

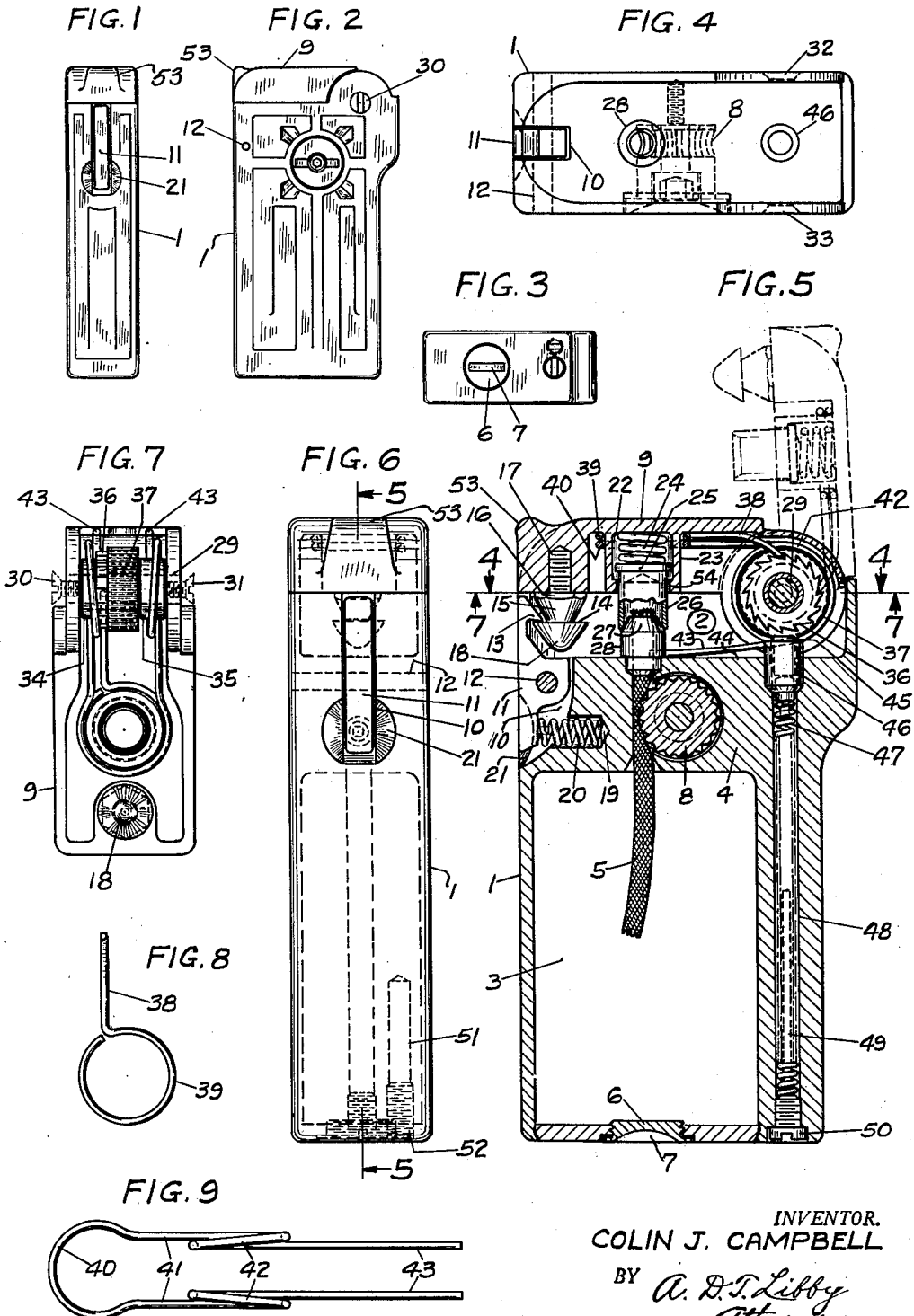
June 27, 1950

C. J. CAMPBELL  
AUTOMATIC LIGHTER

2,512,767

Filed Feb. 14, 1946

2 Sheets-Sheet 1



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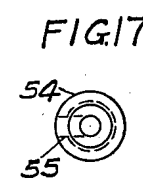
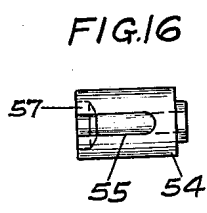
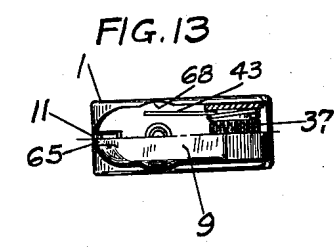
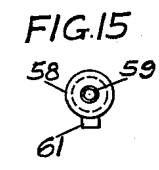
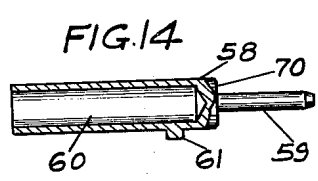
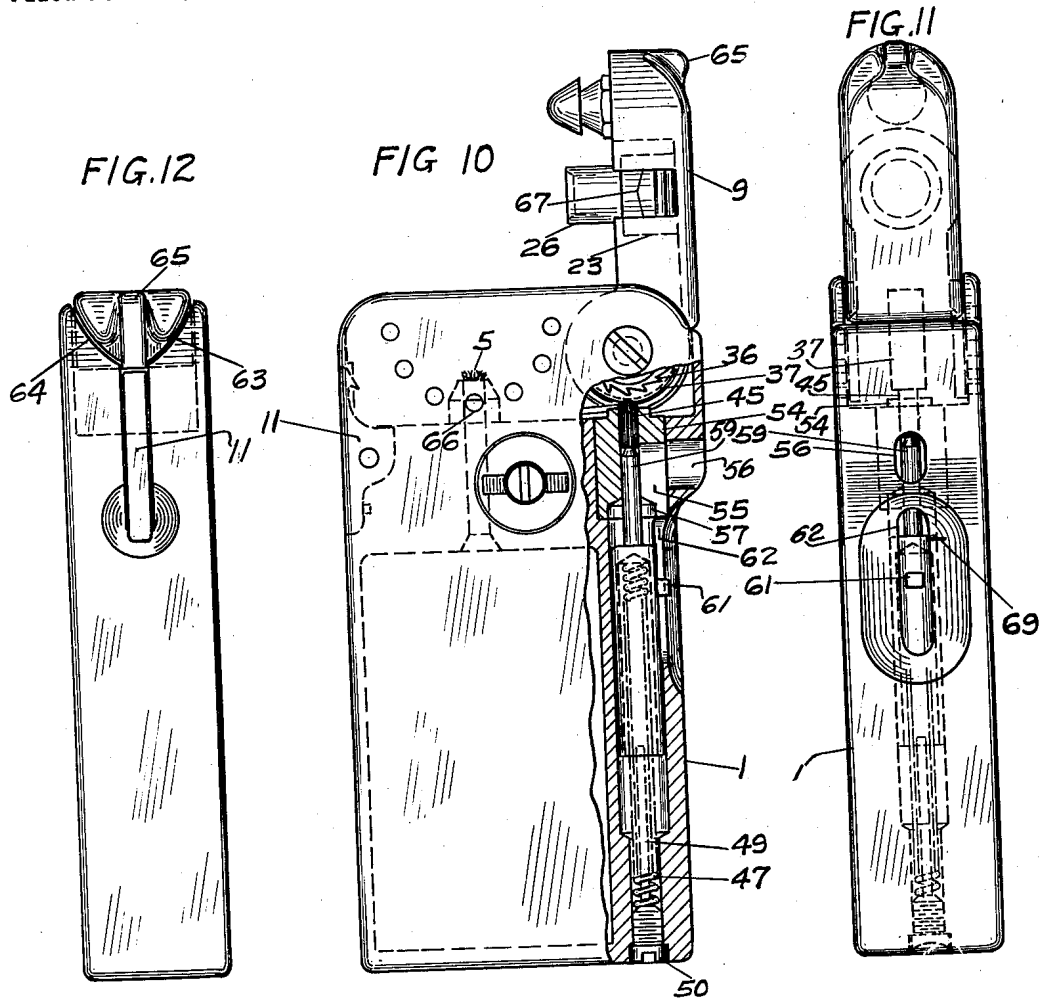
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# UNITED STATES PATENT OFFICE

2,512,767

## AUTOMATIC LIGHTER

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4 Claims. (Cl. 67—7.1)

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This invention relates to automatic lighters of the type used by smokers although it is adapted for other uses.

It is the principal object of my invention to provide an improved lighter which improvements are found in many of the details entering into the construction of the device. These improvements or advantages are found in means for holding the cover in closed position and for releasing it. Also in the means for snuffing the flame on closing the cover and at the same time providing an improved means of securing a closure for the wick end that will hold the vapors coming from the end of the wick when the cover is in closed position.

Another advantage is an improved means of operating the ignition structure so as to get a good hot spark from the flint or the ignition slug directed toward the end of the wick as the cover is raised.

A still further advantage is means of mounting a flint or ignition slug and a still further advantage is the provision made for carrying extra flints or ignition slugs so that they are protected from any of the gases which may come from the wick chamber.

Another advantage of my improved construction is the manner of feeding the wick. While obtaining all of the aforesaid advantages together with others which will appear to the user of these devices there is also the advantage of obtaining a lighter which presents a smooth surface so that there is no danger of any parts catching in the clothing or handbag of the user.

A still further object of my invention is to provide a lighter which is highly ornamental in character.

A further object of my invention is to provide new and improved means for introducing a flint into cooperative position with the friction wheel.

A further object of my invention is to provide a lighter having a guide surface for positioning a cigarette or the like with respect to the end of the wick.

A still further object of my invention is to provide a structure which can be ignited in a windy place and yet one in which means are provided for supplying sufficient oxygen from the air to maintain a good flame from the wick.

These and other objects will be clear to a user of the structure shown in the attached drawings wherein,

Figure 1 is a view of the structure shown in Figure 2 looking from left to right.

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Figure 2 is a side elevation of the structure shown in Figure 1 looking from right to left.

Figure 3 is a bottom view of the structure shown in Figure 2. Figures 1, 2 and 3 are shown substantially in full size.

Figure 4 is a view on the line 4—4 of Figure 5.

Figure 5 is a section on the line 5—5 of Figure 6 showing the cover in open position in broken lines.

Figure 6 is a view of Figure 5 looking from left to right.

Figure 7 is a view on the line 7—7 of Figure 5.

Figure 8 is a view of the spring member which operates the combination ratchet and friction

15 wheel.

Figure 9 is a view of the spring which opens the cover when released. Figures 4 to 9 inclusive are shown at about twice the size of an actual structure.

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Figure 10 is a view partly in elevation and partly in section of a modified form of construction showing the cover in open position.

Figure 11 is a view of Figure 10 looking from right to left.

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Figure 12 is a view of Figure 10 looking from left to right with the cover in closed position. Figures 10, 11 and 12 are shown substantially twice the size of a true structure.

Figure 13 is a full size view of the top of the structure with one-half of the cover broken away.

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Figure 14 is a view of the flint operating plunger.

Figure 15 is a view of Figure 14 looking from right to left.

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Figure 16 is a plan view of the flint holder shown in Figure 10.

Figure 17 is a view of Figure 16 looking from right to left.

In the different views wherein like numbers refer to corresponding parts and referring to the construction in Figures 1 to 9, 1 is a casing having a top chamber 2 and a bottom chamber 3, these chambers being separated by a wall 4. The chamber 3 is utilized to receive the absorbent material for carrying the ignition fuel and the body portion of the wick 5, only part of which is shown within the chamber 3. Access to the chamber 3 for loading it is provided by a nut 6 having a screw slot 7 therein which is adapted to receive a coin such as a penny or a dime for actuating it. Carried by the wall 4 is a device 8 used for raising and lowering the wick, by a rack and pinion or compression action, but no further description of this device will be made herein for it is fully disclosed in my abandoned application

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S. N. 640,869, filed January 12, 1946, but it does enter into the general improvement of the lighter.

What I term as the front edge of the structure is provided with a recess 10 within which is positioned a catch 11 that is carried on a pivot 12. The catch 11 has a hook portion 13 that is adapted to engage a shoulder 14 on a detachably mounted catch post 15. This post 15 preferably has a hexagonal head 16 and a screw stem 17 whereby it may be screwed securely into the cover 9. Preferably the post 15 has a conically shaped head 18 to cooperate with the hook 13 to make easy closure of the cover.

Positioned in the wall 4 is a recess 19 within which is positioned a spring 20 that acts on the end of the catch 11 to continuously move it toward latching position. The wall of the casing is provided with an oval shaped depression 21 in alignment with the spring 20 and the end of the latch 11 is formed so that when the cover is closed the spring end of the catch or latch 11 is positioned within the depression 21 and at least not beyond the surface of the casing so that there is no danger of the end of the catch 11 engaging clothing while the lighter is being carried in the pocket of the user. Carried by the cover 9 and preferably integral therewith is a recess 22 formed by a circular wall 23. Positioned within the recess 22 is a spring 24 that coacts between the top of the cover and the outer surface 25 of the bottom of a cup shaped snuffer 26. It will be noted that the bottom of the cup 26 has a somewhat larger diameter than the cup itself thereby forming a flanged bottom for the cup or snuffer 26. After the snuffer has been inserted in position then the metal around the outer edge of the wall 23 is spun inwardly to form a collar 54 which is engaged by the flange 25 when the cover is opened, thereby preventing the snuffer 26 and the spring 24 from falling out of place. The open end of the snuffer 26 is formed to engage the conical surface 27 of a holder 28 carried by the wall 4 for receiving the end of the wick 5. When the cover is in closed position it will be noted that flange 25 is free from the collar 54 so the open end of the snuffer 26 forms a closure on the conical surface 27 of the holder 28. Since the snuffer 26 is of considerable length, a substantial amount of vapor from the ends of the wick will collect in the cup of the snuffer so that when the cover is opened, in a manner that will be presently described, quick ignition takes place. Since the bearing between the wall 23 and the snuffer 26 is very short the snuffer 26 will be self-aligning and will thereby insure a good contact at its open end with the conical surface 27. This I believe to be a decided improvement in the construction and arrangement of the snuffer parts.

The cover 9 is pivoted to the casing 1 by a pin 29 which is held to the casing by any satisfactory means such as screws 30 and 31 shown in dotted position in Figure 7, the casing being recessed at 32 and 33 to receive the heads of the screws 30 and 31. Carried on the pivot pin or spindle 29 are positioning collars 34 and 35 that act to position a combination structure comprising a ratchet wheel 36 and a friction wheel 37 which are free to rotate on the spindle 29. For operating the ratchet wheel 36 a spring 38 is utilized. This spring has a loop end 39 that is positioned around the wall 23 of the recess 22. Also positioned around the wall 23 is the loop end 40 of a spring 41 having loops 42 in each of its arms, one of the loops passes around the positioning collar or bushing 34 while the other loop passes around the

positioning collar or bushing 35 and the free ends 43 extend backwardly in the direction of the wick holder and are located on the bottom wall 44 of the top chamber 2. On this construction it will be understood that spring 41 acts to quickly open the cover after it has been released by the catch 11 and the spring 38 acts to rapidly turn the ratchet wheel 36 and the friction wheel 37 that are mounted as an integral unit on spindle 29.

Cooperating with the friction wheel 37 is a flint or slug of ignition material 45 that is positioned in a seat 46 in the casing 1. An elongated spring 47 is located in a hole 48 which extends longitudinally of the casing 1. One end of the spring is positioned around the stem 49 of a screw 50 and it will be noted from Figure 5 that the stem 49 extends a considerable distance through the spring 47 thereby making it easy to install and it also acts as a stabilizer for the spring 47. Here again the head of the screw 50 is positioned slightly below the surface of the casing and has a slot which is wide enough to receive a coin for the purpose of removing the screw and spring to renew the flint or ignition slug 45. The wall of the casing carrying the screw 50 and the spring 47 is considerably thicker than the front wall and has a second hole 51 positioned adjacent the hole 48. The hole 51 is for the purpose of receiving a supply of the flints or slugs 45, the hole being closed by screw 52. With this construction the flints or ignition slugs are carried in a closed hole so that they are free from exposure to any fumes coming from the chamber 3.

In the form of the construction shown in Figures 10 to 17 inclusive the construction is the same as has been described in so far as the cover mounting and latch means and wick feeding means is concerned. The additional new features will now be pointed out.

By reference to Figure 10 it will be seen that the slug or ignition material or flint 45 is carried in a bushing 54 which from its definition is hollow or having a hole therethrough. The bushing 54 has a longitudinally positioned slot through its wall on one side. This slot 55 is positioned in alignment with an opening 56 in the casing 1. The lower end of the bushing 54 is provided with a recess 57 to receive a plunger 58. The plunger 58 has an end 59 of a reduced diameter to fit the hollow portion of the bushing 54 and to engage the flint 45 seated therein. The plunger 58 has a bore 60 within which is positioned one end of the spring 47 that is carried or guided by the stem 49 of the screw 50. The plunger 58 has a projection 61 that is located in an elongated opening 62 in the edge of the casing. By reason of this construction when it is desired to put a new flint 45 in position, the operator engages the projection 61 with a finger or thumb nail and pulls the plunger 58 against the tension of the spring 47 so that the end 59 of the plunger uncovers the slot 55 at the side of the bushing 54. Then a flint 45 is passed through the casing hole 56 above the end of the plunger projection 59 after which the plunger is released and the spring 47 will move the plunger into engagement with the flint 45 and push it against the friction wheel 37. I have found this arrangement is a great time saver in applying a flint to a lighter of the type described. A mark 63 is provided adjacent the upper end of opening 62 to show that when the projection 61 reaches that mark it is time a new flint was installed, in addition the shoulder 70 of the plunger will engage the bottom of recess 57 to prevent its end from contacting with the friction wheel 37.

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In passing it may be noted that the plunger 58 is assembled in its position before the bushing 54 is put into place.

It will be noted from Figure 12 that the front edge of the casing, and by the front I mean that edge carrying the retaining and releasing latch 11, has its edges 63 and 64 curved inwardly and downwardly to form an arcuate configuration, to provide a seat for a cigarette or the like to be lighted, from the wick 5. The front ends of the cover have curved surfaces to fit the curved edges 63 and 64 so as to form a closed structure although Figure 12 shows a slight opening in order to illustrate the construction. The finger engagement formation shown as 65 in Figures 10 and 12 is slightly different as indicated in that it has a narrow portion of substantially the same width as the width of the latch 11 so that when the cover is in closed position it is in alignment with the latch 11 and thereby produces a smooth continuous surface. As shown in Figure 10 the casing 1 is provided with one or more holes 66 which are positioned at opposite sides of the casing. If only one hole on each side of the casing is used, this is preferably positioned directly opposite the wick as shown in the drawing. If more than one of the holes 66 are used on each side they may be arranged arcuately as indicated or in some other form. The object of these openings is to allow a sufficient amount of oxygen to come into the chamber around the wick 5 and by arranging the holes on opposite sides of a vertical plane through the wick 5 the flame from the wick 5 is directed in a substantially straight line upwardly.

Where only one hole 66 is used on each side of the casing, I may utilize an opening 67 positioned in the opposite sides of the cover opposite the snuffer 26. This will allow additional air to accumulate around the end of the wick when the cover starts to open, thereby preventing a vacuum tendency which would be caused by the snuffer 26 when being withdrawn suddenly from its seat on the conical surface 27 next to the wick.

As a further means for providing an air space on opposite sides of the wick I may form the sides of the casing with a recess 68 and form the edges of the cover to fit this recess as shown in Figure 13.

From the constructions described, it will be seen that I have provided a lighter to accomplish all the objects and advantages set forth and in which all the parts are constructed and arranged to give long life and positive and efficient surface, and finally a construction in which all of the assembled parts do not project beyond the surface of the casing, the only projection being a slightly raised but rounded portion 53 on the cover for acting as a finger engagement formation for assistance in closing the cover. Having thus described my invention, what I claim is:

1. An automatic lighter including a casing having top and bottom chambers separated by a thick wall so as to hold other essential parts of the lighter, the bottom chamber adapted to receive absorbent material for carrying ignition fuel and the body of a wick, the wall having a hole there-through for passage of the wick from the bottom chamber to the top chamber, a holder having a conically shaped top positioned in the hole and extending into the top chamber to locate the ignition end of the wick, means transversely positioned in said wall and having a rotatable part intercepting the wick hole and compressibly engaging the wick to adjust its position in the holder, a hinged cover for the top chamber with

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means for rapidly opening the cover when released, said cover having a recess formed by a circular wall depending from the top of the cover, a cup shaped snuffer having a closed bottom with a circular flange thereat, the free edge of the recess wall being spun over to form a collar after the flanged end of the snuffer cup has been put into the recess, so as to hold the cup in the recess, a spring within said recess and engaging the top of the cover and the flanged bottom of the snuffer cup, said snuffer cup having its open end formed to fit the conically shaped top of the holder, the length of the snuffer cup being such that its flanged bottom will be raised from the collar at the mouth of the recess so the cup will be resiliently held in snuffing position when the cover is in closed position, a ratchet and friction wheel structure operatively carried by the cover and brought into action when the cover moves to open position, means for holding the cover in closed position and for releasing it, said means including a safety catch operatively mounted in a recess in said wall at least not beyond the outer surface of the casing, a spring set in a hole in said wall and engaging an end of said catch to continuously move it into catching position and a catch post carried by the cover so as to be engaged by the opposite end of the catch to hold the cover in closed position.

2. An automatic lighter as defined in claim 1 further characterized in that the cover carries at its hinged end, in laterally positioned relationship, the ratchet and friction wheel structure having a readily removable bearing spindle extending transversely of the cover and the side walls of the casing and forming a pivot for the cover and said structure, a spring for opening the cover having a circular seat portion positioned around the walls of said depending recess and having spaced arms looped around the opposite ends of said structure and then extending toward said seat portion in contact with the lower wall of the top chamber, a further spring also having a seat around the wall of said recess and having an arm extending under tension into driving engagement with said ratchet wheel for rapidly turning the ratchet and friction wheels when the cover is released, a slug of ignition material positioned in a seat in the casing in alignment with the friction wheel and a screw positioned in a hole in the bottom of the casing, the hole extending from the bottom of the casing through to said slug seat, the screw having an elongated stem and a spring having one end around said stem and extending into compression engagement with said slug to push it into operative engagement with the friction wheel.

3. In a lighter of the type described having a casing carrying a friction wheel with means for moving it in frictional engagement with a flint, means for mounting the flint comprising a hollow bushing to receive the flint in one end, the bushing having a longitudinally positioned slot through its wall on one side of the axis, the casing having an opening in alignment with said slot, the slot and opening serving to pass a flint into the bushing, the casing also having a hole extending from the bottom of the casing up to and in alignment with the hole through the bushing, a plunger positioned in said casing hole and having an end of reduced diameter to slide in the bushing and engage the flint, a shoulder at the beginning of said reduced diameter and acting as a stop for the plunger against said bushing, the plunger being hollow at its opposite end, a

spring positioned within the casing hole and extending into the hollow part of said plunger and automatically and continuously acting on the plunger as the flint is used up and a screw having an extended stem for guiding the spring.

4. A lighter as set forth in claim 3 further defined in that the casing has an elongated opening therein positioned below the casing opening through which a flint can be passed while the plunger has a projection extending into said elongated opening for automatically indicating when a new flint is required and also acting as a means for withdrawing the plunger to uncover said casing opening for inserting a flint for the purpose described.

COLIN J. CAMPBELL.

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