

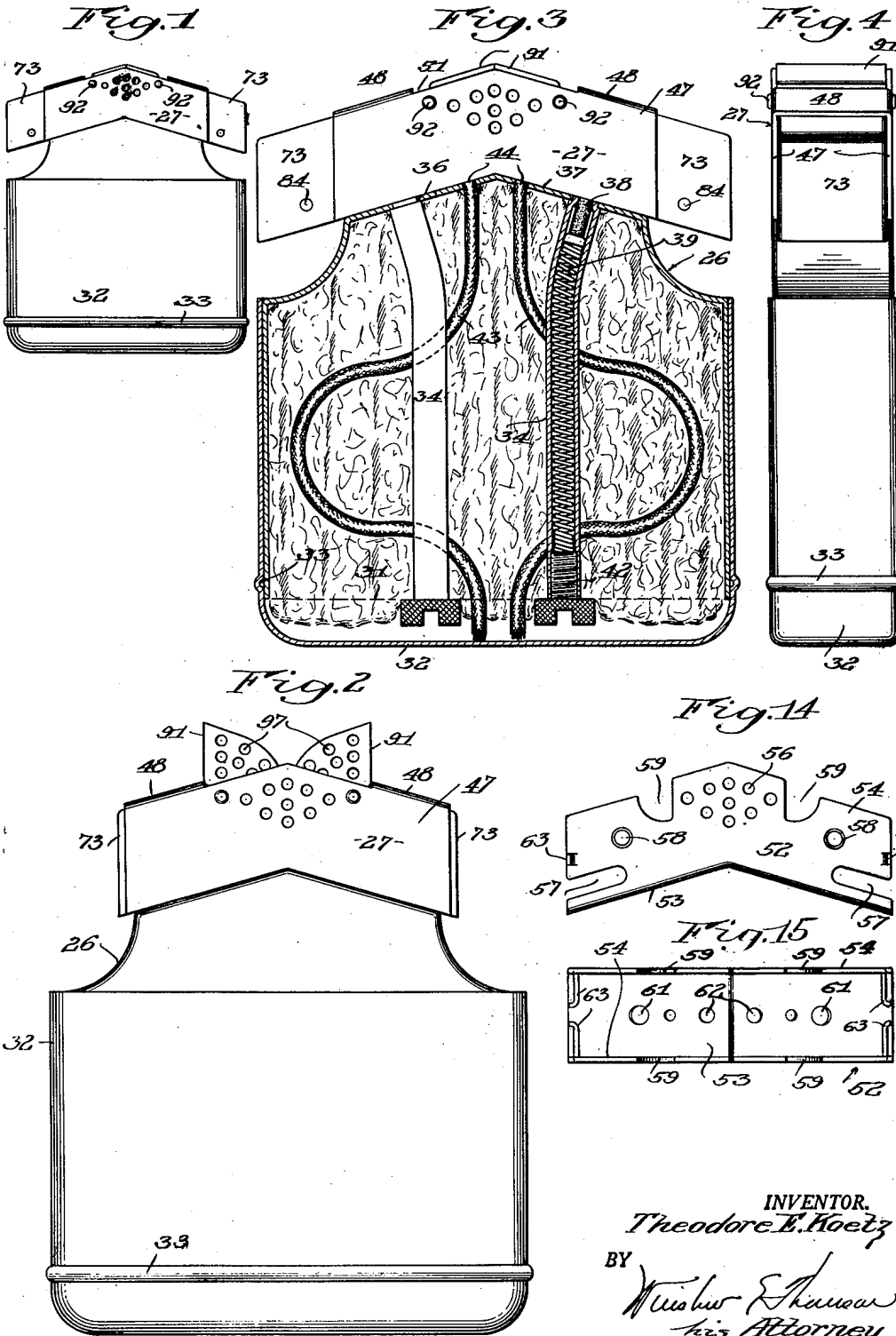
June 20, 1950

T. E. KOETZ  
CIGARETTE LIGHTER

2,512,104

Filed Aug. 1, 1946

4 Sheets-Sheet 1



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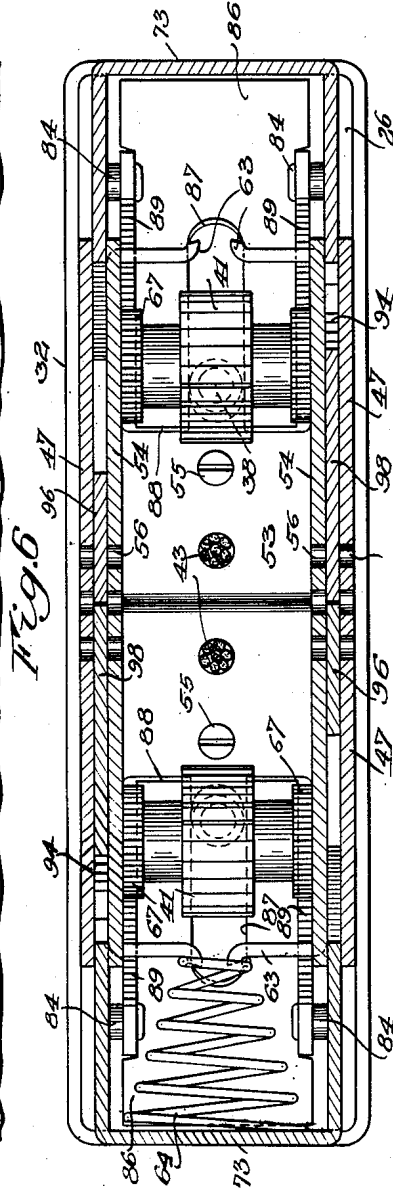
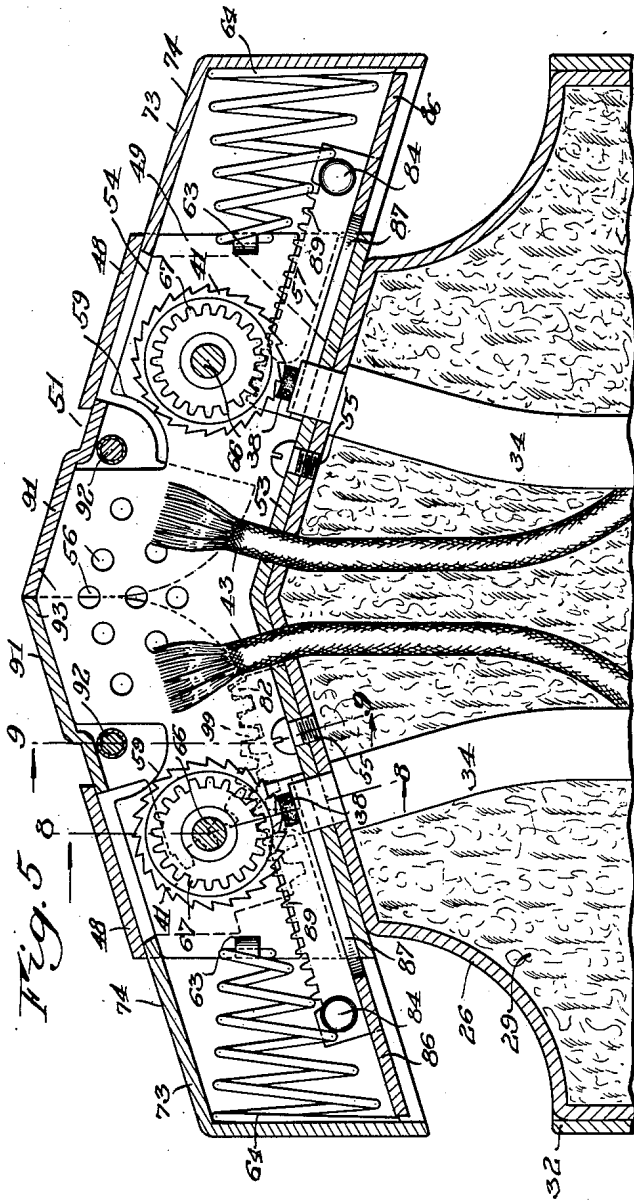
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4 Sheets-Sheet 2



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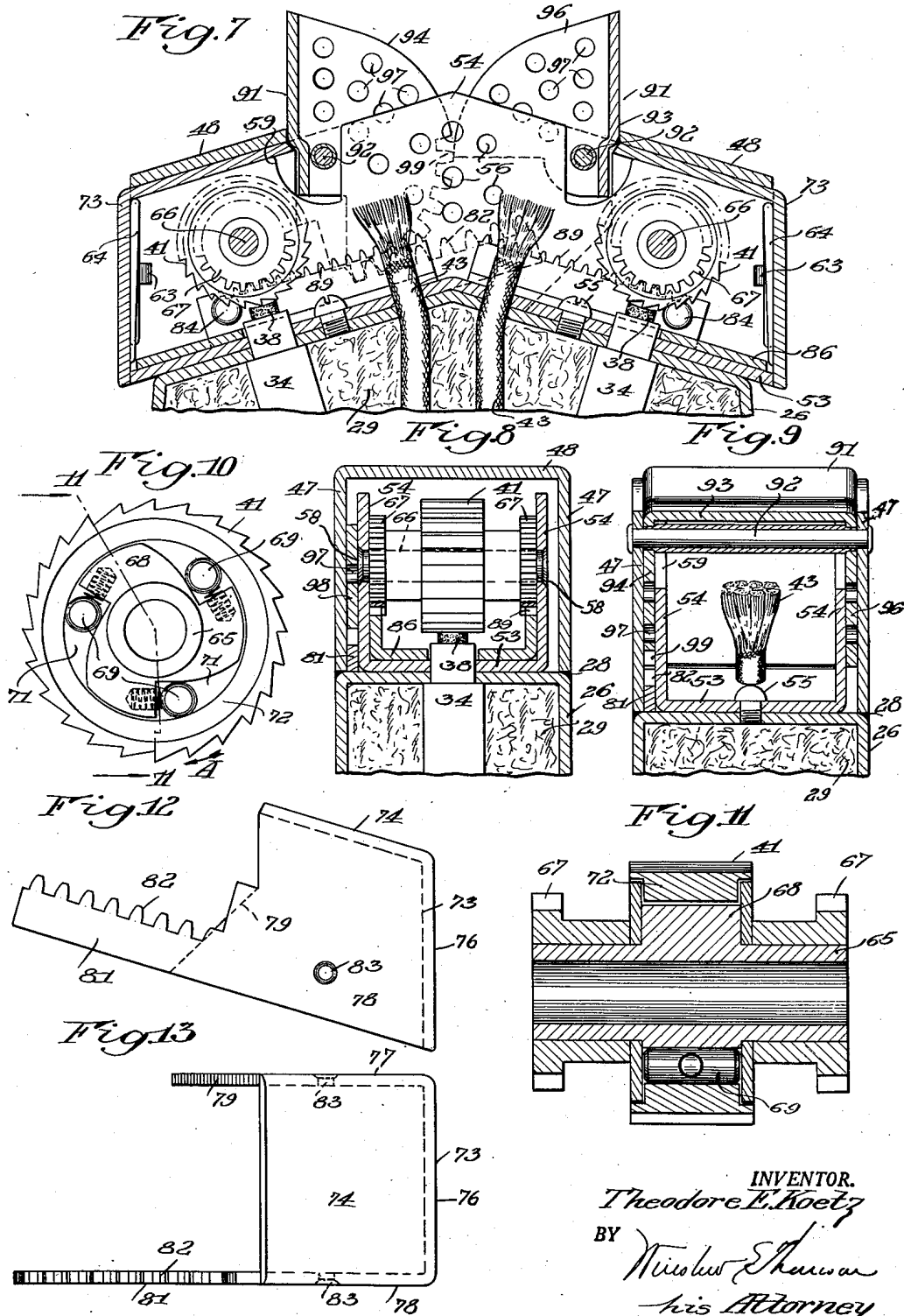
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4 Sheets-Sheet 3



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# UNITED STATES PATENT OFFICE

2,512,104

## CIGARETTE LIGHTER

Theodore E. Koetz, Rochester, N. Y.

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6 Claims. (Cl. 67—7.1)

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My invention relates to a finger operated cigarette or cigar lighter. While the cigarette lighter of my invention has been shown and will be described as a pocket lighter, it will be understood that the principles thereof may be incorporated in table or other models of such lighters.

An object of my invention is to provide a practical and dependable finger operated lighter which may be manufactured at a reasonable cost.

Another object of my invention is to incorporate in a cigarette or cigar lighter, which may be operated with the fingers of one hand, a dual ignition unit to thus render the lighter more reliable in use.

A further object of my invention is to provide a dual ignition lighter wherein means are provided for protecting the dual flames thereof against being extinguished by the wind thereby to render the lighter suitable and reliable for use while driving or engaged in other outdoor activities under which conditions many conventional types of lighters are unreliable in use.

My invention further contemplates the provision of a dual ignition lighter in which means are provided for creating a forced draft which carries the sparks from the pyrophoric elements to the wicks and facilitates ignition thereof to the end that the lighter is positively ignited and is thus more reliable in operation.

Other objects and advantages of the novel cigarette lighter of my invention will be particularly set forth in the claims and will be apparent from the following description, when taken in connection with the accompanying drawings, in which:

Fig. 1 is a side elevation of the lighter of my invention showing the parts in non-operating position;

Fig. 2 is a view similar to Fig. 1 somewhat enlarged and showing the position of the parts when the lighter has been actuated to ignite the same;

Fig. 3 is a view similar to Fig. 2 but with the casing in section which houses the fuel, the feeding elements for the flints and the wicks;

Fig. 4 is an end elevation of Fig. 3;

Fig. 5 is a vertical sectional view showing the dual ignition unit of my invention with the parts in their inactive position;

Fig. 6 is a horizontal sectional view of the lighter of my invention showing the parts in the position which they occupy in the inactive position of Fig. 5;

Fig. 7 is a view similar to Fig. 5 showing the parts in their actuated position;

Fig. 8 is a sectional view taken substantially

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on the line 8—8 of Fig. 5 in the direction indicated by the arrows;

Fig. 9 is a sectional view taken substantially on the line 9—9 of Fig. 5 in the direction indicated by the arrows;

Fig. 10 is a side elevation showing the scratch wheel and the clutch for operating the same;

Fig. 11 is a sectional view taken substantially on the line 11—11 of Fig. 10;

Fig. 12 is a side elevation of one of the finger actuated elements for operating the lighter;

Fig. 13 is a top plan view of Fig. 12;

Fig. 14 is a side elevation of the fixed part of the lighter in which the sliding parts operate;

Fig. 15 is a top plan view of Fig. 14;

Fig. 16 is a side elevation of the lighter with the wall of the outer casing removed to show the operating mechanism for controlling the opening and closing of the wind shields, the parts being shown in inactive position;

Fig. 17 is a view similar to Fig. 16 with the parts shown in actuated position;

Fig. 18 is a side elevation of one of the wind shields;

Fig. 19 is a bottom view of Fig. 18; and

Fig. 20 is an end view of Fig. 18.

As shown most clearly in Fig. 3, the lighter of my invention comprises a casing, generally indicated by the numeral 26, and a casing 27 which is secured to the casing 26 in any suitable manner as by solder 28 (Fig. 8). The casing 26 houses the usual cotton or other material 29 which is saturated with the usual lighter fuel. The bottom of the casing 26 is open, as shown at 31, and is closed by a cover 32 which is telescoped over the side walls of the casing 26. Any suitable means such as an annular bead 33 may be provided to indicate the level to which fuel should be placed in the cover 32 prior to inserting the body of the lighter in the cover. This method of filling the lighter prevents the flints from getting wet and the wicks from being oversaturated with fluid.

The casing 26 also houses a pair of tubular elements 34 which are rigidly secured, as shown at 36, to the top wall 37 of the housing 26. A pyrophoric element 38 is carried in each of the tubes 34 and each is urged by a spring 39 into pressure frictional engagement with a toothed scratch wheel 41 (Figs. 5, 6, 8 and 10). The lower ends of the tubes are threaded to receive plug screws 42 through which pressure is applied on the springs 39 to urge the pyrophoric elements 38 into pressure engagement with the scratch wheels.

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The casing 26 also encloses a pair of wicks 43 which are preferably intertwined through the casing so as to absorb fuel from the saturated cotton. The wicks extend through openings 44 in the top wall 37 of the casing into the casing 27, as shown most clearly in Fig. 5. Upon removal of the cover 32 the parts within the casing 26, including the wicks are accessible and ease of filling the casing with fuel is obtained.

The casing 27 (Fig. 5) has side walls 47 and a top wall 48. While the casing 27 may be rectangular in vertical section, I prefer to form the casing in the shape shown. The bottom and ends of the casing are open, as shown at 49, and the top wall has an enlarged opening 51, the purpose of which will later appear.

Mounted within the casing 27 is a fixed supporting and guiding member 52 which is secured by means of screws 55 to the top wall 37 of the casing 26. The fixed guide member 52 is shown most clearly in Figs. 14 and 15 and comprises the bottom wall 53 and side walls 54. The side walls have a plurality of air openings 56 therein, the functioning of which will later appear. The side walls 54 further have guide slots 57, openings 58, and cut-out portions 59, the purposes of which will also presently appear.

The bottom wall 53 of the fixed guide, in addition to the openings for the screws 55, has openings 61 for the pyrophoric elements and openings 62 through which the wicks extend. The ends of the fixed guide are provided with seat elements 63 for the reception of springs 64 (Fig. 5).

Referring now to Figs. 8, 10, and 11, a pair of shafts 66 are carried rigidly in the openings 58 of the fixed guide 52. Loose with respect to the shaft is a sleeve 65. A pair of pinions 67 are rigid with respect to the sleeve whereby upon rotation of the pinions 67, the spider 68, integral with the sleeve 65, of a clutch illustrated in Figs. 10 and 11 is rotated. Each of the clutches includes a plurality of spring pressed rollers 69 which lie in wedge shaped openings 71 between the spider and an annular ring 72 which carries the scratch wheel 41. The clutches are of a conventional type, well known in the art, to enable the scratch wheels to be rotated in the direction indicated by the arrow A in Fig. 10 and upon reverse rotation of the pinions 67 the drive between the spider 68 and the annular ring 72 is disconnected so as to permit reverse rotation of the pinions 67 without rotating the scratch wheels 41.

Mounted on opposite sides of the lighter, as shown in Figs. 1 and 3, are a pair of actuators 73 which are adapted to be moved inward, as illustrated in Fig. 2, upon being pressed by the thumb and forefinger of the user. Each of the actuators, as shown in Figs. 12 and 13, includes a top wall 74, an end wall 76 and side walls 77 and 78. The side wall 77 is cut off at an angle, as shown at 79 and the side wall 78 has an extension 81 which is toothed as shown at 82. The actuators are right and left hand and oppositely arranged to enable the extensions 81 to clear each other when the parts are in the position shown in Fig. 7. The actuator illustrated in Figs. 12 and 13 is for the right side of the lighter, as viewed in Fig. 5. The actuators are provided with openings 83 for the reception of guide pins 84 adapted to ride in the slots 57 of the fixed guides 52 (Figs. 5 and 14).

The springs 64 normally urge the actuators in an outward direction away from each other

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to the position shown in Fig. 5, the springs seating on the seat elements 63 (Fig. 15) and bearing against the end walls 76 of the actuators 73.

As shown most clearly in Fig. 6, the pins 84 are adapted to be received in openings in a slide 86. The slides 86 ride on the upper surface of the fixed guide 52 (Figs. 14 and 15). Each slide has an elongated slot 87 which extends from the forward edge 88 thereof to enable the slide to clear the pyrophoric elements, the screws 55 and the wicks as shown most clearly in Fig. 7. The slides are further provided with racks 89 adapted to mesh with the pinions 67 which drive the scratch wheels 41 (Fig. 8). It will be appreciated that upon operation of the actuators by the fingers, the slides are driven toward each other to rotate the pinions and the scratch wheels.

The lighter is provided with a pair of wind shields 91 which are pivoted on pins 92 carried by the casing 27. The pins 92 extend through the cut-outs 59 in the fixed guide 52 (Fig. 14) and through openings formed in the side walls of the casing 27. The construction of the wind shields is shown most clearly in Figs. 18, 19, and 20 and each includes a top wall 93 which forms the closure for the lighter openings and a pair of side walls 94 and 96. Each of the side walls is provided with a plurality of air openings 97 and the side wall 94 is extended on the arc of a circle, as shown at 98. This extended portion is provided with teeth 99 adapted to mesh with the teeth 82 of the extension 81 (Figs. 12 and 13).

In Figs. 16 and 17 the outer wall of the casing 27 has been removed to show the operation of the wind shields. It will be appreciated that the wind shields are right and left and that a corresponding structure appears on the other side of the lighter reversed from the position shown in Figs. 15 and 17.

It will be apparent, upon operation of the actuators by the thumb and forefinger, that the teeth of the extension 81 through their engagement with the teeth 99 of the wind shields causes the wind shields to shift from the position shown in Fig. 16 to that shown in Fig. 17 to enable the user to extend a cigar or cigarette between the wind shields into proximity to the flames of burning gases above the wicks.

It will be appreciated that the wind shields, together with the adjacent parts of the casing protect the flames against being extinguished by the wind, the openings 97 in the wind shields and the casing side walls permitting access of enough air to support combustion.

From Fig. 6 it will be apparent that the side walls 94 and 96 of the wind shields lie between the outer walls of the casing and the fixed guide 52. The extensions 81 carrying the teeth 82 which mesh with the teeth 99 of the wind shields also operate in these spaces. At will be clear from an examination of Fig. 16, the air openings 97 in the side walls of the casing 27 and the air openings 56 in the fixed guide register with each other. However when the wind shields are closed, communication between the two sets of openings is cut off as indicated in Fig. 16. When the parts are moved from the position shown in Fig. 16 to that shown in Fig. 17, the openings in the casing and in the fixed guide register with each other to enable access of some air to the flames through these openings and also through the openings in the wind shields.

One of the important features of the lighter of my invention is the fact that a dual ignition system is provided. Upon inward pressing of the

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actuators and actuation of the scratch wheels two sparks are thrown inward toward the wicks so that either or both wicks are lighted. If desired, a single wick might be employed, the sparks from both scratch wheels being directed toward the wick which would then be preferably centrally located with respect to the scratch wheels. With dual ignition the reliability of the lighter in operation is assured.

Another feature of the lighter of my invention lies in the fact that the casing 27 is substantially closed at its ends and the wind shields are closed when the parts are in the position shown in Fig. 5. The ends of the casing are substantially closed by the actuators 73 and the slides 86. Thus when the actuators are pressed inward, the air space within the casing 27 is decreased so as to force a blast of air from both sides inwardly over the pyrophoric elements and toward the wicks. This materially aids in enabling the wicks to be ignited by the sparks and aids in directing the sparks toward the wicks. During the initial portion of the actuation, the wind shield is substantially closed. As it gradually opens, it permits a flow of air over the wicks and out through the wind shields. However, during the initial blast of air across the wicks, the opening through the wind shields is somewhat restricted so as to increase the effectiveness of the blast of air directed upon the wicks.

It will be appreciated that the springs 64 restore the actuators to the position of the parts shown in Fig. 5 upon release of the actuators from manual control. At the same time, the pinions are rotated without rotating the scratch wheels and the wind shields are moved to the closed position shown in Fig. 5. Upon closing, air is substantially excluded from gaining access to the wicks and the wind shields during this period act as snuffers for the wicks.

While I have shown and described the preferred form of my invention, it will be appreciated that various changes and modifications may be made, particularly in the form and relation of parts, without departing from the spirit of my invention as set forth in the appended claims.

I claim:

1. A lighter comprising, in combination, a casing having open ends, a pair of actuators slidable in said casing and substantially closing said open ends, spring means for normally moving said actuators away from each other, a pair of pyrophoric members mounted in said casing, wick means mounted between said pyrophoric members and arranged to receive sparks therefrom, a pair of friction elements movable in frictional engagement with said members upon pressing said actuators toward each other with the fingers, said casing and actuators forming an enclosure which upon pressing the actuators inward forces a draft of air over both pyrophoric members toward the wick means, and means above the wick means for confining the air adjacent the wick means during the initial portion of the movement of the actuators.

2. A lighter comprising, in combination, a casing having open ends, a pair of actuators slidable in said casing and closing said open ends, spring means for normally moving said actuators away from each other, a pair of pyrophoric members mounted in said casing, wick means mounted between said pyrophoric members and arranged to receive sparks therefrom, a pair of friction elements movable in frictional engagement with said members upon pressing said actuators toward

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each other with the fingers, said casing and actuators forming an enclosure which upon pressing the actuators inward forces a draft of air over both pyrophoric members toward the wick means, and means including a closure opened by movement of the actuators above the wick means for confining the air adjacent the wick means during the initial portion of the movement of the actuators.

3. A lighter comprising, in combination, a casing having open ends, a pair of actuators closing said open ends, spring means for normally moving said actuators away from each other, a pair of pyrophoric elements mounted in said casing, means operated by said actuators for scratching said pyrophoric elements, wick means mounted between said pyrophoric elements and arranged to receive sparks therefrom upon movement of said actuators by the fingers toward each other against the action of said spring means, said casing and actuators forming an enclosure which upon pressing the actuators inward forces a draft of air over both pyrophoric elements toward the wick means, and shield means arranged above said wick means and operated upon actuation of said actuators for confining the air adjacent the wick means during the initial portion of the movement of said actuators, said shield means moving to a fully open position upon further movement of said actuators.

4. A lighter comprising, in combination, a casing having open ends, a pair of actuators closing said open ends, said actuators being in telescopic relation to said casing, spring means for normally moving said actuators away from each other, a pair of pyrophoric elements mounted in said casing, means operated by said actuators for scratching said pyrophoric elements, wick means mounted between said pyrophoric elements and arranged to receive sparks therefrom upon movement of said actuators by the fingers toward each other against the action of said spring means, and shield means arranged above said wick means and operated upon actuation of said actuators for confining the air adjacent the wick means during the initial portion of the movement of said actuators, said shield means moving to a fully open position upon further movement of said actuators to enable access to said wick means.

5. A lighter comprising, in combination, a casing having open ends, a pair of actuators closing said open ends and movable telescopically with respect thereto, spring means for normally moving said actuators away from each other, a pair of pyrophoric elements mounted in said casing in the same longitudinal plane, means operated by said actuators for scratching said pyrophoric elements, a pair of wick elements mounted between and in the same plane with said pyrophoric elements and arranged to receive sparks therefrom upon movement of said actuators by the fingers toward each other against the action of said spring means, said casing and actuators forming an enclosure which upon pressing the actuators inward forces a draft of air over both pyrophoric elements toward said wicks, and shield means arranged above said wicks and operated upon actuation of said actuators for confining the air adjacent said wicks during the initial portion of the movement of said actuators, said shield means moving to a fully open position upon further movement of said actuators.

6. A lighter comprising, in combination, a casing having open ends, a pair of actuators closing said open ends and movable telescopically with

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respect thereto, spring means for normally moving said actuators away from each other, a pair of pyrophoric elements mounted in said casing in the same longitudinal plane, means operated by said actuators for scratching said pyrophoric elements; a pair of wick elements mounted between and in the same plane with said pyrophoric elements and arranged to receive sparks therefrom upon movement of said actuators by the fingers toward each other against the action of said spring means, and shield means arranged above said wicks and operated upon actuation of said actuators for confining the air adjacent said wicks during the initial portion of the movement of said actuators, said shield means moving to a fully open position upon further movement of said actuators.

THEODORE E. KOETZ.

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