

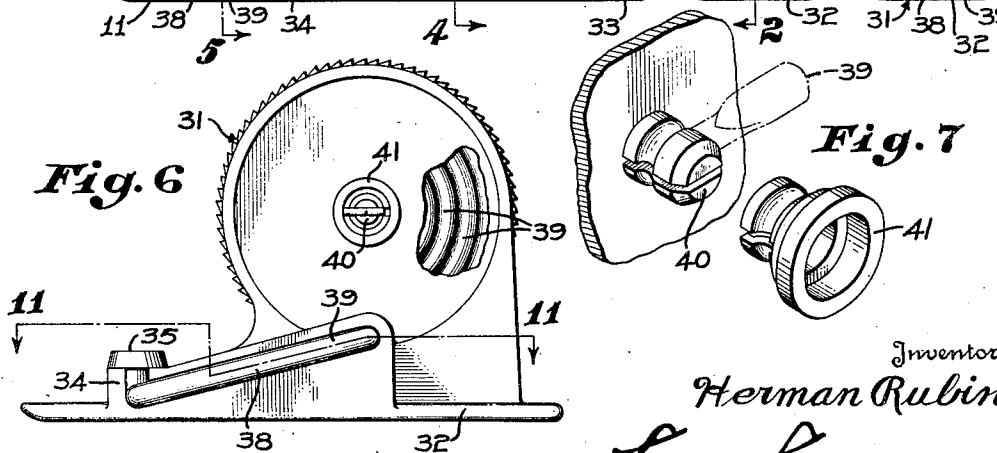
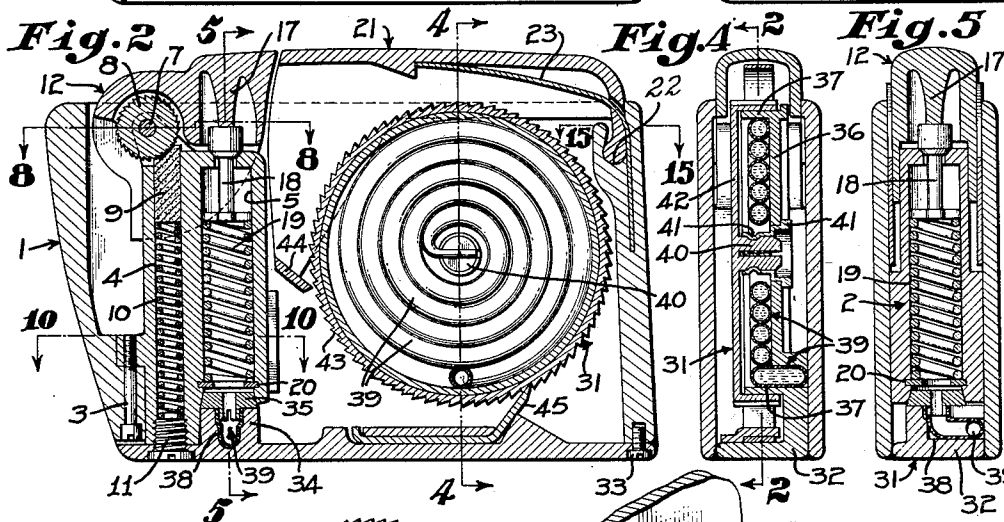
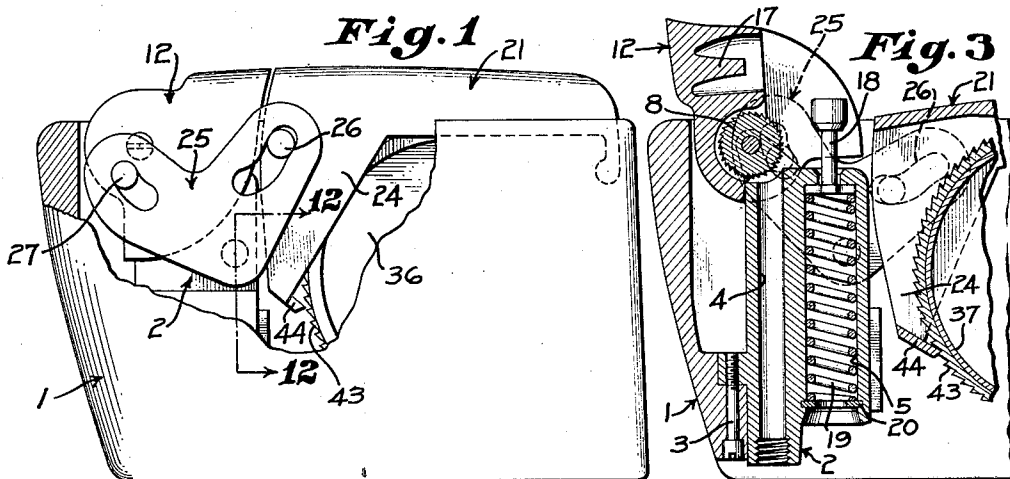
May 22, 1951

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CIGARETTE LIGHTER

2,553,678

Filed Jan. 24, 1949

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

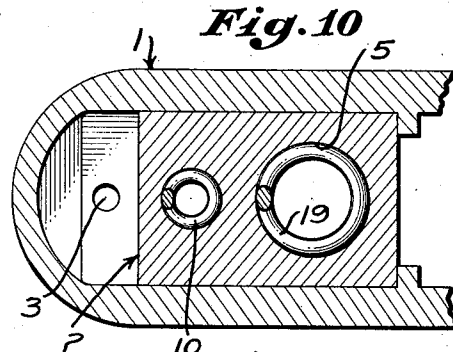
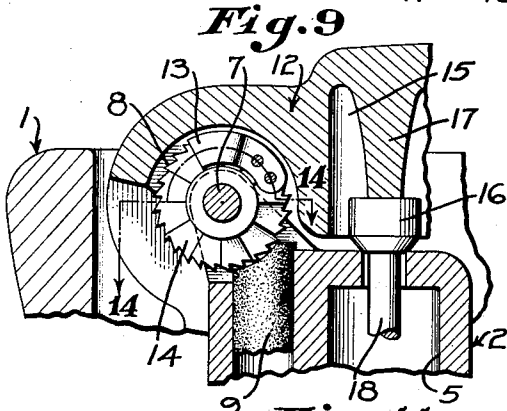
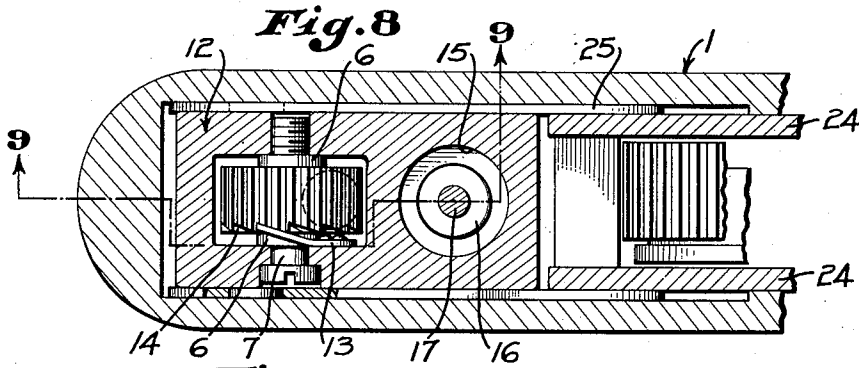


Fig. 11

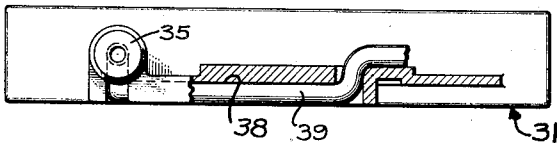


Fig. 13

Fig. 14

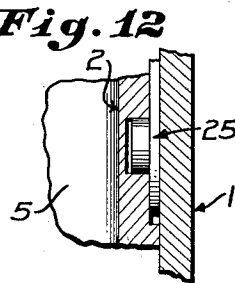


Fig. 12

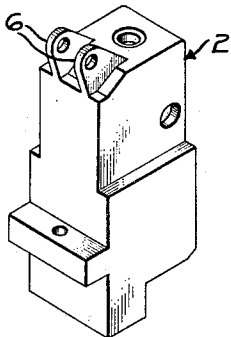


Fig. 16

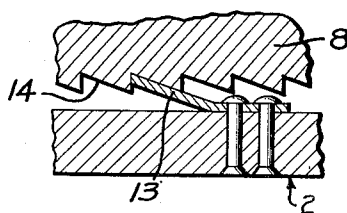
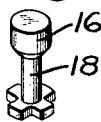


Fig. 15



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# UNITED STATES PATENT OFFICE

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## CIGARETTE LIGHTER

Herman Rubin, Los Angeles, Calif.

Application January 24, 1949, Serial No. 72,341

10 Claims. (Cl. 67—7.1)

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My invention relates to cigarette lighters, and included in the objects of my invention are:

First, to provide a cigarette lighter which may employ a solid or semi-solid fuel, and incorporates a novelly arranged fuel cartridge unit which may be readily and quickly inserted in the lighter or replaced by a fresh cartridge, as needed.

Second, to provide a cigarette lighter wherein operation of the lighter to open or expose the burner automatically forces an appropriate quantity of fuel into position for ignition and operates an igniter to effect ignition, whereas reverse or closing movement effectively snuffs out the flame.

Third, to provide a cigarette lighter which is particularly safe against loss of fuel while being carried or when not in use, and which is so arranged that loss of fuel is avoided while replacing the fuel cartridge.

Fourth, to provide a cigarette lighter which is capable of operating for a relatively long period before replacement of the fuel cartridge and which utilizes the fuel efficiently.

Fifth, to provide a cigarette lighter wherein the fuel is contained in a coiled tube of small cross section and novelly arranged means is employed to progressively collapse the tube as fuel is needed.

With the foregoing and other objects in view, reference is directed to the accompanying drawings in which:

Figure 1 is a side view of my cigarette lighter with a portion of the case broken away to illustrate the operating mechanism.

Figure 2 is a sectional view taken through 2—2 of Figure 4, the parts being shown in the positions assumed when the lighter is closed.

Figure 3 is a fragmentary sectional view taken in the same plane as Figure 2, but showing the parts in the position assumed when the lighter is ignited.

Figure 4 is a transverse sectional view through 4—4 of Figure 2.

Figure 5 is another transverse sectional view through 5—5 of Figure 2.

Figure 6 is an elevational view of the cartridge unit removed from the lighter.

Figure 7 is an enlarged fragmentary exploded perspective view of the reel hub structure.

Figure 8 is an enlarged fragmentary sectional view through 8—8 of Figure 2.

Figure 9 is an enlarged fragmentary sectional view through 9—9 of Figure 8.

Figure 10 is a fragmentary sectional view through 10—10 of Figure 2.

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Figure 11 is a sectional view through 11—11 of Figure 6.

Figure 12 is a fragmentary sectional view through 12—12 of Figure 1, illustrating the manner of pivoting the bell crank levers.

Figure 13 is a perspective view of the mounting block which incorporates the fuel chamber and flint bore.

Figure 14 is a fragmentary sectional view through 14—14 of Figure 9 showing the ratchet drive for the flint wheel.

Figure 15 is a fragmentary sectional view through 15—15 of Figure 2 with the operating lever omitted to illustrate the manner in which it is fulcrumed.

Figure 16 is a perspective view of the burner valve.

My cigarette lighter includes a shell 1 which is relatively flat and open at its upper and lower edges. Within the shell near one end there is fitted a mounting block 2, the mounting block and interior of the shell adjacent thereto having mating formations which receive a screw 3. The mounting block is provided with a flint bore 4 and a parallel disposed fuel chamber 5. The upper end of the block which is slightly below the upper edge of the shell is provided at opposite sides of the flint bore with brackets 6 which receive a pin 7 to journal a flint wheel 8. The flint bore 4 receives a flint 9 backed by a spring 10 which is held therein by a cap screw 11. The journal pin 7 also pivots a hood or snuffer member 12, which member is provided with a cavity adapted to receive the flint wheel 8. Secured to one side of this cavity is a spring pawl 13 adapted to engage ratchet teeth 14 formed on the side of the flint wheel so that rotation of the hood member in one direction causes corresponding rotation of the flint wheel across the end of the flint 9.

The hood member 12 is provided with a snuffer cavity 15 adapted to register with the fuel chamber 5. The fuel chamber is constricted at its upper end to form a burner opening in which is adapted to be seated a valve head 16. The valve head is adapted to be engaged by a boss 17 depending in the snuffer cavity 15. A stem 18 extends from the valve head 16 into the fuel chamber and is engaged by a spring 19 held in place by a retainer 20 located near the lower end of the chamber. The lower end of the chamber is shaped to form a seat which fits a cartridge unit to be described hereinafter.

The upper, open edge of the shell is partially closed by the hood member 12 which projects

above the shell. The remaining space is closed by a lever 21 which is complementary to the hood member 12 and is also disposed above the shell 1. The end of the lever remote from the hood member turns downwardly and seats in a socket 22 formed in the shell 1. A spring 23 is anchored in the shell and projects through the lever adjacent its fulcrum end so as to underlie the lever and urge it upwardly. The lever is provided with side portions 24 which project into the shell 1 adjacent its sides. Pivotaly mounted on the sides of the mounting block 2 is a pair of bell cranks 25 which have arms extending upwardly and overlapping the side portions 24. These arms are connected to the side portions by slot and pin drive means 26. The other arms of the bell cranks extend over the sides of the hood member 12 and are connected thereto by slot and pin means 27. The arrangement of the bell cranks and their connections with the lever 21 and hood member 12 are such that depression of the lever 21 from the position shown in Figures 1 and 2 to the position shown fragmentarily in Figure 3 causes the hood member to pivot away from the valve head 16 and simultaneously to force the flint wheel across the end of the flint to produce sparks in the region of the burner opening.

Fuel is supplied by means of a replaceable fuel unit 31 which is adapted to be inserted in the lower, open edge of the shell. The fuel unit includes a base member 32 held in place by the cap screw 11 and by a second screw 33 threaded into the end wall of the shell. The base 32 is provided with an upwardly directed boss 34 having a seal member 35 which engages and seats in the lower end of the fuel chamber 5. One side of the base 32 is provided with an upstanding plate 36. The plate is provided with an annular flange 37 to form a circular recess. A passageway 38 communicates between the recess and the boss 34. Threaded in this passage is a fuel tube 39 which enters the circular recess and is spirally coiled therein. The radially inner end of the fuel tube is clamped between a split pin 40 and a hollow hub member 41 journaled by the mounting plate 36. The pin 40 is centered in a cover member 42 having a flange which overlies the flange 37 and is provided with peripheral ratchet teeth 43. Fuel tube 39 may be an extrusion of soft metal such as aluminum or lead or may be formed of yieldable plastic material or synthetic rubber.

The ratchet teeth 43 are engaged by a pawl 44 located between and joining the lower extremities of the side portions 24 of the lever 21. The pawl is so disposed that depression of the lever to actuate the hood member and ignite the lighter advances the cover member 42 a predetermined amount. Rotation of the cover member progressively collapse the spirally wound fuel tube 39 so that its fuel contents may be discharged in appropriate quantities into the fuel chamber 5. The base member 32 is provided with a recess for supporting a detent 45 to prevent back travel of the cover member 42.

Operation of my lighter is as follows:

Depression of the lever 21 forces a small quantity of fuel into the chamber 5 and tends to force an equal amount upwardly around the valve stem 18. At the same time the hood member swings clear and actuates the flint wheel to produce sparks for igniting the fuel issuing from the fuel chamber. The fuel contained in the fuel tube may be a solid or a semi-solid or may

be liquid. In any case it is provided that the liquid be sufficiently viscous to cling to the stem and burn on the exposed portion thereof. When the lever 21 is released the hood returns to position over the valve head, snuffing out the flame and forcing the valve head tight against its seat to prevent loss of fuel and re-supplying the stem with fuel.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

I claim:

1. A cigarette lighter, comprising: a flat shell open at opposite edges, and having a mounting block therein near one end and a fuel cartridge cavity between said block and the other end of said shell; said mounting block defining a fuel chamber having a burner opening exposed toward one open edge of said shell; an igniter including a friction wheel journaled in proximity to said burner opening and a flint element fitted in said block; a cap movable between a position closing said burner opening and a position exposing said burner opening said cap operatively connected with said friction wheel to ignite fuel at said burner opening as said cap is raised; a lever member, forming with said cap a cover for said one open edge of said shell and operatively connected with said cap; a replaceable fuel cartridge adapted to fit said cartridge cavity and communicating with said fuel chamber; and means incorporating said lever and said cartridge and operable on movement of said lever for delivering predetermined quantities of fuel to said fuel chamber.

2. A cigarette lighter, comprising: means defining a burner opening; an igniter and snuffer alternately operable to ignite a fuel present at said burner opening and to extinguish the resulting flame; a replaceable fuel cartridge adapted for communication with said burner opening and including a progressively collapsible fuel container; a lever for actuating said igniter and snuffer; and a ratchet and pawl means incorporating said cartridge and said lever for collapsing said container and feeding predetermined quantities of fuel to said burner opening.

3. A cigarette lighter, comprising: means defining a burner opening; an igniter and snuffer alternately operable to ignite a fuel present at said burner opening and to extinguish the resulting flame; a replaceable fuel cartridge including a reel; a collapsible tube containing fuel communicating with said burner opening and wrapped about said reel; and manually operated means engageable with said reel to feed predetermined quantities of fuel from said collapsible tube to said burner opening.

4. A cigarette lighter, comprising: means defining a burner opening; an igniter and snuffer alternately operable to ignite a fuel present at said burner opening and to extinguish the resulting flame; a replaceable fuel cartridge including a reel; a collapsible tube containing fuel communicating with said burner opening and wrapped about said reel; a lever for actuating said igniter and snuffer; and a ratchet and pawl means incorporating said lever and reel to rotate said reel and progressively collapse said tube thereby to deliver predetermined quantities of fuel to said burner opening.

5. A cigarette lighter, comprising: a housing structure defining a fuel cartridge compartment, a fuel chamber and a burner orifice; a pair of levers operatively connected and covering an

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edge of said housing, one of said levers forming a snuffer for said burner orifice; an ignition means operable by movement of said snuffer lever to expose said burner orifice; a replaceable cartridge including a progressively collapsible fuel container adapted to fit said compartment and communicate with said fuel chamber; and means operatively connecting said cartridge with the other of said levers to collapse said fuel container progressively and deliver predetermined quantities of fuel to said fuel chamber.

6. A cigarette lighter, comprising: a housing structure defining a fuel cartridge compartment, a fuel chamber and a burner orifice; a pair of levers operatively connected and covering an edge of said housing, one of said levers forming a snuffer for said burner orifice; an ignition means operable by movement of said snuffer lever to expose said burner orifice; a replaceable cartridge including a reel, a collapsible tube filled with fuel and wound thereon, said tube communicating with said fuel chamber and adapted to be collapsed upon rotation of said reel; and means incorporating the other of said levers and said reel to deliver predetermined quantities of fuel to said fuel chamber.

7. A cigarette lighter, comprising: a housing structure open at opposite edges and defining a fuel cartridge compartment and a burner orifice; a replaceable fuel cartridge adapted to fit said compartment and communicate with said burner orifice, said fuel cartridge including a base closing one open edge of said housing structure; a pair of complementary levers closing the other open edge of said housing structure, one of said levers overlying said burner orifice and forming a snuffer therefor, the other of said levers overlying said fuel cartridge compartment and operatively connected to said fuel cartridge and to said snuffer lever to deliver predetermined quantities of fuel to said orifice and move said snuffer lever clear of said burner orifice; and ignition means operatively associated with said levers to ignite fuel present at said burner orifice.

8. A cigarette lighter, comprising: a housing structure open at opposite edges and defining a fuel cartridge compartment and a burner orifice; a valve means controlling said burner orifice; a replaceable fuel cartridge adapted to fit said compartment and communicate with said burner orifice, said fuel cartridge including a base closing one open edge of said housing structure; a pair of complementary levers closing the other open edge of said housing structure, the first of said levers overlying said burner orifice and valve means and engageable therewith to close said valve means, the other of said levers overlying said fuel cartridge compartment and operatively connected to said fuel cartridge and said first lever to deliver predetermined quantities of fuel to said orifice and move said first lever clear of

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said valve means and burner orifice; and ignition means operatively associated with said levers to ignite fuel present at said burner orifice.

9. A cigarette lighter, comprising: a housing structure open at opposite edges and defining a fuel cartridge compartment and a burner orifice; a replaceable cartridge including a base closing one open edge of said housing structure, a reel, and a collapsible tube filled with fuel and wound on said reel, said tube communicating with said burner orifice and adapted to be collapsed upon rotation of said reel; a pair of complementary levers closing the other upon edge of said housing structure, one of said levers overlying said burner orifice and forming a snuffer therefor, the other of said levers overlying said fuel cartridge compartment and operatively connected to said fuel cartridge and to said snuffer lever to deliver predetermined quantities of fuel to said orifice and move said snuffer lever clear of said burner orifice; and ignition means operatively associated with said levers to ignite fuel present at said burner orifice.

10. A cigarette lighter, comprising: a housing structure open at opposite edges and defining a fuel cartridge compartment and a burner orifice; a valve means controlling said burner orifice; a replaceable cartridge including a base closing one open edge of said housing structure, a reel and a collapsible tube filled with fuel and wound on said reel, said tube communicating with said burner orifice and adapted to be collapsed upon rotation of said reel; a pair of complementary levers closing the other open edge of said housing structure, the first of said levers overlying said burner orifice and valve means and engageable therewith to close said valve means, the other of said levers overlying said fuel cartridge compartment and operatively connected to said fuel cartridge and said first lever to deliver predetermined quantities of fuel to said orifice and move said first lever clear of said valve means and burner orifice; and ignition means operatively associated with said levers to ignite fuel present at said burner orifice.

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