May 17, 1932. H. A. DOUGLAS 1,859,201

IGNITER

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Fig. 1.

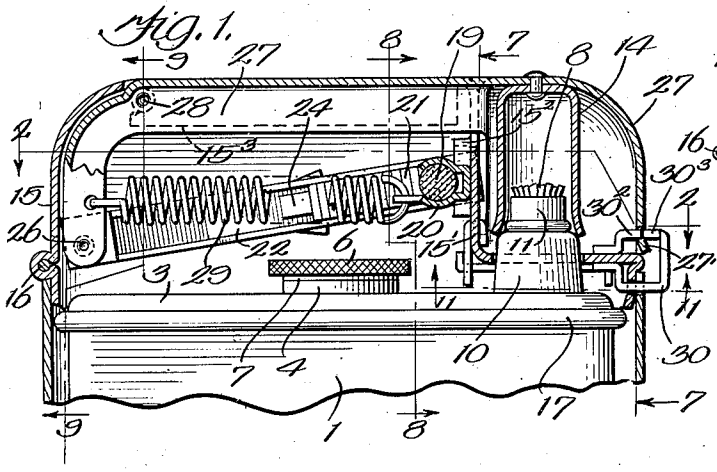


Fig. 4.

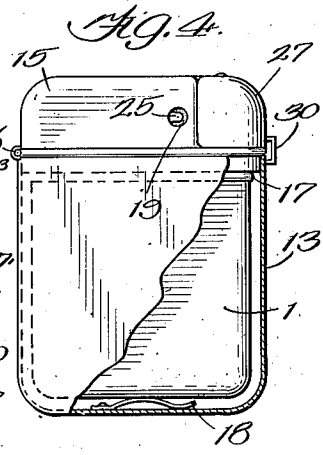


Fig. 2.

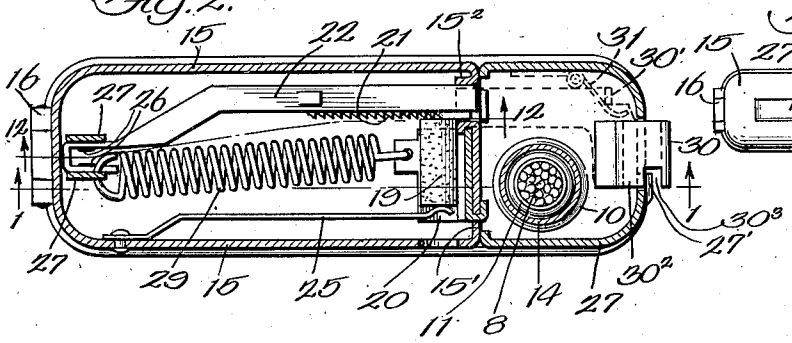


Fig. 5.

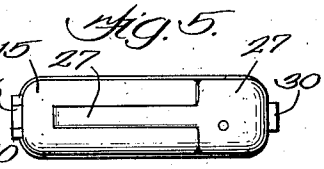


Fig. 3

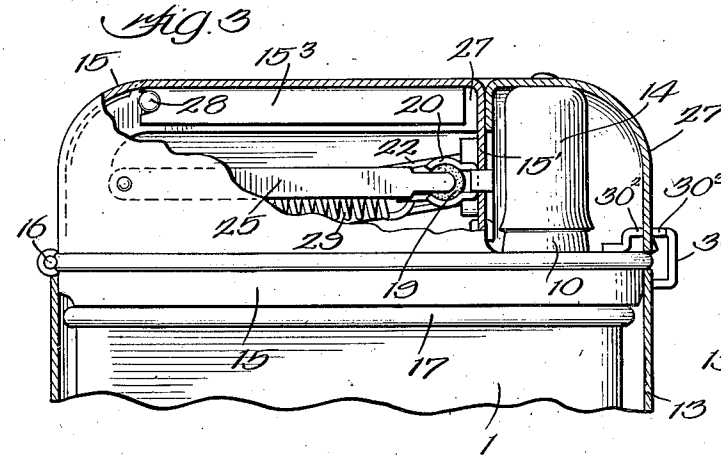
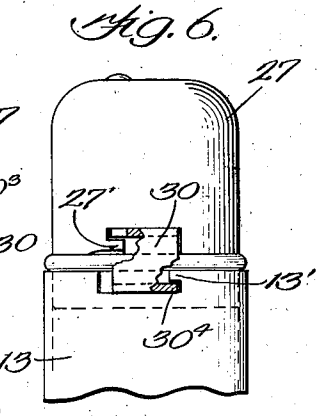


Fig. 6.



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Fig. 7.

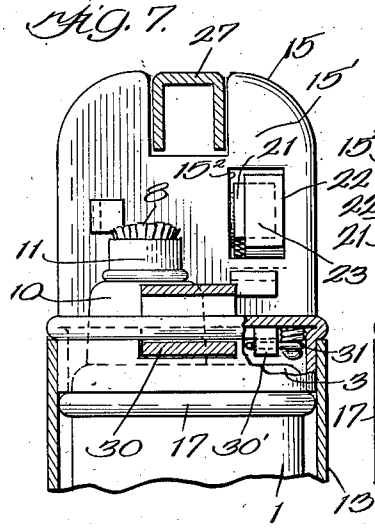


Fig. 8.

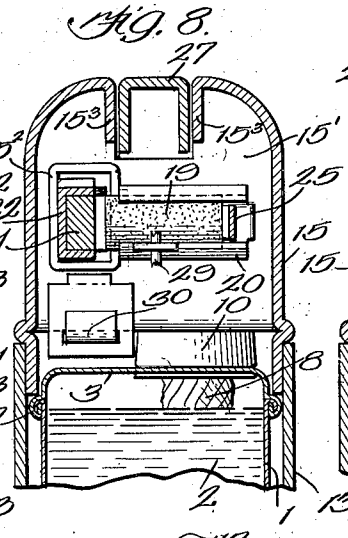


Fig. 9.

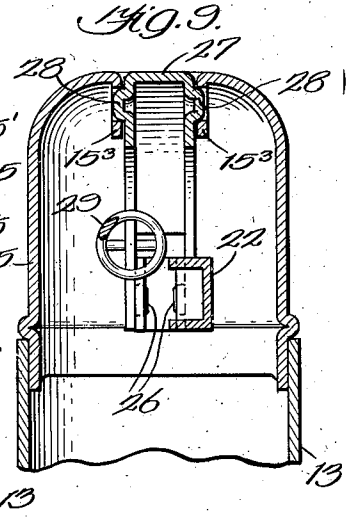


Fig. 10.

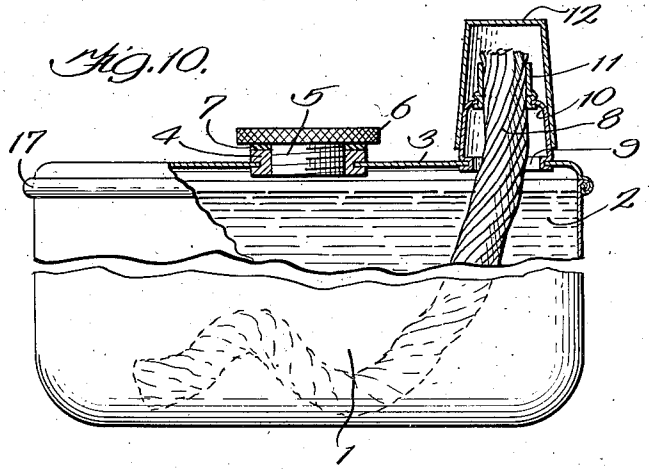


Fig. 11.

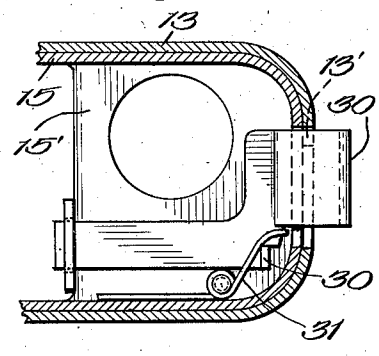


Fig. 12.

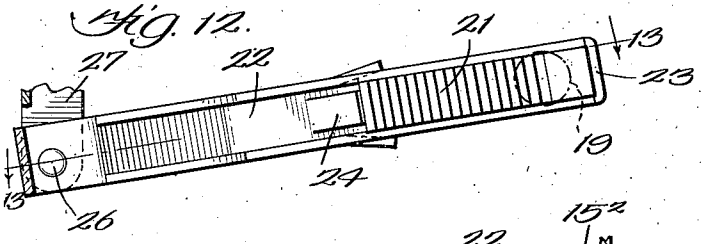
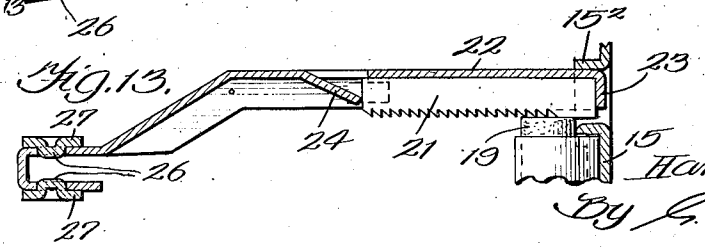


Fig. 13.



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Patented May 17, 1932 1,859,201

UNITED STATES PATENT OFFICE

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN

IGNITER

Application filed May 9, 1929. Serial No. 361,671.

My invention relates to igniters, the invention being of particular service in connection with those igniters that are known as cigar or cigarette lighters.

Cigar or cigarette lighters of the prior art were inclusive of liquid fuel receptacles which carried igniting mechanism in proximity to wicking furnished with fuel from the receptacles. Such receptacles were provided with screw plugs to permit of the replenishment of fuel therein. It is one object of my invention to eliminate the re-filling of such receptacles by the users.

In accordance with one feature of my invention I provide a casing in which the fuel carrying member of the igniter is separably received and is held in cooperative relation with the igniting mechanism, which is preferably entirely carried upon the casing independently of the fuel carrying member of the igniter. The fuel employed is preferably such liquid as is commonly employed in igniters of the prior art, in which event the fuel carrying members of my invention, are in the form of containers from which wicks issue that terminate in close proximity to the igniting mechanism or spark producer. Such containers, filled with fuel, are supplied to the trade to be sold to consumers to replace the emptied containers to their cigar lighters. These empty containers may be collected and returned to their makers for re-filling and re-sale, thereby cheapening the cost to the consumer. The fuel member is desirably held in place within the igniter casing by means of a retainer which is assembled with preferably all of the igniting mechanism to cooperatively relate such mechanism with the fuel member. This retainer is preferably a closure member that forms a part of the casing and takes part in covering the igniting mechanism and the wicking or other portion of the fuel member which is to carry the cigar or cigarette igniting flame. In such construction the fuel member is thus received in the body of the casing and is guarded by the lid member of the casing. The lid is desirably hinged upon the body of the casing in order that it may be readily moved into and out of closed position, the lid being adapted to be swung sufficiently clear of the body portion of the casing to permit of the passage of the fuel member into and out of the casing where the lid is located. A spring desirably presses the container against the lid or other retainer so as to compensate for inequalities in manufacture and to insure the proper relation of the fuel member to the igniting mechanism.

My invention finds its most useful embodiment in an igniter whose igniting mechanism is inclusive of a body of pyrophoric material such as flint, and a striker for impinging upon the flint body to generate igniting sparks, the flint body being in close proximity to the wicking or other part which is carried by the fuel member and which is set into flame by the sparks that reach it. A spring is employed to operate the striker and a latch serves to hold the spring under tension in readiness to operate the striker upon release of the latch. The striker is preferably in the form of a hard metal bar having teeth adapted to strike the flint body. This bar is preferably pivoted, at one end, upon one arm of a bell crank lever which is pivoted upon the closure lid and constitutes a carrier for the striker and the spring is attached, at one end, to this bell crank arm and at its other end to the retainer or closure lid. Such carrier or bell crank is held in a depressed position against the force of the spring by the aforesaid latch and it is turned by the spring away from the fuel member to effect the operation of the striker and to remove the snuffer from the wick, this snuffer being desirably provided upon the carrier. This carrier, therefore, is formed to constitute a closure member which supplements the closing fuction of the lid which is preferably maintained in its closed position until the fuel member is to be replaced. The latch is desirably given an inward movement to release the carrier when the flame is to be established and a sidewise movement when the lid and the carrier are to be removed for the purpose of replacing the fuel member.

The invention will be more fully explained in connection with the accompanying drawings in which Fig. 1 is a view of an upper

portion of the igniter of my invention, parts being shown in sectional elevation and parts in full elevation, this figure being generally taken on line 1—1 of Fig. 2; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a view, mainly in elevation, of the igniter portion shown in Fig. 1, a few parts being shown in section; Fig. 4 is a view in elevation of an igniter on a smaller scale, a portion being shown in section; Fig. 5 is a top view of the igniter shown in Fig. 4; Fig. 6 is an end view of the structure as shown in Fig. 3, parts being broken away and shown in section; Fig. 7 is a view generally taken on line 7—7 of Fig. 1; Fig. 8 is a sectional view on line 8—8 of Fig. 1; Fig. 9 is a sectional view on line 9—9 of Fig. 1; Fig. 10 is a view, in elevation, of the preferred form of fuel member, parts being broken away and shown in section; Fig. 11 is a sectional view on line 11—11 of Fig. 1; Fig. 12 is a view of part of the structure generally taken on line 12—12 of Fig. 2; and Fig. 13 is a view generally taken on line 13—13 of Fig. 12.

The fuel member illustrated is inclusive of a container 1 for the liquid fuel 2. This container has a cover 3 permanently secured thereto. This cover is furnished with an interiorly threaded bushing 4 that passes through an opening in the cover and receives a threaded closure plug 5. This closure plug has a flange 6 which presses a sealing gasket 7 upon the bushing. Fuel is admitted to the container through the opening occupied by the plug. Fuel is discharged from the container by means of a wick 8 that reaches the bottom of the container and passes through another opening in the cover 3, this latter opening receiving another bushing 9 through which the wick passes. Both bushings are desirably clinched into engagement with the cover. The bushing 9 has an upwardly extending slightly tapering continuation 10. An upright elongated bushing 11 has its lower end clinched into the border of the portion 10 that surrounds an opening at the upper end of this portion. The part 11 snugly surrounds the upper end of the wick to position it sufficiently close to the spark emanating portion of the igniting mechanism. When containers of the construction described are carried in stock, each is supplied with a cap 12 whose skirt snugly engages the bushing portion 10 to guard against the escape of liquid fuel.

When the container is inserted within the body 13 of the casing of an igniter the cap 12 is removed, this cap being replaced by a snuffer 14 that is placed in sealing engagement with the bushing portion 10 when the igniter is not in use and which is removed from such engagement when the wick is to be lighted, as will more fully hereinafter appear. The casing also includes a retainer 15 which is preferably in the form of a lid that is desirably hinged to the casing body as indicated at 16. Said lid is somewhat in the form of an inverted cup whose bottom edge or rim is received within the upper end of the casing body when the lid is closed, this rim then engaging the bead 17 which is formed upon and about the upper end of the fuel container, said lid then preventing the container from being displaced upwardly. A leaf spring 18 is secured, at one end, within the casing body and upon its bottom wall, this spring being depressed by the lid, when closed, through the intermediation of the fuel container to prevent the fuel container from moving about within the casing, the spring compensating for some inequalities that may occur in manufacture. When the fuel container within the casing is to be replaced the lid is swung back upon its hinge 16 clear of the path of movement of the container being removed and of the new container to be inserted.

The retainer or lid 15 desirably constitutes a carrier for all of the parts of the igniting mechanism, though the invention is not to be thus limited. The igniting mechanism illustrated is inclusive of a block 19 of pyrophoric material, preferably flint, which is normally substantially stationary with respect to the container and the wick or inflammable element 8 where it issues from the container. This relationship of this block and the wick is desirably normally maintained by placing the block within a horizontally disposed clip 20 which is secured to the front wall portion 15′ of the lid 15. The igniting mechanism also includes a striker 21 which is preferably in the form of a bar of hard metal having a serrated face that is opposed to and engages one end of the block 19. This striking bar is received within the channel of an arm 22 that is of U-shape in cross section with the U turned ninety degrees. The striking bar is caught between the deflected end portion 23 of said arm and the tongue 24 which is struck from the arm into its channel as will later appear. The arm 22 is moved to the right when the igniter is used for its purpose. It is guided in its movement, at its right hand end, by the flint block 19 and one side of the sleeve 15^2 which is struck from the part 15′ of the lid. A leaf spring 25 is anchored, at one end, to a side of the cover 15 and presses, at its unmounted end, against the block 19 to maintain the block in engagement with the striking bar and to feed the block through the clip 20 as the block becomes worn by said bar. The arm 22 is pivotally mounted upon trunnions 26 which are struck inwardly from the sides of a lever 27 which is also U-shaped in cross section. This lever is in the form of a bell crank having pivotal trunnions 28 struck outwardly therefrom at the elbow of the lever and which

trunnions are received within socket openings that are formed within ribs 15^3 that are struck inwardly from the top of the lid 15.

A coiled spring 29 is anchored, at its front end, to the clip 20 and is attached, at its rear end, to the depending arm of the bell crank 27. This spring is under tension and exerts a forward bodily pull upon the lever that maintains the lever trunnions 28 in their socket heads in the rib 15^3, these sockets seats being open toward the left. Said spring also pulls upon the aforesaid lever in a counterclockwise direction, the lever being held in its depressed position by a latch 30 which is carried by the lid portion 15′. This lid portion is angular and depressed below the top level of the lid and inwardly offset with respect to the contiguous upright side of the casing body 13 and the right hand end of the lever 27 to afford a chamber in which the upper end of the wick, the bushing portion 11 and the upper part of the bushing portion 10 are received. This latter bushing portion extends through an opening in the horizontal part of the lid portion 15′, the latch being in sliding relation to this horizontal wall part. The inner portion of the latch 30 projects through a slot in the hook like member 15^4 which is carried by the part 15′. When the bell crank lever 27 is held depressed by the latch 30, the snuffer 14 snugly engages the top of the bushing portion 10 to extinguish the flame that was previously produced in a manner which may be apparent, but which will later be described, and to prevent the evaporation and escape of the liquid fuel from the wick. The latch 30 is formed with an ear or lug 30′ which is pressed upon by a spring 31 which normally serves to hold the latch in its outermost position and against the force of which the latch is inwardly moved when the igniter is to be operated. When the latch is in its normal outermost position, the part 30^2 thereof is in register with and engages the top part of the portion 27′ of the lever 27 whereby this lever is held in its lowered position against the force of the spring 29. When the latch is pushed inwardly against the force of the spring 31 the recess 30^3 is brought into register with the lever portion 27′, the spring 29 then being free to turn this lever counterclockwise. When said lever is turned counterclockwise the arm 22 is moved forwardly to scrape the serrated face of the striking bar 21 across the adjacent end of the flint block 19. The sparks which arise at the flint block have access through the bore of the sleeve 15^2 to the wick which is consequently ignited.

The lever 27 is desirably of T form, the stem of the T substantially filling the slot between the ribs 15^3 of the lid 15 and the head of the T fitting into the angular recess afforded by the wall portion 15′ of the lid 15 and rounding out the appearance of the device as indicated in Figs. 4 and 5. The T head is hollow to enclose the snuffer and the inflammable end of the wick.

To prevent undesired opening movement of the lid 15, the latch 30 is also employed to normally hold the rim thereof with the casing body. During the inward and outward movements of the latch, the latch portion 30^4 is always beneath and in engagement with the casing body portion 13′ for the purpose just stated. When it is desired to raise the lid to afford access to the fuel container 1 the latch is moved inwardly and laterally toward the left to remove the latch portion 30^4 from beneath the body casing portion 13′ whereupon the lid 15 and the lever 27 may be moved in unison to open and closed positions. When the lid is raised its rim is disengaged from the bead 17 upon the fuel container permitting this container to be removed and replaced by a fresh one.

The unmounted end of spring 25 may be moved to one side and downwardly, the spring being pivotally anchored, when it is desired to replace the flint body 19.

There are a number of novel features of construction in the igniter of my invention which are claimed herein apart from the removable fuel member.

Changes may be made without departing from the invention.

Having thus described my invention, I claim:

1. An igniter including a casing; a lever pivoted upon the casing; a spring for operating the lever; a latch upon the casing for positioning the lever against the force of the spring; a striker operable by the lever when the lever is released by the latch; a body of spark producing material engageable by the striker, when thus operated, to produce sparks; and an inflammable element in the region of said body of spark-producing material to receive igniting sparks therefrom, wherein the casing is inclusive of a hinged lid upon which the lever is mounted, wherein the spring is attached, at one end, to the lid, and wherein the latch is given movement in one direction to release the lever and in holding engagement with the lid throughout this direction of movement and wherein the latch is movable in another direction enabling the release of the lid.

2. An igniter including a casing; a lever pivoted upon the casing; a spring for operating the lever; a latch upon the casing for positioning the lever against the force of the spring; a striker operable by the lever when the lever is released by the latch; a body of spark producing material engageable by the striker, when thus operated, to produce sparks; and an inflammable element in the region of said body of spark-producing material to receive igniting sparks therefrom, wherein the casing is inclusive of a lid upon

which the lever is mounted, wherein the spring is attached, at one end, to the lid, and wherein the latch is given movement in one direction to release the lever and in holding engagement with the lid throughout this direction of movement and wherein the latch is movable in another direction enabling the release of the lid.

3. An igniter including a casing; a lever pivoted intermediate its ends upon the casing; a spring for operating the lever and attached thereto at one side of the lever pivot; a latch upon the casing for positioning the lever against the force of the spring; a striker coupled with the lever to be operable by the lever when the lever is released by the latch; a body of spark producing material engageable by the striker, when thus operated, to produce sparks; and an inflammable element in the region of said body of spark producing material to receive igniting sparks therefrom, wherein the striker is connected with the end of the lever with which the spring is connected and is provided with a guide for directing its movement upon the body of spark producing material and wherein the spark receiving portion of the inflammable element is upon the exterior of the casing and the casing is inclusive of a lid upon which the lever is mounted.

In witness whereof, I hereunto subscribe my name.

HARRY A. DOUGLAS.