Jan. 23, 1934. J. HOLTZMAN 1,944,177

CIGAR LIGHTER

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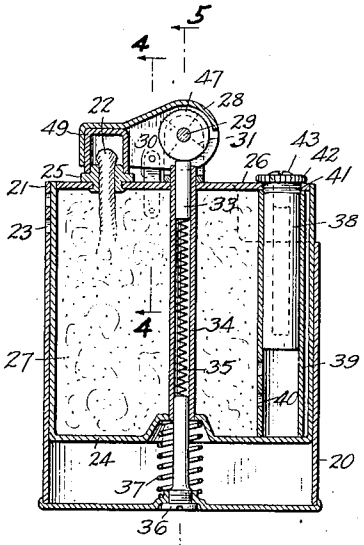



Fig. 1

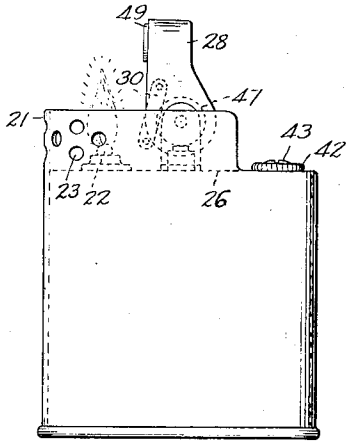



Fig. 2

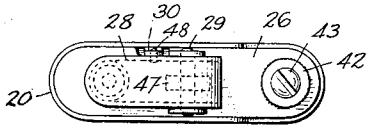



Fig. 3

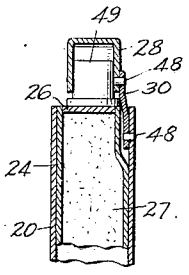



Fig. 4

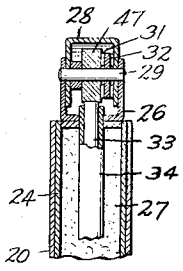



Fig. 5

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CIGAR LIGHTER

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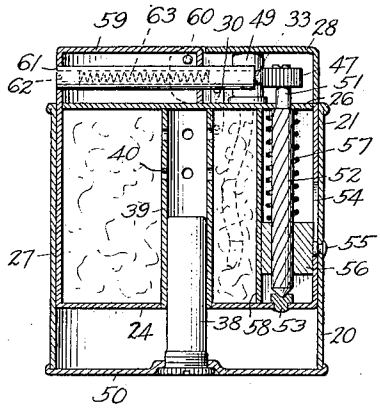



Fig. 6

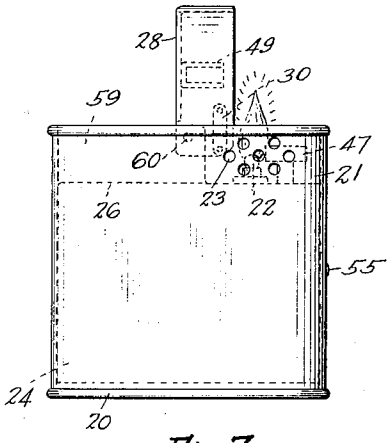



Fig. 7

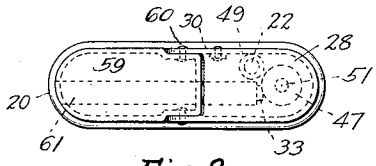



Fig. 8

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Patented Jan. 23, 1934 1,944,177

# UNITED STATES PATENT OFFICE

1,944,177

## CIGAR LIGHTER

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Application May 22, 1929. Serial No. 365,013

12 Claims. (Cl. 67—7.1)

This invention relates to pocket cigar and cigarette lighters, and particularly, to the type of so-called "automatic" lighters wherein a light is produced automatically on the application of manual pressure to a controlling member.

My invention contemplates the provision of economical, simple and effective means for automatically actuating the spark-producing mechanism usually employed in devices of this character and for simultaneously uncapping the wick.

My invention further contemplates the provision of simple and effective means for filling the lighter with liquid or pasty fuel and for thoroughly impregnating the absorbent fuel-holding cotton usually used in such lighters.

My invention further contemplates the provision of a suitably shaped container and casing of good appearance, adapted for economical production in large quantities, and of means for concealing and covering the operative parts in the closed position of the lighter.

My invention further contemplates the provision of means for putting a maximum pressure upon the pyrophoric material of the lighter so that the production of a spark is assured when the lighter is manipulated.

The various objects of my invention will be clear from the description which follows, and from the drawings, in which,

Fig. 1 is a vertical section of one form of my improved lighter, showing particularly, the means for putting additional pressure on the pyrophoric material when the lighter is operated, and showing, further, one form of the wheel driving means, and of the means for impregnating the absorbent cotton of the container with fuel by pressure.

Fig. 2 is a front view of said lighter, in open position with the wind-shield raised to protect the flame.

Fig. 3 is a top plan view of the same, showing the lighter in closed position.

Fig. 4 is a vertical section of the same, taken on the line 4—4 of Fig. 1.

Fig. 5 is a similar view, taken on the line 5—5 of Fig. 1.

Fig. 6 is a vertical section of another form of my improved lighter, showing a modified form of the wheel driving means, and showing a modified form of the means for impregnating the cotton of the lighter with fuel by pressure.

Fig. 7 is a front view thereof, showing the position assumed by certain of the parts in the open position of the lighter.

Fig. 8 is a top plan view thereof in the closed position of the lighter.

In that practical embodiment of my invention which I have illustrated in detail in Figs. 1 to 5 inclusive, I prefer to provide an outer casing as 20 which terminates at its upper end in a suitable wind-shield 21 adapted to substantially enclose the flame produced when the wick 22 is ignited. The wind-shield portion 21 is provided with suitable perforations as 23 to allow the access of sufficient air to the wick flame to support combustion.

Fitted into the outer casing 20 and adapted to reciprocate vertically or to telescope therein, is the inner casing or container 24. The various operative parts of my improved lighter are preferably suitably mounted on said inner casing. For example, the wick 22 is supported by a suitable bushing 25, secured to the upper end 26 of the container 24, said wick extending into the interior of the container and receiving fuel from the absorbent material 27 which may be cotton or the like, and with which such lighters are usually filled.

For normally capping the wick and preventing the evaporation of fuel therethrough, I provide a wheel-covering and cap-carrying frame as 28 mounted on the abrading wheel shaft 29. At one end of said frame 28, is secured the wick cap 49 designed to fit closely against a shoulder of the wick bushing 25. One or more links as 30 may be provided to connect the side or sides of the frame 28 with the outer casing 20. The link is pivoted at its respective ends to the frame and to the casing by suitable means, such as the screws or rivets 48. On the shaft 29 is loosely mounted the abrading wheel 47 which is provided with suitable ratchet teeth as 31 on one face thereof. Interposed between the teeth 31 and one side of the frame 28 and operated on the movement of the frame, is the disc ratchet 32 provided with teeth designed to engage the teeth 31 of the abrading wheel, and to rotate said wheel in the proper direction to strike sparks from the block 33 of pyrophoric material, so that said sparks are directed toward the wick 22. The block 33 is supported in a suitable tube as 34, secured in the interior of the inner casing 24, and preferably though not necessarily projecting slightly above the top thereof.

For exerting pressure upon the block 33 so as to force said block into firm engagement with the abrading wheel, I provide the spring 35 arranged in the tube 34 and prevented from leaving said tube by the screw 36, which is threaded into the bottom of the outer casing 20. For normally maintaining the parts of my improved

lighter in the inoperative positions thereof illustrated in Fig. 1, I prefer to interpose a suitable spring as 37 between the bottom of the inner casing 24 and that of the outer casing 20. Said spring serves the additional function of automatically returning the parts to their normal positions after the lighter has been operated.

Fuel in the form of liquid or paste may be forced into the interior of the inner casing by suitable means provided for that purpose. As illustrated, particularly in Fig. 1, said means takes the form of a hollow piston or plunger 38 closed at the bottom thereof and fitting quite closely into the tube 39, which is in turn secured in the interior of the inner casing 24, and which is provided with suitable openings as 40 for the discharge of the fuel into the absorbent material 27. As illustrated, the piston or plunger 38 is externally threaded as at 41 to engage suitable threads at the top of the tube 39 and at the top of the inner casing 24, so as to form a tight closure at the top of said tube. Said piston may further be provided with an enlarged head 42 adapted to rest on the top 26 so as to limit the entrance of the piston into the tube. The head 42 is preferably provided with a central perforation communicating with the inside of the piston, and through which extra blocks of pyrophoric material may be inserted and stored in the piston for future use. Said opening is normally closed by the removable screw 43 which allows access to the interior of the piston when desired.

The operation of that form of my improved lighter which has just been described is as follows:

For inserting fuel into the container, the piston 38 is unscrewed and removed, thereby exposing the upper end of the tube 39. Liquid or paste fuel is then inserted into the tube until it is substantially full. In case of liquid, the fuel will to some extent, be discharged through the openings 40 until the surrounding cotton can absorb no more of the fuel whereupon the remaining fuel will stay in the tube. After the tube 39 has been so filled, the piston 38 is inserted into the top of the tube and forced downwardly, thereby exerting pressure upon the fuel in the tube. Since the piston fits quite closely into said tube, the fuel is forced downwardly and through the openings 40 into the absorbent material 27, thereby thoroughly impregnating said material.

After the piston has been forced down as far as it can go, it may be removed for the operation to be repeated, or if sufficient fuel has been supplied to the lighter, it is screwed into the top of the casing tightly, and forms a sufficiently tight joint to prevent any material evaporation of the fuel in the container. If any portion of the fuel is left at the bottom of the tube, said fuel gradually penetrates into the absorbent material so that with one filling, the absorbent material, due to its impregnation by pressure, is capable of supplying fuel to the wick over a considerable period of time.

After the container has been filled as above described, the lighter is ready for operation to produce a spark. To do this, the inner casing and the outer casing are telescoped together by manual pressure, against the action of the spring 37. This results in the further insertion of the screw 36 into the tube 34 and the compression of the spring 35, thereby forcing the block 33 of pyrophoric material with greater pressure against the abrading wheel. At the same time, the link 30 rotates the frame 28 and therethrough the ratchet disc 32 on the shaft 29, to raise said frame into the position shown in Fig. 2. Simultaneously, the teeth on the ratchet disc engage the teeth 31 of the abrading wheel, and rotate said wheel in a clock-wise direction, as viewed in Fig. 1, to strike sparks from the block 33 and to ignite the wick 22 which has meanwhile been uncapped. At the same time, the wind shield 21 is moved beyond the top 26 of the inner casing and protects the flame from being extinguished by any air currents.

It will be seen that the wick can be ignited only while the inner and outer casings are maintained in the positions shown in Fig. 2 by manual pressure. When the casings are released, the spring 37 operates to separate said casings and to bring them back into the normal position shown in Fig. 1, the wick being thereby capped by the return of the frame 28 through the agency of the link 30, and the flame capped and extinguished.

In that embodiment of my improved lighter illustrated in Figs. 6 to 8 inclusive, the outer casing 20 is similar in form to that previously described, as is the inner casing 24. In this form of my improved lighter, however, I prefer to arrange the tube 39 centrally of the container 24 and to secure the piston 38 in the bottom 50 of the outer casing. Said piston 38 may be of substantially the same form as that illustrated and described in connection with the modification shown in Figs. 1 to 5. The abrading wheel 47, however, is mounted for rotation about a vertical axis, being supported by the shaft 51. Said shaft is provided with suitable threads as 52, and has a bearing in the top 26 of the inner casing, and a second adjustable bearing as 53 in the bottom of said casing, which is suitably threaded for adjustment.

A slot as 54 is made in said inner casing, through which projects the headed rivet 55, secured to the outer casing at one end, and to the reciprocating nut 56 at its other end. Said nut is mounted for engagement with the screw threads 52 and is normally urged to its lowermost position by the spring 57, arranged about the shaft 51. A suitable partition as 58 may be provided in the interior of the inner casing 24 to aid in guiding said nut during the reciprocation thereof. For supporting the wick capping frame 28 which carries the wick cap 49, I prefer to provide an extension as 59 on the top 26 of the inner casing, and to pivot said frame to said extension as at 60. The tube 61 for supporting the block 33 of pyrophoric material may be closed at one end by a suitable screw 62, which may be used for the purpose also of adjusting the pressure put upon said block through the intermediary of the spring 63 arranged in said tube.

The frame 28 is operated through the link 30, as hereinbefore described. It will be noted that in the normal position of this form of my improved lighter, all of the parts are concealed, and the substantially flat tops and sides only are visible, presenting a good appearance and that the lighter is well adapted to receive suitable ornamentation.

To operate the lighter, the casings 24 and 20 are telescoped together by manual pressure, whereupon any fuel remaining in the tube 39 is forced into the surrounding absorbent material 27 by means of the plunger 38. At the same time, the nut 56 is drawn upwardly by the outer casing, owing to its connection thereto by the rivet 55, against the action of the spring 57, whereby

the shaft 51 is rotated, as is the wheel 47 and sparks are thrown against the wick 22. Simultaneously, the link 30 rotates the frame 28 about its pivot 60 and ignites the wick which has been uncapped by said frame, while the shield 21 moves beyond the top 26 of the inner casing and protects the resulting flame on the wick.

After operation, to produce a light, the respective casings are released, whereupon the spring 57 forces the nut 56 down to its lowermost position and thereby causes the outer casing 20 to move with said nut through the rivet 55 back to the position illustrated in Fig. 6, and resulting in the return of all of the parts back to the normal or closed positions thereof.

It will be understood that while I have shown and described various modifications of my invention, I do not intend to limit myself to the specific forms shown and described but intend to claim my invention as broadly as may be permitted by the state of the prior art and the terms of the appended claims.

I claim:

1. In a lighter, the combination with a pair of telescoping casings, the outer of said casings terminating in a wind-shield and being longer than the inner casing, of a frame pivotally mounted on the inner casing, a link connecting said frame and the outer casing, and spark-producing means carried by the inner casing and operatively connected to said frame whereby sparks are produced on the telescoping of said casings toward each other and the wind-shield is projected beyond the inner casing into position to shield a flame produced by said sparks.

2. In a lighter, an outer casing, a slotted inner casing slidably arranged within the outer casing, an upright screw supported in said inner casing and projecting therefrom, an abrading wheel at the upper end of said screw, a spring-pressed nut in the inner casing mounted on said screw, a connecting member secured to said nut and said outer casing and passing through the slot of the inner casing, a wick cap and wheel cover pivoted to said inner casing and a link connecting said cover to the outer casing, whereby the wick is uncapped and the wheel rotated on the telescoping of said casings together.

3. In a lighter, an outer casing terminating in a normally retracted wind shield extending about one edge of the casing and about both sides thereof and completely open at the top, an inner casing slidable in the outer casing, spark-producing means including a wheel carried by and mounted on an axis fixed relatively to the inner casing above the top thereof, said inner casing having a threaded opening in the top thereof, a tube in the inner casing communicating with said opening, a plunger of greater length than half the length of the tube slidable in said tube, said plunger being threaded at its outermost end for removable engagement with the threaded opening to seal said opening against leakage, a spring arranged between the bottom walls of said casings to urge said casings apart, and means operative on the telescoping movement of said casings together against the action of the spring for rotating said wheel and for projecting said wind shield above the top of the inner casing.

4. In a lighter, an inner casing adapted to have fuel inserted thereinto, an outer casing into which said inner casing telescopes, said outer casing terminating in a wind shield open at its top, a spring normally urging said casings apart into a position wherein the wind shield is below the top of the inner casing, said wind shield being projected into operative position above the top of the inner casing on the movement of said casings together against the actions of the spring, and spark-producing means carried by said inner casing and operated automatically on the relative movement of said casings, comprising an abrading wheel revolubly supported by the inner casing, a wick adjacent the wheel, a cover for the wick and wheel pivoted near the top of the inner casing, and means for rotating the wheel simultaneously with the projection of the wind shield around the wick, whereby the wick is ignited and is accessible through the open top of the windshield.

5. In a lighter, an outer casing terminating at one end thereof in a wind shield having an open top and terminating at the other end thereof in a horizontal bottom, an inner casing having a horizontal bottom, a spring normally maintaining the bottom of the inner casing above the bottom of the outer casing and normally maintaining the wind shield in its inoperative lowermost position, and means responsive to the movement of the casing bottoms toward each other for producing a flame, said wind shield being automatically projected into flame-shielding position above the top of the inner casing on said movement.

6. In a lighter, an inner casing adapted to have fuel inserted thereinto, an abrading wheel revolubly supported by the inner casing, a wick adjacent the wheel, a cover for the wick and wheel pivotally mounted on and above the top of the inner casing, and extending in its closed position part way across the top of the lighter, an outer casing into which said inner casing telescopes, a wind shield forming the upper end of the outer casing, a spring in one of said casings normally retracting the wind shield into its inoperative position and urging said casings apart, and means operatively connecting the outer casing to the wheel and to the cover for simultaneously uncapping the wick, rotating the abrading wheel to light the wick, and projecting the wind shield into its operative position about the lighted wick.

7. In a lighter, a fuel container, spark-producing means carried above the upper part of the container including an abrading wheel and a wick, a pivoted cover for the wheel and wick, means operatively connecting the cover to the wheel, and a wind shield encompassing the container and movable from a position below the end of the wick into a position about the wick and connected to the cover simultaneously to uncap the wick and to rotate the wheel to light the wick, and to protect the lighted wick.

8. In a lighter, a fuel container having a recess at the top and at one side thereof, spark-producing means carried by the container including an abrading wheel and a wick arranged in said recess, a cover for the wheel and wick pivoted at the top of the lighter, said cover in its closed position providing an upper wall for said recess at the same level as the upper part of the remainder of the top of the lighter, and having depending side and end walls lying in the same plane as the remaining corresponding end and side walls of the casing, a movable wind shield arranged about and slidable on the casing, means for operatively connecting the wind shield to the wheel for rotating the wheel on the upward movement of the wind shield relatively to the casing, and means for operatively connecting the wind shield

to the cover for swinging said cover from the recess to uncap the wick while the wind shield is being projected about the wick and the abrading wheel is being rotated.

9. In a lighter, the combination with a pair of telescoping casings, movable relatively to each other, of spark-producing means carried by the inner casing, a fuel receiving tube in said inner casing in transverse spaced relation to said means and adapted to prevent fuel from reaching said means, and means independent of the spark-producing means and cooperating with said tube for forcing fuel out of said tube and into the remainder of said inner casing, on the telescoping of the casings together comprising a plunger secured to the outer casing and inserted into the tube.

10. In a lighter, a pair of telescoping casings, a fuel receiving tube in the inner of said casings, a plunger inserted into said tube for forcing fuel out of said tube and into the remainder of the inner casing, means for removably securing the plunger in fixed relation to one of the casings, an abrading wheel on the inner casing, an ignitable wick projecting from said casing, a cap for said wick, a pivoted frame on the inner casing carrying said cap and arranged to cover said cap and said wheel in the normal position of the parts of said lighter, and means for operatively connecting said frame and said wheel to said outer casing whereby the wick is uncapped and the wheel is rotated on the telescoping of said casings together.

11. In a lighter, an outer casing provided with a filling opening, an inner casing including a fuel container, a tube in the inner casing, a plunger passed through the opening of the outer casing and removably secured thereto and entering the tube, and means carried by said casings for producing a light on the telescoping of said casings together, said plunger reciprocating in said tube on the relative movement of said casings to force fuel inserted into said tube out of the tube and into the container.

12. In a lighter, a pair of telescoping, inner and outer casings movable relatively to each other, spark-producing mechanism mounted on the inner casing, said mechanism including an abrading wheel carried by said inner casing, a tube mounted in the inner casing and extending substantially in the direction of the path of relative movement of said casings, a block of pyrophoric material located in said tube, a spring mounted in the tube, a spring-holding screw entering said tube, a wick mounted in the inner casing adjacent the wheel, a wick-capping member pivotally carried by said inner casing and being mounted on the same axis as the wheel for covering the wick, said outer casing having an opening in one end thereof for the passage of said screw, said screw pressing the spring in the tube against the pyrophoric material, a second spring located between the outer and inner casings and acting normally to separate the casings, means connecting the outer casing and the capping member to swing said member on its pivot to uncap the wick upon telescoping movement of said casings together against the action of the spring, said means acting to cause operation of the wheel to produce sparks to light the wick.

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