

Nov. 7, 1950

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2,529,104

CIGARETTE LIGHTER

Filed April 19, 1948

2 Sheets-Sheet 1

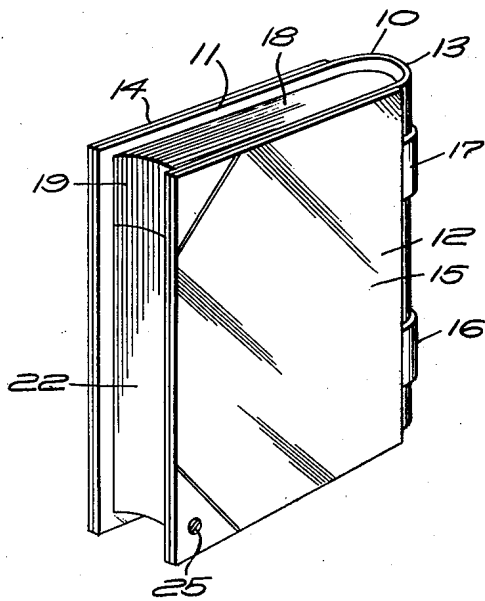


Fig. 1

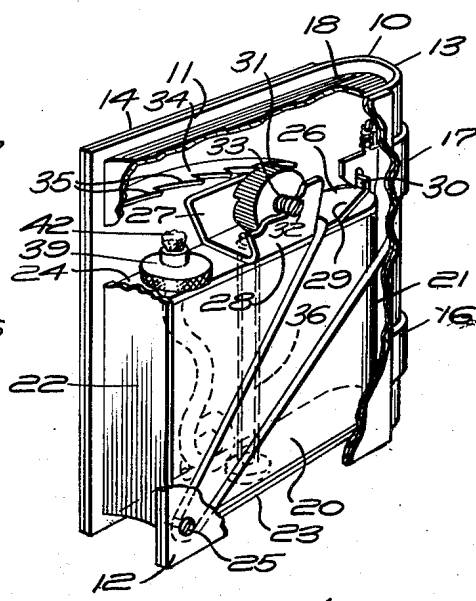


Fig. 2

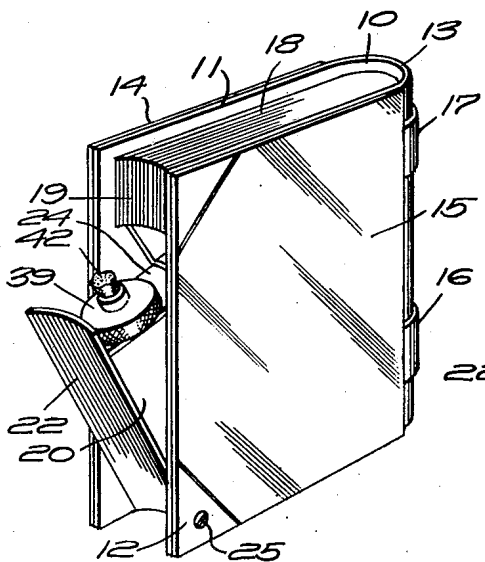


Fig. 3

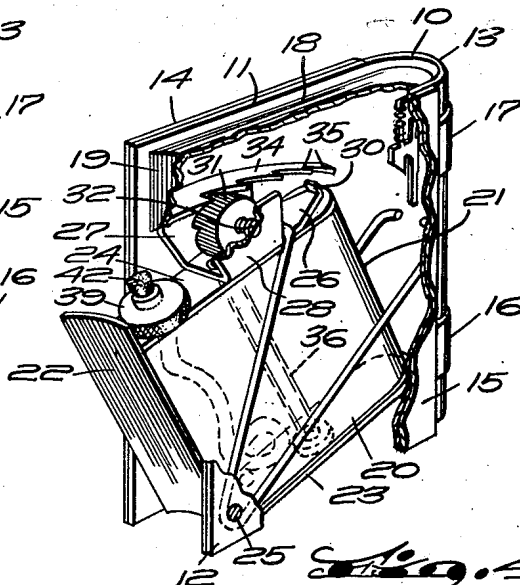


Fig. 4

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2 Sheets-Sheet 2

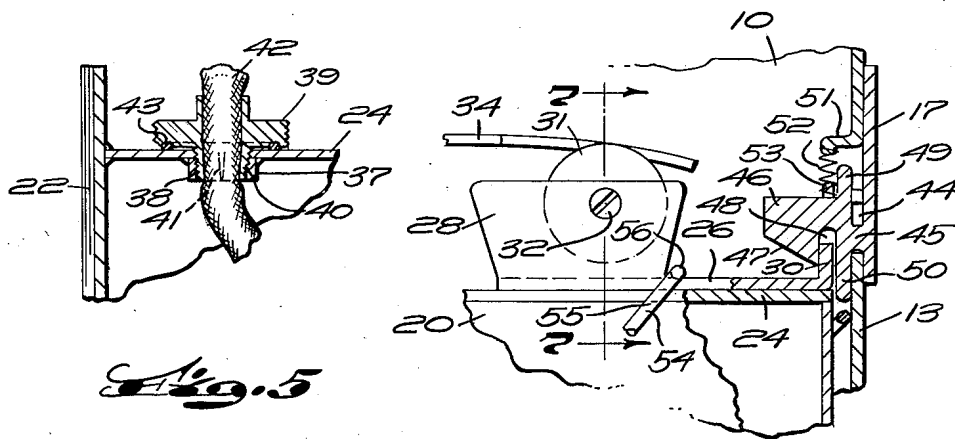


Fig. 5

Fig. 6

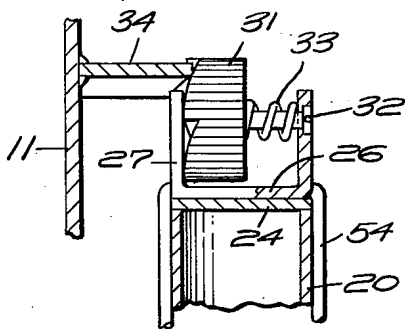


Fig. 7

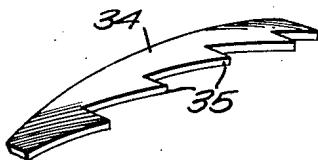


Fig. 9

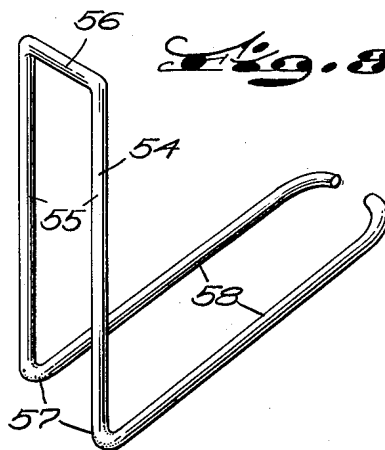


Fig. 8

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CIGARETTE LIGHTER

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1 Claim. (Cl. 67—7.1)

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Our present invention relates to pyrophoric cigarette lighters, and more particularly to a novel construction of automatic lighter.

The principal object of the present invention is to provide a cigarette lighter in which the operating mechanism is completely concealed in a housing resembling another object such as a book.

A further object of the present invention is to provide a cigarette lighter in which the operating mechanism can be fitted into a small restricted space.

Another object of the present invention is to provide a cigarette lighter which eliminates the conventional cover and trigger construction and has a minimum number of operating parts.

A further object of the present invention is to provide a cigarette lighter having the above advantages and which is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, our invention consists of a novel arrangement of parts, more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more particularly defined in the appended claim.

In the drawings,

Fig. 1 is a perspective view of a cigarette lighter in closed position embodying our invention;

Fig. 2 is a similar view, partially broken away to show the operating mechanism;

Fig. 3 is a perspective view of the lighter in open position;

Fig. 4 is a similar view, partially broken away to show the operating mechanism;

Fig. 5 is an enlarged detailed section showing the wick and plug construction;

Fig. 6 is an enlarged detailed section showing the catch and release mechanism;

Fig. 7 is an enlarged detailed section, taken on line 7—7 of Fig. 6, showing the pyrophoric wheel arrangement;

Fig. 8 is an enlarged perspective view of the operating spring; and

Fig. 9 is an enlarged perspective view of the rack.

Cigarette lighters are usually equipped with covers or snuffer arrangements so constructed that pressure on a release mechanism or trigger will open the cover or snuffer and simultaneously produce a spark to light a wick. Such mechanisms are comparatively intricate and require operating room. It has been difficult, therefore, to produce a lighter that is also a piece of jewelry or combined with another object, especially for women's wear.

The present invention provides a small, simple, lighter mechanism that eliminates the cover or

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snuffer and permits the construction of an article of jewelry or utility. For purposes of illustration, we have shown the lighter of the present invention built into a housing shaped to simulate a small book. It will be readily seen that the lighter mechanism can easily be concealed in the cover or base of a compact, powder box, or any other similar article or in a separate housing of different design.

Referring more in detail to the drawings illustrating our invention, the lighter is mounted in a housing 10, Figs. 1 and 3, comprising two spaced rectangular portions 11 and 12 connected along one edge by an integral U-bend 13 to simulate the covers of a book. To provide strength, body and decoration, each portion 11 and 12 has a rectangular surface plate 14 and 15 attached thereto. The U-bend 13, which forms the back of the "book" may be provided with a decorative strap 16 soldered thereto near the lower end, the upper strap 17 being vertically slidable to operate the catch release mechanism as hereinafter described.

Adjacent the upper edge of the portions 11 and 12 is a top cover portion 18 having a slightly concave portion 19 extending downwardly at the front edge. The portions 18 and 19 may be scored to simulate the leaves of a book.

The lighter fuel tank comprises a comparatively flat body portion 20 having a rounded rear edge 21 and attached to a slightly concave front portion 22 which extends upwardly beyond the top of the tank to abut the lower edge of the portion 19 when the lighter is closed. The outer surface of the portion 22 may also be scored so that in closed position, Fig. 1, the front edge presents an unbroken appearance resembling the leaves of a book. The bottom 23 of the tank forms the counterpart of the upper portion 18 in closed position. The top of the tank is closed by a plate 24.

To allow room for the operating mechanism, the sides of the tank 20 and the top plate 24 are narrow enough to be spaced from the portions 11 and 12 of the housing 10. As shown in Figs. 2 and 4, the tank assembly is mounted in the housing 10 by a pivot pin 25 extending through the lower outer corner so that the tank assembly can swing outwardly into the position shown in Fig. 4.

A plate 26 is mounted on the top plate 24 having a central integral U-shaped portion forming spaced ears 27 and 28, Figs. 2, 4 and 7, and a tapered portion 29 having an upturned end 30. The abrasive wheel 31 is rotatably mounted on a pivot pin 32 between the ears 27 and 28 and a coil spring 33 surrounds the pivot pin and urges against the flat side of the wheel 31 to yieldingly hold the toothed side of the wheel 31 against the rack 34, Figs. 7 and 9. The rack 34 is fixed to the

side 11 and is curved so that it will remain in continuous contact with the wheel 31 during the pivotal movement of the tank 20. The rack 34 has large teeth 35 each adapted to engage a tooth on the side of the wheel 31. When the lighter is being closed, the spring 33 permits the wheel 31 to yieldingly ride over the teeth 35 without rotating.

The number of teeth on the wheel and rack are so arranged that the wheel will make three quarters of a revolution in opening. This permits the use of a light tensioned spring in the tube 36 (dotted lines) to urge the flint against the wheel 31. The result is less wear on the flint and a multiplicity of small sparks instead of a few heavy sparks.

The tank may be filled with cotton in the conventional manner, if desired. However, we prefer to use the construction shown in Figs. 2 and 5. A collar 37 depends from an opening in the top tank plate 24. The collar 37 has an internally threaded tapered opening 38. A flat knurled edge plug 39 has an externally threaded depending portion 40 which is split, as at 41. The wick 42 extends through the plug 39 as shown in Fig. 5. When the tank is full, the plug 9 is threaded into the collar 37, the tapered thread portion 38 pinching the split portion 40 around the wick 42 to prevent leakage. A washer 43 is positioned between the plug 39 and top plate 24 to further seal the opening. This construction provides a combined wick and refilling opening in the tank.

The catch release mechanism is shown in detail in Fig. 6. A slot 44 is provided in the rear edge 13 of the lighter housing 10. The releasing strap 17, which is vertically slidable, has an attached neck portion 45 extending through the slot 44. The neck 45 is an integral part of a vertically positioned plate 46 which has a lower cam edge 47 positioned in the path of movement of the upturned end 30 of the plate 26. The cam edge 47 terminates in an abrupt vertical slot 48 and the plate 46 has upwardly and downwardly extending portions 49 and 50 to retain the parts in sliding vertical position about the slot 44. Above the slot 44, the material is punched inwardly to form an L-shaped finger 51, the shorter leg extending downwardly, which abuts the end of a vertical coil spring 52, the lower end of the spring surrounding a pin 53 on the plate 46.

The operating force to the mechanism is imparted by an elbow shaped spring 54 shown in detail in Fig. 8 and in position in Figs. 2 and 4. The spring 54 is preferably in one piece having parallel arms 55 connected by the portion 56 and having spaced elbows 57 terminating in spaced parallel arms 58. The spring 54 surmounts the tank 20 with the portion 56 extending across the top of the plate 26 behind the ears 27 and 28. The elbows 57 pass around the pivot pin 25 and the arms 58 rest against the rear portion 13 of the housing 10.

With the parts positioned as shown in Figs. 1 and 2, the spring 54 is compressed and the upturned end 30 of the plate 26 is retained in the slot 48 of the release plate 46, the spring 52 urging the plate 46 into downward position. When the catch or strap 17 is pushed upwardly against the action of the spring 52, the end 30 clears the slot 48 and the elbow spring 54 snaps the tank about the pivot 25 into the position shown in Figs. 3 and 4 until the forward edges of the plate

ears 27 and 28 hit the downward portion 19 of the cover plate which acts as a stop. During this movement, the wheel 31 rides on the rack 34 and is given a rapid $\frac{3}{4}$ turn which throws a stream of sparks lighting the wick 42.

By pushing inwardly against the portion 22, the spring 54 is again compressed and the end 30 rides under the cam edge 47 until its snaps into the slot 48. The flame is snuffed by lack of air and the lighter is again ready for action.

The above construction can readily be built into other objects, such as compacts, as only a small flat space is necessary for the operating mechanism. The lighter cannot fail to spark because the drive between sparking wheel and rack is direct without intermediate gears or plates.

While we have described a specific embodiment of our invention, it is obvious that changes may readily be made in the size, shape, and relative arrangement of parts, without departing from the spirit and scope of the invention as defined in the appended claim.

We claim:

A cigarette lighter comprising a housing, said housing having a flat rectangular shape to simulate the appearance of a book, a fuel tank pivotally mounted in said housing, a wick extending from said tank, means for urging said tank pivotally out of said housing, said means including an elbow spring having an arm abutting said housing, an arm abutting said tank, and an intermediate elbow extending around the pivot of said tank, means for releasably retaining said tank in position within said housing, said means including a plate mounted for vertical movement in said housing and having manually engageable means outside said housing, said plate having a vertical slot, an extending portion on said tank adapted to engage said slot, and a spring for yieldingly retaining said plate in downward closed position, and means for throwing a plurality of sparks to light said wick during the outward pivotal movement of said tank, said means including a plate on said tank having spaced ears, a sparking wheel pivotally mounted between said ears, one face of said wheel having a toothed surface, a fixed rack mounted in said housing in the path of movement of said wheel, a spring on said wheel pivot for yieldingly retaining the teeth of said rack and wheel in operative engagement, and a flint extending from said tank portion and being yieldingly maintained in contact with the under side of said wheel.

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