April 29, 1947. I. FLORMAN 2,419,889

LIGHTER

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FIG. 1.

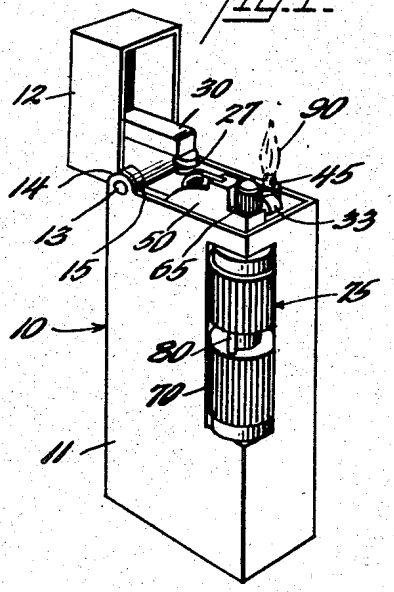

FIG. 2.

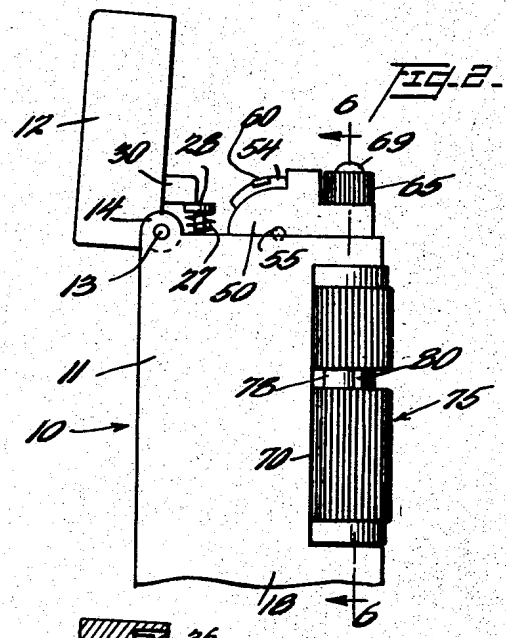

FIG. 3.

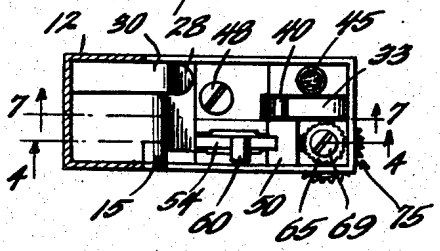

FIG. 4.

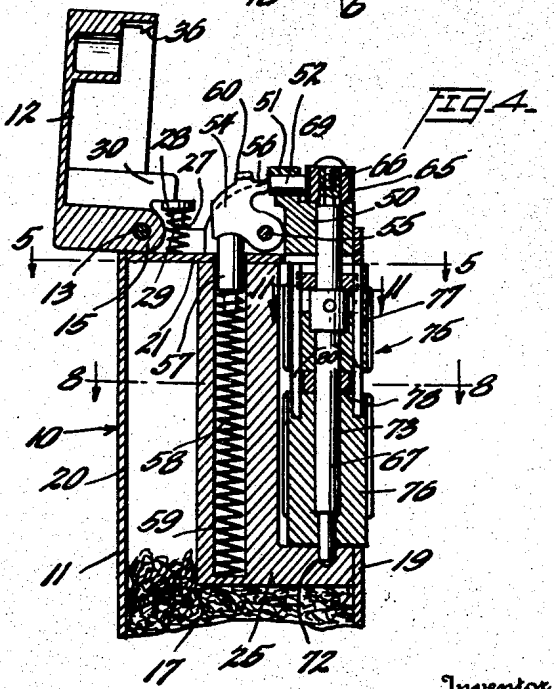

FIG. 5.

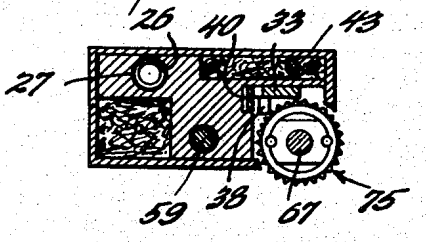

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FIG. 6.

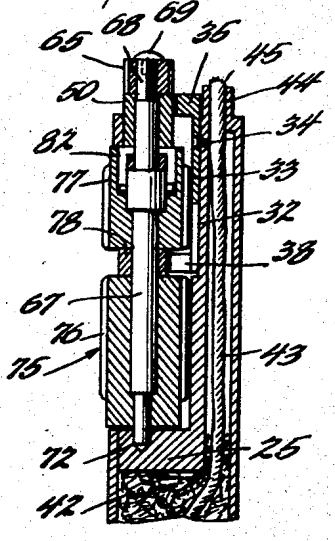


FIG. 7.

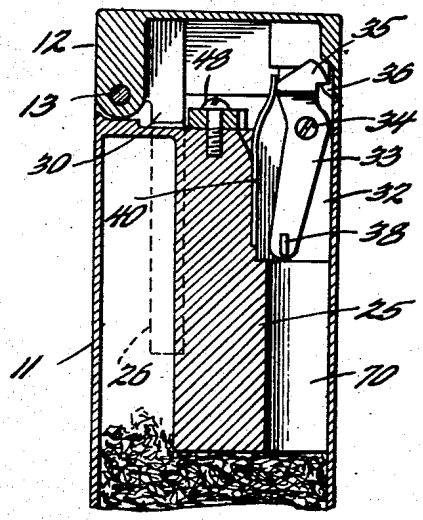
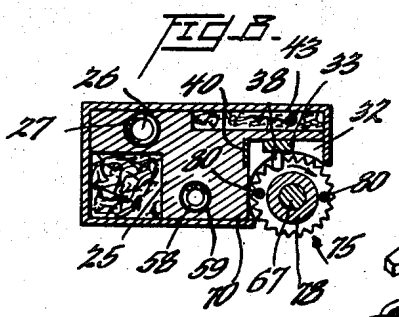


FIG. 8.



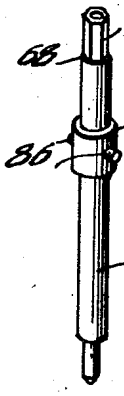
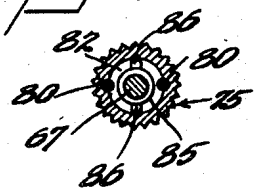


FIG. 9.

FIG. 11.



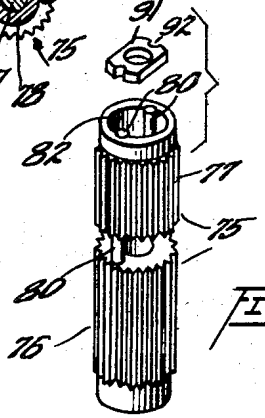


FIG. 10.

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UNITED STATES PATENT OFFICE

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LIGHTER

Irving Florman, New York, N. Y.

Application July 18, 1945, Serial No. 605,663

7 Claims. (Cl. 67—7.1)

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This invention relates to cigarette lighters or the like and more particularly to lighters of the type which are provided with closures or caps which are adapted to be opened substantially simultaneously with the igniting of the wick.

The general object of the invention is to provide a novel and improved lighter of this class which is sturdy in construction and easy to operate, while at the same time being of a compact arrangement and smooth contour when closed, whereby it is convenient to carry and use as a pocket lighter for any occasion.

In its preferred embodiment the invention contemplates the provision of a lighter having a cover adapted to conceal and protect the operating mechanism when the lighter is not being used, and which is spring pressed toward open position, the cover being maintained closed by a spring-retained latch device. A knurled roller is set in one corner of the substantially rectangular lighter casing and a flint wheel is adapted to be actuated thereby to shower sparks on the exposed end of a wick in the conventional way. However, novel means are associated with said roller to trip the cover or closure retaining latch when the roller is spun, so that the release of the closure and the igniting of the wick occur substantially simultaneously, and as a result of the same manipulative act.

Other objects and features of novelty will be apparent from the following specification when read in connection with the accompanying drawings in which one embodiment of the invention is illustrated by way of example.

In the drawings,

Figure 1 is a view in perspective of a lighter embodying the principles of the invention, the lighter being in open position;

Figure 2 is a view in side elevation of the same lighter;

Figure 3 is a top plan view of the lighter in open position, the raised lid or cover being shown in section;

Figure 4 is a vertical sectional view of the lighter taken on line 4—4 of Figure 3;

Figure 5 is a horizontal sectional view taken on line 5—5 of Figure 4;

Figure 6 is a transverse vertical sectional view taken on line 6—6 of Figure 2;

Figure 7 is a vertical sectional view taken on line 7—7 of Figure 3 rearwardly of the section which comprises Figure 4;

Figure 8 is a horizontal sectional view taken on line 8—8 of Figure 4;

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Figure 9 is a perspective view of the axle shaft of the flint wheel and actuating roller;

Figure 10 is an exploded perspective view of the actuating roller assembly; and

Figure 11 is a horizontal sectional view through the roller and axle assembly taken on line 11—11 of Figure 4.

The illustrated example of the lighter embodying the novel features of the present invention is indicated generally by the reference numeral 10 and comprises a body housing or casing 11 of the general shape of a rectangular parallelepiped and a box-like cap or closure 12 which is hinged to the casing by means of the pintle 13 which passes through adjacent ears 14 and 15 of the casing and cover.

The casing 11 includes side walls 17 and 18, a front wall 19, a rear wall 20, a top wall 21, and a bottom wall which is not shown in the drawings. The interior of the casing or housing is partly occupied by a block or frame 25 of irregular configuration, which contains or supports certain of the operative mechanism of the lighter. For example, the frame 25 is provided with a tubular recess 26 (see Figures 5 and 8) which is adapted to receive a compressible coil spring 27, upon the upper end of which is seated an abutment 28 having a guiding stem 29 received within the uppermost coils of the spring. The cover or cap 12 is provided with an abutment or projection 30 which is adapted to be in contact with the spring pressed abutment 28 at all times regardless of the angular position of the projection 30 corresponding to the pivotal position of the closure 12. It will be readily seen that the resilient pressure of the spring 27 urges the abutment 30 and consequently the cover 12 from the closed position shown in Figure 7 to the open position shown in Figures 1 to 4 inclusive.

The frame or block 25 within the casing 11 is provided with a narrow vertical chamber or recess 32 in which is housed a latch lever 33 which is pivoted upon the screw 34 and is provided with a nose portion 35 adapted to hook around the corresponding lip 36 formed on the inside of the forward edge of the cover 12. These parts are shown in engaged position in Figure 7 of the drawings. The lower downwardly extending end of the latch lever 33 is provided with an operating projection or abutment 38 and the upper end 35 of the latch is urged toward engaged position with the cover projection 36 by means of a leaf spring 40 which is seated within the rearward portion of the recess 32. The actuating abut-

ment 38 is adapted to be contacted and moved by operating means to be later described.

The portion of the interior of the casing 11 which is not occupied by the frame 12 is adapted to be filled with cotton or other absorbent material saturated with fuel as indicated at 42, and a wick 43 leads from the fuel reservoir through an opening 44 in the upper wall 21 of the housing 19 and projects at 45 in position to be ignited by the sparks from the flint.

Secured as by means of the screw 48 to the frame of the lighter is a superstructure 50 which is adapted to support and guide the flint and flint wheel. A substantially cylindrical horizontal opening or passageway 51 is provided in the upper portion of the superstructure 50 to accommodate the flint 52. A pivoted element or lever 54 rotating upon the pintle 55 is provided with a nose portion 56 adapted to press against the rear end of the flint 52 and urge it forwardly toward the flint wheel. The flint projecting lever 54 is urged in a clockwise direction by means of the plug 57 seated upon the upper end of the compressed coil spring 58 contained within the bore 59 of the block or frame 25. A handle or trigger projection 60 extends from the lever 54 so that the lever may be retracted against the pressure of the spring 58 when it is desired to remove or replace the flint.

The flint wheel 65 is provided with a serrated periphery in the conventional way and is seated upon an upper surface of the superstructure 50 adjacent the flint 52. The flint wheel 65 is provided with a polygonal bore through which the correspondingly shaped end 66 of the actuating shaft 67 extends. The shaft 67 is shouldered as at 68 and the flint wheel is secured in position by means of the screw 69. Thus, it will be seen that the flint wheel 65 is rigid with the shaft 67 and is adapted to rotate therewith.

The shaft 67 extends downwardly through an arcuate recess 70 formed in the casing, which recess is conveniently positioned along one corner of the casing 11, and the lower end of the shaft 67 is seated for rotation in the block or frame 25, as at 72. For the greater portion of the length of the shaft 67 it passes through a bore 73 in a double operating roller assembly 75 which is clearly shown in section in Figures 4 and 6 of the drawings and in perspective in Figure 10. This operating assembly consists of a lower knurled roller 76 and an upper knurled roller 77 separated by a washer 78. The two rollers are connected by a pair of diametrically oppositely disposed rods or bars 80. The upper roller 77 is provided with a cylindrical recess 82 and the rods 80 may extend in grooves formed along the edges of this recess as clearly shown in Figure 11 of the drawings. The shaft 67 is provided intermediate its length with a shouldered enlargement 85 transfixed by a horizontal pin 86 the ends of which project radially from the enlargement 85. The enlarged portion 85 and the pins 86 occupy the recess 82 within the upper roller 77 and the arrangement is such that upon rotation of the roller 77 for less than a half turn, the rods 80 will strike the ends of the pin 86 and cause the shaft 67 to rotate along with the operating roller assembly 75. This of course will cause the flint wheel 65 carried at the upper end of the shaft 67 to rotate against the flint 52 and shower sparks upon the upper end 45 of the wick and thus ignite the wick and produce the flame indicated at 90 in Figure 1.

A washer 91 having flat sides and having its ends notched as at 92 for receiving the projecting edges of the rods 80, is placed around the upper end of the shaft 67 and dropped into the recess 82. This washer maintains the rods 80 in their rigid fixed positions within the grooves adjacent the edges of the opening 82. This arrangement effects a rigid keying of the rods 80 so that they may exert a positive driving action upon the pin 86 and cause the flint wheel shaft to rotate upon the rotation of the actuating roller assembly 75.

The gap between the rollers 76 and 77 which is bridged by the exposed portions of the rods 80 is at the same level as the trigger or actuating projection 38 on the cover retaining latch lever 33 and this trigger 38 is disposed within the path of rotation of the rods 80, as most clearly shown in Figures 6 and 8 of the drawings. Thus whenever the roller assembly 75 is rotated (in a clockwise direction as viewed in Figure 8) one or the other of the rods 80 will strike the trigger or projection 38 and cause the latch lever 33 to rotate about its pivot 34, against the pressure of the leaf spring 40, in a clockwise direction as viewed in Figure 7. This will cause the latch 35 to be disengaged from the keeper 36 on the cover 12 and the spring 27 will effect a quick projection of the cover 12 to open position. At substantially the same time, the rods 80 will contact with the ends of the pin 86 carried by the shaft 67 and the flint wheel will rotate against the flint to ignite the wick.

Thus, it will be understood that by means of the present invention a novel and ingenious lighter has been provided which possesses the convenient and time-saving feature of effecting in a quick and efficient way the simultaneous opening of the lighter and igniting of the wick.

Various changes and alterations may be made in the embodiment illustrated and described herein without departing from the scope of the invention as defined in the sub-joined claims.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a lighter having a cover, a cover latch, and a combined cover latch releasing and flint wheel turning mechanism, the improvement comprising a shaft connected to the flint wheel for the rotation thereof, a manually operable cylinder concentrically rotatable about said shaft, means for engaging intermittently said cylinder with the cover latch, and lost motion means interconnecting said shaft and cylinder.

2. In a lighter having a cover, a cover latch, and a combined cover latch releasing and flint wheel turning mechanism, the improvement comprising a shaft connected to the flint wheel for the rotation thereof, a manually operable cylinder concentrically rotatable about said shaft, an element projecting from the inner surface of said cylinder, a projection upon said shaft and in the path of rotation of said element, and a cover catch release mounted in the path of rotation of said element.

3. A lighter of the class described comprising, in combination, a casing and a closure therefor; an inflammable wick and a flint and flint wheel housed within said casing and closure; a spring urging said closure toward open position and a latch movably carried by said casing and adapted to engage said closure to retain it in closed position; a rotatable shaft having bearings in said casing and having the flint wheel fixed thereto, a hollow actuating roller surrounding said shaft, bearing thereon, and having a lost motion driv-

ing connection therewith, internally of the roller, and a lost motion actuating connection between said roller and latch externally of the roller, a portion of the periphery of said roller being exposed externally of said casing for manipulation, whereby rotation of the roller substantially simultaneously effects the opening of the closure and the igniting of the wick.

4. A lighter of the class described comprising, in combination, a casing and a closure therefor; an inflammable wick and a flint and flint wheel housed within said casing and closure; a spring urging said closure toward open position and a latch movably carried by said casing and adapted to engage said closure to retain it in closed position; a rotatable shaft having bearings in said casing and having the flint wheel fixed thereto, a hollow actuating roller surrounding said shaft and having a lost motion driving connection therewith, and tripping means carried by said roller and adapted to contact and move said latch to release the latter, a portion of the periphery of said roller being exposed externally of said casing for manipulation, whereby rotation of the roller substantially simultaneously effects the opening of the closure and the igniting of the wick.

5. A lighter of the class described comprising, in combination, a casing and a closure therefor; an inflammable wick and a flint and flint wheel housed within said casing and closure; a spring urging said closure toward open position and a latch movably carried by said casing and adapted to engage said closure to retain it in closed position; a rotatable shaft having bearings in said casing and having the flint wheel fixed thereto, a hollow actuating roller surrounding said shaft, a radial projection on said shaft and a spline-like bar carried by said roller within the latter and adapted to contact said radial projection and thus rotate the ignition wheel shaft when said roller is rotated, said spline bar extending in an axial direction beyond the end of said roller, and a projection on said latch lever extending into the path of movement of said bar extension, whereby it may be contacted and moved by said bar and the latch released substantially simultaneously with the ignition of said wick.

6. A lighter of the class described comprising, in combination, a casing and a closure therefor; an inflammable wick and a flint and flint wheel housed within said casing and closure; a spring urging said closure toward open position and a latch movably carried by said casing and adapted to engage said closure to retain it in closed position; a rotatable shaft having bearings in said casing and having the flint wheel fixed thereto, an elongated, hollow, knurled, two-part, actuating roller surrounding said shaft and having a portion of its knurled periphery exposed exteriorly of said casing for rotative manipulation, the two parts of the roller being spaced axially and connected by one or more longitudinally extending rods spaced radially of the axis of the roller and of said shaft, a lost motion drive for said shaft from said roller, a projection on said latch lever extending between the two parts of the roller assembly and into the path of the exposed portions of the rods, whereby upon rotation of said roller assembly, the closure is opened and the wick ignited substantially simultaneously.

7. A lighter of the class described comprising, in combination, a casing and a closure therefor; an inflammable wick and a flint and flint wheel housed within said casing and closure; a spring urging said closure toward open position and a latch movably carried by said casing and adapted to engage said closure to retain it in closed position; a rotatable shaft having bearings in said casing and having the flint wheel fixed thereto, an elongated, hollow, knurled, two-part, actuating roller surrounding said shaft and having a portion of its knurled periphery exposed exteriorly of said casing for rotative manipulation, the two parts of the roller being spaced axially and connected by one or more longitudinally extending rods spaced radially of the axis of the roller and of said shaft, said rods extending into the hollow upper part of the roller assembly as internally disposed splines, one or more radially extending pins carried by said shaft internally of said upper part and adapted to provide with said rod extension a lost motion drive for said shaft from said roller, a projection on said latch lever extending between the two parts of the roller assembly and into the path of the exposed portions of the rods, whereby upon rotation of said roller assembly, the closure is opened and the wick ignited substantially simultaneously.

IRVING FLORMAN.

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