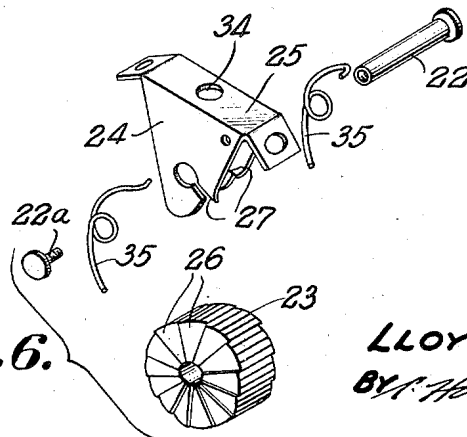


Fig. 5.

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UNITED STATES PATENT OFFICE

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CIGARETTE LIGHTER

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3 Claims. (Cl. 67—7.1)

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This invention relates to a cigarette lighter and is particularly directed to providing a lighter which may be manufactured inexpensively, which is fully automatic in its operation, and which is strong, safe and durable in use.

An important object of this invention is to provide a cigarette lighter which is fully automatic in its operation and in which the flame is shielded from air drafts.

A further object of this invention is to provide a lighter in which the wick and igniting mechanism, when out of use, are normally concealed from view and without access to air, and the action of exposing the wick automatically rotates the sparking wheel against the flint to produce the shower of sparks which ignite the pyrophoric fluid with which the wick, normally, is saturated.

A still further important object of the invention is to provide a cigarette lighter of the automatic type which is easily and inexpensively manufactured, of neat and attractive design, and which is safe, strong and durable in use.

The cigarette lighter of the present invention comprises, in general, a receptacle for containing a pyrophoric fluid, a wick in the receptacle having an end extending therefrom, wick igniting mechanism comprising a shaft journaled in a frame carried by the receptacle adjacent to the exterior end of the wick, an abradant surfaced wheel mounted on the shaft, ratchet means carried by said shaft for rotating said wheel, a flint having an end resiliently pressed against the abradant surface of the wheel, a cover for enclosing the wick and igniting mechanism, an opening in the cover, a slidable plate normally closing said opening and movable to gain access to said wick, and means actuated by the opening movement of said sliding plate for rotating said wheel against said flint.

An understanding of the manner in which the above and other objects of the invention are attained may be had from the following description, reference being made to the accompanying drawings, in which:

Figure 1 is a perspective view of a preferred embodiment of a cigarette lighter incorporating the novel igniting arrangement of the present invention;

Figure 2 is a perspective view of the lighter with the cover separated from the pyrophoric fluid receptacle to illustrate the igniting assembly;

Figure 3 is an end elevation of the cover;

Figure 4 is a side elevation in section of the

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lighter with the cover separated from the receptacle;

Figure 5 is an end view of the pyrophoric fluid receptacle and igniting mechanism; and

Figure 6 is an exploded view of the parts comprising the shaft, the abradant surfaced wheel, and wheel rotating mechanism.

Like reference characters refer to like parts throughout the specification and drawings.

Referring to the drawings, the numeral 10 indicates a receptacle suitable for containing a pyrophoric fluid. The receptacle may be formed of metal or other relatively strong, fluid tight material, such as a thermo-setting plastic. The upper end of the receptacle is formed with a ledge or rim 11 adapted to receive, in snug fitting relationship, a removable cover 12.

The receptacle 10 is formed with an internally threaded opening 13 in the base in which is received, in threaded engagement, a set screw 14. A further internally threaded opening 15 is provided in the base which leads to a housing 16 which extends through the receptacle to the top. A flint 17 is mounted in the upper end of the housing with its external end pressed resiliently outwardly by a spring 18 which extends between the base of the flint and a set screw 15a which is threaded into the opening 15.

An opening 19 is provided in the top of the receptacle through which a wick 20 is extended into the body of the receptacle leaving a short end extending above the top adjacent to but spaced slightly apart from the external end of the flint 17, as illustrated in Figures 2 and 4.

Spaced apart upright members 21 mounted transversely of the top provide journals for the transverse shaft 22 on which are mounted the abradant wheel 23 and the rotating assembly described in detail hereinafter.

For ease in assembly, the shaft 22 is formed, preferably, in two parts comprising the main shaft having an enlarged head at one end and the other end being internally drilled and tapped to receive an externally threaded screw 22a having an enlarged head. The shaft 22, when assembled, is extended through and journaled in aligned holes in the spaced apart members 21.

The abradant surfaced wheel 23, preferably of steel with a serrated periphery, is rotatably mounted on the shaft 22 about midway between the spaced apart members 21. A frame 25 is carried above the wheel 23 on two spaced-apart arms 24 which are rotatably mounted on the shaft 22 with the wheel 23 between them. The frame 25 is preferably designed to follow the con-

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tour of the upper part of the wheel 23. The edges of the periphery of the wheel are preferably formed with ratchet-like teeth 26 and pawls 27 are carried on the internal opposing faces of the arms 24 adapted to engage the teeth in one direction of the arcuate movement of the frame 25 over the wheel 23 and, in the opposite direction of the movement of the frame to ride over the teeth. The parts are assembled such that the wheel 23 is mounted on the shaft 22 for rotation through an arc of a circle, being rotated by the engagement of the pawls 27 with the teeth 26 on the rearward movement of the frame 25. The assembly is positioned on the top of the receptacle in a manner such that the flint 17 is pressed resiliently against the abradant surface of the wheel 23.

The cover 12 is designed to fit snugly on the rim 11 to enclose the wick and the igniting mechanism. The cover is formed with a U-shaped transverse opening 30 which gives access to the wick. An inverted U-shaped plate 31 is slidably mounted in the cover and adapted to be brought into and out of alignment with the opening to enclose and expose the wick respectively, an exteriorly positioned projection 32 being provided on the plate for engagement by the thumb or finger, a slot being formed in the side of the cover to provide for the sliding movement of the projection.

In the preferred embodiment of the invention illustrated in the drawings, the plate 31 is in the form of a U-shaped frame, the top of which is parallel to the top of the cover and in its retracted position slides thereunder, and the two sides parallel to the sides of the cover and sliding internally thereof, as illustrated in Figure 3. Sufficient clearance is provided between the frame 25 and the undersurface of the frame 31 to permit the arcuate movement of the frame 25 without binding.

A downwardly extending pin 33 is carried by the top of the U-shaped frame and is normally adapted to fit loosely in a hole 34 in the top of the frame 25.

The frame 25 is normally held in a position extending toward the flint 17 and wick 20 by springs 35 one of which is positioned at each end of the shaft, one end of each spring being secured to an adjacent member 21 and the other end being secured to an adjacent arm 24.

In operation, the springs 35 urge the frame 25 in a forwardly extending position, carrying with it the U-shaped frame, through the pin 33, to close the opening 30. In this position, the igniting assembly and wick are totally enclosed without access to air. A spring 40, Figure 4, may be provided between the rearward end of the cover and the U-shaped frame 31 to aid the springs 35 in returning the frame to its normal position closing the opening 30. On retracting the U-shaped frame against the resistance of the springs 35 and 40, the frame 25 is rotated rearwardly through an arc of a circle, the pawls 27 engaging the teeth 26 to rotate the wheel against the flint and thus generate the shower of sparks which ignite the pyrophoric fluid carried by the wick. On release of the finger grip 32, the U-shaped frame is urged, by the springs 35, to its position normally closing the opening.

The cigarette lighter of the present invention has many advantages. Firstly, it may be manufactured inexpensively of readily available materials and in neat and attractive designs. It is fully automatic in its operation in that retrac-

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tion of the U-shaped frame 31 to expose the wick and the rotation of the wheel against the flint are simultaneous to produce a shower of sparks which ignite the pyrophoric fluid with which the wick is saturated. Also, the lighter is safe in that by releasing the frame 31, the springs 35 return the plate to its normal position closing the opening with a snap action, thereby cutting off the air necessary for combustion, and the flame is instantaneously extinguished.

It will be understood of course that departures may be made from the preferred embodiment of the invention described and illustrated herein without departing from the scope of the invention as defined by the appended claims.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A lighter comprising a receptacle for containing a pyrophoric fluid, a wick in the receptacle having an end extending therefrom, a shaft journaled in spaced-apart members mounted on the top of said receptacle, a frame having spaced-apart arms rotatably mounted on said shaft, an abradant surfaced wheel mounted on said shaft between said arms, ratchet teeth in engagement with said wheel, pawls carried by said spaced arms in engagement with said ratchet teeth for rotating said wheel in one direction only, a flint resiliently pressed against the abradant surface of the wheel, a hollow cover enclosing said wick and wheel assembly, a transverse U-shaped opening in said cover, a spring urged inverted U-shaped frame normally closing said opening, and means carried by said U-shaped frame normally engaging said first mentioned frame for moving said frame in an arcuate curve on said shaft during the sliding movement of said U-shaped frame.

2. A lighter comprising a receptacle for containing a pyrophoric fluid, a wick in the lighter having an end extending therefrom, a shaft journaled in spaced members mounted on the top of said receptacle, a frame having spaced arms rotatably mounted on said shaft, an abradant surfaced wheel rotatably mounted on said shaft between said arms, ratchet teeth in engagement with said wheel, pawls carried by said spaced arms adapted to engage with said ratchet teeth for rotating said wheel in one direction only, a flint resiliently pressed against the abradant surface of the wheel, a hollow cover enclosing said wick and wheel assembly, a transverse U-shaped opening in said cover adjacent to said wick, an inverted U-shaped plate slidably carried by said cover normally closing the opening, means carried by said plate adapted to engage said frame for rotating said frame in an arcuate curve on said shaft during the sliding movement of said plate.

3. A lighter comprising a receptacle for containing a pyrophoric fluid, a wick in the receptacle having an end extending therefrom, a shaft journaled in spaced-apart members mounted on the top of said receptacle, a frame having spaced-apart arms rotatably mounted on said shaft, an abradant surfaced wheel mounted on said shaft between said arms, ratchet teeth in engagement with said wheel, pawls carried by said spaced arms in engagement with said ratchet teeth for rotating said wheel in one direction only, a flint resiliently pressed against the abradant surface of the wheel, a hollow, removable cover adapted to fit snugly over the top of said fluid receptacle, a

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transverse U-shaped opening in said cover between the abradant surfaced wheel and the forward end thereof, a spring-urged inverted U-shaped frame normally adapted to close said opening and adapted to slide rearwardly within the walls of said cover, and means carried by said U-shaped frame adapted to engage said first mentioned frame to move said frame in an arcuate curve on said shaft during the sliding movement of said U-shaped frame.

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